Surface Water Supply of the United States 1955

Part 4. St. Lawrence River Basin

GEOLOGICAL SURVEY WATER-SUPPLY PAPER 1387

Prepared in cooperation with the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Vermont, and Wisconsin, and with other agencies

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Part 4. St. Lawrence River Basin

Prepared under the direction of J. V. B. WELLS, *Chief, Surface Water Branch*

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PREFACE

This report was prepared by the Geological Survey in cooperation with the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Vermont, and Wisconsin, and with other agencies, by personnel of the Water Resources Division, C. G. Paulsen, chief, under the general direction of J. V. B. Wells, chief, Surface Water Branch, and B. J. Peterson, chief, Annual Reports Section.

The data were collected and computed under supervision of district engineers, Surface Water Branch, as follows:

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H. B. Kinnison---------- Boston, Mass.
J. H. Morgan---------- Champaign, Ill.
L. R. Sawyer---------- St. Paul, Minn.

CALENDAR FOR WATER YEAR 1955

OCTOBER 1954

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

NOVEMBER 1954

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

DECEMBER 1954

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

JANUARY 1955

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

FEBRUARY 1955

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

MARCH 1955

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

APRIL 1955

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

MAY 1955

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

JUNE 1955

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

JULY 1955

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

AUGUST 1955

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

SEPTEMBER 1955

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

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SCOPE OF WORK

This volume is one of a series of 18 reports presenting measurements of stage, discharge, and content of streams, lakes, and reservoirs in the United States during the water year ending September 30, 1955. Since 1888, when the United States Geological Survey first studied streamflow in relation to problems of irrigation, similar measurements have been made at more than 13,250 gaging stations in the 48 States and at many others in the Territories of Alaska and Hawaii. On September 30, 1955, the Geological Survey and cooperating organizations were maintaining 6,860 gaging stations, including those in Alaska and Hawaii. Discharge measurements only were made at many other points in the 1955 water year, most of which are published at the end of each report. The name of each stream measured at points other than gaging stations is not listed in the index to this report. Only the major river basins in which measurements were made are listed under the item "Discharge measurements" in the index.

COOPERATION

Many State, municipal, and private organizations have cooperated with the Geological Survey in this work by either furnishing or helping to collect data. Organizations that supplied data are acknowledged in station descriptions, and organizations that assisted in the collection of data through cooperative agreements with the Survey are:

Illinois: State Department of Public Works and Buildings, E. A. Rosenstone, director, through Division of Waterways, T. B. Casey, chief engineer; and Department of Highways, Cook County, W. H. Erickson, president of the Board of County Commissioners and W. J. Mortimer, superintendent.

Indiana: State Department of Conservation, H. G. Hook, director, through Division of Water Resources, C. H. Bechert, director; State Highway Commission, N. R. Godwin, chairman, succeeded by V. R. Smith, and C. E. Vogelgesang, chief engineer; Indiana Flood Control and Water Resources Commission, Anton Hulman, Jr., chairman, J. I Perrey chief engineer; State Board of Health, Dr. A. C. Offutt, commissioner, and B.A. Poole, director, Bureau of Sanitary Engineering; and city of Fort Wayne Filtration Plant, L. R. Matthews, superintendent.

Michigan: State Department of Conservation, G. E. Eddy, director, through Geological Survey Division, W. L. Daoust, State geologist, Fish and Fisheries Division, F. A. Westerman, head, General Operations Division, G. A. Walker, head, and Parks Division, A. C. Elmer, head; State Water Resources Commission, M. P. Adams, executive secretary; and State Highway Department, C. M. Ziegler, commissioner.

Minnesota: State Department of Conservation, Division of Waters, S. A. Frellsen, director; and Minnesota State Iron Range Resources and Rehabilitation Commission, E. G. Bayuk, commissioner, succeeded by K. J. Otava.

New York: State Department of Law, N. L. Goldstein, attorney general; State Department of Public Works, B. D. Tallamy, superintendent, succeeded by J. W. Johnson;

Board of Black River Regulating District, L. P. Gaylord, chief engineer; Commission for the Improvement of Oswegatchie River and the Hydraulic Power Thereon, A. E. Boughner, commissioner; city of Auburn, A. E. Turner, city manager; and village of Lancaster, H. J. Huber, superintendent of public works.

Ohio: State Department of Highways, S. O. Linzell, director; State Department of Natural Resources, A. W. Marion, director.

Vermont: Water Conservation Board, R. W. Thieme, commissioner.

Wisconsin: Public Service Commission of Wisconsin, Warren Oakey, chief engineer, and Wisconsin Committee on Water Pollution, T. F. Wisniewski, director.

Assistance in the form of funds or services was given by the Corps of Engineers, Department of the Army, in collecting records published herein for 70 gaging stations, of which 2 were in Indiana, 30 in Michigan, 2 in Minnesota, 11 in New York, 14 in Ohio, 5 in Vermont, and 6 in Wisconsin.

Assistance was also furnished by the Weather Bureau of the United States Department of Commerce, Fish and Wildlife Service of the United States Department of the Interior, and the United States Department of State.

Full cooperation exists between the Geological Survey, United States Department of the Interior, and the Water Resources Branch, Department of Northern Affairs and National 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 designated international gaging stations.

The following organizations aided in collecting records:

Indiana: Indiana & Michigan Electric Co. and Sanitary District of Chicago.

Michigan: Wayne County Road Commission; Huron-Clinton Metropolitan Authority; Southeastern Oakland Co. Sewage Disposal District; cities of Allegan, Battle Creek, Birmingham, Crystal Falls, Dearborn, Detroit, Flint, Jackson, Grand Rapids, Lansing, Niles, and Owosso; American Boxboard Co.; Consumers Power Co.; Detroit Edison Co.; Dow Chemical Co.; Michigan Gas & Electric Co.; White Pine Copper Co.; Wisconsin-Michigan Power Co.; and Upper Peninsular Power Co.

New York: Municipalities of Batavia, Canandaigua, Oneida, Rochester, and Syracuse; Cornell University; New York State Electric & Gas Corp.; Niagara Mohawk Power Corp.; and Rochester Gas & Electric Corp.

Wisconsin: State Conservation Department, Lake Superior District Power Co., Wisconsin Michigan Power Co., and Wisconsin Public Service Corp.

DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey, under the direction of personnel shown in the preface. The data for stations in the several States were collected and prepared for publication in the district offices listed below.

State	District office	Address
Illinois	Champaign	605 South Neil Street.
Indiana	Indianapolis	611 North Park Avenue.

State	District office	Address
Michigan a/	Lansing	407 Capitol Saving & Loan Building.
Minnesota	St. Paul	1610 Post Office Building.
New York	Albany	526 Federal Building.
Ohio	Columbus	1509 Hess Street.
Vermont	Boston, Mass	939 Post Office Building.
Wisconsin b/	Madison	666 State Office Building.

a Except Menominee River at Twin Falls, near Iron Mountain and below Koss but including Brule and Menominee Rivers near Florence, Wis.
b Except Brule and Menominee Rivers near Florence but including Menominee River at Twin Falls, near Iron Mountain and below Koss, Mich.

Information of a more detailed nature than that published for most of the gaging stations given in this report is on file in the district offices listed above. Provisional records of discharge prior to publication, and other unpublished data containing the gaging-station records may usually be obtained from the district office.

DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Cubic foot per second (cfs) 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.

Cubic feet per second per square mile (cfsm) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Runoff 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. The term is used for comparing runoff with rainfall, which is also usually expressed in inches.

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 relation to storage for irrigation.

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

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

Contents is the volume of water in a reservoir. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

DOWNSTREAM ORDER OF LISTING GAGING STATIONS

Beginning with the series of reports for the water year ending September 30, 1951, the order of listing gaging-station records was changed. In this report, in a downstream

direction along the main stem all stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention show which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

The order of listing used before the publication of the 1951 report listed first all stations on the main stem from headwaters toward mouth, then all stations on the uppermost tributary to the main stem from the tributary's source to mouth, and then all stations from source to mouth of the uppermost tributary to the tributary.

EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data 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 fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge. Typical structures in use at gaging stations are shown in figure 1.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect determinations of peak discharge (such as slope-area or contracted-opening determinations, computation of flow over dams or weirs, and by other methods), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is essentially the shifting-control method.

At some gaging stations the stage-discharge relation is affected by backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in determining discharge. Information requisite for determining the slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage. If so, the rate of change in stage is used as a factor in the determination of discharge.

A, Kalamazoo River near Battle Creek, Mich.

B, Huron River at Milan, Ohio

C, Fall Creek near Ithaca, N. Y. (Photo by Ithaca Journal)

FIGURE 1.—GAGING STATION STRUCTURES

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, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins. If the stage-discharge relation is affected by ice, this information is given in a note to the table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The data herein presented generally comprise a description of the station, a skeleton rating table, and a table showing the daily discharge and monthly and yearly discharge and runoff of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the water year 1955 is shown on page IV for the purpose of finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "Location" for some stations, is that determined and used by the Corps of Engineers unless otherwise noted. Under "Records available" are given the periods for which there are published records generally equivalent to those at the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. 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). In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual reports. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has

been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

Skeleton rating tables are published for all stations except those at which the daily discharge for the greater part of the open-water period was determined by the shifting-control method, the slope method, or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables are generally not published for stations on canals.

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

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Runoff for the month may be expressed in cubic feet per second per square mile (line headed "Cfsm"), or in inches (line headed "In."), or in acre-feet (line headed "Ac-ft"). Figures for cubic feet per second per square mile and runoff in inches are omitted if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

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Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record and ice effect, or by other effects that reduce the degree of accuracy of the records. Days on which discharge measurements were made are indicated by asterisk and footnote unless they were made at frequent regular intervals, in which instance the general frequency of discharge measurements is given under "Remarks" in the station description.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station and a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is usually given in the first report in which data for the reservoir are published, but it is omitted from succeeding reports.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Runoff at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and runoff in inches are not published unless storage or diversion records are included to indicate 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. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur when relatively large negative adjustments are made or when evaporation is large in comparison with the observed discharge.

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 actually show the water supply available at the stations for further development, because water must first be supplied to existing irrigation systems.

PUBLICATIONS

To facilitate publication of the annual series of reports, the area of the United States is divided into 14 parts whose boundaries coincide with certain natural drainage lines. Formerly, the results of streamflow measurements were published in 14 volumes, one for each of the 14 parts. Beginning with the reports for 1951, the records are published in 18 volumes, there being 2 volumes each for Parts 1, 2, 3, and 6. The boundaries of the various parts are indicated by the following list and the map in figure 2.

Part 1. North Atlantic slope basins, in two volumes:
- A, North Atlantic slope basins, Maine to Connecticut.
- B, North Atlantic slope basins, New York to York River.

2. South Atlantic slope and eastern Gulf of Mexico basins, in two volumes:
- A, South Atlantic slope basins, James River to Savannah River.
- B, South Atlantic slope and eastern Gulf of Mexico basins, Ogeechee River to Pearl River.

3. Ohio River basin, in two volumes:
- A, Ohio River basin except Cumberland and Tennessee River basins.
- B, Cumberland and Tennessee River basins.

4. St. Lawrence River basin.
5. Hudson Bay and upper Mississippi River basins.
6. Missouri River basin, in two volumes:
- A, Missouri River basin above Sioux City, Iowa.
- B, Missouri River basin below Sioux City, Iowa.

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 on the water resources of the United States may be purchased or consulted as follows:

1. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., who will, on application, furnish lists giving prices. A list of Geological Survey publications may also be obtained by applying to the Director, Geological Survey, Washington, D. C.

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 offices of the Water Resources Division of the Geological Survey. Addresses of the offices in the area covered by this report are given on page 2.

Early records of the flow of streams in the United States are published in the reports listed below. In many of these reports records for years earlier than those indicated have been included for some streams.

Streamflow data for the years 1884-1901, in reports of the Geological Survey

(A = Annual Report; B = Bulletin)

Report	Character of data	Year
10th A, pt. 2	Descriptive information only.	
11th A, pt. 2	Monthly discharge and descriptive information.....	1884 to September 1890.
12th A, pt. 2	....do.....	1884 to June 30, 1891.
13th A, pt. 3	....do.....	1884-92.
14th A, pt. 2	Monthly discharge.....	1888-93.
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.	1895.
WSP 11.....	Gage heights.....	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge..	1895-96.
WSP 15.....	Descriptions, measurements, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries above Kansas River.	1897.
WSP 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.	1897.
WSP 27.....	Measurements, ratings, and gage heights of streams east of the Mississippi River, and Missouri River and tributaries.	1898.

Streamflow data for the years 1884-1901, in reports of the Geological Survey--Continued

(A = Annual Report; B = Bulletin)

Report	Character of data	Year
WSP 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.....	1898.
WSP 35 to 39.	Descriptions, measurements, gage heights, and ratings.....	1899.
21st A, pt. 4	Monthly discharge.....	1899.
WSP 47 to 52.	Descriptions, measurements, gage heights, and ratings.....	1900.
22d A, pt. 4.	Monthly discharge.....	1900.
WSP 65, 66...	Descriptions, measurements, gage heights, and ratings.....	1901.
WSP 75.....	Monthly discharge.....	1901.

Reports on surface-water supply containing records from 1899 to date for drainage basins in this report are listed below. The data for any particular gaging station will, in general, be found in the reports covering the years during which the station was maintained.

Numbers of water-supply papers containing results of stream measurements in St. Lawrence River basin, 1899-1955

Year	WSP	Year	WSP	Year	WSP	Year	WSP	Year	WSP
1899	36	1911	304	1923	564	1934	759	1945	1034
1900	49	1912	324	1924	584	1935	784	1946	1054
1901	65,75	1913	354	1925	604	1936	804	1947	1084
1902	a82,83	1914	384	1926	624	1937	824	1948	1114
1903	97	1915	404	1927	644	1938	854	1949	1144
1904	129	1916	434	1928	664	1939	874	1950	1174
1905	170	1917	454	1929	684	1940	894	1951	1207
1906	206	1918	474	1930	699	1941	924	1952	1237
1907-8	244	1919-20	504	1931	714	1942	954	1953	1277
1909	264	1921	524	1932	729	1943	974	1954	1337
1910	284	1922	544	1933	744	1944	1004	1955	1387

a Lake Ontario and tributaries to St. Lawrence River proper.

The records at most of the stations discussed in these reports extend over many years. Discharge measurements at many points other than regular gaging stations have been made each year and are published at the end of each report. The streams and points of measurement are listed in the same order as the streams and gaging stations in the body of the report. An index of the records obtained before 1904 has been published in Water-Supply Paper 119.

Each of the reports on the surface-water supply for the year 1939 (Water-Supply Paper 874 for the St. Lawrence River basin) contains, for the area included in that report, a summary of yearly discharge at gaging stations at which 10 or more complete years of record had been collected. These summaries were reprinted separately.

Reports also 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 may have been revised), as well as some records not contained in the annual series of water-supply papers. The only such reports for any part of the area covered by this report are Water-Supply Paper 424, "Surface waters of Vermont, 1875-1916," and Water-Supply Paper 156, "Water powers of northern Wisconsin, 1895-1905."

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 for the area covered by this report.

State reports containing compilations of records of discharge

State	Period	Report	Issued by
Indiana.....	1923-27	Pub. 72, Surface water supply of Indiana...	Department of Conservation.
Do.....	1927-30	Pub. 112, Surface water supply of Indiana..	Do.
Minnesota.....	1909-12	Water-resources investigation of Minnesota.	State Drainage Commission.
Do.....	1883-1949	Surface water supplies of the Mesabi Iron Range.	Department of Conservation.

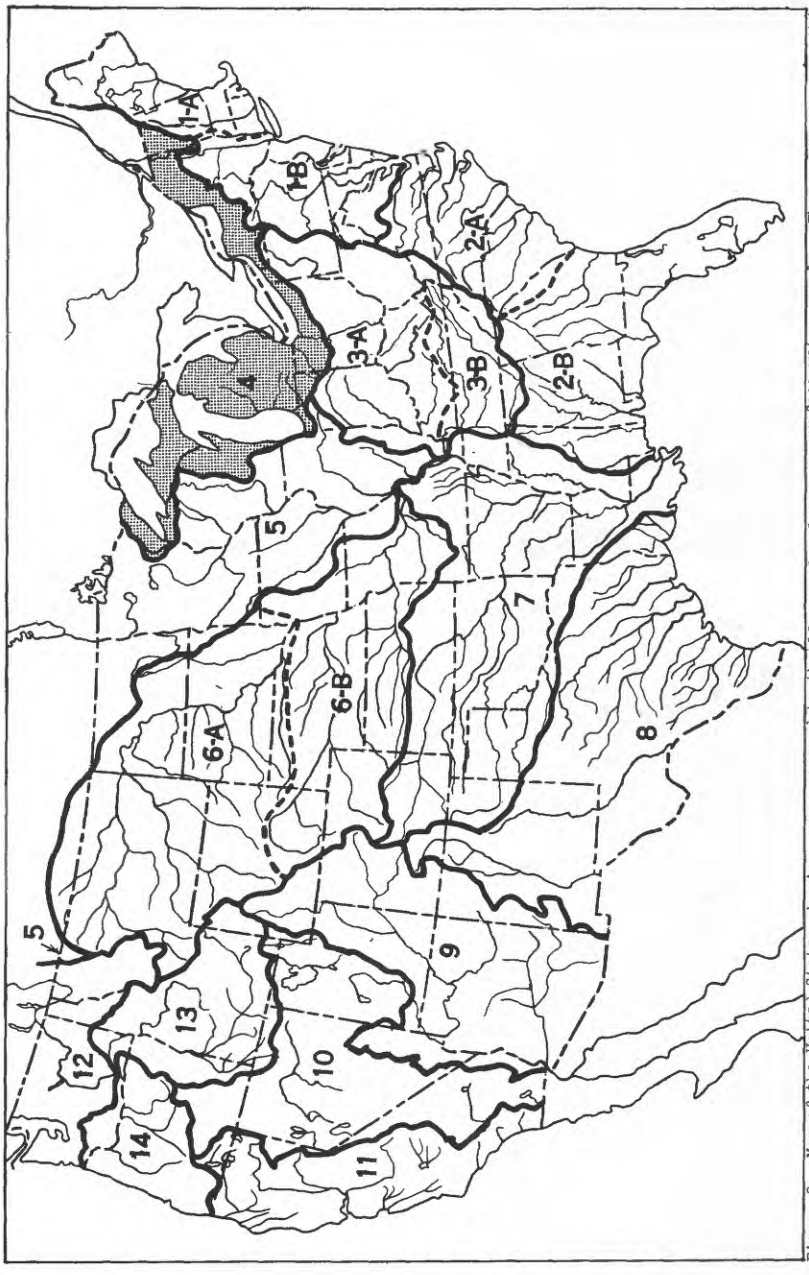

Figure 2. Map of the United States showing areas covered by the 18 annual volumes on surface-water supply. The area covered by this report is shaded.

State reports containing compilations of records of discharge--Continued

State	Period	Report	Issued by
Ohio.....	1898-1921	Bull. 73, Ohio streamflow, Part 1.....	Engineering Experiment Station, Ohio State University.
Do.....	1898-1944	Bull. 127, Ohio streamflow, Part 2.....	Do.
Do.....	1902-39	Bull. 200, Compilation of streamflow.....	Department of Agriculture, Division of Conservation.
Do.....	1898-1939	Bull. 111, Ohio stream-drainage areas and flow-duration tables.	Engineering Experiment Station, Ohio State University.
Wisconsin.....	1888-1914	1st report of Railroad Commission of Wisconsin to Legislature on Water powers.	Railroad Commission of Wisconsin.
Do.....	1914-23	2nd report of Railroad Commission of Wisconsin to Legislature on water powers.	Do.

Note.--In addition to the records contained in the reports listed above, annual or biennial reports in which are contained records of discharge are issued by the State of New York, Board of Water Supply, city of New York, and the city of Rochester.

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 or other agencies. The more recent of these special reports also contain other pertinent hydrologic information and analyses and compilations of data relating to earlier notable floods. The following list gives the numbers and titles of these reports:

Report	Issued by
WSP 147: Destructive floods in the United States in 1904.	U. S. Geological Survey.
WSP 162: Destructive floods in the United States in 1905.	Do.
WSP 636-C: The New England flood of November 1927.	Do.
WSP 771: Floods in the United States, magnitude and frequency.	Do.
WSP 773-E: The New York State flood of July 1935.	Do.
WSP 798: The floods of March 1936, part 1, New England Rivers.	Do.
WSP 799: The floods of March 1936, part 2, Hudson River to Susquehannah River region.	Do.
WSP 847: Maximum discharges at stream-measurement stations through September 1938.	Do.
WSP 867: Hurricane floods of September 1938.	Do.
WSP 1137-G: Floods of 1950 in the Upper Mississippi River and Lake Superior basins in Minnesota.	Do.
WSP 1137-I: Summary of floods in the United States during 1950.	U. S. Geological Survey.
Bull. 1: Magnitude and frequency of floods in Minnesota.	Minnesota Division of Waters.
Bull. 7: Floods in Ohio, magnitude and frequency.	Ohio Water Resources Board.
Bull. 14: Local floods in Ohio during 1947.	Do.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE GEOLOGICAL SURVEY

The table below contains a list of gaging stations for the area covered by this report, at which records of discharge were collected during the water year October 1954 to September 1955 by agencies other than the Geological Survey. The records of these stations are not contained in publications of the Geological Survey, nor have they been published elsewhere.

Records of discharge collected by agencies other than the Geological Survey

Stream	Location	Period	Collected by
Cayuga Lake Outlet...	Lock 1 (Mud lock), N. Y.....	1926-55	State Department of Public Works, Syracuse, N. Y.
Clyde River.....	Clyde, N. Y.....	1924-55	Do.
Indian River.....	Theresa, N. Y.....	1934-55	Niagara Mohawk Power Corporation, Syracuse, N. Y.
New York Barge Canal a/	Brewerton, N. Y.....	1925-55	State Department of Public Works, Syracuse, N. Y.
Oswegatchie River, East Branch.	Brown Falls, N. Y.....	1934-55	Niagara Mohawk Power Corporation, Syracuse, N. Y.
Oswego River.....	Dam O-5, Minetto, N. Y.....	1928-55	State Department of Public Works, Syracuse, N. Y.
Do.....	Lower Dam, Fulton, N. Y.....	1928-55	Oswego River Watershed Corporation, Fulton, N. Y.
Do.....	High Dam, Oswego, N. Y.....	1940-55	Niagara Mohawk Power Corporation, Syracuse, N. Y.

a/ Diversion around station on Oneida River at Caughdenoy, N. Y.

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

Stream	Location	Period	Collected by
Raquette River.....	Colton, N. Y.....	1934-55	Niagara Mohawk Power Corporation, Syracuse, N. Y.
St. Regis River, West Branch.	Parishville, N. Y.....	1934-55	Do.
Salmon River.....	Bennetts Bridge, Altmar, N. Y..	1934-55	Do.
Saranac River.....	Kents Falls, N. Y.....	1934-55	System Properties, Inc., Cadyville, N. Y
Seneca River.....	Seneca Falls, N. Y.....	1931-55	New York State Electric & Gas Corp., Geneva, N. Y.
Do.....	Waterloo, N. Y.....	1931-55	Do.
Skaneateles Lake Outlet.	Skaneateles, N. Y.....	1922-55	City of Syracuse, N. Y.

Note.--Records for the stations given in the above table are unpublished but are available at the office of the organization by which the station was operated. In addition to the records listed in the above table, the Agricultural Research Service of the U. S. Department of Agriculture (beginning in 1941) has collected records of runoff from 3 areas of less than 2 acres each near East Lansing, Mich.

HYDROLOGIC CONDITIONS

The water year 1955 was characterized by near median runoff over most of the area covered by this report. For the first six months of the water year runoff was generally well above median with excessive runoff occurring over much of the area during October, November, and December. During the last six months of the water year runoff was generally deficient. Record-breaking floods occurred in the Little Calumet River basin during October. These floods are described in Water-Supply Paper 1370-B, "Floods of October 1954 in the Chicago area, Illinois, and Indiana" now in preparation. Runoff was record-high for October at two key gaging stations in Michigan. Minor floods occurred in the vicinity of Buffalo, N. Y., and in the Genesee River basin during March. For two key gaging stations in the area covered by this report, a comparison of the monthly and yearly mean discharge during the 1955 water year with the median discharge for the 25-year period 1921-45 is shown in figure 3 on the following page.

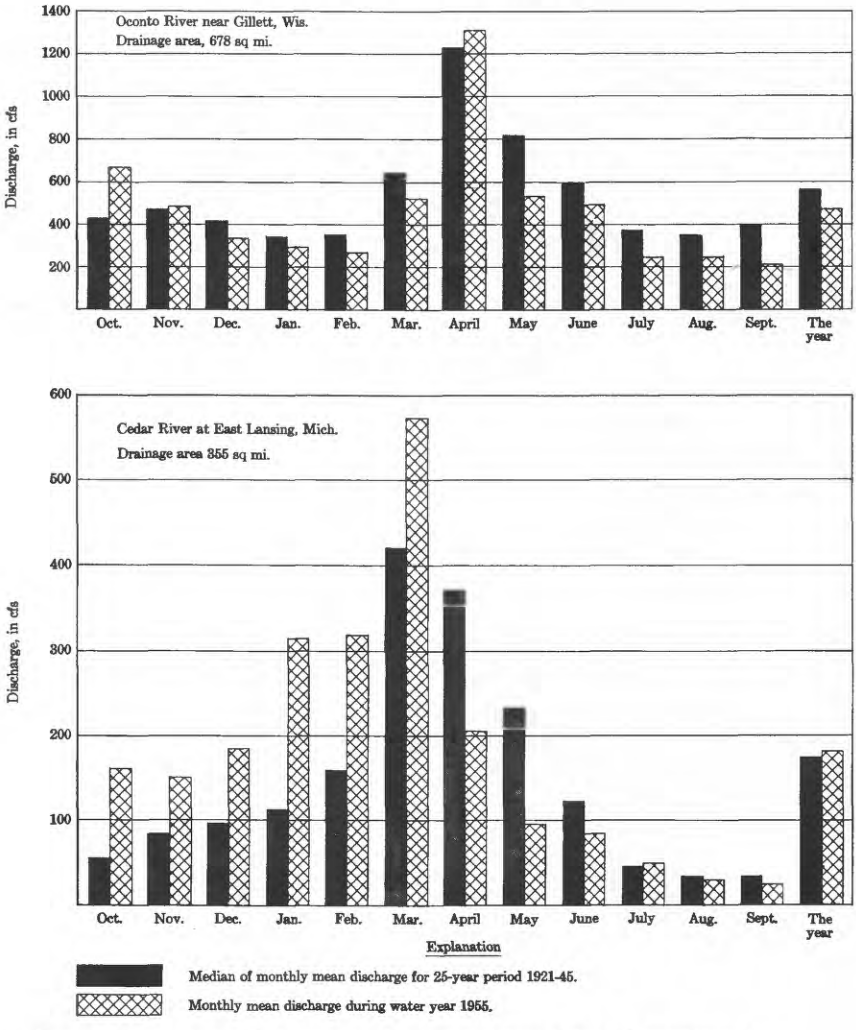

Figure 3. Comparison of discharge at two key gaging stations during 1955 water year with median discharge for 25-year period.

STREAMS TRIBUTARY TO LAKE SUPERIOR

Pigeon River at Middle Falls, below International Bridge, Minn.

(International gaging station)

Location.--Lat 48°00'44", long 89°36'58", in NE¼ sec. 24, T. 64 N., R. 6 E., on right bank 400 ft upstream from Middle Falls, 3½ miles upstream from mouth, and 5⅝ miles downstream from International Bridge.
Drainage area.--600 sq mi.
Records available.--April 1924 to September 1955 in reports of Geological Survey. Published as "at International Bridge" April 1924 to September 1940. October 1923 to September 1932 in House Document 92, 73d Congress, 1st session. June 1921 to September 1955 in reports of Water Resources Division, Department of Northern Affairs and National Resources, Canada.
Gage.--Water-stage recorder. Datum of gage is 789.58 ft above mean sea level, datum of 1929. Oct. 1, 1923, to Sept. 1, 1936, staff gage and Sept. 2, 1936, to Sept. 30, 1940, wire-weight gage, at International Bridge, 5⅝ miles upstream at datum 100.24 ft higher.
Average discharge.--32 years (1923-55), 507 cfs.
Extremes.--Maximum discharge during year, 3,180 cfs Apr. 20 (gage height, 6.39 ft); maximum gage height, 8.21 ft Apr. 11 (backwater from ice); minimum discharge, 47 cfs Sept. 15, 16 (gage height, 0.32 ft).
1923-55: Maximum discharge, 11,000 cfs May 5, 1934 (gage height, 7.6 ft, site and datum then in use), from rating curve extended above 7,000 cfs; minimum, 27 cfs Nov. 4, 1945 (gage height, -0.08 ft).
Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.
Cooperation.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.
Revisions (water years).--WSP 744: 1927, 1928. WSP 974: Drainage area. WSP 804: 1934(M). WSP 1337: 1924(M), 1925, 1926-28(M), 1931(M), 1938(M), 1941(M), 1945-46(M), 1947, 1948(M), 1950(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	45	3.0	775
.5	66	4.0	1,260
1.0	137	5.0	1,940
2.0	414	6.4	3,190

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	165	130	120	96	88	109	158	968	314	168	118	83
2	163	160	119	95	89	110	170	1,190	294	168	116	73
3	160	150	116	95	90	110	190	1,230	286	163	124	64
4	155	130	112	95	91	110	230	1,080	288	204	135	60
5	151	120	107	95	92	110	230	968	280	199	142	57
6	148	125	102	94	93	111	270	860	269	178	129	57
7	144	125	*100	94	94	112	330	793	303	165	118	54
8	142	125	100	94	94	113	420	731	326	151	112	55
9	137	*126	102	94	94	116	*616	677	314	144	110	58
10	137	130	101	94	95	118	1,090	646	288	137	109	57
11	135	153	100	*94	96	120	1,700	620	263	133	108	57
12	*135	170	100	94	97	121	2,500	588	250	128	103	55
13	139	165	99	94	98	122	2,580	558	236	124	100	*51
14	148	165	98	94	99	122	2,710	530	228	120	98	50
15	176	165	98	94	*99	123	*2,520	507	209	120	96	48
16	191	144	99	93	99	123	2,440	480	202	122	95	52
17	189	142	100	92	100	123	2,520	471	189	118	94	63
18	173	142	100	92	101	123	2,710	445	176	115	*93	68
19	160	137	100	92	102	123	3,020	426	168	*120	91	188
20	151	133	98	92	103	124	3,020	405	165	128	106	217
21	146	129	97	92	103	126	2,880	383	*165	126	102	139
22	144	135	97	92	103	*128	2,400	371	165	135	98	109
23	139	122	98	92	103	128	*2,000	359	160	137	94	102
24	135	129	100	91	104	128	1,700	*359	155	131	90	104
25	139	139	100	90	105	128	1,520	359	151	124	88	110
26	146	151	99	90	106	126	1,400	338	144	116	86	109
27	151	148	98	90	107	125	1,270	320	139	120	86	a112
28	148	160	97	90	108	125	1,160	371	135	128	85	a111
29	151	148	97	89	-	128	1,080	420	133	126	88	a110
30	142	131	96	88	-------	134	991	405	144	120	90	a110
31	131	-------	95	88	-------	144	-------	353	-------	120	86	-------
Total	4,671	4,229	3,145	2,869	2,753	3,763	45,825	18,211	6,539	4,308	3,190	2,583
Mean	151	141	101	92.5	98.3	121	1,528	587	218	139	103	86.1
Cfsm	0.252	0.235	0.168	0.154	0.164	0.202	2.55	0.978	0.363	0.232	0.172	0.143
In.	0.29	0.26	0.19	0.18	0.17	0.23	2.84	1.13	0.41	0.27	0.20	0.16

Calendar year 1954: Max 7,900 Min 55 Mean 562 Cfsm 0.937 In. 12.71
Water year 1954-55: Max 3,020 Min 48 Mean 280 Cfsm 0.467 In. 6.33

Peak discharge (base, 3,000 cfs).--Apr. 20 (3:30 p.m.) 3,180 cfs (6.39 ft).
* Discharge measurement made on this day.
• a No gage-height record; discharge estimated on basis of records for Baptism River near Beaver Bay.
Note.--Stage-discharge relation affected by ice Nov. 1-10, Dec. 2 to Apr. 14.

Poplar River at Lutsen, Minn.

Location.--Lat 47°38', long 90°42', in sec. 33, T. 60 N., R. 3 W., on right bank 350 ft upstream from concrete bridge on U. S. Highway 61 at Lutsen and 1,650 ft upstream from mouth.

Drainage area.--114 sq mi.

Records available.--May 1911 to December 1912 (gage heights only), January 1913 to September 1917, July 1928 to February 1929, March 1930 to September 1947, August 1952 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 697.89 ft above mean sea level. May 6 to Nov. 4, 1911, staff gage at site 1,250 ft downstream and Aug. 22, 1912, to Sept. 30, 1917, at site 900 ft downstream at different datum. July 17, 1928, to Mar. 30, 1937, chain gage at old steel highway bridge, 150 ft downstream at datum 6.90 ft lower.

Average discharge.--23 years (1913-17, 1930-32, 1933-47, 1952-55), 109 cfs.

Extremes.--Maximum discharge during year, 564 cfs Apr. 21 (gage height, 4.49 ft); minimum, 9.6 cfs Sept. 7 (gage height, 2.13 ft).
1913-17, 1928-47, 1952-55: Maximum discharge, 1,880 cfs May 1, 1954 (gage height, 6.23 ft); minimum, 2.3 cfs Dec. 3, 1939 (gage height, 1.73 ft).

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 894: 1938-39. WSP 974: Drainage area. WSP 1337: 1914(M), 1928, 1930-35, 1936(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	10	3.3	122
2.4	21	3.6	200
2.6	34	4.0	330
2.8	50	4.5	570
3.0	72		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	36	41	29	17	27	37	203	102	30	97	20
2	41	41	40	29	19	27	59	278	96	29	82	18
3	40	41	39	28	20	27	83	274	99	38	110	17
4	38	39	39	28	20	27	94	239	102	43	178	16
5	35	39	39	28	21	27	79	203	94	38	156	14
6	33	38	38	29	21	27	83	178	94	33	104	13
7	31	38	*38	25	22	27	79	162	108	29	76	10
8	31	42	38	25	22	27	86	154	104	27	59	12
9	31	*40	38	24	22	26	*139	144	110	24	50	17
10	32	40	38	23	22	27	227	146	97	22	48	20
11	36	46	37	*23	22	27	326	139	89	20	42	19
12	*44	49	37	23	23	28	397	132	83	19	36	16
13	60	46	36	23	23	28	401	124	78	17	33	*14
14	54	45	36	22	23	28	*402	116	70	18	30	14
15	60	40	35	22	*23	28	350	114	65	17	27	13
16	60	39	35	21	23	28	309	110	59	17	26	14
17	55	39	35	20	23	28	320	108	55	16	23	48
18	48	40	34	20	23	28	354	106	50	15	*21	56
19	44	39	33	20	24	28	435	99	47	*14	20	54
20	41	38	33	20	25	28	500	94	*44	13	29	43
21	39	38	32	20	25	29	532	91	41	14	35	44
22	38	36	31	20	26	*29	425	86	38	24	29	124
23	38	37	32	20	26	30	358	91	40	25	26	134
24	38	46	33	20	26	30	*330	*110	35	19	25	124
25	40	46	32	20	26	31	302	99	33	15	23	89
26	48	45	31	20	26	27	278	92	30	16	23	71
27	47	44	30	19	26	25	254	115	28	28	23	82
28	43	43	30	18	27	25	230	178	26	26	23	97
29	44	42	30	18	-	25	215	156	26	27	23	85
30	40	42	30	18	-------	26	197	127	28	116	30	82
31	38	-------	30	17	-------	29	-------	112	-------	122	26	-------
Total	1,307	1,234	1,080	692	646	854	7,881	4,380	1,971	911	1,533	1,380
Mean	42.2	41.1	34.8	22.3	23.1	27.5	263	141	65.7	29.4	49.5	46.0
Cfsm	0.370	0.361	0.305	0.196	0.203	0.241	2.31	1.24	0.576	0.258	0.434	0.404
In.	0.43	0.40	0.35	0.23	0.21	0.28	2.57	1.43	0.64	0.30	0.50	0.45

Calendar year 1954: Max 1,670 Min 25 Mean 112 Cfsm 0.982 In. 13.34
Water year 1954-55: Max 532 Min 10 Mean 65.4 Cfsm 0.574 In. 7.79

Peak discharge (base, 500 cfs).--Apr. 21 (2 a.m.) 564 cfs (4.49 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 28 to Dec. 20, Dec. 26 to Jan. 2, Jan. 14-18, 21-29, Feb. 8-14.

Baptism River near Beaver Bay, Minn.

Location.--Lat 47°20', long 91°12', in sec. 15, T. 56 N., R. 7 W., on right bank 260 ft upstream from bridge on U. S. Highway 61 and 6 miles northeast of village of Beaver Bay.

Drainage area.--140 sq mi.

Records available.--July 1928 to January 1929, March 1930 to September 1947, June 1949 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 609.97 ft above mean sea level (Corps of Engineers benchmark). Prior to Oct. 5, 1934, staff gage at same site and datum.

Average discharge.--23 years (1930-47, 1949-55), 166 cfs.

Extremes.--Maximum discharge during year, 1,660 cfs Apr. 11 (gage height, 4.69 ft); minimum, 8.6 cfs (gage height, 1.82 ft, from recorded range in stage), occurred sometime during period Jan. 18 to Feb. 15.
1928-29, 1930-47, 1949-55: Maximum discharge recorded, 9,350 cfs Aug. 9, 1939 (gage height, 8.11 ft), from rating curve extended above 4,000 cfs; minimum daily, 0.4 cfs Jan. 5, 6, 1940.

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

Revisions (water years).--WSP 894: 1939. WSP 1337: 1933-34(M), 1935.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 7		Apr. 8 to Sept. 30			
2.3	30	1.9	11	3.0	138
2.5	45	2.0	15	3.3	258
2.7	67	2.1	20	3.6	463
3.0	122	2.4	42	4.0	834
		2.7	71	4.6	1,530

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	41	34	15	9.6	14	50	345	182	36	243	53
2	46	42	30	15	10	14	300	1,050	164	34	190	44
3	46	42	27	15	11	14	690	814	174	64	296	35
4	43	39	25	15	11	14	580	631	178	75	355	29
5	38	39	24	15	11	14	574	498	186	68	269	24
6	36	39	23	15	11	14	465	384	355	55	190	19
7	35	39	23	14	12	14	370	307	392	44	130	17
8	34	*43	*22	14	12	14	489	258	447	37	89	20
9	32	44	21	14	12	14	*688	229	940	30	69	27
10	34	45	20	14	12	14	*995	224	834	24	69	30
11	*56	47	19	13	12	14	1,340	201	631	21	58	27
12	77	57	18	*13	13	15	1,450	178	498	19	50	*25
13	95	61	18	13	13	15	1,260	164	377	17	42	22
14	90	55	17	13	13	15	*1,090	144	274	17	36	20
15	103	55	17	13	13	15	866	122	209	16	32	18
16	112	50	17	13	*13	15	726	107	160	16	27	19
17	98	48	17	12	13	15	659	96	122	14	*24	435
18	81	46	17	12	13	15	775	85	98	13	21	586
19	70	45	17	12	13	15	962	78	85	*13	19	455
20	61	43	17	12	14	15	1,020	71	*76	12	53	307
21	55	42	17	12	14	15	919	66	76	15	56	367
22	50	38	17	12	14	15	697	62	68	230	50	506
23	46	38	16	12	14	*15	*568	*66	59	160	43	568
24	43	44	16	12	14	15	489	124	54	82	36	489
25	43	40	16	12	14	15	400	114	49	60	32	355
26	54	43	16	12	14	14	348	104	43	162	35	263
27	56	41	16	11	14	14	301	194	38	424	35	370
28	53	42	15	10	14	14	269	370	34	258	36	334
29	53	39	15	10	-	15	243	400	31	348	42	274
30	46	36	15	10	-------	16	214	312	31	559	66	238
31	43	-------	15	9.6	-------	20	-------	234	-------	392	61	-------
Total	1,772	1,323	597	394.6	353.6	457	19,797	8,032	6,865	3,315	2,754	5,976
Mean	57.2	44.1	19.3	12.7	12.6	14.7	660	259	229	107	88.8	199
Cfsm	0.409	0.315	0.138	0.091	0.090	0.105	4.71	1.85	1.64	0.764	0.634	1.42
In.	0.47	0.35	0.16	0.10	0.09	0.12	5.26	2.13	1.82	0.88	0.73	1.59

Calendar year 1954: Max 3,150 Min 12 Mean 167 Cfsm 1.19 In. 16.24
Water year 1954-55: Max 1,450 Min 9.6 Mean 141 Cfsm 1.01 In. 13.70

Peak discharge (base, 1,300 cfs).--Apr. 11 (10 p.m.) 1,660 cfs (4.69 ft).
* Discharge measurement made on this day.
Note.--No gage-height record Jan. 18 to Feb. 15; discharge estimated on basis of weather records and records for Poplar River at Lutsen. Stage-discharge relation affected by ice Dec. 1 to Jan. 17, Feb. 16, 17, Feb. 21 to Apr. 7.

Partridge River near Aurora, Minn.

Location.--Lat 47°31'00", long 92°11'25", in NE¼NW¼ sec. 13, T. 58 N., R. 15 W., on right bank at downstream side of highway bridge, 0.2 mile downstream from Second Creek, 2.5 miles southeast of Aurora, and 2¾ miles upstream from mouth.

Drainage area.--156 sq mi.

Records available.--August 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,402.30 ft above mean sea level, datum of 1929. Prior to Aug. 26, 1944, staff gage at same site and datum.

Average discharge.--13 years, 141 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 174 cfs Apr. 12 (gage height, 3.25 ft); minimum, 5.1 cfs Sept. 7 (gage height, 0.95 ft).
1942-55: Maximum discharge, 3,230 cfs May 10, 1950 (gage height, 7.86 ft); minimum, 3.1 cfs Sept. 22, 23, 1948 (gage height, 0.77 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated at times by storage in off-channel Partridge Reservoir, formerly known as Whitewater Lake. Reservoir formed from lake by levees around marsh areas and natural outlet. Available capacity, 20,000 acre-ft between elevation 1,410 ft (natural lake level) and 1,440 ft. Storage began Apr. 9, 1955. Storage in reservoir obtained from Colby Lake during periods of high flow; release from storage returned to Colby Lake to maintain lake elevation during heavy water use for iron ore processing. Some seepage losses from reservoir bypasses station.

Revisions (water years).--WSP 974: 1942. WSP 1307: 1943(M).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 19				Apr. 20 to Sept. 30			
1.0	5.7	2.1	35	0.9	4.5	2.1	40
1.2	8.7	2.5	63	1.1	7.4	2.5	66
1.4	12	3.0	125	1.3	12	3.0	125
1.7	20	3.3	186	1.7	23		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	30	21	11	7.0	7.1	15	69	48	37	68	8.2
2	15	29	20	10	7.0	6.8	20	99	49	32	66	8.0
3	15	30	20	10	7.1	7.0	26	101	50	47	62	8.8
4	14	28	20	10	7.1	6.8	30	93	48	43	60	7.1
5	13	28	20	9.8	7.3	7.0	*37	80	48	42	59	5.7
6	13	27	20	9.8	7.3	6.8	46	75	52	42	54	6.0
7	14	26	20	9.5	7.0	6.8	60	64	94	42	50	5.2
8	14	26	19	9.5	7.3	7.2	69	62	91	41	48	7.1
9	13	26	19	9.5	7.1	7.4	106	62	122	36	46	8.4
10	13	26	*19	9.2	6.8	7.4	134	58	112	32	44	8.4
11	15	*26	18	9.2	6.8	7.5	*155	56	98	29	41	6.9
12	24	26	18	9.0	6.8	7.5	168	56	88	28	37	7.6
13	26	27	17	8.8	7.0	8.0	152	53	76	23	33	6.0
14	26	25	17	8.8	6.8	8.0	128	50	66	21	30	6.0
15	27	27	17	8.5	6.8	8.0	115	50	59	19	28	5.6
16	*28	28	17	8.3	6.7	7.8	*103	46	55	17	23	*6.0
17	28	28	17	*8.0	6.7	7.8	93	44	57	16	21	38
18	30	28	16	7.8	6.7	7.5	88	46	54	18	19	29
19	30	28	16	7.8	*7.3	7.5	*86	48	50	13	17	44
20	31	28	16	7.8	7.4	7.2	82	45	48	*11	21	58
21	31	28	15	8.0	7.6	7.2	78	43	50	23	*18	63
22	30	27	15	8.0	7.3	7.0	72	43	48	75	15	57
23	30	26	15	7.8	7.3	7.0	69	43	49	56	14	61
24	31	26	15	7.8	7.1	6.8	65	41	49	57	13	58
25	31	25	14	7.5	7.4	6.8	62	40	*44	58	12	57
26	30	25	14	7.2	7.1	6.8	62	40	41	56	11	55
27	29	24	13	7.2	6.7	7.0	59	*44	38	60	11	61
28	28	23	13	7.0	6.8	7.2	55	46	35	58	12	58
29	27	23	12	7.0	-	*7.4	54	50	32	67	11	57
30	27	22	11	6.8	-------	7.6	52	53	29	79	11	57
31	30	-------	11	6.8	-------	8.0	-------	50	-------	81	9.2	-------
Total	727	796	515	263.4	197.3	225.9	2,341	1,750	1,780	1,253	964.2	864.0
Mean	23.5	26.5	16.6	8.50	7.05	7.29	78.0	56.4	59.3	40.4	31.1	28.8
(†)	0	0	0	0	0	0	+188	+65.9	+53.1	0	0	0

Adjusted for change in contents in Partridge Reservoir

Mean	23.5	26.5	16.6	8.50	7.05	7.29	266	122	112	40.4	31.1	28.8
Cfsm	0.151	0.170	0.106	0.054	0.045	0.047	1.71	0.782	0.718	0.259	0.199	0.185
In.	0.17	0.19	0.12	0.06	0.05	0.05	1.90	0.90	0.80	0.30	0.23	0.21

	Observed			Adjusted			
Calendar year 1954:	Max 2,100	Min 5.2	Mean 157	Mean 157	Cfsm 1.01	In. 13.68	
Water year 1954-55:	Max 168	Min 5.2	Mean 32.0	Mean 57.4	Cfsm 3.68	In. 4.98	

Peak discharge (base, 500 cfs).--No peak above base.
* Discharge measurement made on this day.
† Change in contents in Partridge Reservoir, equivalent in cubic feet per second; records furnished by Erie Mining Co.
Note.--Stage-discharge relation affected by ice Nov. 23 to Dec. 10, Dec. 29 to Feb. 3, Feb. 5, Mar. 8 to Apr. 4.

St. Louis River near Aurora, Minn.

Location.--Lat 47°29'30", long 92°14'20", in SW¼ sec. 22, T. 58 N., R. 15 W., on left bank at upstream side of highway bridge, three-quarters of a mile downstream from Partridge River and 1½ miles south of Aurora.

Drainage area.--312 sq mi.

Records available.--August 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,371.24 ft above mean sea level, datum of 1929. Prior to Aug. 26, 1944, chain gage at same site and datum.

Average discharge.--13 years, 264 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 637 cfs July 31 (gage height, 3.02 ft); minimum daily, 12 cfs Mar. 23-29; minimum gage height, 0.66 ft Oct. 6, 7, 10, 11.
1942-55: Maximum discharge, 5,380 cfs May 14, 1950 (gage height, 8.37 ft); minimum, 4.0 cfs Oct. 2, 3, 1948 (gage height, 0.30 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated at times by storage in off-channel Partridge Reservoir, formerly known as Whitewater Lake. Reservoir formed from lake by levees around marsh areas and natural outlet. Available capacity, 20,000 acre-ft between elevation 1,410 ft (natural lake level) and 1,440 ft. Storage began Apr. 9, 1955. Storage in reservoir obtained from Colby Lake during periods of high flow; release from storage returned to Colby Lake to maintain lake elevation during heavy water use for iron ore processing. Some seepage losses from reservoir enters above station.

Revisions (water years).--WSP 1337: 1950.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	20	1.9	201
.8	33	2.4	363
1.1	64	3.0	627
1.5	118		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	50	48	26	14	14	16	285	144	116	578	65
2	29	50	47	26	14	14	29	406	144	104	460	62
3	30	50	46	25	14	14	55	445	144	139	375	60
4	27	48	45	24	14	14	80	418	144	135	333	57
5	25	47	44	24	14	14	*96	363	144	133	305	52
6	25	47	42	23	14	13	119	333	150	126	275	48
7	25	46	41	22	14	13	142	308	226	121	250	45
8	25	45	41	22	14	13	168	294	244	110	223	51
9	26	45	40	21	14	13	235	278	375	100	207	54
10	25	45	39	21	14	14	440	278	435	92	191	51
11	29	*47	*38	20	14	14	*559	265	422	86	176	47
12	37	47	38	20	14	14	559	250	382	76	161	46
13	46	47	38	19	14	13	504	235	341	72	150	45
14	44	46	38	19	14	13	447	218	305	74	139	43
15	46	47	37	18	14	13	402	207	269	66	128	41
16	*47	48	37	17	14	13	371	188	238	62	120	*41
17	46	50	36	*17	15	13	352	176	223	58	112	112
18	47	48	35	17	*15	13	348	169	204	56	104	100
19	49	48	35	16	15	13	352	165	194	52	99	133
20	50	49	34	16	16	13	*352	154	186	47	109	165
21	51	49	33	16	16	13	344	143	174	*73	*103	174
22	50	48	32	16	15	13	330	135	165	186	102	169
23	50	49	32	16	15	12	319	132	156	139	96	184
24	49	50	31	15	15	12	312	126	*158	139	90	181
25	50	51	31	15	15	12	308	120	144	144	86	178
26	50	52	30	15	15	12	298	116	135	139	82	176
27	49	52	29	15	14	12	281	*125	125	144	79	188
28	48	51	28	15	14	*12	269	135	114	146	76	191
29	47	51	28	14	-	12	256	148	106	218	76	191
30	46	50	27	14	-------	13	244	158	102	418	75	194
31	47	-------	27	14	-------	14	-------	154	-------	612	69	-------
Total	1,243	1,453	1,127	578	404	405	8,587	6,925	6,293	4,183	5,429	3,144
Mean	40.1	48.4	36.4	18.6	14.4	13.1	286	223	210	135	175	105
(†)	0	0	0	0	0	0	+188	+65.9	+53.1	0	0	0
Adjusted for change in contents in Partridge Reservoir												
Mean	40.1	48.4	36.4	18.6	14.4	13.1	474	289	263	135	175	105
Cfsm	0.129	0.155	0.117	0.060	0.046	0.042	1.52	0.926	0.843	0.433	0.561	0.337
In.	0.15	0.17	0.13	0.07	0.05	0.05	1.70	1.07	0.94	0.50	0.65	0.38

	Observed				Adjusted			
Calendar year 1954:	Max 2,740	Min 15	Mean 289		Mean 289	Cfsm 0.926	In. 12.57	
Water year 1954-55:	Max 612	Min 12	Mean 109		Mean 134	Cfsm 0.429	In. 5.86	

Peak discharge (base, 600 cfs).--July 31 (6 p.m.) 637 cfs (3.02 ft).
* Discharge measurement made on this day.
† Change in contents in Partridge Reservoir, equivalent in cubic feet per second; records furnished by Erie Mining Co.
Note.--Stage-discharge relation affected by ice Nov. 23 to Apr. 10.

Embarrass River at Embarrass, Minn.

Location.--Lat 47°39'24", long 92°11'51", in NW¼ sec. 25, T. 60 N., R. 15 W., on left bank at Embarrass 30 ft upstream from highway bridge and 100 ft upstream from railway bridge.

Drainage area.--93.8 sq mi.

Records available.--August 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,410.36 ft above mean sea level, datum of 1929. Prior to Aug. 28, 1944, chain gage at same site and datum.

Average discharge.--13 years, 76.5 cfs.

Extremes.--Maximum discharge during year, 360 cfs Apr. 15 (gage height, 5.88 ft); minimum, 2.0 cfs Sept. 7 (gage height, 0.70 ft).
1942-55: Maximum discharge, 1,740 cfs May 8, 9, 1950; maximum gage height, 10.92 ft May 9, 1950; minimum daily discharge, 1.9 cfs Mar. 15-22, 1949; minimum gage height, 0.67 ft Mar. 20, 21, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 10		Apr. 11 to Sept. 30			
0.9	6.7	0.7	2.0	1.7	54
1.0	11	.8	3.0	2.0	78
1.1	16	.9	4.7	3.0	154
1.2	22	1.0	8.7	4.0	224
		1.2	20	5.0	294
		1.4	32	6.0	370

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.3	14	16	7.0	3.8	4.7	7.5	97	30	8.7	34	4.0
2	8.8	13	15	7.0	3.8	4.7	12	173	28	9.7	27	3.8
3	10	13	15	7.0	4.0	4.7	30	198	28	13	26	3.2
4	8.3	13	14	6.8	4.0	4.9	55	196	25	19	23	2.8
5	7.9	13	13	6.8	4.2	4.9	70	183	24	19	20	2.6
6	7.9	13	12	6.5	4.7	4.9	*75	165	23	16	16	2.6
7	7.9	13	11	6.5	4.7	5.2	95	146	27	13	12	2.2
8	8.3	14	11	6.2	4.7	5.2	125	124	41	11	9.2	2.4
9	8.8	15	10	6.0	4.4	5.2	205	106	158	8.7	7.2	3.2
10	8.8	*14	*9.8	5.8	4.4	5.4	250	97	201	7.7	8.2	3.8
11	9.2	16	9.8	5.5	4.7	6.0	278	88	201	6.3	6.3	3.3
12	11	17	9.6	5.5	5.2	6.0	*302	76	200	5.6	4.7	3.2
13	18	18	9.6	5.2	5.4	6.0	335	66	188	5.0	4.0	3.2
14	18	19	9.6	*5.0	5.2	6.0	357	58	158	5.6	3.8	3.2
15	18	18	9.8	4.8	5.2	6.0	356	51	114	5.9	3.4	2.8
16	19	18	9.8	4.5	4.9	6.0	336	47	76	5.6	3.3	*3.2
17	*18	18	9.6	4.5	4.9	5.8	310	43	56	5.0	3.2	32
18	16	18	9.4	4.2	4.9	5.8	286	39	47	4.2	3.0	42
19	16	18	9.2	4.2	4.9	5.5	*263	38	41	4.0	2.8	36
20	15	18	9.2	4.2	*5.2	5.5	247	34	34	3.6	*4.0	28
21	14	17	9.0	4.4	5.2	5.2	234	30	34	*3.6	5.6	24
22	13	16	9.0	4.5	5.2	5.2	220	27	33	9.2	5.2	28
23	14	16	9.4	4.2	5.2	5.2	203	24	28	13	4.7	35
24	15	18	9.4	4.0	5.2	5.2	183	27	*22	11	4.4	37
25	15	19	9.4	4.0	5.2	5.0	162	26	20	8.7	3.8	33
26	15	19	9.2	3.8	5.2	4.8	141	*25	17	8.2	3.8	29
27	15	19	8.5	3.5	4.9	4.8	123	28	13	20	3.6	30
28	15	19	8.0	3.5	4.9	4.8	107	36	9.7	27	3.6	38
29	15	18	7.8	3.5	-	5.0	95	45	8.7	26	3.6	38
30	15	17	7.6	3.5	-------	*5.0	82	43	7.2	34	4.4	37
31	14	-------	7.2	3.5	-------	6.0	-------	36	-------	40	4.4	-------
Total	403.2	491	316.9	155.6	134.2	164.6	5,544.5	2,372	1,890.6	377.3	268.2	516.5
Mean	13.0	16.4	10.2	5.02	4.79	5.31	185	76.5	63.0	12.2	8.65	17.2
Cfsm	0.139	0.175	0.109	0.054	0.051	0.057	1.97	0.816	0.672	0.130	0.092	0.183
In.	0.16	0.19	0.13	0.06	0.05	0.09	2.20	0.94	0.75	0.15	0.11	0.20

Calendar year 1954: Max 1,220 Min 4.7 Mean 81.5 Cfsm 0.869 In. 11.79
Water year 1954-55: Max 357 Min 2.2 Mean 34.6 Cfsm 0.369 In. 5.03

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 29 to Feb. 3, Mar. 17 to Apr. 10.

Embarrass River near McKinley, Minn.

Location.--Lat 47°27'10", long 92°23'00", in NW¼ sec. 4, T. 57 N., R. 16 W., on left bank 40 ft upstream from highway bridge, 0.9 mile below outlet of Esquagama Lake, and 4¼ miles southeast of McKinley.

Records available.--October 1953 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,338.65 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 575 cfs Apr. 18 (gage height, 8.37 ft); minimum, 11 cfs Sept. 7 (gage height, 2.92 ft).
1953-55: Maximum discharge, 1,690 cfs Apr. 20, 1954 (gage height, 11.72 ft); minimum, that of Sept. 7, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 17		Apr. 18 to Sept. 30	
3.2	22	2.9	10
3.7	53	3.0	15
4.0	82	3.4	41
6.0	302	4.0	91
8.5	595	6.0	308
		8.5	594

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	39	45	28	22	27	28	287	64	61	100	17
2	35	37	44	29	22	27	34	314	68	56	92	16
3	33	38	43	28	23	27	49	297	80	77	90	15
4	32	38	42	28	23	27	66	292	80	66	86	14
5	30	36	41	27	24	27	*85	299	76	58	78	13
6	30	37	41	27	24	27	103	308	72	51	69	12
7	27	37	39	26	25	27	151	307	72	49	62	12
8	27	37	38	25	25	27	247	304	88	44	55	19
9	29	36	38	25	26	28	323	289	128	40	50	20
10	30	36	37	25	26	28	*360	272	118	37	47	19
11	34	*37	*37	25	26	29	379	251	129	35	43	17
12	44	37	36	25	26	29	413	234	164	30	39	16
13	45	35	36	25	27	29	456	212	207	29	37	16
14	44	36	35	25	27	29	494	196	239	30	34	16
15	41	35	36	*25	28	29	524	179	251	30	30	17
16	*39	36	35	25	29	29	*550	166	248	28	28	18
17	38	36	34	24	30	29	564	145	232	26	28	*59
18	37	37	34	24	30	28	572	130	214	25	25	44
19	36	38	33	24	31	27	566	122	189	23	26	38
20	36	39	33	24	*31	27	551	110	162	*22	*36	36
21	36	39	32	24	31	27	526	99	138	40	32	38
22	36	39	32	24	31	26	499	90	117	163	28	43
23	38	47	32	24	30	26	471	86	101	125	25	52
24	38	53	32	23	30	26	439	82	91	92	22	55
25	40	47	32	23	30	25	406	72	*81	66	22	58
26	40	49	31	23	29	24	375	68	73	64	23	61
27	38	49	31	23	28	24	345	83	64	63	21	77
28	37	49	30	22	27	24	315	94	57	55	20	81
29	38	47	29	22	-	24	285	*86	52	69	22	81
30	36	45	29	22	-------	*24	257	76	50	133	23	81
31	35	----	29	22	-------	24	-------	68	-------	117	19	------
Total	1,114	1,201	1,096	766	761	831	10,435	5,618	3,705	1,804	1,312	1,061
Mean	35.9	40.0	35.4	24.7	27.2	26.8	348	181	124	58.2	42.3	35.4
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,660 Min 26 Mean 171 Cfsm - In. -
Water year 1954-55: Max 572 Min 12 Mean 81.4 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 12, 13, Jan. 15 to Mar. 29.

West Two River near Iron Junction, Minn.

Location.--Lat 47°24'05", long 92°42'10", in SW¼SW¼ sec. 24, T. 57 N., R. 19 W., on right bank 40 ft upstream from bridge on State Highway 216, 5 miles southwest of Iron Junction, and 9¼ miles upstream from St. Louis River.

Records available.--October 1953 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,322.05 ft above mean sea level, datum of 1929 (Minnesota Highway Department benchmark).

Extremes.--Maximum discharge during year, 705 cfs July 24 (gage height, 8.98 ft); minimum daily, 3.8 cfs Jan. 30 to Feb. 4; minimum gage height, 2.45 ft Nov. 15.
1953-55: Maximum discharge, 916 cfs Apr. 17, 1954 (gage height, 9.85 ft); minimum daily, that of Jan. 30 to Feb. 4, 1955; minimum gage height, that of Nov. 15, 1954.

Remarks.--Records good except those for periods of ice effect or backwater from leaves, debris, or vegetation, which are fair.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	13	*14	9.4	3.8	4.5	10	66	46	24	182	25
2	17	13	14	9.2	3.8	4.5	20	162	45	24	125	24
3	16	*14	14	9.1	3.8	4.4	43	209	47	92	91	24
4	16	14	14	9.0	3.8	4.5	75	202	57	79	69	24
5	14	14	14	8.8	3.9	4.5	150	144	57	57	52	24
6	14	14	13	8.6	4.0	4.6	230	100	56	40	41	24
7	*14	13	13	8.4	4.0	4.7	*313	75	90	30	33	24
8	14	13	13	8.2	4.1	4.8	430	59	100	25	28	24
9	14	13	13	8.0	4.1	5.0	530	51	179	21	24	25
10	14	13	13	7.8	*4.1	5.1	630	50	218	19	24	26
11	15	14	13	7.6	4.1	5.2	676	49	225	17	22	24
12	16	14	13	7.6	4.1	5.2	*672	44	169	15	22	24
13	19	15	13	*7.6	4.1	5.2	620	39	111	14	20	22
14	19	15	13	7.5	4.1	5.2	512	36	76	14	18	22
15	17	14	13	7.4	4.2	5.3	*378	31	56	14	18	20
16	16	16	13	7.2	4.3	5.3	271	31	42	14	17	22
17	15	16	13	7.0	4.3	*5.3	204	28	32	13	16	42
18	15	16	13	6.6	4.5	5.2	166	27	28	13	18	100
19	14	16	13	6.4	4.6	5.2	139	26	26	13	18	114
20	14	15	13	6.2	4.7	5.1	124	26	22	13	20	60
21	14	15	12	6.0	4.6	5.0	111	26	20	31	20	46
22	14	14	12	5.6	4.6	5.0	98	24	19	295	20	47
23	15	20	12	5.4	4.5	5.0	85	23	16	503	18	58
24	14	35	12	5.0	4.5	5.0	73	*23	15	691	19	62
25	14	30	12	4.8	4.5	5.0	64	22	15	586	20	53
26	14	22	12	4.5	4.5	4.8	56	22	14	294	20	44
27	14	18	11	4.2	4.5	4.8	49	28	*13	167	20	46
28	14	16	10	4.0	4.5	5.0	45	69	13	*132	*20	52
29	14	15	10	3.9	-	5.2	41	102	13	136	22	53
30	13	15	9.8	3.8	------	5.6	36	88	14	257	33	*46
31	13	----	9.6	3.8	--------	6.5	--------	60	--------	226	32	------
Total	463	485	387.4	208.6	118.6	155.7	6,851	1,942	1,834	3,869	1,104	1,201
Mean	14.9	16.2	12.5	6.73	4.24	5.02	228	62.6	61.1	125	35.6	40.0
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 891 Min 9.2 Mean 58.1 Cfsm - In. -
Water year 1954-55: Max 691 Min 3.8 Mean 51.0 Cfsm - In. -

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 31 to Nov. 3, Nov. 5, 8-10, 15, Nov. 23 to Apr. 10 (no gage-height record Jan. 27 to Feb. 9, Feb. 12 to Mar. 16, Mar. 18 to Apr. 6; discharge estimated on basis of 3 discharge measurements, weather records, engineers' notes, and records for stations on nearby streams). Backwater from leaves, debris, and vegetation Oct. 1-30, Nov. 4, 6, 7, 11-14, 16-22, June 12 to July 21, Aug. 3 to Sept. 17.

East Swan River near Toivola, Minn.

Location.--Lat 47°16'55", long 92°50'05", in NE¼NE¼ sec. 2, T. 55 N., R. 20 W., on left bank 350 ft downstream from bridge on St. Louis County Road 442, 4.8 miles upstream from confluence with West Swan River, 8 miles northwest of Toivola, and 8¾ miles upstream from St. Louis River.

Drainage area.--112 sq mi.

Records available.--September 1953 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,260.46 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 1,260 cfs Apr. 10 (gage height, 16.27 ft); minimum daily, 13 cfs Jan. 28 to Feb. 3; minimum gage height, 3.24 ft Nov. 10.
1953-55: Maximum discharge, 1,510 cfs Apr. 13, 1954 (gage height, 17.44 ft); maximum gage height, 18.45 ft Apr. 12, 1954 (backwater from ice); minimum daily discharge, that of Jan. 28 to Feb. 3, 1955; minimum gage height, that of Nov. 10, 1954.
Flood in May 1950 reached a stage of about 20.0 ft, from information by local residents.

Remarks.--Records good except those for periods of ice effect which are fair.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 5-12)

3.2	13	8.0	284
4.0	39	11.0	548
5.0	81	15.0	1,030
6.0	136	17.0	1,420

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	30	*24	22	13	16	45	191	65	64	*574	46
2	43	26	24	22	13	16	70	565	63	72	403	44
3	38	*25	24	22	13	17	100	577	67	268	330	42
4	36	24	24	22	14	17	145	404	96	380	286	35
5	31	30	24	22	14	19	200	290	88	314	246	34
6	30	28	24	21	14	19	300	214	106	188	201	31
7	*31	27	24	21	14	19	*400	173	137	121	167	30
8	29	26	24	21	14	20	600	147	144	90	139	29
9	35	27	24	21	*14	21	950	128	262	68	117	36
10	34	28	24	21	14	23	1,240	145	330	54	104	43
11	34	28	24	21	14	24	1,150	137	292	45	90	48
12	36	27	23	*21	14	24	*907	119	217	36	76	41
13	61	26	23	21	14	25	683	105	159	32	67	36
14	59	26	23	21	14	28	534	96	119	31	63	33
15	49	24	23	21	14	30	437	86	93	29	58	33
16	39	25	23	20	14	31	368	78	74	27	52	32
17	37	22	23	20	14	*31	326	76	65	26	48	85
18	34	23	23	19	15	31	290	69	58	25	44	120
19	31	24	23	18	15	31	276	65	55	24	42	96
20	35	26	23	18	15	30	258	66	54	21	54	74
21	36	25	23	18	15	30	246	63	44	37	56	64
22	30	24	23	17	15	30	219	56	37	498	50	84
23	29	25	23	16	15	30	195	50	31	768	46	102
24	30	28	23	16	15	30	180	*51	33	640	45	111
25	31	29	22	15	15	30	161	44	32	412	43	90
26	33	28	23	14	15	30	146	41	28	292	45	74
27	30	26	23	14	15	30	130	56	*30	276	42	76
28	29	25	22	13	15	31	116	126	28	222	*45	108
29	28	24	22	13	-	32	108	138	26	245	49	98
30	26	24	22	13	------	35	100	108	27	625	57	*85
31	26	-- --	22	13	------	40	-------	82	--- ----	773	49	- -- -
Total	1,095	780	720	577	400	820	10,880	4,546	2,860	6,703	3,688	1,860
Mean	35.3	26.0	23.2	18.6	14.3	26.5	363	147	95.3	216	119	62.0
Cfsm	0.315	0.232	0.207	0.166	0.128	0.237	3.24	1.31	0.851	1.93	1.06	0.554
In.	0.36	0.26	0.24	0.19	0.13	0.27	3.61	1.51	0.95	2.23	1.22	0.62

Calendar year 1954: Max 1,360 Min 19 Mean 108 Cfsm 0.964 In. 13.04
Water year 1954-55: Max 1,240 Min 13 Mean 95.7 Cfsm 0.854 In. 11.59

Peak discharge (base, 400 cfs).--Apr. 10 (3 p.m.) 1,260 cfs (16.27 ft); May 3 (1:30 a.m.) 637 cfs (11.89 ft); July 3 (11 p.m.) 404 cfs (9.44 ft); July 31 (6 a.m.) 795 cfs (13.28 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 1-4, Nov. 24 to Apr. 9.

Swan River near Toivola, Minn.

Location.--Lat 47°15'02", long 92°48'36", in NE¼NE¼ sec. 13, T. 55 N., R. 20 W., on left bank at upstream side of bridge on St. Louis County Highway 5, 0.4 mile downstream from confluence of East Swan and West Swan Rivers, 3½ miles upstream from St. Louis River, and 5⅝ miles north of Toivola.

Drainage area.--254 sq mi.

Records available.--October 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,251.78 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 2,050 cfs Apr. 11 (gage height, 13.58 ft); maximum gage height, 14.00 ft Apr. 10 (backwater from ice); minimum daily discharge, 25 cfs Jan. 29 to Feb. 5; minimum gage height, 2.45 ft July 21.
1952-55: Maximum discharge, 2,980 cfs Apr. 13, 1954 (gage height, 17.17 ft, backwater from ice); minimum, 20 cfs Nov. 13, 1952 (gage height, 2.55 ft), result of freezeup; minimum gage height, 2.33 ft July 26, 1954.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-21)

2.4	27	6.0	440
3.0	71	9.0	985
4.0	180	13.6	2,060

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	39	*45	35	25	30	70	385	140	70	*1,110	55
2	58	35	41	35	25	30	110	1,020	129	105	855	53
3	54	*43	40	35	25	30	170	1,100	129	338	746	50
4	50	41	41	35	25	30	250	907	166	579	613	44
5	46	36	40	35	25	31	400	754	169	507	504	41
6	44	40	40	35	26	30	*570	593	186	353	409	39
7	*46	39	38	35	26	29	760	446	238	229	340	36
8	44	39	38	35	26	30	1,160	348	258	166	282	36
9	46	37	38	34	26	31	1,670	296	394	121	236	42
10	49	36	38	34	*26	32	1,990	306	507	92	204	48
11	49	41	36	*34	26	33	2,010	293	478	73	178	55
12	54	40	35	34	26	33	*1,840	258	388	60	149	50
13	78	40	35	34	26	33	1,540	228	296	52	126	45
14	87	40	35	34	26	34	1,270	202	223	48	111	41
15	76	39	35	34	27	33	1,040	176	172	46	99	41
16	65	38	35	33	28	*33	864	157	134	43	88	39
17	59	35	35	32	28	33	744	149	111	40	79	86
18	53	35	35	32	29	33	647	134	101	38	71	172
19	48	36	34	32	31	33	590	125	92	35	66	145
20	45	40	34	32	33	33	538	121	87	32	76	110
21	46	40	34	32	33	33	506	116	73	71	92	92
22	44	39	35	32	32	33	458	101	60	796	78	112
23	39	41	35	31	32	32	408	90	51	1,170	70	152
24	39	44	36	30	31	32	373	*91	48	1,030	63	178
25	40	45	37	29	31	32	338	82	48	695	60	152
26	42	53	37	28	31	32	308	74	41	514	59	124
27	42	50	36	27	30	32	278	88	*42	507	56	119
28	40	49	36	26	30	33	249	208	40	419	*57	162
29	41	46	36	25	-	33	227	272	37	452	58	158
30	40	46	36	25	-------	35	208	244	38	1,290	66	*138
31	38	-------	36	25	-------	40	-------	190	-------	1,380	60	-------
Total	1,562	1,222	1,142	989	785	1,001	21,586	9,554	4,876	11,351	7,061	2,615
Mean	50.4	40.7	36.8	31.9	28.0	32.3	720	308	163	366	228	87.2
Cfsm	0.198	0.160	0.145	0.126	0.110	0.127	2.83	1.21	0.642	1.44	0.898	0.343
In.	0.23	0.18	0.17	0.14	0.11	0.15	3.16	1.40	0.71	1.66	1.03	0.38

Calendar year 1954: Max 2,820 Min 26 Mean 198 Cfsm 0.780 In. 10.57
Water year 1954-55: Max 2,010 Min 25 Mean 175 Cfsm 0.689 In. 9.32

Peak discharge (base, 900 cfs).--Apr. 11 (1 a.m.) 2,050 cfs (13.58 ft); May 3 (4 a.m.) 1,150 cfs (9.77 ft); July 23 (2:30 p.m.) 1,200 cfs (9.98 ft); July 31 (12:30 a.m.) 1,450 cfs (11.12 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5, 6, 8, 10, 11, Dec. 13 to Apr. 10.

St. Louis River at Scanlon, Minn.

Location.--Lat 46°42'12", long 92°25'07", in NW¼ sec. 30, T. 49 N., R. 16 W., on right bank 25 ft downstream from lower bridge on U. S. Highway 61 at Scanlon, 0.6 mile downstream from Minnesota Power & Light Co. powerplant, 3 miles upstream from Thomson Reservoir, and 3.2 miles upstream from Midway River.

Drainage area.--3,430 sq mi, approximately.

Records available.--October 1909 to September 1915, October 1950 to September 1955. Published as "near Thomson" 1909-15.

Gage.--Water-stage recorder. Datum of gage is 1,101.23 ft above mean sea level, datum of 1929. Oct. 5, 1909, to Sept. 30, 1915, chain gage 3 miles downstream and 50 ft below powerplant at datum about 420 ft lower. Oct. 1, 1950, to Aug. 4, 1953, powerplant record at Thomson hydroelectric plant.

Average discharge.--8 years (1910-13, 1950-55), 2,585 cfs (unadjusted).

Extremes.--Maximum discharge during year, 18,500 cfs Apr. 11 (gage height, 9.97 ft); minimum, 416 cfs Dec. 5 (gage height, 2.26 ft).

1909-15, 1950-55: Maximum discharge, 25,100 cfs Apr. 16, 1954 (gage height, 11.78 ft); minimum daily, 171 cfs Feb. 19, 1912.

Maximum discharge known, 40,700 cfs May 9, 1950 (gage height, 15.8 ft, from Minnesota Highway Department).

Remarks.--Records good. Diurnal fluctuation caused by powerplant upstream. Flow regulated by Whiteface Reservoir and Boulder, Island, Rice, and Fish Lakes (combined capacity, 332,160 acre-ft).

Revisions (water years).--WSP 1337: 1911-12.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 13-16, Mar. 2-31, July 12-28)

Oct. 1 to Apr. 3		Apr. 3 to Sept. 30			
2.6	650	3.0	870	6.0	6,080
3.0	985	4.0	2,040	7.0	8,730
3.4	1,380	5.0	3,870	9.0	15,100
4.7	3,610				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	958	1,030	1,060	980	830	730	1,220	2,230	1,630	1,130	14,000	1,350
2	985	1,020	1,040	980	840	706	2,120	4,070	1,460	1,540	11,600	1,320
3	1,060	1,000	980	970	840	714	3,500	7,180	1,570	1,660	10,400	1,400
4	1,080	976	1,050	960	820	706	*4,090	7,000	1,610	3,640	8,990	1,360
5	1,000	1,010	1,070	920	850	714	4,100	5,960	1,600	5,170	7,480	1,260
6	997	1,100	*820	852	810	690	4,070	5,110	1,920	4,180	6,080	1,380
7	940	1,000	1,000	852	870	682	4,070	4,450	1,920	3,180	4,970	1,290
8	958	*1,070	940	870	922	690	5,060	3,610	2,400	2,560	3,910	960
9	949	1,080	1,160	861	886	682	7,030	3,220	2,650	1,930	3,380	933
10	931	1,030	1,200	*913	886	770	8,880	3,010	4,070	1,630	2,790	990
11	913	1,010	1,050	878	940	738	12,800	2,860	4,560	1,320	2,460	951
12	1,010	1,080	1,010	878	1,080	738	12,000	2,420	4,150	1,050	2,020	942
13	1,080	1,060	1,060	904	1,110	738	10,600	2,350	3,710	1,010	1,820	942
14	1,160	1,060	1,040	886	*1,140	730	9,290	2,040	3,180	1,040	1,500	960
15	1,240	1,050	1,090	850	1,150	730	8,110	1,790	2,670	1,290	1,270	1,140
16	1,350	1,060	1,030	830	1,030	730	7,390	1,680	2,180	1,200	1,320	1,090
17	1,120	1,000	1,100	827	949	738	6,520	1,560	1,820	1,060	1,500	1,730
18	*1,140	1,100	1,100	878	940	738	*5,910	1,460	1,710	*1,030	1,350	2,400
19	1,080	1,030	970	861	949	730	5,790	1,360	1,630	1,130	1,380	*2,590
20	1,070	1,080	1,040	861	895	730	5,590	1,220	1,420	1,120	1,680	2,300
21	1,030	1,140	1,130	870	870	*730	5,260	1,190	1,340	1,080	1,350	1,920
22	1,080	1,170	1,070	860	844	730	4,820	1,180	1,260	1,260	1,020	1,830
23	1,030	1,150	1,140	840	786	714	4,340	1,180	1,320	5,360	*1,140	2,010
24	1,080	1,270	1,120	870	818	722	*4,070	1,040	1,130	5,770	1,500	1,980
25	1,040	1,140	1,100	850	844	730	3,670	970	1,290	4,780	1,500	2,150
26	1,080	1,090	1,050	810	754	730	3,380	951	*1,120	3,710	1,520	1,850
27	1,060	1,070	1,000	840	730	722	3,070	1,140	1,170	3,570	1,430	1,650
28	1,090	1,170	860	820	722	722	2,680	1,160	1,120	4,110	1,420	1,750
29	1,080	1,150	900	770	-	746	2,590	*1,670	1,040	4,690	1,450	1,860
30	1,040	1,150	900	810	-------	746	2,300	2,090	1,090	7,510	1,480	1,780
31	1,040	-------	960	860	-------	895	-------	2,000	-------	14,300	1,400	-------
Total	32,671	32,346	32,040	27,011	25,105	22,611	164,320	79,151	59,740	94,010	105,110	46,068
Mean	1,054	1,078	1,034	871	897	729	5,477	2,553	1,991	3,033	3,391	1,536
(†)	-266	-351	-630	-546	-574	-431	+1,724	+786	+664	+501	-21	-25
Adjusted for change in reservoir contents												
Mean	788	727	404	325	323	298	7,201	3,339	2,655	3,534	3,370	1,511
Cfsm	0.230	0.212	0.118	0.095	0.094	0.087	2.10	0.973	0.774	1.03	0.983	0.441
In.	0.27	0.24	0.14	0.11	0.10	0.10	2.34	1.12	0.86	1.19	1.13	0.49

	Observed			Adjusted			
Calendar year 1954:	Max 23,500	Min 770	Mean 3,126	Mean 3,054	Cfsm 0.890	In. 12.10	
Water year 1954-55:	Max 14,300	Min 682	Mean 1,973	Mean 2,042	Cfsm 0.595	In. 8.09	

* Discharge measurement made on this day.

† Change in contents in Whiteface Reservoir and Boulder, Island, Rice and Fish Lakes, equivalent in cubic feet per second; records furnished by Minnesota Power and Light Co.

Note.--Stage-discharge relation affected by ice Nov. 27 to Jan. 5, Jan. 15, 16, Jan. 22 to Feb. 6.

Amnicon Lake near South Range, Wis.

Location.--Lat 46°29'00", long 92°04'05", in sec. 12, T. 46 N., R. 14 W., in northwest corner of lake, 15 miles southwest of South Range.

Drainage area.--5 sq mi, approximately.

Records available.--August 1936 to September 1955 (fragmentary).

Gage.--Staff gage. Datum of gage is 1,188.00 ft above mean sea level (State Highway Commission levels). Gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum elevation observed during year, 1,197.66 ft Aug. 6; minimum, 1,196.66 ft Sept. 14.
1936-55: Maximum elevation observed, 1,199.32 ft May 9, 1950; minimum, 1,195.82 ft Oct. 28, 1948.

Remarks.--Lake has natural outlet.

Revisions (water years).--WSP 854: 1937.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	6.72			-	6.74	-	-	-	7.30	-
2	-	-	-			-	-	-	-	6.70	-	-
3	-	-	-			-	6.82	-	-	6.88	7.56	6.90
4	-	6.76	6.72			-	-	7.00	6.78	6.94	7.64	-
5	-	-	-			-	6.98	-	-	-	-	-
6	6.86	6.76	-			-	-	-	6.88	6.96	7.66	6.82
7	-	-	-	6.67		-	7.08	-	-	6.92	-	-
8	-	-	-			-	-	-	-	-	7.56	6.78
9	6.82	-	-			6.68	7.16	-	6.94	6.90	-	-
10	-	-	-			-	-	-	6.96	-	-	6.76
11	-	-	6.72			-	7.20	6.88	6.96	-	7.44	-
12	6.96	-	-			6.68	-	-	-	6.82	-	-
13	-	6.74	-			-	-	-	6.98	-	7.34	-
14	-	-	-			-	-	6.86	-	6.80	-	6.66
15	-	-	-			-	-	-	-	-	-	-
16	6.86	-	-			-	7.20	6.78	6.96	6.78	7.20	-
17	-	6.72	-			-	7.22	-	-	-	7.14	6.86
18	-	-	6.72			-	-	-	6.94	-	-	-
19	-	-	-			-	-	6.76	-	-	7.08	-
20	6.82	6.68	-			-	7.20	-	6.92	6.72	7.14	-
21	-	-	-			-	-	6.74	6.88	-	-	-
22	-	-	-			-	-	-	-	-	-	6.88
23	6.82	-	-			-	7.16	-	6.82	6.74	7.06	-
24	-	-	-			-	-	-	-	-	-	6.92
25	-	-	-		6.74	-	-	6.70	6.78	-	-	-
26	-	6.74	-			-	-	-	-	6.68	-	-
27	6.82	-	-			-	7.20	-	-	6.74	7.06	6.90
28	-	-	6.72			-	-	6.72	6.74	-	-	-
29	-	-	-			6.70	-	-	-	6.86	-	6.88
30	6.78	-	-			-	7.08	-	6.72	7.06	-	-
31	-		-			-		6.70		-	6.96	

Note.--Add 1,190 ft to obtain elevation above mean sea level.

Bois Brule River at Brule, Wis.

Location.--Lat 46°32'15", long 91°35'45", in NW¼SW¼ sec. 23, T. 47 N., R. 10 W., on right bank 1.4 miles southwest of Brule Post Office, 1.4 miles downstream from Nebagamon Creek, and 1.7 miles upstream from Little Brule River.

Drainage area.--113 sq mi.

Records available.--January 1943 to September 1955.

Gage.--Chain gage read once daily. Datum of gage is 948.49 ft above mean sea level, datum of 1929.

Average discharge.--12 years, 180 cfs.

Extremes.--Maximum discharge during year, 394 cfs July 30 (gage height, 2.65 ft, from graph based on gage readings); minimum daily, 120 cfs Mar. 28, 29.
1943-55: Maximum discharge, 1,520 cfs June 5, 1944 (gage height, 5.2 ft, from graph based on gage readings), from rating curve extended above 745 cfs; minimum observed, 67 cfs Mar. 13, 1943.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1207: Drainage area. WSP 1337: 1943(M), 1944, 1945-50(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	120
1.7	152
2.0	219
2.3	295
2.6	379

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	195	168	164	156	150	142	172	219	160	129	322	152
2	190	168	149	168	150	135	200	248	168	129	285	149
3	184	168	160	152	150	135	219	238	177	200	322	142
4	177	168	160	152	150	135	279	238	181	224	285	138
5	168	168	160	152	150	138	306	219	172	248	264	135
6	168	167	149	152	150	135	322	209	200	233	279	132
7	168	*166	140	*170	150	135	290	205	243	205	243	132
8	160	172	140	170	150	135	300	190	259	205	233	132
9	160	172	156	149	150	135	373	190	344	181	219	132
10	156	168	152	145	150	138	356	186	328	164	219	132
11	172	168	145	145	150	138	350	181	*300	156	200	129
12	177	168	145	145	150	145	328	172	279	149	190	126
13	177	168	140	145	145	135	317	164	253	145	181	126
14	181	168	145	145	145	138	306	164	224	145	172	123
15	219	168	160	145	145	132	285	164	205	*142	164	123
16	209	164	156	145	145	129	279	164	195	145	160	129
17	205	164	156	145	145	130	*264	164	186	138	156	243
18	186	164	160	145	145	132	285	160	177	135	156	205
19	177	160	156	145	145	135	295	160	172	135	152	195
20	172	160	156	145	145	135	300	156	177	132	177	164
21	172	160	156	145	145	132	295	152	168	132	168	156
22	172	156	156	145	145	135	285	149	160	152	160	156
23	168	172	156	145	145	132	269	149	156	138	152	160
24	168	181	160	145	145	132	259	164	152	135	142	156
25	164	186	156	145	*145	132	253	164	145	132	142	152
26	168	186	150	145	145	125	238	152	142	129	195	149
27	168	177	150	145	145	125	233	160	138	168	*188	152
28	164	181	150	145	142	120	229	195	135	164	181	152
29	168	172	150	145	-	120	224	200	132	269	172	149
30	168	168	150	150	-------	125	214	186	132	379	168	145
31	164	-------	156	150	-------	145	-------	172	-------	356	160	-------
Total	5,445	5,076	4,739	4,621	4,117	4,135	8,325	5,634	5,860	5,494	6,207	4,466
Mean	176	169	153	149	147	133	278	182	195	177	200	149
Cfsm	1.56	1.50	1.35	1.32	1.30	1.18	2.46	1.61	1.73	1.57	1.77	1.32
In.	1.79	1.67	1.56	1.52	1.35	1.36	2.74	1.85	1.93	1.81	2.04	1.47

Calendar year 1954: Max 970 Min 140 Mean 204 Cfsm 1.81 In. 24.51
Water year 1954-55: Max 379 Min 120 Mean 176 Cfsm 1.56 In. 21.09

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 7, 8, 11-14, 26-30, Jan. 7, 8, Jan. 10 to Feb. 19, Feb. 21-25, 27, Mar. 6-8, 17, 18, 26-30.

Bad River at Mellen, Wis.

Location.--Lat 46°19'30", long 90°39'35", in sec. 6, T. 44 N., R. 2 W., on upstream side of bridge on U. S. Highway 13 in Mellen, 0.4 mile upstream from Devils Creek and 3.1 miles downstream from Rocky Run.

Drainage area.--101 sq mi.

Records available.--May 1948 to September 1955 (discontinued).

Gage.--Chain gage read twice daily. Datum of gage is 1,217.49 ft above mean sea level, datum of 1929.

Average discharge.--7 years, 131 cfs.

Extremes.--Maximum discharge during year, 1,180 cfs Apr. 10 (gage height, 7.00 ft, from graph based on gage readings); minimum observed, 9.8 cfs July 14 (gage height, 2.57 ft).

1948-55: Maximum discharge observed, 4,340 cfs July 4, 1949 (gage height, 14.0 ft); minimum observed, 3.8 cfs Aug. 25-27, 1948 (gage height, 1.98 ft).

Flood of June 24, 1946, reached a stage of 18.60 ft, from floodmark, from information by local resident (discharge not determined).

Remarks.--Records good except those for period of ice effect, which are fair.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 25 to Sept. 30)

2.1	7	3.5	161
2.4	22	4.0	255
2.7	46	5.0	478
3.0	78	6.8	1,100

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	84	110	53	28	25	200	122	84	27	379	143
2	65	89	120	51	29	25	606	251	68	23	304	122
3	57	89	110	47	29	26	437	314	70	36	292	86
4	54	84	108	44	29	26	521	198	73	38	228	68
5	48	78	76	42	28	26	499	183	61	63	306	56
6	43	84	79	40	28	25	534	141	59	51	524	54
7	41	97	82	38	27	24	424	129	64	58	908	46
8	41	129	77	37	28	23	580	108	77	68	629	42
9	39	*127	57	36	28	24	943	95	324	51	382	41
10	39	115	65	*36	27	26	1,080	88	347	30	246	35
11	136	185	66	36	26	30	1,080	78	*286	21	175	34
12	147	179	65	36	26	33	960	70	223	16	129	32
13	122	161	64	37	25	35	838	62	168	14	105	31
14	294	136	65	38	24	37	856	58	129	10	84	29
15	580	115	66	39	24	38	806	54	94	12	71	29
16	470	102	68	39	24	39	639	50	73	14	62	29
17	368	95	70	39	24	40	472	50	60	*19	54	136
18	279	88	72	39	24	40	505	46	50	14	48	139
19	217	81	74	38	25	40	*547	44	42	13	44	91
20	177	79	76	38	27	39	508	41	37	12	65	66
21	150	76	78	37	29	38	414	37	31	14	76	58
22	132	72	80	37	31	37	334	33	28	14	58	53
23	115	71	81	36	30	37	281	33	30	14	52	115
24	102	78	82	35	28	38	232	35	28	14	44	183
25	91	91	83	34	26	39	204	34	25	12	42	145
26	89	111	80	32	25	38	177	32	21	12	105	111
27	91	105	74	29	*24	38	150	41	20	35	136	98
28	88	102	66	27	24	38	130	62	18	35	*110	98
29	85	97	60	26	-	41	118	198	20	134	148	88
30	84	102	57	26	-------	56	102	183	24	437	244	78
31	81	-------	55	27	-------	86	-------	122	-------	527	228	-------
Total	4,395	3,102	2,366	1,149	747	1,107	15,177	2,992	2,634	1,838	6,278	2,336
Mean	142	103	76.3	37.1	26.7	35.7	506	96.5	87.8	59.3	203	77.9
Cfsm	1.41	1.02	0.755	0.367	0.264	0.353	5.01	0.955	0.869	0.587	2.01	0.771
In.	1.62	1.14	0.87	0.42	0.28	0.41	5.59	1.10	0.97	0.68	2.31	0.86

Calendar year 1954: Max 2,840 Min 11 Mean 147 Cfsm 1.46 In. 19.73
Water year 1954-55: Max 1,080 Min 10 Mean 121 Cfsm 1.20 In. 16.25

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 14 to Apr. 1.

Bad River near Odanah, Wis.

Location.--Lat 46°29'15", long 90°41'45', in SE¼ sec. 2, T. 46 N., R. 3 W., at downstream end of center pier of Elm Hoist Bridge, 5.0 miles downstream from Potato River, 8.5 miles south of Odanah, and 23 miles upstream from mouth.

Drainage area.--611 sq mi.

Records available.--July 1914 to November 1922, May 1948 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 680 ft (from river-profile map). Prior to Nov. 11, 1922, at site 2 miles downstream at different datum.

Average discharge.--15 years (1914-22, 1948-55), 646 cfs.

Extremes.--Maximum discharge during year, 6,770 cfs Apr. 10 (gage height, 10.18 ft); minimum, 107 cfs July 21 (gage height, 2.29 ft).
1914-22, 1948-55: Maximum discharge, 16,500 cfs July 4, 1949 (gage height, 17.3 ft, from floodmark); minimum, 50 cfs Nov. 29, 1948 (gage height, 2.02 ft).
Flood of June 24, 1946, reached a stage of at least 22.2 ft (top of bridge which was submerged), from information by Indian Service.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1207: Drainage area. WSP 1337: 1922.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.3	109	4.0	900
2.5	170	5.0	1,520
2.7	250	6.0	2,300
3.0	385	8.0	4,300
3.5	620	10.0	6,550

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	322	475	530	320	190	210	1,500	570	610	126	2,560	725
2	367	480	520	310	190	220	3,000	2,520	462	123	2,050	535
3	331	520	520	300	190	220	4,000	2,350	412	131	2,670	439
4	290	525	560	280	190	220	4,500	1,700	390	208	1,920	354
5	250	516	520	270	190	220	4,100	1,210	344	545	1,580	286
6	221	525	400	260	190	210	4,330	906	304	426	2,640	237
7	197	*645	350	250	190	200	3,260	774	300	362	3,840	200
8	178	870	400	*240	190	200	3,710	692	331	331	2,820	189
9	174	834	420	240	190	210	5,360	595	1,490	313	1,810	174
10	181	758	410	240	190	240	6,570	540	2,280	246	1,240	163
11	530	1,040	400	240	190	270	6,190	498	1,720	193	858	150
12	650	1,210	380	240	190	290	5,140	457	1,300	163	692	144
13	595	1,070	360	240	180	300	4,200	412	*1,020	144	560	137
14	1,130	918	340	240	180	300	4,490	367	780	131	452	129
15	3,420	769	350	240	180	300	4,300	322	595	140	385	126
16	2,820	676	360	240	180	290	3,060	300	462	*185	318	131
17	2,070	605	360	230	180	280	2,300	286	367	185	272	475
18	1,480	560	360	230	180	260	*2,220	282	290	160	237	625
19	1,170	520	360	230	180	260	2,870	259	254	131	212	488
20	942	488	370	230	190	270	2,500	237	246	120	282	372
21	780	466	380	230	200	290	2,080	216	212	117	376	295
22	676	448	390	220	200	300	1,630	200	185	272	322	250
23	610	448	400	220	200	300	1,340	181	167	268	268	340
24	555	640	400	220	200	300	1,130	200	163	174	221	620
25	511	736	400	210	200	300	984	193	160	129	204	585
26	475	747	380	210	*202	300	840	181	144	117	318	488
27	470	742	370	200	200	300	747	197	134	237	480	434
28	470	708	360	200	200	300	665	242	126	295	*470	416
29	462	686	350	190	-	340	605	978	123	870	525	385
30	466	600	340	190	------	400	540	1,270	120	4,880	912	349
31	457	-- -	330	190	-------	560	-------	888	------ -	4,300	888	- - -
Total	23,250	20,225	12,370	7,350	5,332	8,660	88,161	20,023	15,491	16,022	32,182	10,241
Mean	750	674	399	237	190	279	2,939	646	516	517	1,038	341
Cfsm	1.23	1.10	0.653	0.388	0.311	0.457	4.81	1.06	0.845	0.846	1.70	0.558
In.	1.42	1.23	0.75	0.45	0.32	0.53	5.37	1.22	0.94	0.98	1.96	0.62

Calendar year 1954: Max 12,900 Min 77 Mean 828 Cfsm 1.36 In. 18.38
Water year 1954-55: Max 6,570 Min 117 Mean 710 Cfsm 1.16 In. 15.79

Peak discharge (base, 3,000 cfs).--Oct. 15 (11:30 a.m.) 3,680 cfs (7.44 ft); Apr. 3 (time and discharge unknown); Apr. 10 (1 p.m.) 6,770 cfs (10.18 ft); Apr. 14 (8 p.m.) 5,240 cfs (8.85 ft); May 2 (2 p.m.) 3,100 cfs (6.86 ft); July 31 (4 p.m.) 6,550 cfs (10.00 ft); Aug. 7 (12:30 a.m.) 4,660 cfs (8.33 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 2, Nov. 30 to Apr. 4 (no gage-height record Jan. 24 to Feb. 21, Feb. 23-25, Feb. 28 to Mar. 11, Mar. 13-19, 21-26, 28-30).

White River near Ashland, Wis.

Location.--Lat 46°29'50", long 90°54'15", in sec. 6, T. 46 N., R. 4 W., at downstream end of powerplant of Lake Superior District Power Co., 0.3 mile downstream from bridge on State highway over dam and 4.5 miles south of Ashland city limits.

Drainage area.--269 sq mi.

Records available.--May 1948 to September 1955.

Gage.--Chain gage read twice daily or more often when plant load is changed. Datum of gage is 660.15 ft above mean sea level, datum of 1929 (Lake Superior District Power Co. benchmark).

Average discharge.--7 years, 344 cfs.

Extremes.--Maximum discharge during year, 2,200 cfs Apr. 1 (gage height, 3.80 ft); minimum, 35 cfs Nov. 4 (gage height, 0.46 ft).
1948-55: Maximum discharge, 6,270 cfs July 1, 1953 (gage height, 7.90 ft); minimum, 3.1 cfs Apr. 28-30, 1949 (gage height, 0.09 ft).

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge discharge relation, which are fair. Diurnal fluctuation caused by powerplant at gage.

Rating tables, water year 1954-55, except periods of ice effect or indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-14, Apr. 1-21, June 9-13)

Oct. 1-13, Oct. 17 to Mar. 31

0.7	67	1.5	280
.9	102	1.7	355
1.1	150	1.9	433
1.3	211		

Oct. 14-16, Apr. 1 to Sept. 30

1.1	168	2.5	835
1.3	243	3.0	1,240
1.6	365	3.9	2,060
2.0	542		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	313	195	230	236	240	230	1,660	242	399	179	850	340
2	302	120	207	183	200	220	1,980	672	287	184	902	253
3	295	72	219	258	240	226	1,540	572	290	226	813	241
4	302	235	242	218	210	226	1,240	519	357	291	725	239
5	298	295	253	258	210	229	1,200	434	280	369	587	210
6	302	271	202	224	230	224	1,060	317	286	408	613	210
7	298	230	136	150	200	218	820	270	344	374	608	210
8	302	*309	129	*178	230	224	813	272	349	300	492	198
9	302	*281	253	224	240	224	737	254	826	276	474	201
10	287	275	242	213	210	236	689	259	784	279	332	223
11	310	274	230	218	210	220	689	218	*725	228	312	207
12	317	254	213	218	180	250	645	226	645	195	235	185
13	332	251	224	218	220	230	700	218	547	257	232	216
14	710	245	207	241	200	240	667	209	434	238	253	192
15	910	257	224	234	220	225	684	195	395	*215	223	210
16	430	251	247	231	155	230	629	182	251	189	199	188
17	347	233	253	156	210	210	557	229	225	189	227	291
18	347	245	242	231	250	160	*572	212	193	189	218	328
19	302	245	236	202	250	240	640	218	215	191	188	316
20	242	233	238	208	250	225	577	221	236	190	212	229
21	231	236	238	237	250	250	524	239	236	220	299	220
22	225	236	242	243	250	190	465	230	214	222	299	235
23	225	242	242	197	250	240	452	236	181	255	205	254
24	218	248	247	231	250	240	430	299	200	199	243	248
25	218	287	243	190	*250	190	404	294	194	212	214	254
26	211	263	241	220	220	200	267	288	182	215	295	248
27	211	263	162	210	200	205	275	288	183	232	336	223
28	205	263	162	160	200	250	271	443	179	316	*328	248
29	205	259	150	210	-	225	275	603	179	349	308	235
30	201	259	167	210	------	270	267	587	190	1,160	349	210
31	192	-- -	241	190	-------	413	-------	470	-------	942	353	- - -
Total	9,590	7,327	6,762	6,597	6,225	7,160	21,729	9,916	10,006	9,289	11,924	7,062
Mean	309	244	218	213	222	231	724	320	334	300	385	235
Cfsm	1.15	0.907	0.810	0.792	0.825	0.859	2.69	1.19	1.24	1.12	1.43	0.874
In.	1.33	1.01	0.93	0.91	0.86	0.99	3.00	1.37	1.38	1.28	1.65	0.98

Calendar year 1954: Max 2,790 Min 72 Mean 366 Cfsm 1.36 In. 18.44
Water year 1954-55: Max 1,980 Min 72 Mean 311 Cfsm 1.16 In. 15.69

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 25 to Mar. 2, Mar. 11-30 (no gage-height record Feb. 17-24). Stage-discharge relation indefinite Oct. 14-16, Apr. 22 to June 8.

Montreal River near Saxon, Wis.

Location.--Lat 46°32'45", long 90°24'05", in NW¼ sec. 23, T. 48 N., R. 49 W., on right bank 2 miles upstream from mouth and 3.5 miles north of Saxon.

Drainage area.--281 sq mi.

Records available.--September 1938 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 760 ft (from power company data).

Average discharge.--17 years, 351 cfs.

Extremes.--Maximum discharge during year, 3,100 cfs May 2 (gage height, 5.16 ft); minimum, 68 cfs Nov. 23 (gage height, 1.77 ft).
1938-55: Maximum discharge, 5,700 cfs July 18, 1942 (gage height, 6.93 ft); minimum, 2 cfs Sept. 21, Oct. 8, 1939.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by Saxon Falls powerplant 1.5 miles upstream. Flow regulated by Gile Reservoir on West Branch Montreal River (capacity, 29,610 acre-ft).

Revisions (water years).--WSP 894: 1938-39. WSP 924: 1939-40.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.1	152	3.5	990
2.3	226	4.0	1,520
2.6	357	5.0	2,870
3.0	593		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	344	222	281	300	220	190	700	230	260	218	918	234
2	277	234	320	300	210	190	1,200	2,300	199	214	753	187
3	222	234	310	290	210	190	1,480	2,540	222	199	927	187
4	191	239	300	280	210	190	1,840	1,140	203	234	656	191
5	180	234	300	270	220	190	1,750	628	203	272	448	195
6	180	230	310	270	210	190	1,780	442	222	166	550	206
7	176	303	320	260	210	190	1,400	419	210	239	1,000	191
8	176	*408	320	250	210	200	1,800	393	260	199	753	199
9	176	377	310	*249	200	200	1,690	348	827	176	454	206
10	203	334	310	260	200	200	2,880	321	900	162	303	199
11	344	508	300	270	200	210	2,720	321	628	173	222	203
12	316	534	310	260	200	210	2,360	290	*454	187	184	214
13	272	431	320	250	200	220	1,890	260	352	191	184	203
14	692	362	320	250	210	220	1,860	239	277	187	230	199
15	1,940	303	310	240	210	220	1,680	226	214	191	191	218
16	1,560	268	300	240	210	210	1,710	218	218	*199	214	210
17	1,070	239	300	240	210	210	1,490	234	222	173	206	540
18	715	222	310	240	210	200	1,390	199	226	180	199	448
19	508	206	320	240	200	200	*1,540	173	206	187	210	303
20	393	195	320	230	200	200	1,020	199	203	187	218	226
21	330	191	320	230	200	210	784	210	210	184	184	176
22	294	187	320	230	190	210	642	222	210	230	203	176
23	277	195	310	230	190	210	700	234	210	173	199	234
24	247	376	310	220	190	210	553	230	222	173	210	290
25	222	496	310	220	185	210	362	230	210	173	203	239
26	210	454	310	220	*185	200	316	226	210	199	218	195
27	206	398	310	220	185	200	303	247	230	218	180	176
28	199	362	320	220	190	210	388	308	218	180	206	176
29	199	321	320	220	-	210	348	527	210	243	*255	176
30	206	303	310	220	------	220	226	508	206	1,250	234	176
31	214	--	310	220	------	230	------	362	--	1,400	214	-
Total	12,539	9,366	9,641	7,639	5,665	6,350	38,802	14,424	8,642	8,357	11,126	6,773
Mean	404	312	311	246	202	205	1,293	465	288	270	359	226
Cfsm	1.44	1.11	1.11	0.875	0.719	0.730	4.60	1.65	1.02	0.961	1.28	0.804
In.	1.66	1.24	1.28	1.01	0.75	0.84	5.14	1.91	1.14	1.11	1.47	0.90

Calendar year 1954: Max 4,000 Min 86 Mean 463 Cfsm 1.65 In. 22.38
Water year 1954-55: Max 2,880 Min 162 Mean 382 Cfsm 1.36 In. 18.45

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 2.

Black River near Bessemer, Mich.

Location.--Lat 46°30'55", long 90°04'10", in SE¼ sec. 32, T. 48 N., R. 46 W., on right bank 450 ft downstream from bridge on county highway, 500 ft downstream from Powder Mill Creek, and 2½ miles north of Bessemer.

Drainage area.--202 sq mi.

Records available.--October 1954 to September 1955.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 3,620 cfs Apr. 11 (gage height, 8.59 ft), from rating curve extended above 2,200 cfs by logarithmic plotting; minimum, 36 cfs Sept. 15; minimum gage height, 1.00 ft June 29.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or those above 2,500 cfs, which are fair. Some ground water pumped from mines at Bessemer. Records of water temperatures for the water year 1955 are given in WSP 1400.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 28 to Sept. 17)

0.9	29	3.0	594
1.3	88	7.0	2,580
2.0	250	8.2	3,340

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	300	216	145	78	50	55	200	186	211	46	1,260	100
2	260	211	*140	76	*50	54	600	2,330	*169	46	1,020	85
3	230	*211	130	75	50	*54	1,000	1,960	148	59	1,090	74
4	200	201	125	75	50	52	1,400	1,090	130	64	779	65
5	170	186	115	*75	50	52	*1,250	*737	110	211	554	59
6	*165	211	110	75	50	52	1,240	535	96	128	921	53
7	175	264	105	75	50	53	*1,070	444	90	*120	1,050	49
8	206	314	105	74	49	54	1,560	347	100	108	737	49
9	188	275	100	74	49	56	*2,520	284	324	88	498	49
10	198	253	100	72	48	56	3,340	242	340	76	367	46
11	299	357	95	71	47	56	3,270	206	318	68	272	41
12	229	354	95	70	47	56	2,760	179	267	64	214	38
13	219	311	95	70	48	56	2,180	157	224	60	172	*38
14	1,050	267	92	70	49	56	2,400	139	176	56	141	38
15	2,180	232	90	70	50	56	1,910	124	139	59	118	38
16	1,660	214	90	68	50	55	1,410	116	116	62	*106	43
17	1,160	196	88	67	52	55	1,070	108	96	59	96	558
18	890	186	86	67	55	55	1,120	90	83	58	86	437
19	*695	169	84	66	58	55	1,360	85	78	56	78	253
20	554	162	84	64	60	54	1,140	78	80	55	83	186
21	469	157	82	62	60	54	890	74	66	53	85	148
22	394	157	82	61	60	54	695	71	62	76	74	135
23	357	143	82	60	60	53	554	68	59	62	68	288
24	302	179	84	58	58	53	469	68	56	55	60	327
25	258	201	84	55	57	54	384	66	53	53	58	258
26	224	198	82	53	56	56	318	64	52	53	*64	214
27	198	185	80	52	56	58	275	92	49	80	64	193
28	155	175	80	51	56	63	240	174	48	68	65	179
29	162	165	80	51	-	70	211	408	46	90	88	155
30	214	150	80	50	------	90	162	374	45	1,150	104	143
31	214	--	---	80	50	-------	120	-------	272	--------	1,610	118	--
Total	13,975	6,500	2,970	2,035	1,475	1,817	36,998	11,168	3,831	4,893	10,490	4,339
Mean	451	217	95.8	65.6	52.7	58.6	1,233	360	128	158	338	145
Cfsm	2.23	1.07	0.474	0.325	0.261	0.290	6.10	1.78	0.634	0.782	1.67	0.718
In.	2.57	1.19	0.55	0.37	0.27	0.33	6.81	2.05	0.71	0.90	1.92	0.80

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 3,340 Min 38 Mean 275 Cfsm 1.36 In. 18.47

Peak discharge (base, 1,500 cfs).--Oct. 15 (4 a.m.) 2,350 cfs (6.58 ft); Apr. 4 (time unknown) about 1,600 cfs; Apr. 11 (5 a.m.) 3,620 cfs (8.59 ft); Apr. 14 (12:30 p.m.) 2,580 cfs (6.98 ft); Apr. 19 (1:30 a.m.) 1,510 cfs (5.02 ft); May 2 (6 p.m.) 3,060 cfs (7.83 ft); July 31 (1:30 p.m.) 1,760 cfs (5.50 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 27 to Mar. 31. No gage-height record Oct. 1-7, Jan. 19 to Feb. 1, Mar. 31 to Apr. 5; discharge estimated on basis of weather records and records for nearby stations.

Presque Isle River at Marenisco, Mich.

Location.--Lat 46°22', long 89°41', in NW¼ sec. 21, T. 46 N., R. 43 W., on left bank a quarter of a mile upstream from highway bridge in Marenisco and 2½ miles downstream from confluence of East and West Branches of Presque Isle River.

Drainage area.--175 sq mi.

Records available.--February 1945 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,489.30 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to May 27, 1949, wire-weight gage at site a quarter of a mile downstream at different datum.

Average discharge.--10 years, 190 cfs.

Extremes.--Maximum discharge during year, 1,060 cfs Apr. 11 (gage height, 7.32 ft); minimum, 34 cfs Sept. 15, 16; minimum gage height, 3.07 ft July 20, 21.
1945-55: Maximum discharge, 2,670 cfs Apr. 21, 1952 (gage height, 9.90 ft); minimum observed, 13 cfs Sept. 30, 1948 (gage height, 2.25 ft, site and datum then in use).

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-14, Aug. 24 to Sept. 30)

Oct. 1-16		Oct. 17 to Sept. 30	
3.5	115	2.9	32
5.0	400	3.3	74
6.0	630	4.0	188
7.0	990	6.0	610
		7.4	1,100

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	178	234	140	110	95	*81	220	254	197	58	511	92
2	178	225	*140	105	*95	82	290	522	*172	58	511	80
3	171	*229	135	105	95	82	400	675	155	62	533	68
4	161	225	130	*105	95	82	480	635	160	74	412	62
5	*145	225	125	105	95	82	530	489	129	94	294	63
6	135	217	120	105	95	82	560	*379	117	100	284	51
7	127	217	120	105	96	84	570	314	116	94	304	46
8	122	221	120	105	96	84	577	274	144	*88	258	43
9	121	219	120	105	95	85	*705	250	181	82	234	*45
10	120	214	120	105	93	86	930	229	208	75	201	46
11	164	208	120	105	91	87	1,060	212	217	68	162	49
12	178	206	120	105	88	88	1,010	202	204	62	134	41
13	182	202	120	105	86	89	910	188	183	56	111	42
14	380	190	120	105	84	89	872	179	163	56	96	37
15	742	184	125	105	82	89	872	175	146	67	85	35
16	950	179	120	105	82	89	802	156	129	68	*78	36
17	838	175	115	100	84	88	*690	151	116	66	73	80
18	705	172	115	100	85	88	635	138	108	60	67	116
19	577	165	110	100	87	88	675	131	98	54	63	105
20	478	160	110	100	89	88	690	121	97	50	64	88
21	401	153	110	100	90	89	635	108	90	50	69	72
22	346	148	110	100	90	90	566	105	82	69	63	68
23	314	141	110	100	89	91	489	103	77	66	60	82
24	294	151	115	100	86	92	434	103	69	60	60	106
25	274	163	115	100	84	93	*390	100	62	54	63	97
26	260	165	120	99	82	94	346	96	59	52	82	85
27	264	160	120	96	81	93	314	128	58	73	90	78
28	264	155	115	94	81	93	294	177	55	77	77	75
29	264	150	115	94	-	100	284	284	55	78	80	73
30	254	145	110	94	------	120	262	325	53	252	87	73
31	244	-- --	110	95	-------	160	-------	254	-------	478	98	- - - -
Total	9,831	5,598	3,695	3,157	2,491	2,828	17,492	7,457	3,700	2,701	5,304	2,034
Mean	317	187	119	102	89.0	91.2	583	241	123	87.1	171	67.8
Cfsm	1.81	1.07	0.680	0.583	0.509	0.521	3.33	1.38	0.703	0.498	0.977	0.387
In.	2.09	1.19	0.78	0.67	0.53	0.60	3.72	1.59	0.78	0.57	1.13	0.43

Calendar year 1954: Max 1,560 Min 61 Mean 255 Cfsm 1.46 In. 19.79
Water year 1954-55: Max 1,060 Min 35 Mean 182 Cfsm 1.04 In. 14.08

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 28 to Apr. 7.

Presque Isle River near Tula, Mich.

Location.--Lat 46°33', long 89°46', in sec. 23, T. 48 N., R. 44 W., on downstream handrail of bridge on State Highway 28, 2 miles east of Tula, 5 miles downstream from Little Presque Isle River, and 7 miles southwest of Merriweather.
Drainage area.--260 sq mi.
Records available.--February 1945 to September 1955.
Gage.--Wire-weight gage and crest-stage indicator; gage read once daily. Datum of gage is 1,299.66 ft (corrected) above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).
Average discharge.--10 years, 293 cfs.
Extremes.--Maximum discharge during year, 2,610 cfs Apr. 11 (gage height, 11.58 ft); minimum observed, 32 cfs Sept. 15 (gage height, 4.48 ft).
1945-55: Maximum discharge, 4,200 cfs Apr. 30, 1951 (gage height, 13.55 ft); minimum, 22 cfs Oct. 5, 6, 1948 (gage height, 4.22 ft).
Remarks.--Records good except those for periods of ice effect, which are fair.
Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1945, superseding those published in WSP 1034, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1945		1945-Con.		1945-Con.	
Sept. 1	350	Sept. 9	101	Sept.22	123
2	410	10	101	23	115
3	350	11	104	24	113
4	260	12	105	25	121
5	170	13	99	26	116
7	98	14	102	27	105
8	99	21	116	28	151

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
September 1945.....	4,178	410	69	139	0.535	0.60

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

4.4	22	8.0	900
4.7	64	10.0	1,700
5.0	117	11.5	2,550

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	326	300	185	145	100	100	250	620	313	53	812	128
2	326	290	175	140	96	*100	350	1,500	*236	53	730	109
3	300	*290	170	140	*90	100	500	*1,900	203	58	*784	91
4	248	288	170	140	90	96	700	1,500	178	70	812	82
5	*216	280	165	*138	95	92	1,000	1,050	159	208	676	74
6	188	276	*162	135	95	92	1,200	784	131	159	531	66
7	166	295	140	133	95	92	1,300	622	126	*126	557	51
8	154	313	140	128	95	94	1,400	466	135	109	570	47
9	147	313	145	125	95	98	1,600	388	206	96	401	47
10	150	298	145	124	92	105	*2,310	350	238	80	293	45
11	260	293	145	119	90	105	2,550	306	246	70	223	45
12	298	310	145	115	90	105	2,430	276	243	66	176	*45
13	306	298	145	115	90	105	2,010	253	223	59	145	37
14	466	270	145	115	92	105	1,850	226	193	53	115	40
15	1,170	248	157	110	92	100	1,700	210	166	54	96	32
16	1,700	236	154	110	94	98	1,450	196	142	66	85	33
17	1,350	223	154	110	96	96	1,200	183	124	60	75	350
18	1,050	213	145	110	100	96	1,050	166	111	56	70	583
19	960	203	140	110	105	96	1,090	157	110	48	66	479
20	784	198	140	110	110	96	1,090	142	111	42	74	283
21	649	190	140	110	105	98	930	126	98	38	78	162
22	544	183	140	105	100	98	900	111	91	53	70	128
23	453	178	145	105	100	98	784	108	82	67	62	166
24	405	186	150	105	100	100	660	111	75	54	58	238
25	363	226	150	105	100	100	570	108	69	48	59	195
26	338	240	155	105	100	100	505	100	61	42	69	162
27	326	236	150	105	100	105	440	157	56	69	87	140
28	326	225	150	105	100	110	388	248	53	78	93	128
29	338	218	145	105	-	120	363	450	53	80	98	117
30	326	200	145	105	-------	150	338	479	51	350	119	111
31	310	-- -	145	100	-------	190	-------	440	--- ----	649	145	- -- -
Total	14,943	7,517	4,682	3,627	2,707	3,240	32,908	13,733	4,283	3,114	8,229	4,214
Mean	482	251	151	117	96.7	105	1,097	443	143	100	265	140
Cfsm	1.85	0.965	0.581	0.450	0.372	0.404	4.22	1.70	0.550	0.385	1.02	0.538
In.	2.13	1.08	0.67	0.52	0.39	0.47	4.71	1.96	0.63	0.44	1.18	0.60

Calendar year 1954: Max 2,810 Min 46 Mean 403 Cfsm 1.55 In. 21.01
Water year 1954-55: Max 2,550 Min 32 Mean 283 Cfsm 1.09 In. 14.78

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 30 to Dec. 5, Dec. 9-12, Dec. 19 to Jan. 4, Jan. 12 to Apr. 9. No gage-height record Sundays and holidays; discharge interpolated.

Iron River near White Pine, Mich.

Location.--Lat 46°46'25", long 89°34'55", in SE¼NW¼ sec. 36, T. 51 N., R 42 W., on right bank 30 ft downstream from logging bridge, 1¼ miles north of White Pine, 3 miles downstream from West Branch Iron River, and 4½ miles upstream from mouth.

Drainage area.--100 sq mi.

Records available.--April 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 730.52 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 3,770 cfs Sept. 17 (gage height, 5.83 ft); maximum gage height, 6.05 ft Apr. 1 (ice jam); minimum discharge, 3.8 cfs July 15 (gage height, 1.88 ft).
1952-55: Maximum discharge, 7,900 cfs Apr. 19, 1952 (gage height, 7.27 ft), from rating curve extended above 3,900 cfs by logarithmic plotting; minimum, 2.7 cfs Nov. 7, 1953, Aug. 19-22, 1954 (gage height, 1.91 ft).

Remarks.--Records good except those for period of ice effect or those below 10 cfs, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 26				May 27 to Sept. 30			
2.1	17	4.0	920	1.9	4.2	3.5	425
2.5	100	4.5	1,600	2.0	8.0	4.0	765
3.0	242	5.2	2,820	2.1	17	4.5	1,350
3.5	480			2.5	85	5.0	2,120
				3.0	220		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	215	66	93	44	23	31	340	82	107	7.4	68	18
2	134	77	87	44	22	*30	1,250	1,580	74	8.6	69	12
3	93	93	*80	43	22	30	1,410	787	*81	9.2	1,940	9.2
4	66	*93	74	42	21	30	1,320	*320	77	9.9	*765	8.6
5	49	86	70	*41	21	30	*1,100	184	59	18	298	6.4
6	*41	88	65	41	20	30	1,080	132	40	22	320	5.6
7	31	132	62	41	19	30	780	114	28	14	368	5.3
8	26	193	59	41	*19	30	1,150	100	*23	11	138	6.4
9	26	164	57	41	19	30	2,550	84	22	8.0	74	*7.4
10	28	132	55	40	19	31	2,710	75	32	6.4	54	8.6
11	165	145	54	40	19	33	2,460	66	32	5.6	37	7.4
12	164	142	53	39	20	36	2,060	57	28	4.7	28	6.4
13	142	112	52	38	20	38	1,470	49	28	4.5	20	5.6
14	1,070	95	52	38	21	39	1,990	45	24	4.2	16	5.3
15	2,640	77	52	38	21	39	920	36	20	*5.3	14	4.7
16	818	66	51	37	22	38	614	30	14	9.2	12	5.3
17	371	59	49	36	23	38	474	26	13	8.0	11	1,560
18	249	55	48	36	24	37	754	24	12	6.9	11	680
19	172	51	47	35	25	37	1,030	24	14	5.6	11	248
20	132	51	46	34	28	36	622	22	18	4.7	13	122
21	107	51	46	34	32	36	432	21	14	5.0	18	77
22	88	51	45	33	33	36	275	21	11	8.0	17	81
23	77	53	45	32	34	35	202	20	9.9	11	11	135
24	70	70	45	31	33	35	158	20	9.2	8.0	9.9	191
25	62	249	46	29	33	35	134	21	8.0	5.6	9.2	120
26	57	222	45	28	32	35	*112	22	6.9	6.0	9.9	82
27	57	181	45	27	32	36	93	29	6.4	17	11	76
28	57	150	44	26	31	40	77	79	6.4	18	9.9	87
29	64	120	44	25	-	45	70	409	6.4	17	9.9	66
30	68	105	44	24	-------	54	62	362	6.0	191	12	56
31	66	---	45	23	-------	70	-------	174	-------	138	18	-------
Total	7,405	3,229	1,700	1,101	688	1,130	27,699	5,015	830.2	597.8	4,402.8	3,703.2
Mean	239	108	54.8	35.6	24.6	36.5	923	162	27.7	19.3	142	123
Cfsm	2.39	1.08	0.548	0.356	0.246	0.365	9.23	1.62	0.277	0.193	1.42	1.23
In.	2.76	1.20	0.63	0.41	0.26	0.42	10.30	1.87	0.31	0.22	1.64	1.37

Calendar year 1954: Max 2,910 Min 2.7 Mean 186 Cfsm 1.86 In. 25.31
Water year 1954-55: Max 2,710 Min 4.2 Mean 158 Cfsm 1.58 In. 21.39

Peak discharge (base, 1,500 cfs).--Oct. 15 (2:30 a.m.) 3,600 cfs (5.59 ft); Apr. 2 (7:30 p.m.) 1,550 cfs (4.47 ft); Apr. 9 (8 p.m.) 3,300 cfs (5.43 ft); Apr. 14 (10 a.m.) 2,370 cfs (4.97 ft); Apr. 18 (11:30 p.m.) 1,700 cfs (4.56 ft); May 2 (2 p.m.) 2,640 cfs (5.10 ft); Aug. 3 (7:30 a.m.) 3,040 cfs (5.51 ft); Sept. 17 (3:30 p.m.) 3,770 cfs (5.83 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 28 to Apr. 2.

Middle Branch Ontonagon River near Paulding, Mich.

Location.--Lat 46°21'30", long 89°04'40", in sec. 29, T. 46 N., R. 38 W., on right bank 25 ft downstream from highway bridge, 2¼ miles upstream from Bond Falls Reservoir, and 5¾ miles southeast of Paulding.

Drainage area.--About 175 sq mi.

Records available.--June 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,485.66 ft (corrected) above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Sept. 28, 1942, reference point on downstream side of bridge at same datum.

Average discharge.--13 years, 183 cfs.

Extremes.--Maximum discharge during year, 1,120 cfs Oct. 16 (gage height, 8.00 ft); minimum, 89 cfs Sept. 7 (gage height, 3.61 ft).
1942-55: Maximum discharge, 2,050 cfs Apr. 30, 1951 (gage height, 10.0 ft, from high-water mark); minimum, 27 cfs Nov. 22, 1946 (result of freezeup); minimum gage height, 2.96 ft Nov. 26, 1942 (result of freezeup).

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-15		Oct. 16 to Sept. 30			
4.1	156	3.6	88	7.0	820
5.0	322	4.0	138	7.8	1,060
7.3	910	5.0	322		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	246	237	180	140	115	125	210	255	246	108	246	112
2	228	*228	165	140	115	120	250	342	*217	109	228	102
3	206	224	155	140	115	120	282	373	206	113	*273	97
4	*194	221	145	140	115	120	302	*322	226	132	264	96
5	179	214	140	140	115	120	302	282	219	212	237	94
6	169	210	140	*140	120	120	322	246	190	192	203	92
7	163	212	*130	140	120	120	312	237	174	147	208	90
8	163	224	135	140	*120	*120	342	228	187	138	181	94
9	165	223	140	140	120	125	*462	214	203	138	152	101
10	170	215	140	140	120	130	678	208	196	122	138	101
11	282	228	140	135	115	140	820	199	179	119	127	96
12	292	223	140	135	115	145	880	187	174	136	116	94
13	273	214	140	135	110	145	820	176	167	106	110	*93
14	454	208	140	135	110	145	880	170	160	*100	104	92
15	910	197	140	135	110	140	910	163	149	101	100	91
16	1,060	196	135	130	110	140	*790	154	136	104	97	93
17	1,060	188	135	125	110	135	678	151	128	104	96	133
18	880	183	135	125	115	130	624	151	122	99	94	176
19	692	178	135	125	120	125	706	143	121	96	94	130
20	559	174	135	125	130	125	706	136	128	94	97	114
21	462	172	140	125	140	125	637	132	135	93	109	110
22	395	172	140	125	140	125	546	130	127	108	100	108
23	342	174	140	125	140	125	474	128	122	106	95	109
24	302	183	140	125	135	120	417	132	118	99	94	106
25	282	192	140	125	135	120	373	136	113	94	95	104
26	264	196	135	120	130	120	332	130	109	93	105	101
27	264	196	130	120	130	120	302	149	108	122	112	102
28	255	199	130	120	130	125	282	188	105	142	112	105
29	273	199	130	115	-	130	273	362	102	122	119	105
30	264	190	130	115	------	150	255	373	104	149	117	108
31	246	------	135	115	------	175	------	302	------	237	122	------
Total	11,694	6,070	4,335	4,035	3,400	4,025	15,167	6,499	4,671	3,835	4,345	3,149
Mean	377	202	140	130	121	130	506	210	156	124	140	105
Cfsm	2.15	1.15	0.800	0.743	0.691	0.743	2.89	1.20	0.891	0.709	0.800	0.600
In.	2.48	1.28	0.92	0.86	0.72	0.86	3.22	1.38	0.99	0.82	0.92	0.67

Calendar year 1954: Max 1,090 Min 100 Mean 242 Cfsm 1.38 In. 18.75
Water year 1954-55: Max 1,060 Min 90 Mean 195 Cfsm 1.11 In. 15.12

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 30 to Apr. 2.

Bond Falls Canal near Paulding, Mich.

Location.--Lat 46°24'10", long 89°09'00", in sec. 11, T. 46 N., R. 39 W., on left bank 40 ft upstream from intake to pipeline No. 2, 1.4 miles southeast of Paulding, and 1.5 miles downstream from Bond Falls Reservoir on Middle Branch Ontonagon River.

Records available.--July 1942 to September 1955.

Gage.--Staff gage and concrete control; gage read once daily. Datum of gage is 1,444.59 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 131 cfs.

Extremes.--Maximum discharge during year, 333 cfs Oct. 18-23 (gage height, 2.98 ft); minimum, 6.7 cfs Apr. 7-10 (gage height, 0.27 ft).
1942-55: Maximum discharge, 362 cfs Aug. 27, 1947 (gage height, 3.13 ft, from graph based on gage readings); minimum, 2.5 cfs Nov. 3, 4, 11, 12, 1943; minimum gage height, -1.25 ft May 29, 1943 (two drain holes in weir open and canal gate closed).

Remarks.--Records excellent except those for periods of ice effect, which are good, and those below 20 cfs, which are fair. Canal diverts water from Bond Falls Reservoir to South Branch Ontonagon River; water is used for power production at Victoria Dam near Rockland.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	4.0	1.5	108
.3	7.8	2.0	172
.5	18	3.0	337
1.0	56		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	234	148	196	b235	b190	65	156	10	318	109	226
2	24	*234	148	196	b235	b190	65	221	10	318	84	*224
3	24	213	148	195	223	b190	66	222	10	318	58	224
4	24	201	148	194	198	189	66	222	10	316	42	222
5	24	201	148	195	b190	189	36	222	72	290	25	221
6	24	182	148	194	b190	b190	7.0	224	133	253	26	209
7	24	148	201	b195	b190	*b190	6.7	224	146	253	28	164
8	24	148	243	b195	b190	206	6.7	224	153	253	28	164
9	24	148	243	b195	*b190	214	6.7	224	153	251	28	164
10	24	148	242	b190	b190	195	6.7	196	153	251	28	162
11	25	148	242	b190	b190	178	7.0	140	153	250	62	162
12	25	148	242	b190	201	178	7.0	140	153	250	131	162
13	25	148	242	b190	229	178	7.0	140	153	259	155	162
14	28	148	240	b190	229	178	7.8	140	153	*305	155	161
15	26	153	240	b190	b225	178	7.8	140	187	304	155	132
16	162	164	240	b190	b225	178	7.8	140	210	304	185	108
17	300	164	240	195	b225	175	7.8	185	208	300	206	60
18	308	164	240	201	244	175	7.8	232	245	300	244	20
19	333	164	240	211	b265	175	9.2	232	263	300	236	20
20	333	162	238	243	263	175	9.2	232	263	304	206	19
21	333	158	238	275	262	132	9.2	230	260	304	206	19
22	333	146	216	270	260	95	9.2	230	260	302	206	19
23	278	173	198	b270	260	95	9.2	230	260	300	204	19
24	246	192	198	b270	222	95	9.2	229	260	300	204	19
25	246	190	198	254	194	95	9.2	229	260	298	204	19
26	246	175	198	242	194	89	9.2	229	260	296	201	19
27	245	148	198	b240	194	89	9.2	229	258	296	187	19
28	219	148	198	b240	194	90	9.2	229	258	268	175	19
29	201	148	196	b240	-	89	52	229	256	219	207	19
30	213	148	196	b235	-------	77	88	168	296	184	226	19
31	234	---	196	b235	-------	65	-------	54	-------	138	226	-------
Total	4,600	5,046	6,451	6,706	6,107	4,722	623.8	6,142	5,466	8,602	4,437	3,176
Mean	148	168	208	216	218	152	20.8	198	182	277	143	106
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 352 Min 7.8 Mean 169 Cfsm - In. -
Water year 1954-55: Max 333 Min 6.7 Mean 170 Cfsm - In. -

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

Bond Falls Reservoir near Paulding, Mich.

Location.--Lat 46°24'29", long 89°07'42", in SW¼ sec. 1, T. 46 N., R. 39 W., at Bond Falls Dam on Middle Branch Ontonagon River, 2½ miles east of Paulding.
Drainage area.--About 210 sq mi.
Records available.--October 1950 to September 1955.
Gage.--Staff gage read once daily. Datum of gage is 1,335.59 ft above mean sea level, datum of 1929.
Remarks.--Reservoir is formed by earth-fill and concrete dam with one taintor gate; dam completed in 1937. Usable capacity, 1,730,000,000 cu ft between gage heights of 121 ft (maximum drawdown) and 141 ft (full pond). Dead storage unknown. Water diverted to South Branch Ontonagon River through Bond Falls Canal; water used for power production at Victoria Dam near Rockland.
Cooperation.--Gage-height record furnished by Upper Peninsula Power Co.

Month-end gage height and contents, water years October 1950 to September 1955

Date	Gage height (feet)†	Contents (millions of cubic-feet)	Change in contents (millions of cubic feet)
Sept.30, 1950.....	133.13	1,030	-
Oct. 31.....	127.66	576	-454
Nov. 30.....	128.78	667	+91
Dec. 31.....	129.25	700	+33
Calendar year 1950....	-	-	-237
Jan. 31, 1951.....	124.32	302	-398
Feb. 28.....	122.34	151	-151
Mar. 31.....	125.67	412	+261
Apr. 30.....	140.61	1,760	+1,348
May 31.....	141.27	1,830	+70
June 30.....	140.76	1,780	-50
July 31.....	140.95	1,800	+20
Aug. 31.....	141.29	1,830	+30
Sept.30.....	141.26	1,830	0
Water year 1950-51....	-	-	+800
Sept.30, 1951.....	141.26	1,830	-
Oct. 31.....	141.19	1,820	-10
Nov. 30.....	139.70	1,660	-160
Dec. 31.....	139.88	1,680	+20
Calendar year 1951....	-	-	+980
Jan. 31, 1952.....	138.93	1,580	-100
Feb. 29.....	136.95	1,390	-190
Mar. 31.....	134.60	1,170	-220
Apr. 30.....	140.69	1,770	+600
May 31.....	140.91	1,790	+20
June 30.....	141.05	1,800	+10
July 31.....	141.02	1,800	0
Aug. 31.....	140.08	1,700	-100
Sept.30.....	135.37	1,240	-460
Water year 1951-52....	-	-	-590
Sept.30, 1952.....	135.37	1,240	-
Oct. 31.....	130.30	791	-449
Nov. 30.....	130.49	808	+17
Dec. 31.....	129.82	750	-58
Calendar year 1952....	-	-	-930
Jan. 31, 1953.....	127.67	576	-174
Feb. 28.....	125.54	396	-180
Mar. 31.....	128.10	609	+213
Apr. 30.....	139.64	1,650	+1,041
May 31.....	141.02	1,800	+150
June 30.....	140.89	1,790	-10
July 31.....	140.88	1,790	0
Aug. 31.....	139.96	1,690	-100
Sept.30.....	136.91	1,380	-310
Water year 1952-53....	-	-	+140
Sept.30, 1953.....	136.91	1,380	-
Oct. 31.....	134.39	1,150	-230
Nov. 30.....	134.16	1,130	-20
Dec. 31.....	132.83	1,010	-120
Calendar year 1953....	-	-	+260
Jan. 31, 1954.....	129.47	725	-285
Feb. 28.....	127.04	518	-207
Mar. 31.....	127.06	527	+9
Apr. 30.....	140.74	1,770	+1,243
May 31.....	141.22	1,820	+50
June 30.....	141.00	1,800	-20
July 31.....	137.95	1,490	-310
Aug. 31.....	133.11	1,030	-460
Sept.30.....	136.00	1,300	+270
Water year 1953-54....	-	-	-80

† Gage height at about 8:30 a.m.

Bond Falls Reservoir near Paulding, Mich.--Continued

Month-end gage height and contents, water years October 1950 to September 1955--Continued

Date	Gage height (feet)†	Contents (millions of cubic feet)	Change in contents (millions of cubic feet)
Sept.30, 1954.....	136.00	1,300	-
Oct. 31.....	140.96	1,800	+500
Nov. 30.....	140.97	1,800	0
Dec. 31.....	138.82	1,570	-230
Calendar year 1954...	-	-	+560
Jan. 31, 1955.....	136.00	1,300	-270
Feb. 28.....	133.02	1,020	-280
Mar. 31.....	132.07	945	-75
Apr. 30.....	140.70	1,770	+825
May 31.....	140.16	1,720	-50
June 30.....	138.43	1,530	-190
July 31.....	133.00	1,020	-510
Aug. 31.....	132.29	963	-57
Sept.30.....	131.44	884	-79
Water year 1954-55...	-	-	-416

† Gage height at about 8:30 a.m.

Middle Branch Ontonagon River near Trout Creek, Mich.

Location.--Lat 46°28'45", long 89°05'25", in sec. 8, T. 47 N., R. 38 W., on right bank 0.1 mile upstream from State Highway 28, 3¾ miles west of village of Trout Creek, and 6½ miles downstream from Bond Falls Reservoir.

Drainage area.--About 225 sq mi.

Records available.--June 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,132.03 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 4, 1942, staff gage at same site and datum.

Average discharge.--13 years, 90.5 cfs.

Extremes.--Maximum discharge during year, 638 cfs Apr. 18 (gage height, 3.67 ft); minimum, 38 cfs Mar. 16 (gage height, 1.60 ft).
1942-55: Maximum discharge, 1,750 cfs Nov. 7, 1951 (gage height, 5.05 ft); minimum, 14 cfs sometime during period Jan. 23 to Feb. 13, 1947 (gage height, 1.14 ft, from recorded range in stage), caused by ice jams upstream.

Remarks.--Records good. Flow regulated by Bond Falls Reservoir (see p. 38). Diversion to South Branch Ontonagon River by Bond Falls Canal (see p. 37).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	38	2.5	235
1.7	52	3.0	375
2.0	114	3.6	615

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	54	56	49	49	49	65	63	60	58	56	54
2	52	*54	56	49	49	49	74	99	*63	58	61	*48
3	51	56	*58	49	49	49	82	76	72	60	63	46
4	*51	56	52	49	49	49	82	*63	67	61	*60	46
5	51	54	51	*49	49	48	82	61	63	60	60	46
6	51	52	b56	49	48	b47	80	60	63	60	65	46
7	49	54	b54	49	48	*b46	69	58	61	*58	61	46
8	49	54	b54	48	48	b47	82	58	61	60	60	48
9	49	54	54	51	*48	b48	114	56	61	58	58	48
10	56	52	54	49	48	49	101	56	61	58	58	48
11	56	52	52	48	b48	49	84	54	61	58	58	46
12	54	54	51	51	b48	49	72	52	61	58	58	46
13	51	54	49	49	b48	49	83	52	61	58	58	46
14	154	54	52	49	b49	49	382	52	63	58	56	46
15	110	54	51	48	49	51	366	52	61	60	56	46
16	74	54	51	48	b49	49	*366	56	61	60	56	46
17	86	54	51	49	b49	b50	369	54	61	58	58	72
18	246	54	51	48	49	b50	509	52	61	58	56	52
19	420	54	49	b48	49	b50	615	52	61	58	56	49
20	420	54	49	b49	b49	49	*592	52	61	56	60	49
21	331	54	51	b49	49	b49	592	52	61	56	58	49
22	168	54	50	49	b49	49	592	52	61	56	58	49
23	80	54	50	49	b49	b49	464	54	60	56	58	49
24	56	54	50	49	b49	49	369	56	60	56	58	48
25	56	56	50	50	b49	b49	369	52	58	54	58	48
26	56	56	50	50	b49	b49	366	52	58	58	58	48
27	56	56	50	50	b49	b49	366	58	58	61	58	49
28	54	58	50	50	49	b50	366	60	58	58	61	48
29	56	58	50	50	-	51	215	116	58	58	61	48
30	56	56	50	50	-------	52	60	72	58	65	61	48
31	54	-------	50	49	-------	60	-------	58	-------	60	60	-------
Total	3,209	1,634	1,602	1,523	1,364	1,532	8,028	1,860	1,834	1,811	1,823	1,458
Mean	104	54.5	51.7	49.1	48.7	49.4	268	60.0	61.1	58.4	58.8	48.6
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,090 Min 46 Mean 104 Cfsm - In. -
Water year 1954-55: Max 615 Min 46 Mean 75.8 Cfsm - In. -

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Dec. 2, 3, Dec. 22 to Jan. 4, Jan. 23 to Feb. 9; discharge estimated on basis of weather records and records of released flow from Bend Falls Dam.

East Branch Ontonagon River near Mass, Mich.

Location.--Lat 46°41'20", long 89°04'20", on line between secs. 32 and 33, T. 50 N., R. 38 W., on right bank 700 ft downstream from highway bridge, 1,000 ft downstream from Adventure Creek, 5 miles south of Mass, and 6½ miles upstream from mouth.

Drainage area.--265 sq mi.

Records available.--July 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 873.55 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Oct. 1, 1949, wire-weight gage at bridge 700 ft upstream at same datum.

Average discharge.--13 years, 273 cfs.

Extremes.--Maximum discharge during year, 2,880 cfs Oct. 15 (gage height, 9.04 ft); minimum, 107 cfs Sept. 7 (gage height, 3.49 ft).
1942-55: Maximum discharge, 4,590 cfs July 1, 1953 (gage height, 10.57 ft); minimum, 60 cfs Aug. 25, 1948 (gage height, 3.55 ft, from graph based on gage readings, site then in use).

Remarks.--Records excellent except those for period of ice effect, which are fair.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.5	109	6.0	920
4.0	212	8.0	2,110
5.0	500	8.5	2,480

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	321	258	217	180	150	150	450	370	385	129	261	154
2	289	256	*210	180	150	150	800	1,080	278	135	219	138
3	244	261	205	180	150	145	1,200	780	*254	133	620	127
4	*217	254	200	180	150	145	1,200	542	266	166	*416	122
5	195	*241	200	180	150	145	1,100	416	258	164	310	114
6	184	244	195	*180	150	145	1,070	*313	236	173	340	111
7	177	276	190	180	*150	*145	825	294	214	*162	400	109
8	170	300	190	175	150	145	1,020	286	212	150	268	114
9	170	278	190	175	150	150	*1,590	264	207	146	202	131
10	173	254	185	170	150	155	1,760	246	193	136	170	133
11	271	248	180	170	150	160	1,520	231	186	131	150	127
12	332	244	180	170	150	170	1,220	217	184	123	136	122
13	313	231	175	170	150	170	1,020	202	181	120	129	118
14	1,290	226	175	170	145	175	1,500	195	177	120	123	116
15	2,480	212	170	165	140	175	1,020	190	168	123	122	114
16	1,250	210	170	165	140	170	758	190	160	133	118	116
17	848	207	170	160	145	165	630	205	152	131	116	1,240
18	670	210	170	160	150	160	766	200	146	123	114	542
19	500	200	175	160	155	160	1,150	190	146	122	113	340
20	385	198	175	160	160	160	802	184	148	118	127	254
21	332	195	175	160	165	160	630	177	146	116	135	193
22	302	195	180	160	170	160	500	170	148	123	127	177
23	278	198	185	160	170	155	416	164	146	120	122	177
24	264	205	190	160	170	155	361	236	144	113	114	175
25	254	254	190	155	160	155	329	241	140	111	114	156
26	244	271	185	155	155	155	305	207	136	111	118	148
27	241	251	180	155	150	160	281	258	131	160	120	146
28	244	251	175	150	150	160	266	316	129	168	131	158
29	246	246	175	150	-	165	254	882	127	156	170	152
30	261	236	175	150	-------	180	241	920	125	234	175	156
31	261	-------	180	150	-------	250	-------	542	-------	318	*175	-------
Total	13,406	7,110	5,712	5,135	4,275	4,995	24,984	10,708	5,523	4,468	5,955	5,980
Mean	432	237	184	166	153	161	833	345	184	144	192	199
Cfsm	1.63	0.894	0.694	0.626	0.577	0.608	3.14	1.30	0.694	0.543	0.725	0.751
In.	1.88	1.00	0.80	0.72	0.60	0.70	3.50	1.50	0.77	0.63	0.84	0.84

Calendar year 1954: Max 2,820 Min 130 Mean 328 Cfsm 1.24 In. 16.84
Water year 1954-55: Max 2,480 Min 109 Mean 269 Cfsm 1.02 In. 13.78

Peak discharge (base, 1,400 cfs).--Oct. 15 (8 a.m.) 2,880 cfs (9.04 ft); Apr. 9 (11 p.m.) 2,110 cfs (8.05 ft); Apr. 14 (7 a.m.) 1,760 cfs (7.47 ft); Sept. 17 (10:30 a.m.) 2,720 cfs (8.80 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 3.

Middle Branch Ontonagon River near Rockland, Mich.

Location.--Lat 46°42'05", long 89°09'40", in sec. 27, T. 50 N., R. 39 W., on downstream side of bridge on U. S. Highway 45, 300 ft downstream from East Branch and 2½ miles southeast of Rockland.

Drainage area.--670 sq mi, approximately.

Records available.--July 1942 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read once daily. Datum of gage is 661.1 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 569 cfs.

Extremes.--Maximum discharge during year, 8,720 cfs Oct. 15 (gage height, 11.83 ft); minimum observed, 212 cfs July 26 (gage height, 4.85 ft).
1942-55: Maximum discharge, 27,000 cfs Aug. 22, 1942 (gage height, 21.2 ft, from floodmarks), from rating curve extended above 7,500 cfs on basis of slope-area determinations of peak flow; minimum observed, 157 cfs Dec. 1, 1948; minimum gage height observed, 4.39 ft Aug. 13, 1942.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Bond Falls Reservoir (see p. 38). Diversion to South Branch Ontonagon River by Bond Falls Canal (see p. 37).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 3				Apr. 4 to Sept. 30			
5.0	251	7.0	1,780	4.8	200	6.0	870
5.5	475	10.0	5,740	5.1	288	7.0	1,860
6.0	830	10.7	6,850	5.5	495	9.0	4,450

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	734	453	395	340	280	280	1,000	630	595	256	380	270
2	523	*475	370	340	280	280	2,200	3,470	408	249	335	241
3	426	505	*360	330	285	280	3,000	2,090	*408	256	1,640	235
4	*370	493	350	320	290	275	3,140	951	465	322	*822	230
5	338	470	340	*320	290	275	2,630	*686	441	296	554	214
6	321	448	340	320	290	275	2,510	*508	400	292	595	214
7	306	500	340	320	*290	275	1,700	502	365	274	888	214
8	302	670	340	320	290	*275	2,330	471	355	*259	453	222
9	294	548	340	320	290	280	*3,210	430	350	256	340	227
10	294	475	330	315	290	290	3,140	402	326	249	292	224
11	568	470	330	317	290	300	2,510	380	330	238	263	214
12	580	442	330	320	285	310	2,030	360	317	235	256	*219
13	554	410	320	315	280	315	*1,540	345	309	232	246	222
14	4,850	385	320	315	280	325	2,950	322	305	232	241	214
15	6,850	370	310	310	275	330	2,330	313	296	266	238	214
16	2,520	370	310	305	275	320	1,590	305	281	270	241	284
17	1,520	356	310	300	280	310	1,200	340	266	252	246	4,450
18	1,240	356	310	300	280	305	1,340	330	266	244	232	1,490
19	1,280	352	310	300	290	305	2,630	317	256	235	232	630
20	1,060	343	320	300	300	305	2,090	292	277	235	238	447
21	956	350	320	300	305	305	1,590	292	274	235	266	345
22	678	348	330	300	310	300	1,390	274	274	256	238	313
23	511	352	340	300	320	300	1,190	270	270	249	238	326
24	458	348	350	300	320	300	897	447	270	232	235	335
25	426	442	350	290	310	300	838	418	259	224	224	305
26	415	493	350	290	300	300	798	340	252	212	227	292
27	405	470	340	290	290	300	750	402	246	309	235	284
28	405	460	330	280	290	305	726	862	241	296	235	296
29	426	453	310	280	-	310	702	3,210	246	288	296	281
30	448	420	320	280	-------	330	654	1,750	249	430	301	284
31	460	-----	330	280	-------	450	-------	915	-------	581	292	-------
Total	30,518	13,027	10,345	9,517	8,155	9,410	54,605	22,624	9,597	8,460	11,519	13,736
Mean	984	434	334	307	291	304	1,820	730	320	273	372	458
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 8,550 Min 238 Mean 702 Cfsm - In. -
Water year 1954-55: Max 6,850 Min 212 Mean 552 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Jan. 10, Jan. 12 to Apr. 3.

West Branch Ontonagon River near Bergland, Mich.

Location.--Lat 46°35'30", long 89°32'20", in sec. 3, T. 48 N., R. 42 W., on right bank a quarter of a mile downstream from dam at outlet of Gogebic Lake and 1¼ miles east of Bergland.

Drainage area.--160 sq mi, approximately.

Records available.--July 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,290.81 ft above mean sea level, datum of 1929. Prior to Nov. 5, 1942, staff gage a quarter of a mile upstream at different datum.

Average discharge.--13 years, 187 cfs.

Extremes.--Maximum discharge during year, 980 cfs Apr. 20 (gage height, 5.07 ft); minimum, 33 cfs Apr. 2, 6; minimum gage height, 1.17 ft Apr. 2.
1942-55: Maximum discharge, 1,300 cfs May 3, 1954; maximum gage height, 5.73 ft May 2, 1951; minimum daily discharge, 6 cfs Apr. 27 to May 3, 1949; minimum gage height observed, 0.48 ft Apr. 29, 1949.

Remarks.--Records good. Flow regulated by Gogebic Lake.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.1	32	3.0	255
1.7	65	4.0	565
2.3	120	5.0	960

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	232	118	131	156	198	108	102	315	222	95	119
2	59	215	118	89	152	*271	34	292	*307	228	101	120
3	59	222	*114	100	147	257	34	495	291	165	*94	118
4	59	*112	112	110	88	246	36	700	278	124	86	114
5	*59	82	110	*125	48	239	47	*700	211	96	85	108
6	57	71	108	132	48	228	34	640	171	83	89	105
7	58	78	183	165	161	219	38	640	163	215	88	85
8	*57	74	234	198	*246	230	*38	548	165	213	91	74
9	57	76	224	192	237	239	49	548	167	198	93	*74
10	57	86	119	215	192	226	280	471	156	194	91	72
11	57	82	64	228	158	215	565	344	97	194	148	70
12	57	80	64	222	195	217	660	207	82	198	203	69
13	52	92	66	191	219	190	*801	130	85	198	211	70
14	56	75	136	160	213	182	920	130	86	*203	128	66
15	55	84	142	158	205	188	940	128	86	217	83	66
16	59	75	95	152	198	188	940	107	146	219	193	68
17	325	71	91	200	192	177	940	128	179	215	232	66
18	582	63	79	239	208	167	920	175	205	205	226	56
19	565	61	70	228	226	163	920	180	215	194	138	54
20	402	62	70	237	185	156	940	196	194	190	115	53
21	320	59	70	244	138	127	940	200	180	200	120	52
22	323	59	71	215	132	105	880	198	190	169	115	51
23	210	75	71	196	128	190	840	194	188	177	114	86
24	69	85	74	190	124	260	800	125	177	203	100	104
25	71	95	74	179	106	248	611	135	171	200	82	110
26	68	113	74	167	94	239	453	165	179	217	83	118
27	72	114	74	162	95	230	395	184	190	228	83	119
28	78	116	74	193	94	224	232	169	188	203	83	115
29	65	118	105	217	-	215	102	175	190	170	109	122
30	70	122	173	184	-------	211	100	238	232	104	130	107
31	171	-------	198	160	-------	180	-------	288	--------	94	120	-------
Total	4,319	2,949	3,375	5,579	4,385	6,425	14,597	8,932	5,484	5,736	3,729	2,611
Mean	139	98.3	109	180	157	207	487	288	183	185	120	87.0
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,240 Min 48 Mean 244 Cfsm 1.52 In. 20.73
Water year 1954-55: Max 940 Min 34 Mean 187 Cfsm 1.17 In. 15.82

* Discharge measurement made on this day.

Cisco Branch Ontonagon River at Cisco Lake Outlet, Mich.

Location.--Lat 46°15', long 89°27', in sec. 32, T. 45 N., R. 41 W., on right bank 80 ft downstream from Cisco Lake Dam, 2½ miles upstream from Langford Lake Outlet, 4¾ miles upstream from U. S. Highway 2, and 13 miles southwest of Watersmeet.

Drainage area.--50 sq mi, approximately.

Records available.--October 1944 to September 1955.

Gage.--Staff gage read once daily. Datum of gage is 1,676.69 ft above mean sea level (corrected), datum of 1929.

Average discharge.--11 years, 49.1 cfs.

Extremes.--Maximum discharge during year, 228 cfs Oct. 16 (gage height, 1.83 ft); minimum daily, 5.0 cfs July 21, 22, 24-28, Aug. 13 to Sept. 14.
1944-55: Maximum discharge, 288 cfs May 1-4, 1951 (gage height, 2.10 ft); minimum daily, 0.2 cfs May 29 to June 17, 1948.

Remarks.--Records fair. Flow regulated by Cisco Lake.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

0.3	3.8	0.8	40
.4	7.8	1.2	93
.5	13	1.9	245

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	98	46	41	46	*26	48	72	*135	11	144	5.0
2	27	102	*44	41	*46	26	46	97	131	11	162	5.0
3	33	*98	41	41	46	26	44	*108	131	11	*171	5.0
4	33	95	41	*41	46	26	49	102	127	11	189	5.0
5	*31	95	41	41	46	26	60	57	77	11	149	5.0
6	31	95	41	41	46	26	69	33	66	11	140	5.0
7	44	95	41	41	46	26	77	33	66	11	110	5.0
8	52	95	41	39	46	26	82	33	69	*11	64	*5.0
9	60	95	41	35	46	27	88	31	66	11	42	5.0
10	76	88	41	33	46	27	110	20	64	11	19	5.0
11	93	88	41	33	46	27	116	17	61	11	8.2	5.0
12	105	88	41	35	44	27	127	12	41	11	6.0	5.0
13	112	81	41	33	40	38	135	14	26	11	5.0	5.0
14	178	75	41	25	39	50	144	14	23	10	5.0	5.0
15	208	75	41	19	33	64	144	12	20	9.4	5.0	5.4
16	228	75	41	17	27	69	144	12	19	9.4	5.0	5.4
17	218	75	41	17	26	69	*144	11	15	8.3	5.0	5.4
18	218	75	41	17	26	66	148	11	15	7.4	5.0	9.2
19	213	51	41	17	26	64	145	11	14	5.8	5.0	15
20	208	37	41	19	38	64	92	11	14	5.8	5.0	19
21	198	33	41	19	46	64	39	11	14	5.0	5.0	53
22	194	33	39	17	46	61	20	11	14	5.0	5.0	68
23	189	35	38	38	44	66	17	11	14	5.8	5.0	65
24	184	37	39	46	44	69	15	11	14	5.0	5.0	65
25	155	39	39	46	41	69	11	12	14	5.0	5.0	38
26	148	41	41	48	41	69	22	14	14	5.0	5.0	28
27	112	41	41	48	32	66	40	27	14	5.0	5.0	26
28	105	44	41	48	26	66	67	72	14	5.0	5.0	25
29	102	46	41	48	-	66	74	119	11	5.8	5.0	25
30	98	48	41	48	-------	64	72	140	11	11	5.0	14
31	98	-------	41	47	-------	54	-------	144	-------	95	5.0	-------
Total	3,778	2,073	1,271	1,079	1,125	1,514	2,389	1,283	1,314	351.7	1,299.2	536.4
Mean	122	69.1	41.0	34.8	40.2	48.8	79.6	41.4	43.8	11.3	41.9	17.9
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 245 Min 7.0 Mean 62.1 Cfsm 1.24 In. 16.83
Water year 1954-55: Max 228 Min 5.0 Mean 49.4 Cfsm 0.988 In. 13.41

* Discharge measurement made on this day.

South Branch Ontonagon River at Ewen, Mich.

Location.--Lat 46°32'05", long 89°16'30", in sec. 26, T. 48 N., R. 40 W., on left bank on piers of old State Highway M28 bridge in Ewen.

Drainage area.--About 320 sq mi.

Records available.--April 1942 to September 1955.

Gage.--Staff gage and crest-stage indicator; gage read twice daily. Datum of gage is 1,113.04 ft above mean sea level, datum of 1929. Prior to Jan. 16, 1943, reference mark or chain gage on upstream side of bridge at same site and datum.

Average discharge.--13 years, 512 cfs.

Extremes.--Maximum discharge during year, 4,090 cfs Oct. 16 (gage height, 15.69 ft); minimum, 157 cfs Sept. 16 (gage height, 1.60 ft).
1942-55: Maximum discharge, 6,710 cfs Apr. 19, 1952; maximum gage height, 18.86 ft June 25, 1946; minimum discharge observed, 76 cfs Sept. 23, 1948, June 7, Aug. 9, 22, 1949 (gage height, 0.88 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Some diversion from Middle Branch Ontonagon River by Bond Falls Canal (see p. 37). Some regulation at medium and low flows by Cisco Lake.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Rate of change in stage used as a factor Oct. 15-17, Apr. 4-6, 9-12, May 3, 4)

Oct. 1-16		Oct. 17 to Sept. 30	
1.9	204	1.7	169
4.0	546	4.0	514
8.0	1,420	8.0	1,360
13.0	2,830	13.0	2,830
15.5	3,990	14.2	3,340

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	460	640	350	360	400	310	800	550	760	388	586	335
2	434	640	330	350	400	300	1,360	1,210	*532	388	550	320
3	366	640	310	350	400	300	1,960	2,390	444	395	680	305
4	321	*622	300	350	380	290	2,280	1,990	410	427	780	298
5	276	586	290	350	360	280	2,310	*1,210	335	444	586	291
6	*246	586	*280	340	360	280	2,070	*840	342	380	622	291
7	232	586	330	340	360	*280	1,740	660	372	*358	760	235
8	211	700	400	330	*360	290	1,660	622	388	350	586	228
9	204	680	400	330	360	300	*2,280	550	410	342	427	228
10	218	604	400	330	360	300	3,230	514	418	328	358	235
11	417	586	400	*330	360	300	3,180	444	410	312	256	235
12	470	568	400	330	380	300	2,500	395	395	312	270	*221
13	865	514	400	330	400	300	*1,990	380	380	305	284	221
14	1,440	496	400	320	400	300	1,870	350	358	312	277	214
15	3,170	461	400	310	390	300	1,900	335	320	358	263	187
16	3,810	461	400	300	380	300	1,710	320	342	365	*256	169
17	2,630	444	400	310	370	300	1,240	312	335	358	284	980
18	1,990	444	400	320	370	310	1,160	388	328	350	298	1,280
19	1,560	444	400	350	390	320	1,460	380	312	350	312	1,000
20	1,240	427	400	380	400	350	1,540	365	380	342	305	372
21	1,110	410	390	380	410	320	1,260	358	372	342	305	214
22	1,020	395	380	380	410	300	980	350	365	358	298	187
23	960	380	360	380	400	280	700	342	358	358	284	187
24	860	402	360	380	370	310	586	395	350	350	277	242
25	800	444	360	380	350	320	514	380	342	342	277	256
26	760	461	360	380	330	300	*444	365	342	335	284	228
27	700	444	360	390	320	270	410	514	335	395	284	193
28	660	420	360	400	310	280	380	622	335	380	284	175
29	622	400	360	400	-	300	380	1,460	335	335	284	169
30	640	370	360	400	-------	330	514	1,840	335	358	342	169
31	622	-------	360	400	-------	380	-------	1,410	-------	604	350	-------
Total	29,314	15,255	11,400	10,980	10,480	9,400	44,408	22,241	11,440	11,321	12,009	9,665
Mean	946	508	368	354	374	303	1,480	717	381	365	387	322
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 4,370 Min 130 Mean 663 Cfsm - In. -
Water year 1954-55: Max 3,810 Min 169 Mean 542 Cfsm - In. -

Peak discharge (base, 2,000 cfs).--Oct. 16 (6 a.m.) 4,090 cfs (15.69 ft); Apr. 5 (5 a.m.) 2,320 cfs (11.53 ft); Apr. 10 (12 p.m.) 3,390 cfs (14.29 ft); May 3 (8 p.m.) 2,480 cfs (12.02 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 28 to Apr. 1.

Ontonagon River near Rockland, Mich.

Location.--Lat 46°43'15", long 89°12'25", in sec. 20, T. 50 N., R. 39 W., in downstream side of left pier of bridge on highway between Rockland and Victoria, 1¾ miles southwest of Rockland and 2.4 miles downstream from confluence of Middle and West Branches.

Drainage area.--1.290 sq mi, approximately.

Records available.--June 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 638.87 ft above mean sea level, datum of 1929. Prior to Nov. 23, 1943, wire-weight, chain, and staff gages on downstream side of bridge at same site and datum.

Average discharge.--13 years, 1,489 cfs.

Extremes.--Maximum discharge during year, 14,300 cfs Sept. 17 (gage height, 16.50 ft); maximum gage height, 18.05 ft Apr. 2 (ice jam); minimum daily discharge, 488 cfs Sept. 10.

1942-55: Maximum discharge, 42,000 cfs Aug. 22, 1942 (gage height, 28.6 ft, from floodmark), from rating curve extended above 14,000 cfs on basis of slope-area determination of peak flow; minimum daily, 260 cfs Sept. 6, 1948.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Victoria powerplant on West Branch 5 miles above station, by Bond Falls Reservoir (see p. 38), and by Gogebic and Cisco Lakes.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1943, 1946, and 1947, superseding those published in WSP 974, 1054, and 1084 are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1942		1942-Con.		1946		1947-Con.	
Dec. 1	1,600	Dec. 27	1,100	Jan. 1	500	Jan. 16	850
2	1,800	28	1,000	2	600	17	840
3	900			3	660	18	800
4	1,900	1945		4	660	20	800
5	1,700	Dec. 10	800	5	700	21	920
6	1,300	11	750	6	1,000	22	900
7	900	12	680	7	1,700	23	870
8	1,000	13	660	8	1,600	24	870
9	1,200	14	660	9	1,500	25	800
10	1,300	15	640	18	700	27	850
11	1,500	16	560	19	620	28	800
12	1,800	17	640	20	600	29	820
13	800	18	700	21	700	30	820
14	1,100	19	700	Dec. 10	2,200	31	850
15	1,200	20	700	11	1,500	Feb. 1	800
16	1,000	21	700	12	1,100	2	650
17	900	22	700	13	800	3	800
18	1,200	23	600			4	770
19	1,300	24	550	1947		5	740
20	800	25	500	Jan. 6	850	6	850
21	1,000	26	560	7	900	7	840
22	900	27	650	8	900	8	800
23	900	28	680	9	900		
24	1,600	29	680	10	850		
25	1,100	30	600	14	850		
26	1,300	31	550	15	860		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
December 1942	36,720	-	-	1,185	-	-
Water year 1942-43	660,441	9,270	600	1,809	1.40	19.04
December 1945	21,310	900	500	687	-	-
Calendar year 1945	550,765	10,900	468	1,509	1.17	15.88
January 1946	30,110	1,700	500	971	-	-
Water year 1945-46	463,919	13,800	490	1,271	.985	13.37
December 1946	27,140	2,200	650	875	-	-
Calendar year 1946	481,839	13,800	490	1,320	1.02	13.89
January 1947	25,500	920	650	823	-	-
February	22,150	850	650	791	-	-
Water year 1946-47	532,330	8,800	524	1,458	1.13	15.35
Calendar year 1947	489,218	8,800	376	1,340	1.04	14.10

Ontonagon River near Rockland, Mich.--Continued

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 2		Apr. 3 to Sept. 30	
6.0	580	5.8	460
7.0	1,110	7.0	1,080
8.0	1,940	8.0	1,940
11.0	5,630	11.0	5,630
15.4	12,400	13.8	9,840

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,160	1,320	1,070	910	1,060	910	3,200	1,400	1,930	834	1,260	807
2	1,160	1,420	1,010	880	1,100	930	7,000	4,780	1,510	840	1,130	772
3	946	1,470	965	900	880	950	8,670	5,330	1,380	766	3,210	698
4	865	1,390	1,070	910	800	940	7,620	4,550	1,360	820	2,260	667
5	*832	1,270	990	920	720	920	6,970	*3,250	1,230	959	1,610	633
6	795	1,190	*900	940	700	880	6,640	2,220	1,120	928	1,380	632
7	692	1,350	880	900	840	900	4,770	1,980	982	870	1,960	581
8	669	1,790	850	870	890	*920	5,530	1,780	*955	881	1,410	605
9	658	1,630	834	760	920	920	9,090	1,680	953	806	1,030	626
10	596	1,480	966	860	920	840	*9,730	1,590	974	732	891	488
11	884	*1,400	1,130	900	910	850	8,920	1,340	931	786	856	503
12	1,000	1,320	800	910	910	910	7,440	1,170	854	814	834	593
13	1,270	1,160	840	1,000	820	1,020	5,970	1,050	908	818	771	*562
14	5,720	1,100	890	900	900	1,100	8,100	954	878	808	562	547
15	12,400	1,040	900	900	900	910	*6,370	850	874	*826	686	557
16	7,800	982	1,100	850	900	900	5,350	924	866	810	715	504
17	5,750	987	1,130	870	900	920	4,150	932	844	760	720	8,400
18	4,650	988	880	930	880	910	4,660	908	834	824	735	5,500
19	3,980	940	730	930	900	800	6,630	920	758	809	586	2,530
20	3,140	944	860	910	820	1,050	5,350	882	856	828	630	*1,280
21	2,570	892	880	900	880	1,100	4,550	882	863	844	684	890
22	2,190	952	860	940	910	900	3,720	816	878	855	734	680
23	1,800	926	880	780	900	840	3,110	927	848	822	*708	655
24	1,560	942	840	840	900	900	2,490	1,030	850	732	644	802
25	1,320	938	780	840	920	900	2,340	1,030	835	821	726	802
26	1,280	1,060	720	900	880	900	1,760	964	729	828	648	780
27	1,260	1,240	850	900	760	780	1,690	1,190	824	895	615	705
28	1,170	1,140	900	920	860	860	1,570	1,810	848	864	638	680
29	1,260	1,210	900	880	-	920	1,280	5,140	863	860	662	655
30	1,240	1,070	850	820	-------	950	971	4,680	848	1,010	726	630
31	1,170	-------	850	980	-------	1,500	-------	3,200	-------	1,110	876	-------
Total	71,787	35,541	28,105	27,650	24,680	29,030	155,641	60,159	29,383	26,160	30,897	34,764
Mean	2,316	1,185	907	892	881	936	5,188	1,940	979	844	997	1,159
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 12,700 Min 596 Mean 1,895 Cfsm 1.47 In. 19.95
Water year 1954-55: Max 12,400 Min 488 Mean 1,517 Cfsm 1.18 In. 16.02

Peak discharge (base, 9,000 cfs).--Oct. 15 (8 a.m.) 14,000 cfs (16.30 ft); Apr. 3 (11 a.m.) 10,000 cfs (13.89 ft); Apr. 9 (11:30 p.m.) 11,100 cfs (14.62 ft); Apr. 14 (9:30 a.m.) 9,370 cfs (13.46 ft); Sept. 17 (12:30 p.m.) 14,300 cfs (16.50 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6-8, Dec. 11 to Apr. 2 (no gage-height record Dec. 11 to Jan. 14, Jan. 23 to Mar. 8, Mar. 17-31; discharge estimated on basis of 1 discharge measurement, weather records, records for nearby stations, and records of discharge at Victoria Dam).

Sturgeon River near Sidnaw, Mich.

Location.--Lat 46°35', long 88°35', in sec. 5, T. 48 N., R. 34 W., on right bank 40 ft downstream from highway bridge, 2 miles downstream from Rock River, 3½ miles northwest of Covington, 4 miles upstream from Perch River, and 9 miles northeast of Sidnaw.

Drainage area.--155 sq mi.

Records available.--October 1912 to September 1915, April 1943 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,214.40 ft above mean sea level, datum of 1929. October 1912 to September 1915, staff gage at site 200 ft upstream at different datum. Apr. 2, 1943, to Oct. 1, 1946, chain and staff gages at old timber bridge 20 ft upstream at present datum.

Average discharge.--14 years (1912-15, 1943-45, 1946-55), 211 cfs.

Extremes.--Maximum discharge during year, 2,500 cfs Apr. 14 (gage height, 9.22 ft); minimum, 12 cfs Sept. 16 (gage height, 3.64 ft).
1912-15, 1943-55: Maximum discharge, 3,670 cfs Apr. 30, 1951 (gage height, 10.35 ft); minimum, 4.6 cfs Oct. 8, 1948 (gage height, 3.47 ft).

Remarks.--Records good except those for periods of ice effect, which are fair.

Correction.--The figure of mean discharge for the 1914 water year has been corrected to 225 cfs, superseding figure published in WSP 404.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.6	10	5.0	193
3.8	21	5.5	335
4.1	44	7.0	1,020
4.5	95	9.2	2,500

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	175	193	130	74	54	64	170	252	648	30	153	60
2	183	187	130	72	54	63	270	*356	458	29	145	47
3	161	185	125	70	54	62	450	398	328	29	161	37
4	139	179	125	70	54	62	544	390	270	33	193	29
5	117	175	120	68	54	61	553	386	240	59	213	23
6	106	171	110	67	54	60	*580	342	209	51	203	18
7	95	185	105	66	54	60	558	310	201	42	191	16
8	88	209	105	65	54	60	580	282	187	36	163	15
9	79	209	102	64	*54	62	938	249	175	33	123	16
10	83	199	102	63	54	64	1,360	224	157	27	92	16
11	201	211	100	62	53	66	*1,780	203	143	24	70	16
12	221	261	95	62	52	67	2,200	183	129	22	55	16
13	226	255	92	62	51	69	2,340	165	119	20	44	15
14	733	226	*88	*61	51	*70	2,500	147	111	18	36	14
15	1,400	207	88	61	50	70	2,270	131	97	18	30	13
16	1,460	189	88	61	50	69	1,780	127	86	19	26	13
17	1,170	177	86	61	50	68	*1,460	139	74	19	22	189
18	938	169	82	60	50	67	1,360	133	65	18	22	294
19	738	163	80	60	52	66	1,660	117	55	17	19	261
20	602	157	80	60	56	66	1,590	102	65	16	23	199
21	466	149	80	60	62	68	1,300	90	82	15	28	143
22	374	145	80	59	70	68	1,020	79	76	24	24	113
23	314	125	82	58	74	66	835	72	66	22	22	99
24	273	139	84	58	74	66	692	92	57	21	19	86
25	237	153	86	56	72	66	580	117	50	20	17	76
26	216	157	86	56	70	67	482	111	43	18	16	68
27	207	153	84	54	68	70	406	119	37	29	15	63
28	197	149	82	54	*64	75	346	173	34	*52	16	66
29	*195	140	80	54	-	84	294	688	*30	56	24	*70
30	199	*135	*76	54	------	95	261	885	30	70	*32	76
31	199	------	74	*54	------	*105	------	*810	------	113	48	------
Total	11,792	5,352	2,927	1,906	1,609	2,126	31,159	7,872	4,322	1,000	2,245	2,167
Mean	380	178	94.4	61.5	57.5	68.6	1,039	254	144	32.3	72.4	72.2
Cfsm	2.45	1.15	0.609	0.397	0.371	0.443	6.70	1.64	0.929	0.208	0.467	0.466
In.	2.82	1.28	0.70	0.46	0.39	0.51	7.48	1.89	1.04	0.24	0.54	0.52

Calendar year 1954: Max 2,860 Min 14 Mean 255 Cfsm 1.65 In. 22.30
Water year 1954-55: Max 2,500 Min 13 Mean 204 Cfsm 1.32 In. 17.87

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 29 to Dec. 3, Dec. 5-8, 13, Dec. 18 to Apr. 3.

Sturgeon River near Alston, Mich.

Location.--Lat 46°44', long 88°40', in SE¼ sec. 15, T. 50 N., R. 35 W., on right bank in powerhouse of Upper Peninsula Power Co. at Prickett Dam, 3 miles upstream from Clear Creek and 5 miles southeast of Alston.

Drainage area.--346 sq mi.

Records available.--October 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 670.3 ft above mean tide at New York City (levels by Corps of Engineers).

Average discharge.--8 years, 424 cfs.

Extremes.--Maximum discharge during year, 3,600 cfs Apr. 14 (gage height, 49.43 ft); minimum daily, 98 cfs Sept. 16.
1947-55: Maximum discharge, 5,000 cfs Apr. 29, 1951 (gage height, 51.12 ft); minimum, 7.9 cfs Oct. 24, 1948.

Remarks.--Records good. Flow regulated by powerplant at station.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	376	423	347	218	182	261	312	571	1,020	106	226	111
2	288	423	329	239	181	243	474	672	784	155	294	110
3	386	421	325	251	188	240	839	791	675	117	415	150
4	384	419	316	225	188	240	1,120	688	571	107	392	143
5	335	424	249	216	190	270	1,140	701	571	109	388	142
6	303	380	329	223	178	220	1,150	632	587	121	402	110
7	252	354	277	228	190	220	1,020	571	535	130	410	102
8	257	416	258	210	170	240	940	587	444	133	452	113
9	214	406	199	219	198	250	1,740	587	372	160	280	107
10	262	385	195	219	200	230	*2,390	587	381	112	242	107
11	332	404	199	189	200	260	2,600	531	260	130	203	139
12	396	405	231	179	194	230	2,990	533	212	125	157	102
13	489	451	223	186	197	230	3,190	358	382	122	202	100
14	1,550	504	206	186	173	220	*3,420	258	360	180	173	101
15	2,730	434	235	202	160	240	3,230	250	321	137	198	100
16	2,080	417	*240	212	173	230	2,400	325	*325	158	173	98
17	1,880	441	197	215	172	210	2,030	302	328	136	178	259
18	1,480	408	207	214	188	210	1,910	314	294	127	136	343
19	1,270	367	325	192	198	230	2,430	311	209	126	141	*350
20	867	235	262	205	199	210	2,220	311	286	127	138	383
21	838	223	207	*188	209	250	1,940	284	285	129	192	308
22	759	320	200	191	237	220	1,480	166	211	128	174	185
23	641	377	200	214	272	210	1,160	305	210	161	150	184
24	587	372	210	209	*296	210	1,010	*258	205	132	147	282
25	571	293	248	197	280	210	904	257	245	133	142	177
26	571	295	246	170	250	230	748	247	208	143	*124	144
27	526	315	233	130	202	220	682	265	180	143	151	146
28	*364	278	221	218	250	210	*611	251	*156	*143	152	153
29	416	358	221	210	-	220	571	994	140	143	106	182
30	426	*348	220	191	-------	*230	571	1,560	140	214	112	160
31	416	--- --	200	189	-------	252	-------	1,230	-------	238	113	-------
Total	22,246	11,296	7,555	6,335	5,715	7,146	47,222	15,697	10,897	4,325	6,763	5,091
Mean	718	377	244	204	204	231	1,574	506	363	140	218	170
Cfsm	2.08	1.09	0.705	0.590	0.590	0.668	4.55	1.46	1.05	0.405	0.630	0.491
In.	2.40	1.22	0.81	0.68	0.61	0.77	5.08	1.68	1.17	0.47	0.73	0.55

Calendar year 1954: Max 3,820 Min 112 Mean 509 Cfsm 1.47 In. 20.01
Water year 1954-55: Max 3,420 Min 98 Mean 412 Cfsm 1.19 In. 16.17

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 22-24, Jan. 26, Feb. 7, 8, 25, 26, Mar. 4-30; discharge estimated on basis of weather records, power company output records, and records for nearby stations.

Otter River near Elo, Mich.

Location.--Lat 46°52', long 88°37', in sec. 34, T. 52 N., R. 34 W., on downstream side of highway bridge, 1¼ miles southeast of old Elo school and 3 miles upstream from Otter Lake.

Drainage area.--175 sq mi.

Records available.--November 1942 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 617.88 ft (corrected) above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--13 years, 226 cfs.

Extremes.--Maximum discharge during year, 2,480 cfs Aug. 3 (gage height, 11.33 ft); minimum, 73 cfs July 21; minimum gage height, 3.04 ft Sept. 7, 8.
1942-55: Maximum discharge, 4,540 cfs Apr. 19, 1952 (gage height, 13.52 ft); minimum observed,68 cfs Nov. 18, 1947 (discharge measurement); minimum gage height, 2.94 ft Sept. 29, 30, 1952.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 9		Apr. 10 to Sept. 30	
3.1	98	3.0	71
5.0	400	4.0	202
8.0	1,140	6.0	550
9.2	1,530	8.0	1,070
		10.6	2,080

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	203	149	156	115	100	110	220	242	218	94	150	112
2	162	148	150	115	98	110	350	680	180	90	128	98
3	140	148	140	110	98	110	600	570	258	89	1,220	90
4	125	152	135	110	98	110	900	398	372	101	1,330	83
5	116	149	135	110	98	110	990	298	290	96	705	81
6	110	144	130	110	98	110	*990	242	218	92	570	78
7	107	150	130	110	98	110	760	250	188	89	530	75
8	106	155	130	110	98	110	835	226	174	88	381	80
9	106	154	130	110	98	115	1,530	202	156	83	266	94
10	110	149	125	110	98	120	*1,930	192	153	79	164	98
11	140	146	125	110	98	120	2,080	178	136	78	144	90
12	150	143	125	110	98	125	1,930	164	131	76	138	83
13	161	140	125	110	100	125	1,600	153	127	76	124	81
14	466	132	125	110	100	125	*1,840	144	124	76	118	79
15	1,170	126	125	110	105	120	1,300	138	117	76	112	79
16	660	122	*125	110	105	120	*805	136	*110	86	102	83
17	390	122	120	110	105	120	680	140	105	81	98	655
18	322	119	120	110	105	120	730	132	100	79	95	364
19	265	118	120	110	105	115	1,480	128	100	76	94	*282
20	233	116	120	110	110	115	860	123	119	74	100	242
21	196	114	120	*110	125	115	610	124	107	75	114	178
22	182	113	120	110	125	115	470	112	100	147	98	182
23	172	116	120	105	120	115	381	108	100	99	93	184
24	158	128	120	105	*115	115	330	*122	96	84	93	178
25	152	144	120	105	115	115	290	126	95	80	90	150
26	155	241	115	105	110	115	258	114	93	*78	89	135
27	149	210	115	105	110	115	234	130	90	154	90	132
28	*143	196	115	100	110	120	*218	258	90	110	92	180
29	146	186	115	100	-	130	198	530	90	104	*93	157
30	160	*172	115	100	-----	*140	176	550	93	147	141	184
31	152	-- --	115	100	------	170	--- ----	314	- ----	174	130	-
Total	7,007	4,402	3,881	3,355	2,943	3,685	25,575	7,224	4,330	2,931	7,694	4,587
Mean	226	147	125	108	105	119	852	233	144	94.5	248	153
Cfsm	1.29	0.840	0.714	0.617	0.600	0.680	4.87	1.33	0.823	0.540	1.42	0.874
In.	1.49	0.94	0.82	0.71	0.62	0.78	5.43	1.53	0.92	0.62	1.64	0.98

Calendar year 1954: Max 3,450 Min 88 Mean 258 Cfsm 1.47 In. 20.04
Water year 1954-55: Max 2,080 Min 74 Mean 213 Cfsm 1.22 In. 16.48

Peak discharge (base, 1,300 cfs).--Apr. 11 (8 a.m.) 2,300 cfs (11.02 ft); Apr. 19 (6 a.m.) 1,560 cfs (9.40 ft); Aug. 3 (9 p.m.) 2,480 cfs (11.33 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3 to Apr. 4.

Sturgeon River near Arnheim, Mich.

Location.--Lat 46°56', long 88°33', in SE¼ sec. 1, T. 52 N., R. 34 W., on right bank a quarter of a mile downstream from Otter Lake, 3 miles northwest of Arnheim, and 8½ miles northeast of Pelkie.

Drainage area.--680 sq mi.

Records available.--November 1942 to September 1955.

Gage.--Staff gage read once daily. Datum of gage is 605.98 ft above mean tide at New York City (Corps of Engineers benchmark).

Average discharge.--13 years, 840 cfs.

Extremes.--Maximum discharge during year, 5,160 cfs Apr. 12 (gage height, 13.18 ft); minimum, 274 cfs July 12, 13, 15, Sept. 15, 16; minimum gage height, 1.24 ft July 15, Sept. 15, 16.

1942-55: Maximum discharge (revised),15,500 cfs Apr. 20, 1952 (gage height, 14.57 ft, from graph based on gage readings); minimum, 200 cfs Sept. 14, 1948 (gage height, 1.15 ft).

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
974	1943	Apr. 26, 1943	8,240	13.93
1004	1944	Apr. 25, 1944	7,860	13.88
1034	1945	Mar. 28, 1945	6,820	13.72
1174	1950	May 10, 1950	11,800	14.30
1207	1951	Apr. 30, 1951	9,250	14.05
1237	1952	Apr. 20, 1952	15,500	14.57

Remarks.--Records good except those above 5,000 cfs, which are fair.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1950-52, superseding those published in WSP 1174, 1207, 1237, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1950		1951		1952	
May 7	8,480	Apr. 12	7,000	Apr. 19	10,900
8	7,370	13	7,510	20	14,100
9	8,320	30	8,640	21	9,900
10	10,900	May 1	8,640	22	9,340
11	8,080	2	8,640	23	8,800
12	6,760	3	6,420		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 1950	113,890	10,900	1,080	3,674	5.40	6.23
Water year 1949-50	349,366	10,900	300	957	1.41	19.11
Calendar year 1950	340,306	10,900	260	932	1.37	18.61
April 1951	107,420	8,640	1,670	3,581	5.27	5.87
May	68,350	8,640	750	2,205	3.24	3.74
Water year 1950-51	-	8,640	320	1,072	1.58	21.38
Calendar year 1951	-	8,640	320	1,192	1.75	23.79
April 1952	104,944	14,100	534	3,498	5.14	5.74
Water year 1951-52	-	14,100	256	964	1.42	19.31
Calendar year 1952	-	14,100	256	806	1.19	16.14

Revised peak discharge.--1949-50: May 10 (12 m.) 11,800 cfs.
1950-51: Apr. 13 (8 a.m.) 7,860 cfs (13.88 ft); Apr. 30 (4 p.m.) 9,250 cfs (14.05 ft).

Sturgeon River near Arnheim, Mich.--Continued

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Rate of change in stage used as a factor Oct. 16-22, Apr. 4-27, May 4, May 31 to June 2, Aug. 4, 5)

Oct. 1 to Apr. 12		Apr. 13 to Sept. 30	
1.7	349	1.2	263
6.0	1,600	4.0	986
11.0	3,690	9.0	2,730
13.2	5,160	13.1	5,040

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	632	758	674	401	360	466	576	1,070	1,750	328	458	328
2	674	758	646	414	360	480	898	1,160	1,550	317	484	317
3	632	758	604	414	360	466	1,530	1,500	1,460	306	818	306
4	632	730	590	440	360	466	2,330	1,610	1,370	317	1,990	295
5	618	730	562	453	360	453	2,860	1,530	1,280	306	1,670	306
6	576	730	507	453	360	450	3,090	1,370	1,160	295	1,530	295
7	548	702	453	440	360	440	2,850	1,280	1,070	284	1,430	295
8	507	688	427	414	360	450	2,730	1,160	986	295	1,340	284
9	466	702	440	427	360	453	3,230	1,100	902	284	1,160	284
10	453	702	466	414	360	480	4,040	1,040	790	284	930	284
11	466	702	466	401	360	480	*4,800	986	734	295	790	284
12	507	702	453	388	360	534	5,120	930	653	274	666	284
13	590	702	453	388	360	507	4,860	874	574	274	535	284
14	758	702	427	375	370	494	4,940	790	574	284	471	284
15	1,530	758	440	375	380	494	4,960	707	572	274	446	274
16	2,720	702	*466	375	380	480	4,490	613	*561	284	421	284
17	3,130	674	466	375	375	470	4,120	600	535	295	409	409
18	2,940	688	466	375	375	466	3,780	587	522	306	385	762
19	2,600	674	453	388	375	466	3,910	574	522	295	373	*902
20	2,220	646	466	380	401	466	*3,970	574	471	284	350	874
21	1,830	590	466	*375	427	460	3,730	561	484	284	350	790
22	1,590	534	466	370	440	460	3,220	535	471	306	350	734
23	1,460	548	453	370	453	450	2,750	496	434	328	350	666
24	1,280	590	466	370	*480	450	2,330	*496	421	317	339	574
25	1,160	674	453	370	460	450	2,070	496	397	317	317	548
26	1,070	730	453	370	450	450	1,790	496	397	*295	317	509
27	982	730	453	370	450	453	1,520	484	397	306	306	458
28	*926	702	427	360	455	466	*1,400	535	385	317	317	434
29	842	674	427	360	-	466	1,280	666	362	339	*306	421
30	814	*688	375	360	------	*466	1,130	1,250	339	350	339	421
31	786	---	375	360	-------	480	--------	1,800	--------	409	339	---
Total	35,939	20,668	14,739	12,125	10,951	14,512	90,304	27,870	22,123	9,449	20,286	13,190
Mean	1,159	689	475	391	391	468	3,010	899	737	305	654	440
Cfsm	1.70	1.01	0.699	0.575	0.575	0.688	4.43	1.32	1.08	0.449	0.962	0.647
In.	1.96	1.13	0.81	0.66	0.60	0.79	4.94	1.52	1.20	0.52	1.11	0.72

Calendar year 1954: Max 9,430 Min 264 Mean 963 Cfsm 1.42 In. 19.23
Water year 1954-55: Max 5,120 Min 274 Mean 800 Cfsm 1.18 In. 15.96

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 20, Jan. 22 to Feb. 16, Feb. 25-28, Mar. 6-8, 17, 21-26.

Tahquamenon River near Tahquamenon Paradise, Mich.

Location.--Lat 46°34'30", long 85°16'10", in NE¼ sec. 11, T. 48 N., R. 8 W., on left bank 0.7 mile upstream from Tahquamenon (Big) Falls, 11.5 miles west of Tahquamenon Paradise, and 19 miles northeast of Newberry.

Drainage area.--790 sq mi.

Records available.--August 1953 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 697 ft (from river-profile map).

Extremes.--Maximum discharge during year, 4,850 cfs Apr. 15-17; maximum gage height, 8.71 ft Apr. 17; minimum discharge, 157 cfs July 26 (gage height, 2.88 ft).
1953-55: Maximum discharge, 4,850 cfs Apr. 29, 1954, Apr. 15-17, 1955; maximum gage height, that of Apr. 17, 1955; minimum discharge, that of July 26, 1955.

Remarks.--Records good.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

2.9	163	6.0	1,740
4.0	530	8.0	3,840
5.0	1,060	8.7	4,850

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,250	1,180	1,030	416	313	409	522	2,040	562	306	188	268
2	1,320	1,120	1,030	412	309	402	625	1,860	514	306	188	284
3	1,380	1,090	970	405	303	395	775	1,660	457	306	200	281
4	1,380	1,060	912	402	300	392	940	1,520	422	287	222	265
5	1,380	1,060	802	385	297	385	1,120	1,350	395	278	244	250
6	1,320	1,000	748	378	297	382	1,320	1,220	372	265	278	240
7	1,280	1,000	645	382	297	378	1,480	1,090	*416	256	290	234
8	1,220	970	606	378	303	372	1,740	940	538	244	316	231
9	1,090	940	550	375	303	359	2,120	858	610	216	306	228
10	1,000	*940	514	375	303	355	2,670	748	620	206	278	225
11	1,090	885	498	365	306	385	3,220	670	584	200	259	237
12	1,220	858	486	359	309	426	3,840	610	538	200	247	240
13	1,450	858	475	365	313	439	4,250	558	490	194	234	247
14	1,590	802	464	368	313	453	4,550	522	446	185	219	247
15	1,820	830	457	365	313	460	*4,700	475	416	185	219	262
16	2,040	802	440	362	*313	472	4,850	433	365	210	200	287
17	2,370	775	430	359	319	479	4,850	*439	342	225	*200	284
18	2,470	748	415	359	322	479	4,700	433	309	231	191	281
19	*2,520	720	405	355	326	483	4,550	405	287	234	188	262
20	2,520	709	390	349	336	479	4,400	392	268	228	194	*250
21	2,470	687	*378	342	365	479	4,400	375	259	225	203	247
22	2,320	670	375	342	388	479	4,110	345	268	216	206	240
23	2,170	682	368	342	409	472	3,970	339	293	203	219	237
24	2,040	682	372	342	422	457	3,710	322	319	200	219	228
25	1,900	748	378	342	429	443	3,460	316	319	200	203	225
26	1,740	802	399	339	429	436	3,340	329	316	185	200	228
27	1,620	830	426	336	422	436	3,100	345	303	*185	200	228
28	1,560	885	446	329	416	433	2,770	372	293	191	203	234
29	1,420	970	446	322	-	433	2,520	450	281	194	210	253
30	1,320	1,030	436	319	------	439	2,320	542	290	197	219	247
31	1,250	------	426	316	------	464	------	574	------	194	247	------
Total	51,520	26,333	16,717	11,185	9,475	13,355	90,922	22,532	11,892	6,952	6,990	7,470
Mean	1,662	878	539	361	338	431	3,031	727	396	224	225	249
Cfsm	2.10	1.11	0.682	0.457	0.428	0.546	3.84	0.920	0.501	0.284	0.285	0.315
In.	2.42	1.24	0.79	0.53	0.45	0.63	4.28	1.06	0.56	0.33	0.33	0.35

Calendar year 1954: Max 4,850 Min 179 Mean 990 Cfsm 1.25 In. 17.02
Water year 1954-55: Max 4,850 Min 185 Mean 754 Cfsm 0.954 In. 12.97

* Discharge measurement made on this day.

Black River near Garnet, Mich.

Location.--Lat 46°07'05", long 85°21'55", in SE¼ sec. 13, T. 43 N., R. 9 W., on right bank 10 ft upstream from highway bridge, 15 ft downstream from small tributary entering from right, 3½ miles upstream from Lake Michigan, and 4 miles southwest of Garnet.

Drainage area.--28 sq mi, approximately.

Records available.--September 1951 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 590 ft (from county map).

Extremes.--Maximum discharge during year, 203 cfs Apr. 14 (gage height, 5.16 ft); minimum, 5.5 cfs Sept. 20, 21 (gage height, 2.14 ft); minimum gage height, 2.13 ft Aug. 13, 14, 19, 22.
1951-55: Maximum discharge, 252 cfs Apr. 16, 1954 (gage height, 5.66 ft); minimum, that of Sept. 20, 21, 1955; minimum gage height, that of Aug. 13, 14, 19, 22, 1955.

Remarks.--Records good.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 14		Mar. 15 to Sept. 30	
2.2	7.9	2.1	5.3
2.3	10	2.3	11
2.5	17	2.8	31
3.0	40	4.0	103
3.7	78	5.1	198

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	24	38	12	9.4	10	17	28	17	9.1	6.8	6.8
2	36	25	33	12	9.4	10	22	30	16	8.5	6.6	6.6
3	31	25	29	12	9.4	9.7	27	29	14	8.5	7.4	6.3
4	28	25	25	12	9.1	9.7	32	30	14	8.2	7.9	6.3
5	23	24	22	12	9.4	9.1	42	28	13	8.2	7.7	6.1
6	21	23	20	12	9.4	9.4	57	25	13	8.2	7.4	5.9
7	18	22	18	12	9.1	9.4	*72	25	*25	7.9	7.7	5.9
8	17	22	17	12	9.1	9.1	92	23	23	7.9	7.1	6.1
9	17	21	16	12	9.1	9.4	117	21	18	7.7	6.6	6.6
10	17	*20	15	12	9.1	11	132	20	15	7.7	6.6	8.2
11	40	19	15	11	8.9	13	*128	20	14	7.4	6.3	6.8
12	48	18	15	11	8.7	14	136	19	14	7.4	6.1	6.6
13	65	18	14	11	8.7	14	149	18	13	7.4	6.1	6.3
14	62	20	14	11	8.7	14	193	17	12	7.7	6.1	9.1
15	67	19	14	11	8.7	*14	144	16	12	7.7	*6.1	7.7
16	75	19	14	11	*8.9	14	114	16	11	7.7	6.1	6.6
17	74	19	14	10	8.9	13	100	*15	11	8.2	6.1	6.3
18	60	19	14	*11	9.1	12	86	15	11	7.7	6.1	6.1
19	50	18	13	11	9.1	11	76	15	10	7.4	6.1	5.9
20	44	17	13	11	11	11	77	14	10	7.9	6.3	*5.7
21	*39	17	*12	11	12	11	92	13	10	7.4	6.3	5.7
22	35	17	13	11	12	11	80	13	10	7.1	6.1	5.9
23	32	17	13	10	11	11	69	14	11	7.1	6.1	5.7
24	29	20	12	10	11	11	60	13	10	7.1	6.1	5.7
25	26	23	12	10	10	11	53	13	9.7	7.1	6.1	5.9
26	26	22	14	10	10	11	47	13	9.4	7.4	6.3	5.7
27	29	35	14	10	10	10	41	16	8.8	*8.2	6.6	6.6
28	28	60	13	10	10	10	36	16	8.8	7.1	6.3	7.1
29	26	51	13	10	-	11	34	23	9.1	6.8	6.8	6.3
30	24	43	12	9.7	------	10	31	22	9.4	6.8	7.1	6.8
31	23	--	12	9.4	------	12	------	20	------	6.8	7.4	--
Total	1,155	722	513	340.1	269.2	345.8	2,356	600	382.2	237.3	204.4	193.3
Mean	37.3	24.1	16.5	11.0	9.61	11.2	78.5	19.4	12.7	7.65	6.59	6.44
Cfsm	1.33	0.861	0.589	0.393	0.343	0.400	2.80	0.693	0.454	0.273	0.235	0.230
In.	1.53	0.96	0.68	0.45	0.36	0.46	3.12	0.80	0.51	0.31	0.27	0.26

Calendar year 1954: Max 230 Min 8.2 Mean 26.8 Cfsm 0.957 In. 12.96
Water year 1954-55: Max 193 Min 5.7 Mean 20.1 Cfsm 0.718 In. 9.71

Peak discharge (base, 120 cfs).--Apr. 14 (8:30 a.m.) 203 cfs (5.16 ft).
* Discharge measurement made on this day.

Manistique River at Germfask, Mich.

Location.--Lat 46°14'00", long 85°55'40", in SE¼ sec. 4, T. 44 N., R. 13 W., on left bank 600 ft upstream from bridge on State Highway 77, 1 mile south of Germfask, 1½ miles upstream from Grays Creek, and at mile 62.5.

Drainage area.--341 sq mi.

Records available.--March 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 662.40 ft above mean sea level (levels by Michigan Department of Conservation). Prior to Dec. 29, 1938 (corrected), staff gage at site 600 ft downstream at different datum.

Average discharge.--17 years, 443 cfs.

Extremes.--Maximum discharge during year, 1,110 cfs Apr. 13-15; maximum gage height, 4.83 ft Apr. 14; minimum discharge, 135 cfs July 25, 26 (gage height, 0.77 ft).
1938-55: Maximum discharge, 2,130 cfs Apr. 1, 1938 (gage height, 8.50 ft, from graph based on gage readings, site and datum then in use); minimum, that of July 25, 26, 1955.

Remarks.--Records excellent except those for periods of ice effect or doubtful or no gage-height record, which are good. Since July 1948, slight regulation during summer low flow by dam on outlet of Manistique Lake.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.7	127
1.0	164
2.0	340
4.8	1,110

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	604	534	534	371	300	330	371	590	290	245	202	207
2	604	534	506	360	300	330	416	590	272	236	236	203
3	590	534	478	360	300	330	465	590	245	225	263	186
4	590	520	465	360	310	330	548	590	236	212	300	175
5	576	520	440	350	310	320	632	576	227	203	a320	168
6	548	520	430	350	310	320	702	562	225	200	a310	163
7	506	520	430	350	310	310	730	534	245	193	a290	158
8	478	506	420	350	310	310	786	520	*281	186	a270	155
9	465	*492	410	330	310	320	900	506	290	181	a240	154
10	452	492	410	330	310	320	990	492	272	177	a220	156
11	506	478	400	330	300	330	*1,020	492	263	170	a200	161
12	576	478	400	330	300	350	1,080	478	245	165	a180	161
13	632	465	400	330	300	340	1,080	465	236	163	a175	160
14	646	465	400	330	300	340	1,110	465	227	150	a165	164
15	702	465	404	330	*300	*340	*1,080	452	215	152	a160	174
16	702	465	390	330	300	340	1,050	440	207	164	a150	178
17	730	465	390	320	300	340	1,050	*440	198	163	*147	172
18	730	452	382	*330	300	330	990	428	193	156	147	170
19	*730	452	360	320	310	330	930	416	186	150	144	165
20	700	452	350	320	330	330	930	404	193	144	144	161
21	660	440	340	320	350	330	960	393	236	142	152	*158
22	632	440	*330	320	360	330	930	393	236	141	159	156
23	590	440	340	320	350	330	930	382	236	139	154	156
24	562	465	360	320	350	340	900	382	245	137	147	156
25	548	506	393	320	340	340	870	371	236	136	147	155
26	534	506	393	320	340	330	814	245	218	*137	147	154
27	548	506	393	310	330	330	758	236	207	144	148	156
28	562	548	393	310	330	330	730	263	196	158	152	168
29	548	562	393	310	-	330	674	300	196	159	155	177
30	548	548	371	310	------	330	632	340	225	156	167	174
31	534	--	371	300	------	340	-------	330	-- ----	175	188	- -
Total	18,333	14,770	12,476	10,241	8,860	10,250	25,058	13,665	6,977	5,259	5,979	5,001
Mean	591	492	402	330	316	331	835	441	233	170	193	167
Cfsm	1.73	1.44	1.18	0.968	0.927	0.971	2.45	1.29	0.683	0.499	0.566	0.490
In.	1.99	1.61	1.36	1.12	0.96	1.12	2.73	1.49	0.76	0.58	0.65	0.55

Calendar year 1954 : Max 1,280 Min 169 Mean 462 Cfsm 1.35 In. 18.38
Water year 1954-55 : Max 1,110 Min 136 Mean 375 Cfsm 1.10 In. 14.92

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records, engineers notes, recorded range in stage, and records for nearby stations.
Note.--Discharge computed from doubtful gage-height record Oct. 1 to Nov. 8. Stage-discharge relation affected by ice Dec. 4-14, 16, 17, 19-24, Jan. 11, 13-15, Jan. 19 to Feb. 28, Mar. 4-11, 17, 19 (no gage-height record Feb. 5-14).

Manistique River near Blaney, Mich.

Location.--Lat 46°05'05", long 86°03'35", in SE¼ sec. 28, T. 43 N., R. 14 W., on left bank 40 ft downstream from logging bridge, half a mile downstream from Duck Creek, 7 miles southwest of Blaney, and at mile 34.5.
Drainage area.--704 sq mi.
Records available.--March 1938 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 612.55 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 24, 1939, chain gage on downstream side of bridge 40 ft upstream at same datum.
Average discharge.--17 years, 826 cfs.
Extremes.--Maximum discharge during year, 2,830 cfs Apr. 15, 16; maximum gage height, 15.71 ft Apr. 15; minimum discharge, 182 cfs July 26 (gage height, 5.51 ft).
1938-55: Maximum discharge, 9,300 cfs Apr. 1, 1938 (gage height, 19.42 ft, from graph based on gage readings), from rating curve extended above 6,100 cfs by logarithmic plotting; minimum, that of July 26, 1955.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
974	1943	Apr. 13, June 23, 1943	3,910	-
1004	1944	Apr. 27, 28, 1944	2,570	-
1034	1945	Mar. 23, 1945	4,720	18.10
1237	1952	Apr. 10, 11, 17, 18, 1952	3,100	-

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Since July 1948, slight regulation during summer low flow by dam on outlet of Manistique Lake.
Revisions (water years).--WSP 874: 1938. Revised figures of discharge, in cubic feet per second, for high-water period in the water year 1945, superseding those published in WSP 1034, are given herewith:

Mar. 21, 1945..... 4,200
Mar. 22, 1945..... 4,500

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1945.....	61,350	4,720	540	1,979	2.81	3.24
Water year 1944-45.....	309,665	4,720	350	848	1.20	16.37
Calendar year 1945.....	322,540	4,720	350	884	1.26	17.05

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	894	870	920	520	420	480	790	1,130	550	358	193	256
2	942	870	840	520	420	480	940	1,090	495	358	193	263
3	918	870	770	510	420	470	1,150	1,060	452	338	199	256
4	894	870	720	500	420	470	1,500	1,040	421	319	263	236
5	847	847	680	490	420	470	1,940	1,010	400	301	358	224
6	801	847	650	490	430	470	2,000	966	379	293	358	217
7	732	824	620	490	430	470	*2,060	918	390	285	348	211
8	686	801	600	480	430	470	2,120	870	*452	270	328	205
9	663	*778	590	480	430	470	2,240	847	484	263	319	205
10	640	778	580	480	430	470	2,380	824	463	256	285	211
11	709	755	580	470	420	490	2,540	778	432	243	263	211
12	847	732	580	470	420	500	2,620	755	400	236	250	217
13	1,010	732	580	470	420	520	*2,660	732	390	230	236	217
14	1,040	709	580	460	430	540	2,740	709	379	224	230	224
15	1,160	709	570	460	*430	550	2,830	686	358	230	224	230
16	1,250	686	570	450	430	*560	2,780	663	338	263	*211	236
17	1,350	686	560	450	430	560	2,700	640	328	263	211	243
18	*1,350	686	550	*450	430	560	2,580	*617	319	250	199	236
19	1,300	663	540	450	450	560	2,380	594	293	230	199	236
20	1,230	663	520	450	470	560	2,240	572	285	217	193	230
21	1,180	640	500	450	490	560	2,270	550	319	211	199	*224
22	1,110	663	*480	450	490	560	2,270	528	390	205	205	217
23	1,040	640	490	450	500	560	2,180	517	390	199	205	217
24	980	709	500	450	500	560	2,060	517	400	193	199	224
25	918	778	520	450	500	560	1,940	506	410	188	193	217
26	894	824	530	450	490	560	1,760	474	379	*188	193	217
27	894	824	530	440	490	560	1,600	379	358	188	193	217
28	918	918	540	440	480	570	1,480	400	328	199	193	230
29	918	966	540	430	-	580	1,350	463	319	205	211	243
30	894	980	540	430	-------	600	1,230	572	338	205	217	243
31	870	----	530	420	-------	660	-------	617	-------	199	236	----
Total	29,879	23,318	18,300	14,400	12,520	16,450	61,330	22,024	11,639	7,607	7,304	6,813
Mean	964	777	590	465	447	531	2,044	710	388	245	236	227
Cfsm	1.37	1.10	0.838	0.661	0.635	0.754	2.90	1.01	0.551	0.348	0.335	0.322
In.	1.58	1.23	0.97	0.76	0.66	0.87	3.24	1.16	0.61	0.40	0.39	0.36

Calendar year 1954: Max 4,200 Min 256 Mean 860 Cfsm 1.22 In. 16.57
Water year 1954-55: Max 2,830 Min 188 Mean 635 Cfsm 0.901 In. 12.23

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 22 to Apr. 4. No gage-height record Nov. 30 to Dec. 21; discharge estimated on basis of weather records and records for nearby stations.

West Branch Manistique River near Manistique, Mich.

Location.--Lat 46°05'20", long 86°09'40", in SE¼ sec. 27, T. 43 N., R. 15 W., on left bank 300 ft downstream from Stutts Creek and 10 miles northeast of Manistique.

Drainage area.--322 sq mi.

Records available.--April 1938 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 628 ft (from river-profile map). Prior to Apr. 14, 1939, chain gage at site 300 ft upstream at different datum.

Average discharge.--17 years, 415 cfs.

Extremes.--Maximum discharge during year, 2,350 cfs Apr. 16 (gage height, 8.46 ft); minimum, 102 cfs July 23-26, Aug. 2, 3; minimum gage height, 1.75 ft July 24, 25.
1938-55: Maximum discharge, 5,300 cfs Apr. 29, 1939 (gage height, 12.9 ft); minimum, 71 cfs Oct. 3, 1948.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 5		Apr. 6 to Sept. 30			
2.1	144	1.7	99	3.0	312
3.0	338	2.0	117	8.0	2,110
5.0	920	2.5	196	8.5	2,350

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	314	404	432	230	180	190	325	828	325	155	104	136
2	338	404	416	225	175	185	390	792	291	148	102	139
3	377	404	385	220	175	185	470	758	272	144	109	134
4	377	390	360	215	170	185	550	740	250	136	152	125
5	351	390	335	215	170	180	670	688	231	131	229	117
6	326	390	315	210	170	180	880	635	218	131	267	114
7	309	390	300	210	170	185	985	600	220	129	309	111
8	295	*390	285	205	165	185	*1,060	548	223	126	325	110
9	280	390	270	205	165	190	1,200	513	*238	124	296	109
10	273	390	260	200	160	195	1,340	479	250	118	255	112
11	283	377	255	200	160	200	1,550	446	234	116	216	112
12	300	364	250	195	155	210	*1,790	427	218	114	190	113
13	338	364	245	190	155	220	*1,950	401	210	112	174	112
14	351	351	240	190	*150	*230	2,070	374	200	111	160	116
15	404	351	235	185	150	235	2,200	353	190	113	150	117
16	460	338	230	180	150	235	2,300	335	178	111	142	116
17	502	338	225	*175	150	235	2,200	325	167	110	138	115
18	545	326	220	175	155	235	2,030	*312	156	108	*134	114
19	560	314	215	175	165	230	1,870	299	150	108	128	*114
20	*560	312	*210	175	175	230	1,750	284	147	106	127	112
21	545	309	205	175	180	230	1,750	269	156	105	127	111
22	516	304	205	175	185	225	1,750	260	169	104	122	111
23	474	307	205	180	190	220	1,670	250	190	103	119	111
24	446	326	210	180	190	220	1,590	238	194	102	117	111
25	432	351	215	180	190	220	1,440	234	192	*102	116	112
26	418	377	220	185	190	220	1,340	227	182	102	115	112
27	404	418	220	185	190	220	1,200	234	171	104	115	115
28	404	446	225	185	190	230	1,090	236	160	106	115	115
29	404	446	230	185	-	235	985	276	156	106	115	117
30	404	446	230	180	-------	250	915	315	155	106	122	119
31	404	-- --	230	180	-------	275	-------	344	-------	104	131	-- ---
Total	12,394	11,107	8,080	5,965	4,770	6,665	41,310	13,020	6,093	3,595	5,021	3,482
Mean	400	370	261	192	170	215	1,377	420	203	116	162	116
Cfsm	1.24	1.15	0.811	0.596	0.528	0.668	4.28	1.30	0.630	0.360	0.503	0.360
In.	1.43	1.28	0.94	0.69	0.55	0.77	4.78	1.50	0.70	0.42	0.58	0.40

Calendar year 1954: Max 3,060 Min 117 Mean 434 Cfsm 1.35 In. 18.30
Water year 1954-55: Max 2,300 Min 102 Mean 333 Cfsm 1.03 In. 14.04

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3 to Apr. 5.

Manistique River near Manistique, Mich.

Location.--Lat 46°01'50", long 86°09'40", in SE¼ sec. 15, T. 42 N., R. 15 W., on left bank 1 mile downstream from West Branch, 6 miles northeast of Manistique, and at mile 19.5.

Drainage area.--1,100 sq mi, approximately.

Records available.--March 1938 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 608 ft (from river-profile map). Prior to July 15, 1939, chain gage at site 1,600 ft upstream at different datum.

Average discharge.--17 years, 1,350 cfs.

Extremes.--Maximum discharge during year, 5,720 cfs Apr. 16, 17 (gage height, 9.86 ft); minimum, 305 cfs July 25, 26 (gage height, 1.26 ft).

1938-55: Maximum discharge, 13,600 cfs (revised) Apr. 27, 1939 (gage height, 12.59 ft, present site and datum); minimum, 288 cfs Oct. 4, 1948; minimum gage height, 1.01 ft Aug. 23, 1941.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
854	1938	Apr. 1, 2, 1938	13,200	†12.52
874	1939	Apr. 27, 1939	13,600	†12.59
894	1940	Apr. 26, 1940	7,540	10.72
924	1941	Apr. 17, 18, 1941	4,210	-
954	1942	Apr. 7, 1942	7,000	10.54
974	1943	June 23, 1943	8,740	11.13
1034	1945	Mar. 24, 1945	9,050	11.2

† From graph based on gage readings and corrected to equivalent gage height at recorder site.

Remarks.--Records good except those for period of ice effect, which are fair. Slight regulation during summer low flow by dam on outlet of Manistique Lake since July 1948.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1938-39, 1943, 1945, superseding those published in WSP 854, 874, 974, and 1034, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1938		1939-Con.		1943-Con.	
Mar. 26	5,000	Apr. 24	9,050	June 23	8,740
27	6,000	25	10,600	24	8,430
28	7,500	26	11,900	25	7,830
29	9,360	27	13,200	26	7,000
30	10,900	28	12,900	27	6,290
31	12,600	29	12,600		
Apr. 1	13,200	30	10,900	1945	
2	13,200	May 1	9,670	Mar. 22	6,500
3	12,200	2	8,430	23	7,500
4	9,980			24	8,740
5	8,120	1943		25	8,430
6	7,270	June 19	6,290	26	8,120
		20	7,000	27	7,830
1939		21	7,270	28	7,540
Apr. 23	7,830	22	7,830	29	7,270

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
April 1938.....	153,560	13,200	2,440	5,119	4.65	5.19
April 1939.....	148,100	13,200	1,380	4,937	4.49	5.01
May.....	104,330	9,670	1,740	3,365	3.06	3.53
Water year 1938-39.....	569,461	13,200	530	1,560	1.42	19.26
Calendar year 1939.....	559,571	13,200	530	1,533	1.39	18.91
June 1943.....	135,930	8,740	1,910	4,531	4.12	4.60
Water year 1942-43.....	666,114	8,740	668	1,825	1.66	22.51
Calendar year 1943.....	643,847	8,740	632	1,764	1.60	21.76
March 1945.....	98,180	8,740	760	3,167	2.88	3.32
Water year 1944-45.....	504,853	8,740	500	1,383	1.26	17.07
Calendar year 1945.....	530,943	8,740	500	1,455	1.32	17.95

Manistique River near Manistique, Mich.--Continued

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-17		Oct. 18 to Sept. 30			
3.3	970	1.2	288	8.0	3,600
5.6	2,060	3.0	840	10.0	5,890
		5.0	1,700		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,210	1,300	1,500	820	670	700	1,200	2,120	945	560	322	414
2	1,400	1,300	1,400	810	660	690	1,600	2,000	858	560	316	442
3	1,450	1,300	1,260	800	660	680	2,100	1,940	805	545	338	428
4	1,400	1,300	1,200	800	650	670	2,600	1,880	735	530	400	414
5	1,350	1,260	1,100	780	640	660	3,200	1,820	700	500	590	400
6	1,250	1,260	1,030	780	640	660	3,400	1,700	*665	485	665	372
7	1,170	1,220	980	770	630	660	3,440	1,600	665	470	682	355
8	1,090	1,220	970	770	620	670	3,440	1,500	718	456	700	341
9	1,010	*1,180	940	760	610	670	3,680	1,400	770	442	665	333
10	990	1,180	900	740	600	690	3,930	1,350	770	428	620	352
11	1,050	1,140	900	730	600	710	4,210	1,300	735	414	545	350
12	1,170	1,140	890	720	590	740	4,630	1,220	700	400	500	347
13	1,400	1,100	890	720	590	770	5,000	1,180	665	372	470	344
14	1,550	1,100	890	720	590	800	*5,280	1,140	650	366	442	355
15	1,700	1,060	880	710	*590	840	5,420	1,100	620	366	414	366
16	1,900	1,060	860	700	590	*860	5,570	*1,060	590	400	386	372
17	2,060	1,020	840	680	600	880	5,570	1,020	560	414	372	372
18	*2,180	1,020	830	670	610	870	5,280	1,000	545	400	364	361
19	2,180	1,000	820	*660	620	870	5,000	962	530	386	*347	352
20	2,120	980	800	650	650	860	4,630	928	515	361	338	341
21	2,000	962	780	650	680	860	4,520	875	515	347	336	*327
22	1,820	962	*750	660	700	860	4,410	858	590	336	341	322
23	1,700	962	750	670	700	850	4,310	822	620	330	336	322
24	1,600	1,020	770	690	700	840	4,110	805	635	319	330	322
25	1,500	1,140	800	700	700	840	3,930	788	650	308	322	322
26	1,400	1,220	820	710	700	840	3,600	770	620	*308	316	319
27	1,350	1,260	820	700	700	840	3,230	718	590	316	316	324
28	1,350	1,400	820	700	700	850	2,900	700	560	330	316	338
29	1,400	1,500	830	700	-	870	2,660	788	545	338	327	352
30	1,350	1,500	830	690	------	920	2,360	910	545	344	355	369
31	1,300	------	820	680	------	1,020	-------	980	-------	333	372	------
Total	46,400	35,066	28,670	22,340	17,990	24,540	115,210	37,234	19,611	12,464	13,143	10,728
Mean	1,497	1,169	925	721	642	792	3,840	1,201	654	402	424	358
Cfsm	1.35	1.05	0.841	0.655	0.584	0.720	3.49	1.09	0.595	0.365	0.385	0.325
In.	1.56	1.17	0.97	0.76	0.61	0.83	3.89	1.26	0.66	0.42	0.44	0.36

Calendar year 1954: Max 7,830 Min 370 Mean 1,432 Cfsm 1.30 In. 17.64
Water year 1954-55: Max 5,570 Min 308 Mean 1,050 Cfsm 0.955 In. 12.93

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4 to Apr. 6 (no gage-height record Feb. 3-15, Mar. 1-31).

Indian River near Manistique, Mich.

Location.--Lat 45°59'30", long 86°17'15", in NE¼ sec. 34, T. 42 N., R. 16 W., on shore of Indian Lake just upstream from highway bridge over outlet of Indian Lake, 2 miles northwest of Manistique.

Drainage area.--302 sq mi.

Records available.--March 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 608.66 ft above mean sea level (levels by Michigan Department of Conservation). Prior to July 9, 1942, chain gage at highway bridge 30 ft downstream at same datum. Since Jan. 18, 1944, auxiliary staff gage on right bank 1½ miles downstream at same datum, read twice daily.

Average discharge.--17 years, 378 cfs.

Extremes.--Maximum daily discharge during year, 611 cfs Apr. 21-23, 25; maximum gage height, 4.94 ft Apr. 21; minimum daily discharge, 121 cfs July 17; minimum gage height, 3.55 ft Jan. 8.

1938-55: Maximum discharge, 1,550 cfs June 24, 1943 (gage height, 7.79 ft), from rating curve extended above 660 cfs on basis of computation of peak flow over dam; minimum daily, about 20 cfs Nov. 23, 1946 (caused by ice jams at outlet of Indian Lake); minimum gage height, 2.53 ft Nov. 13, 1950 (ice jam at outlet of Indian Lake).

Remarks.--Records good. Indian Lake regulated by needles in gate section of concrete dam 1½ miles below gage.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	343	399	380	328	234	253	343	556	210	225	142	169
2	346	409	380	328	232	245	353	543	240	208	164	169
3	365	409	380	328	240	250	360	543	248	208	137	176
4	365	399	380	318	232	253	374	543	248	218	138	183
5	365	399	380	318	236	250	389	529	252	221	156	169
6	365	399	380	318	234	264	409	520	248	221	162	156
7	356	399	380	318	230	262	421	515	255	215	160	158
8	356	*385	375	318	227	250	432	482	*263	226	162	164
9	363	389	370	241	223	304	450	469	271	212	160	188
10	364	389	365	238	229	315	460	457	259	197	160	156
11	376	385	360	237	232	376	469	445	255	197	160	149
12	385	376	360	237	232	380	482	432	259	197	160	158
13	409	376	360	238	232	374	503	432	248	197	160	171
14	406	376	355	240	234	374	529	421	256	201	160	326
15	421	367	350	255	239	370	547	414	252	201	187	320
16	432	367	350	251	236	*370	561	406	252	148	160	352
17	444	354	345	*235	*234	374	575	263	245	121	181	370
18	444	364	345	231	232	374	556	*256	245	134	*181	363
19	444	360	340	231	236	363	570	253	237	169	188	363
20	*444	360	*340	231	241	363	570	256	225	174	181	352
21	444	360	337	245	247	363	611	253	225	178	181	*340
22	444	360	337	229	249	370	611	244	249	178	162	332
23	444	355	337	228	249	374	611	241	243	160	169	322
24	432	355	337	228	244	374	592	240	208	165	183	322
25	432	360	334	232	244	363	611	202	231	*144	164	313
26	421	360	337	230	249	363	597	206	218	138	178	316
27	432	367	337	228	247	363	*597	220	213	138	164	313
28	425	376	337	228	247	353	584	202	225	150	164	316
29	425	376	328	228	-	353	584	185	229	144	151	308
30	409	376	328	226	------	343	570	171	225	138	181	305
31	409	--- -	328	226	------	343	------	188	--- ---	160	162	- -
Total	12,510	11,306	10,952	7,967	6,641	10,326	15,321	11,087	7,234	5,583	5,098	7,799
Mean	404	377	353	257	237	333	511	358	241	180	164	260
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 886 Min 215 Mean 388 Cfsm 1.28 In. 17.38
Water year 1954-55: Max 611 Min 121 Mean 306 Cfsm 1.01 In. 13.71

* Discharge measurement made on this day.

Note.--No gage-height record at auxiliary gage Nov. 19-26, Dec. 1-20, Apr. 9, 10, May 29; discharge estimated on basis of 1 discharge measurement, weather records, and records for stations on nearby streams.

Middle Branch Escanaba River near Ishpeming, Mich.

Location.--Lat 46°23'40", long 87°45'30", in NW¼SW¼ sec. 12, T. 46 N., R. 28 W., on left bank half a mile downstream from County Highway 581, 6 miles southwest of Ishpeming, and 10 miles east of Republic.
Drainage area.--128 sq mi.
Records available.--June 1954 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 1,389.02 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).
Extremes.--1954: Maximum discharge during period June to September, 355 cfs Sept. 22 (gage height, 3.82 ft); minimum, 24 cfs Sept. 2 (gage height, 1.39 ft).
1954-55: Maximum discharge during water year, 1,510 cfs Apr. 15 (gage height, 9.56 ft); minimum, 22 cfs Sept. 15 (gage height, 1.35 ft).
Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair.

Rating table, June 25, 1954, to Sept. 30, 1955, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	19	6.0	707
1.5	33	9.0	1,330
2.0	94	9.5	1,480

Discharge, in cubic feet per second, 1954

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	-	250	80	27	11	-	111	98	140	21	-	40	29	340
2	-	199	91	27	12	-	a100	77	109	22	-	38	30	355
3	-	150	137	27	13	-	a80	62	109	23	-	35	31	325
4	-	119	125	28	14	-	a66	53	*109	24	-	35	45	242
5	-	98	94	33	15	-	*a55	45	94	25	150	33	39	185
6	-	88	74	36	16	-	49	*40	93	26	213	31	34	153
7	-	84	60	43	17	-	45	34	111	27	185	41	31	132
8	-	83	56	37	18	-	43	31	144	28	129	67	31	112
9	-	76	56	41	19	-	41	31	250	29	109	67	30	115
10	-	88	98	121	20	-	41	29	340	30	171	55	29	129
										31	-	68	27	
Total											-	2,376	1,727	4,907
Mean											-	76.6	55.7	134
Cubic feet per second per square mile											-	0.598	0.435	1.05
Runoff in inches											-	0.69	0.50	1.17

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	144	140	98	60	50	60	90	213	*656	45	139	41
2	140	130	94	60	50	59	115	272	415	41	129	36
3	123	125	93	60	50	58	180	*310	258	40	258	31
4	109	*125	90	60	50	57	230	295	220	40	378	28
5	98	122	86	60	50	56	250	258	242	57	370	26
6	91	119	82	60	50	56	265	213	220	61	288	38
7	86	128	79	60	50	55	265	199	206	48	272	35
8	79	144	76	59	50	56	295	206	192	50	220	36
9	75	143	76	58	50	58	415	178	178	90	*154	30
10	80	130	77	58	50	60	656	160	158	100	118	29
11	175	132	74	58	50	61	940	*147	143	90	97	27
12	242	143	72	58	49	63	*1,170	136	126	72	80	29
13	*206	140	*69	*58	48	64	1,240	123	116	54	67	27
14	250	132	67	57	48	65	1,390	114	115	47	57	24
15	460	123	66	57	47	65	1,480	107	107	39	49	*23
16	605	115	66	56	47	64	1,270	111	91	36	44	23
17	639	112	65	56	47	64	1,000	123	81	34	40	42
18	554	112	65	56	49	62	*826	114	76	33	37	102
19	430	114	64	56	50	62	758	102	71	29	34	91
20	340	112	64	56	54	62	809	94	76	*28	36	65
21	280	108	64	55	58	62	843	88	75	31	38	57
22	250	111	64	54	*64	62	775	81	70	45	35	45
23	220	104	66	54	67	62	673	75	67	53	32	40
24	199	104	68	53	67	62	554	86	62	42	30	38
25	185	114	69	52	66	*62	445	157	55	33	29	37
26	175	121	68	52	65	63	378	143	50	32	33	34
27	171	116	67	51	64	64	318	135	47	83	30	39
28	167	110	66	51	62	65	272	213	44	104	31	53
29	161	104	64	50	-	66	242	415	45	83	39	59
30	165	100	62	50	------	70	213	656	48	74	41	65
31	155	-- -	60	50	------	77	-------	826	-- -- -	114	40	- -
Total	7,054	3,633	2,241	1,735	1,502	1,922	18,357	6,350	4,310	1,728	3,245	1,250
Mean	228	121	72.3	56.0	53.6	62.0	612	205	144	55.7	105	41.7
Cfsm	1.78	0.945	0.565	0.438	0.419	0.484	4.78	1.60	1.12	0.435	0.820	0.326
In.	2.05	1.05	0.65	0.50	0.44	0.56	5.33	1.84	1.25	0.50	0.95	0.36

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 1,480 Min 23 Mean 146 Cfsm 1.14 In. 15.48

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Nov. 28 to Dec. 7, Dec. 11 to Apr. 5. No gage-height record July 8-19; discharge estimated on basis of weather records and records for nearby stations.

East Branch Escanaba River at Gwinn, Mich.

Location.--Lat 46°17'10", long 87°26'00", in NE¼ sec. 21, T. 45 N., R. 25 W., on right bank in county park at Gwinn, 1 mile upstream from mouth.

Drainage area.--125 sq mi.

Records available.--October 1954 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,100 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,030 cfs Apr. 15 (gage height, 12.01 ft); minimum, 27 cfs Sept. 14-17; minimum gage height, 6.65 ft Sept. 15-17.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 1-5, Feb. 22-24, Mar. 7)

6.6	25	8.0	165
6.9	39	10.0	542
7.3	73	12.0	1,030

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	125	110	88	58	46	46	85	156	*206	43	82	39
2	115	110	84	58	46	46	123	188	159	41	60	35
3	105	110	80	56	45	45	219	201	133	39	80	33
4	96	*110	77	57	45	45	*284	186	122	40	132	31
5	87	115	74	58	45	45	348	185	116	71	115	30
6	80	115	73	57	45	44	338	171	115	67	84	29
7	74	120	68	54	45	45	311	149	109	52	139	29
8	70	120	64	55	44	45	348	146	109	46	126	29
9	72	125	62	54	44	45	458	129	101	46	*80	29
10	95	125	63	52	44	44	674	119	91	42	62	30
11	160	130	59	51	43	45	792	*112	84	38	52	30
12	190	132	60	50	43	46	*720	104	78	36	45	29
13	200	123	*58	*52	43	46	608	97	75	34	41	28
14	250	115	57	52	44	46	821	91	71	33	38	27
15	320	107	57	52	45	48	974	85	64	35	36	*27
16	450	101	58	51	46	48	*696	85	58	42	34	27
17	450	96	59	51	47	50	542	96	55	43	33	29
18	370	95	60	50	49	49	*448	91	52	38	32	40
19	300	94	59	50	52	47	*458	83	50	35	31	40
20	260	92	61	49	53	47	468	75	51	*34	31	33
21	230	89	62	48	53	45	488	70	71	32	31	31
22	210	88	62	48	*52	*45	448	66	60	41	31	31
23	180	84	64	47	52	48	368	64	56	41	31	31
24	165	88	64	47	51	48	311	75	53	36	30	31
25	145	103	64	46	49	45	275	102	49	33	31	31
26	130	114	64	46	48	45	*239	91	46	32	30	30
27	120	109	63	46	47	45	212	108	43	62	30	31
28	115	106	60	46	46	46	193	172	42	68	37	36
29	*110	102	57	46	-	47	176	320	40	52	48	38
30	110	98	59	46	------	48	160	398	42	53	45	35
31	110	- -	58	46	------	59	-------	320	- ----	75	42	-
Total	5,494	3,226	1,998	1,579	1,312	1,443	12,585	4,335	2,401	1,380	1,719	949
Mean	177	108	64.5	50.9	46.9	46.5	420	140	80.0	44.5	55.5	31.6
Cfsm	1.42	0.864	0.516	0.407	0.375	0.372	3.36	1.12	0.640	0.356	0.444	0.253
In.	1.64	0.96	0.59	0.47	0.39	0.43	3.75	1.29	0.71	0.41	0.51	0.28

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 974 Min 27 Mean 105 Cfsm 0.840 In. 11.43

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to Nov. 11, Jan. 15 to Feb. 21, Mar. 26-29; discharge estimated on basis of weather records, 2 discharge measurements, and records for stations on nearby streams.

Escanaba River at Cornell, Mich.

Location.--Lat 45°54'40", long 87°12'50", in sec. 32, T. 41 N., R. 24 W., on right bank 50 ft downstream from highway bridge, half a mile downstream from Bobs' Creek, three-quarters of a mile northeast of Cornell, and 15 miles upstream from mouth.

Drainage area.--870 sq mi.

Records available.--August 1903 to November 1912 (fragmentary), January 1913 to November 1915 (gage heights only), October 1950 to September 1955. Published as "near Escanaba" 1903-15.

Gage.--Water-stage recorder. Datum of gage is 749.26 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). August 1903 to November 1915, chain gage at site 11 miles downstream at different datum.

Average discharge.--8 years (1909-12, 1950-55), 986 cfs.

Extremes.--Maximum discharge during year, 7,520 cfs Apr. 14 (gage height, 4.30 ft); maximum gage height, 4.38 ft Apr. 5 (ice jam); minimum discharge, 126 cfs June 26 (gage height, 1.19 ft).

1903-12, 1950-55: Maximum discharge, 10,000 cfs Apr. 19, 1952; maximum gage height, 5.19 ft Apr. 15, 1952 (ice jam); minimum discharge observed, 90 cfs July 5, 1910 (gage height, 1.5 ft), but may have been less during extended periods of no gage-height record during winter seasons 1903-12.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by Boney Falls powerplant 8 miles above station, since 1950.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1904, superseding those published in WSP 129, are given herewith:

May 23, 1904.....2,000

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 1904	5,500	1,985	3,626	4.03	4.64

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	185	3.0	2,920
1.6	405	4.0	6,220
2.0	850	4.2	7,060
2.5	1,720		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,280	738	730	450	240	350	700	1,330	2,410	334	521	278
2	1,280	824	657	290	290	360	1,000	1,730	*1,860	402	501	282
3	1,140	776	617	350	300	300	1,200	1,780	1,420	240	526	314
4	923	*828	766	490	280	300	1,600	1,720	1,210	282	698	200
5	906	760	430	430	280	270	2,900	1,560	921	375	816	210
6	843	837	350	390	200	180	3,100	1,480	1,020	535	759	195
7	787	753	460	420	250	240	2,590	1,440	1,130	425	696	197
8	687	608	440	420	220	290	2,590	1,120	1,020	358	806	222
9	706	830	460	290	240	250	3,390	1,160	853	344	654	249
10	475	798	470	270	250	290	4,020	932	772	286	502	262
11	760	778	500	400	250	310	4,910	*873	882	366	*406	197
12	1,280	728	250	410	260	400	5,420	788	574	300	388	203
13	1,250	852	*230	*410	190	210	5,420	808	666	269	305	215
14	*1,420	705	380	400	220	260	6,420	900	488	281	245	245
15	2,100	446	460	300	320	350	*6,840	623	415	270	252	*227
16	2,450	737	490	220	310	370	6,220	502	516	279	292	227
17	2,610	672	500	210	310	360	5,240	714	434	340	267	233
18	2,380	628	470	400	330	360	4,380	684	493	300	260	203
19	2,140	596	210	380	350	400	*4,230	620	232	260	216	197
20	1,750	690	390	370	230	280	4,380	525	352	*260	222	227
21	1,370	592	480	350	280	*300	4,540	558	426	228	203	245
22	1,260	426	470	300	*390	330	4,380	288	441	246	203	245
23	1,060	624	500	220	380	350	3,780	378	448	276	203	268
24	912	666	460	270	360	350	3,090	618	446	246	203	245
25	856	742	370	350	350	340	*2,740	620	460	246	236	191
26	1,020	797	290	340	380	370	2,330	642	226	260	220	203
27	915	870	320	330	200	270	1,910	796	239	249	246	239
28	950	632	440	330	290	300	1,760	1,140	336	417	198	268
29	929	664	400	380	-	340	1,600	1,670	356	414	286	298
30	827	908	450	220	------	400	1,520	2,280	418	398	284	328
31	909	-	470	230	------	450	-------	2,630	--- ---	442	294	--- -
Total	38,175	21,505	13,910	10,550	7,950	9,930	104,200	32,909	21,464	9,928	11,908	7,113
Mean	1,231	717	449	340	284	320	3,473	1,061	715	320	384	237
Cfsm	1.41	0.824	0.516	0.391	0.326	0.368	3.99	1.22	0.822	0.368	0.441	0.272
In.	1.63	0.92	0.60	0.45	0.34	0.42	4.45	1.41	0.92	0.42	0.51	0.30

Calendar year 1954: Max 6,470 Min 172 Mean 953 Cfsm 1.10 In. 14.89
Water year 1954-55: Max 6,840 Min 190 Mean 793 Cfsm 0.911 In. 12.37

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5 to Apr. 5.

Ford River near Hyde, Mich.

Location.--Lat 45°45'20", long 87°12'05", in SW¼ sec. 19, T. 39 N., R. 23 W., on right bank 40 ft downstream from county highway bridge, 1.4 miles downstream from Tenmile Creek, and 1½ miles north of Hyde.

Drainage area.--450 sq mi.

Records available.--October 1954 to September 1955.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 3,120 cfs Apr. 14-16; maximum gage height, 5.89 ft Apr. 15; minimum discharge, 27 cfs Aug. 23, Sept. 9 (gage height, 1.43 ft).

Remarks.--Records fair prior to Apr. 4, good thereafter.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	24	2.9	440
1.6	48	4.0	1,180
1.9	104	5.9	3,120
2.4	242		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	570	350	262	96	78	95	300	708	876	66	83	50
2	520	350	239	96	79	94	450	729	*841	66	102	48
3	460	*350	152	96	79	94	700	771	701	66	106	47
4	410	340	160	96	80	94	960	771	536	62	109	43
5	370	330	165	95	80	94	*995	736	435	75	120	39
6	350	320	160	94	80	94	1,140	680	373	64	118	34
7	330	300	150	92	80	95	1,140	644	337	64	106	30
8	330	290	135	90	80	100	1,420	580	312	89	96	30
9	330	280	125	90	80	110	1,510	500	283	89	96	28
10	350	270	120	88	80	115	1,940	440	266	77	*98	30
11	420	259	115	87	80	120	2,060	*382	242	64	85	30
12	560	249	110	*87	80	130	2,280	348	213	56	74	31
13	600	239	105	87	80	135	2,380	319	192	51	61	32
14	780	232	*105	87	81	140	*2,880	294	172	50	54	35
15	960	226	100	87	81	145	3,120	266	155	51	47	33
16	1,120	220	100	87	83	145	*3,000	245	144	48	43	*33
17	1,170	213	100	86	86	145	2,820	226	130	54	39	33
18	1,000	210	100	85	92	145	2,500	210	116	64	35	35
19	880	210	98	85	100	145	*2,220	195	106	64	34	33
20	760	204	98	85	110	140	2,330	177	104	58	32	34
21	680	201	98	85	110	*140	2,720	163	100	*51	32	39
22	630	195	100	85	105	140	2,500	152	102	47	30	42
23	530	198	100	84	*105	135	2,220	144	100	42	28	42
24	450	256	105	84	100	135	1,940	147	96	38	28	42
25	420	308	105	84	100	135	1,690	140	89	36	30	42
26	400	341	100	82	100	135	*1,420	144	85	35	28	42
27	390	348	100	81	98	130	1,220	201	77	39	33	51
28	390	361	100	81	96	130	1,060	259	72	38	39	51
29	380	348	97	80	-	135	925	548	68	43	45	50
30	370	326	96	79	-------	145	799	841	70	50	58	56
31	360	---	96	78	-------	180	-------	869	-------	58	48	-------
Total	17,270	8,324	3,796	2,699	2,483	3,915	52,639	12,829	7,393	1,755	1,937	1,165
Mean	557	277	122	87.1	88.7	126	1,755	414	246	56.6	62.5	38.8
Cfsm	1.24	0.616	0.271	0.194	0.197	0.280	3.90	0.920	0.547	0.126	0.139	0.086
In.	1.43	0.69	0.31	0.22	0.21	0.32	4.35	1.06	0.61	0.15	0.16	0.10

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 3,120 Min 28 Mean 318 Cfsm 0.707 In. 9.61

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4 to Apr. 3 (no gage-height record Jan. 25 to Mar. 12). No gage-height record Oct. 1 to Nov. 10, May 8-10; discharge estimated on basis of weather records, 1 discharge measurement, engineer's notes, and records for nearby stations.

Iron River at Caspian, Mich.

Location.--Lat 46°03'31", long 88°37'38", on line between SE¼ and SW¼ sec. 1, T. 42 N., R. 35 W., on downstream side of highway bridge in Caspian, 5½ miles upstream from mouth.

Drainage area.--84 sq mi, approximately.

Records available.--March 1948 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 1,438.78 ft above mean sea level, datum of 1929.

Average discharge.--7 years, 90.6 cfs.

Extremes.--Maximum discharge during year, 478 cfs Apr. 10 (gage height, 7.24 ft); minimum observed, 40 cfs Mar. 6 (gage height, 3.59 ft).
1948-55: Maximum discharge, 1,430 cfs July 2, 1953 (gage height, 10.20 ft); minimum observed, 29 cfs Mar. 13, 1954 (gage height, 3.41 ft).

Remarks.--Records good. Flow regulated by ground water pumped from mines into river above station.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Mar. 8)

Oct. 1 to Apr. 9		Apr. 10 to Sept. 30	
3.7	48	3.7	41
4.0	71	6.0	266
6.0	266	7.0	420
7.0	420		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	82	81	69	66	*66	138	122	*98	61	82	59
2	73	82	*79	68	*66	65	183	158	86	59	*89	54
3	68	*84	77	69	65	65	218	*133	88	61	113	55
4	*66	84	76	*69	66	65	248	163	88	62	89	52
5	60	84	69	69	68	65	208	133	91	103	97	52
6	61	84	73	71	69	63	188	111	86	80	86	51
7	61	81	71	65	66	62	163	103	87	71	105	48
8	61	82	71	69	66	62	188	103	84	86	82	*54
9	63	81	71	66	66	66	278	97	80	71	78	55
10	77	81	71	68	66	69	*410	93	81	66	70	59
11	101	81	69	69	68	73	420	88	80	64	68	55
12	91	77	74	68	69	69	345	86	80	62	64	51
13	82	73	71	69	63	66	290	78	77	*59	64	53
14	153	77	71	69	66	69	352	77	74	56	62	51
15	228	76	71	70	63	77	338	80	73	61	57	50
16	193	76	73	73	65	69	254	70	68	67	61	54
17	143	76	73	68	61	68	213	75	71	62	59	90
18	118	76	74	70	65	71	203	75	68	61	61	65
19	103	76	69	71	65	71	218	73	71	56	57	57
20	95	76	73	71	74	60	208	73	73	56	66	52
21	89	74	74	68	74	58	203	77	75	55	57	53
22	92	76	74	69	69	52	198	68	68	67	54	51
23	89	76	74	69	68	100	153	67	65	55	55	45
24	85	82	74	69	68	68	143	93	67	56	57	56
25	82	84	73	69	67	73	133	75	70	54	56	55
26	81	79	73	68	65	65	124	75	66	51	57	49
27	85	81	71	68	61	67	115	93	62	78	61	62
28	85	81	73	68	65	69	107	98	62	69	59	58
29	87	82	66	68	-	77	112	193	61	64	56	59
30	89	81	73	68	-------	81	101	153	61	111	59	55
31	85	-------	71	66	-------	99	-------	115	-------	105	62	-------
Total	2,923	2,385	2,253	2,131	1,860	2,150	6,452	3,098	2,261	2,089	2,143	1,660
Mean	94.3	79.5	72.7	68.7	66.4	69.4	215	99.9	75.4	67.4	69.1	55.3
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 740 Min 52 Mean 98.9 Cfsm - In. -
Water year 1954-55: Max 420 Min 45 Mean 86.0 Cfsm - In. -

* Discharge measurement made on this day.

Brule River near Florence, Wis.

Location.--Lat 45°57'30", long 88°15'55", in SE¼ sec. 11, T. 41 N., R. 32 W., Michigan meridian, on left bank 40 ft upstream from highway bridge, 1 mile upstream from Paint River, 3½ miles north of Florence, and 6 miles upstream from confluence with Michigamme River.

Drainage area.--380 sq mi.

Records available.--January 1914 to February 1916, June 1944 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,210 ft, revised (from topographic map). Prior to Aug. 29, 1944, wire-weight or chain gages at bridge 40 ft downstream at same datum.

Average discharge.--12 years (1914-15, 1944-55), 362 cfs.

Extremes.--Maximum discharge during year, 1,490 cfs Apr. 11 (gage height, 3.89 ft); maximum gage height, 7.45 ft Dec. 7 (ice jam); minimum discharge, 214 cfs Sept. 7 (gage height, 2.00 ft).

1914-16, 1944-55: Maximum discharge, 4,700 cfs July 2, 1953 (gage height, 6.57 ft); maximum gage height, 7.70 ft Apr. 5, 1954 (ice jam); minimum discharge, 155 cfs Aug. 16, 22, 1949; minimum gage height, 1.86 ft Aug. 27, Sept. 13, 1948.

Revisions.--Figures of maximum discharge for water years 1914 and 1915 have been revised to 2,050 cfs May 1, 1914 (gage height, 4.6 ft) and 1,150 cfs May 9, 1915 (gage height, 3.7 ft), superseding those published in WSP 384 and 404, respectively.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow not adjusted for ground water pumped from mines into Iron River above station at Caspian, Mich.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1914-16, superseding those published in WSP 384, 404, and 434, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1914		1915-Con.		1915-Con.		1916-Con.	
May 1	1,840	Apr. 5	380	May 27	580	Jan. 27	280
2	1,650	6	400	28	540	28	280
3	1,050	7	430	29	500	29	280
4	850	8	460	30	470	30	280
5	700	9	510	31	430	31	280
6	550	10	580			Feb. 1	280
7	460	11	620	1916		2	280
8	430	12	680	Jan. 9	280	3	280
9	450	May 10	780	10	280	4	280
June 9	640	11	720	11	280	5	280
10	540	12	660	12	280	6	280
11	470	13	620	13	280	7	270
12	440	14	590	14	270	8	260
13	430	15	560	15	270	9	250
14	430	16	540	16	270	10	250
15	440	17	530	17	270	11	250
16	450	18	530	18	270	12	250
17	470	19	530	19	270	13	250
		20	540	20	270	14	250
1915		21	580	21	270	15	250
Mar.21-31	e300	22	600	22	270	16	250
Apr. 1	300	23	640	23	270	17	250
2	320	24	690	24	270	18	250
3	340	25	670	25	270	19	250
4	360	26	630	26	280	20	250

e Average for period indicated.

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 1914	1,840	401	728	1.92	2.21
June	848	305	523	1.38	1.53
March 1915	-	-	306	.805	.93
April	730	453	520	1.37	1.53
May	848	430	594	1.56	1.80
Water year 1914-15	730	-	366	.963	13.08
Calendar year 1915	1,380	180	413	1.09	14.75
January 1916	453	270	281	.739	.85
February	305	250	257	.676	.73

Brule River near Florence, Wis.--Continued

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.0	214
2.5	440
3.0	745
3.9	1,490

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	392	382	*332	315	*260	260	520	490	*490	278	*462	249
2	387	382	340	315	260	260	700	*682	429	270	414	238
3	362	*382	340	*315	260	260	950	668	424	270	506	228
4	352	382	340	315	270	260	1,050	675	446	278	456	228
5	*332	377	340	315	280	260	930	656	446	473	392	224
6	314	372	335	310	280	260	*759	580	419	424	367	*221
7	305	367	330	310	270	260	724	534	419	342	403	221
8	300	367	330	305	270	260	766	512	414	367	362	228
9	300	362	330	300	270	270	1,000	473	440	377	314	249
10	328	352	330	300	270	280	1,300	451	451	328	300	249
11	495	352	330	300	280	290	*1,440	440	429	300	278	242
12	506	352	330	300	275	280	*1,440	414	403	*283	266	235
13	451	347	320	300	265	270	1,300	398	387	280	278	232
14	598	337	320	300	260	290	1,440	387	372	275	249	228
15	960	337	325	310	260	300	1,390	377	347	290	242	228
16	938	332	330	310	260	285	1,210	367	328	300	235	232
17	794	332	330	305	260	280	1,020	352	314	280	235	262
18	662	337	330	300	270	280	915	352	300	270	235	314
19	574	342	320	300	285	290	976	352	300	255	228	296
20	517	337	330	295	300	280	984	342	328	250	235	270
21	484	337	330	290	310	280	945	337	357	255	238	262
22	451	332	330	290	310	285	829	332	328	270	228	257
23	440	332	330	290	300	290	738	332	305	260	228	253
24	419	337	330	290	290	285	668	414	296	240	228	257
25	403	357	330	290	280	280	623	440	291	230	232	250
26	398	367	320	290	265	280	574	387	283	300	249	260
27	414	362	320	280	260	285	539	440	274	350	262	290
28	414	357	320	275	*260	300	506	506	266	320	257	310
29	408	352	320	270	-	310	495	836	270	450	253	300
30	403	342	320	270	-------	350	473	759	278	500	257	290
31	392	-------	320	265	-------	400	-------	580	-------	470	262	-------
Total	14,493	10,605	10,182	9,220	7,680	8,820	27,204	14,865	10,834	9,835	9,151	7,603
Mean	468	354	328	297	274	285	907	480	361	317	295	253
Cfsm	1.23	0.932	0.863	0.782	0.721	0.750	2.39	1.26	0.950	0.834	0.776	0.666
In.	1.42	1.04	0.99	0.90	0.75	0.86	2.67	1.45	1.06	0.96	0.89	0.74

Calendar year 1954: Max 2,460 Min 220 Mean 437 Cfsm 1.15 In. 15.61
Water year 1954-55: Max 1,440 Min 221 Mean 385 Cfsm 1.01 In. 13.73

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 2. No gage-height record Apr. 3-5, July 13-31, Sept. 25-30; discharge estimated on basis of discharge measurements, weather records, and records for nearby stations.

Paint River at Crystal Falls, Mich.

Location.--Lat 46°06'20", long 88°20'05", in SE¼ sec. 20, T. 43 N., R. 32 W., on right bank 150 ft downstream from municipal powerplant at Crystal Falls and 13 miles upstream from mouth.

Drainage area.--616 sq mi.

Records available.--August 1944 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,306.1 ft above mean sea level (Wisconsin-Michigan Power Co. benchmark).

Average discharge.--11 years, 596 cfs.

Extremes.--Maximum discharge during year, 5,420 cfs Apr. 15 (gage height, 6.88 ft); minimum, 149 cfs Sept. 13 (gage height, 1.87 ft); minimum daily, 224 cfs Sept. 13.
1944-55: Maximum discharge, 10,700 cfs July 2, 1953 (gage height, 9.70 ft); minimum, 7.7 cfs Sept. 17, 1950 (gage height, 0.89 ft); minimum daily, 81 cfs Nov. 1, 1947.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diurnal fluctuation caused by powerplant immediately above station.

Revisions (water years).--WSP 1174: 1947-48(m).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.1	220	4.0	1,540
2.5	384	6.0	3,980
3.0	670	6.8	5,260

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	580	644	*420	392	*320	320	540	1,020	*1,540	333	*532	286
2	589	*636	467	387	320	320	850	1,080	1,290	336	500	278
3	566	623	424	376	330	320	980	1,150	1,090	328	580	258
4	*534	614	479	*386	320	330	1,150	1,220	952	337	669	243
5	501	590	446	384	320	330	1,250	1,210	866	462	616	242
6	461	590	398	379	320	320	1,280	1,080	823	482	598	235
7	438	580	361	372	310	323	1,200	990	754	434	626	229
8	423	580	366	354	320	321	1,350	897	742	416	607	*231
9	467	570	410	365	320	340	1,900	832	690	410	510	247
10	476	570	426	370	320	342	3,500	*778	638	364	462	247
11	760	560	424	355	320	354	*4,620	722	592	332	430	243
12	908	560	414	354	310	365	4,940	678	550	*314	388	251
13	824	560	396	365	310	370	4,940	628	509	288	358	224
14	1,110	550	392	358	310	361	5,100	598	490	290	332	235
15	2,150	540	420	366	310	373	5,260	546	466	289	316	228
16	2,490	530	414	350	310	390	4,460	513	430	308	315	231
17	2,300	520	405	352	310	380	3,200	500	410	324	306	258
18	2,010	500	412	347	300	380	2,710	490	376	303	311	359
19	1,740	500	407	343	320	380	2,770	468	387	295	298	353
20	1,470	520	382	351	354	380	2,800	464	390	278	286	299
21	1,250	580	392	339	406	380	2,500	434	418	274	298	314
22	1,070	630	421	354	421	380	2,200	408	424	268	288	305
23	935	640	414	350	392	380	1,950	398	397	264	272	296
24	844	600	411	350	360	380	1,700	445	387	261	272	282
25	768	590	402	336	340	380	*1,550	437	364	256	272	289
26	742	610	425	348	340	380	1,350	418	346	250	276	288
27	712	580	405	342	320	380	1,200	462	324	310	274	332
28	713	520	386	338	*320	380	1,100	612	328	376	294	325
29	704	470	371	314	-	380	1,000	1,330	324	376	300	327
30	684	440	356	311	-------	390	990	1,880	323	411	298	312
31	660	---	380	331	-------	450	-------	1,730	-------	545	298	-----
Total	29,879	16,997	12,626	11,019	9,253	11,259	70,340	24,418	17,620	10,514	12,182	8,247
Mean	964	567	407	355	330	363	2,345	788	587	339	393	275
Cfsm	1.56	0.920	0.661	0.576	0.536	0.589	3.81	1.28	0.953	0.550	0.638	0.446
In.	1.80	1.03	0.76	0.66	0.56	0.68	4.25	1.48	1.06	0.63	0.74	0.50

Calendar year 1954: Max 5,900 Min 272 Mean 773 Cfsm 1.25 In. 17.04
Water year 1954-55: Max 5,260 Min 224 Mean 642 Cfsm 1.04 In. 14.15

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 5 to Dec. 1, Mar. 17 to Apr. 10, Apr. 17, Apr. 20 to May 2; discharge estimated on basis of weather records and records for nearby streams. Stage-discharge relation affected by ice Feb. 1-19, Feb. 24 to Mar. 6.

Michigamme River near Crystal Falls, Mich.

Location.--Lat 46°06'50", long 88°12'55", in NW¼ sec. 20, T. 43 N., R. 31 W., on right bank 400 ft upstream from highway bridge, 4½ miles downstream from Michigamme Reservoir, 6 miles east of Crystal Falls, and 16 miles upstream from confluence with Brule River.

Drainage area.--670 sq mi.

Records available.--August 1944 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,300 ft (from topographic map).

Average discharge.--11 years, 712 cfs.

Extremes.--Maximum discharge during year, 4,380 cfs May 4 (gage height, 8.57 ft); minimum daily, 109 cfs Oct. 10.
1944-55: Maximum discharge, 6,340 cfs May 3, 1954 (gage height, 10.11 ft); minimum daily, 71 cfs Nov. 26, 1950.

Remarks.--Records excellent. Flow regulated by powerplants and by Michigamme Reservoir (capacity, 119,950 acre-ft) 4.5 miles above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.8	102	3.5	470
2.0	124	5.0	1,210
2.5	202	7.1	2,750
3.0	313		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	685	855	830	1,090	*708	*685	630	275	1,960	755	198	618
2	780	*855	*805	1,090	708	662	550	1,000	1,620	755	*200	618
3	780	830	805	1,090	708	662	167	1,810	1,420	755	200	577
4	*780	830	771	1,070	708	662	188	2,230	1,420	755	200	572
5	780	830	111	1,060	708	662	197	1,210	1,080	755	198	572
6	780	830	465	1,060	708	662	*202	1,100	866	755	206	486
7	780	830	805	1,060	708	662	202	961	1,120	755	204	*300
8	780	830	805	1,060	708	662	224	855	1,120	755	460	323
9	584	830	789	1,060	708	662	286	855	954	730	595	323
10	109	830	805	1,060	708	640	346	*985	830	730	618	319
11	470	830	805	1,060	708	640	373	1,060	855	708	640	312
12	780	830	805	*1,060	708	640	300	1,060	407	648	685	315
13	780	830	988	1,060	708	640	454	1,000	653	*595	708	314
14	855	830	1,120	1,060	708	723	980	830	830	595	708	316
15	930	830	1,120	1,060	708	855	1,050	830	805	582	694	314
16	1,390	830	1,120	1,040	685	855	2,690	830	805	526	708	318
17	1,850	830	1,120	1,040	685	755	2,430	830	679	478	602	322
18	1,780	830	1,120	1,040	685	618	*1,920	830	805	411	708	316
19	1,380	830	114	1,040	685	618	1,990	805	408	437	708	318
20	982	830	641	1,040	685	618	2,070	780	558	417	708	314
21	1,210	830	1,120	1,040	685	618	1,640	525	755	408	685	316
22	1,210	830	1,120	974	685	640	1,180	279	433	408	685	318
23	1,210	830	1,120	1,040	685	662	1,120	614	506	336	685	317
24	1,210	830	1,120	980	685	618	377	780	755	198	708	164
25	1,060	830	1,120	905	685	591	831	780	755	430	685	167
26	855	830	1,090	905	685	628	1,090	780	372	370	685	165
27	855	798	1,090	905	685	572	1,180	780	575	349	685	172
28	855	154	1,090	905	685	530	1,210	433	755	470	685	170
29	855	439	1,090	842	-	482	1,210	1,070	755	480	685	165
30	855	830	869	880	-------	498	710	1,310	755	189	685	161
31	855	----	1,090	824	-------	526	-------	*1,480	-------	198	685	-------
Total	29,065	23,851	27,863	31,400	19,525	19,948	27,797	28,967	25,611	16,733	17,506	9,982
Mean	938	795	899	1,013	697	643	927	934	854	540	565	333
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 6,200 Min 92 Mean 853 Cfsm 1.27 In. 17.28
Water year 1954-55: Max 2,690 Min 109 Mean 762 Cfsm 1.14 In. 15.42

* Discharge measurement made on this day.

Menominee River near Florence, Wis.

Location.--Lat 45°57'04", long 88°11'13", in NE¼ sec. 16, T. 41 N., R. 31 W., on left bank half a mile downstream from confluence of Brule and Michigamme Rivers and 3½ miles northeast of Florence.

Records available.--July 1950 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,120 ft (from topographic map).

Average discharge.--5 years, 2,108 cfs.

Extremes.--Maximum discharge during year, 9,520 cfs Apr. 16 (gage height, 9.44 ft); minimum, 78 cfs May 22 (gage height, 1.37 ft); minimum daily, 472 cfs Sept. 18.
1950-55: Maximum discharge, 20,500 cfs July 2 or 3, 1953 (gage height, 13.81 ft, from floodmarks), from rating curve extended above 12,000 cfs by logarithmic plotting; minimum, 57 cfs Sept. 18, 1950 (gage height, 1.28 ft); minimum daily, 220 cfs Feb. 4, 1951.

Remarks.--Records excellent. Flow regulated by powerplants, and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,000 acre-ft) on Michigamme River, and by many other smaller reservoirs on tributaries above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

2.4	435	6.0	3,790
3.0	775	9.2	9,120
4.0	1,580		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,770	1,940	*1,710	1,000	1,730	1,820	1,360	1,820	4,790	1,800	*1,410	1,390
2	1,870	1,800	1,870	1,370	1,800	1,840	1,270	*2,160	4,710	1,030	1,430	1,030
3	1,850	*2,020	1,630	*1,970	1,580	1,740	1,350	3,270	3,860	858	1,410	988
4	1,940	1,900	1,520	1,870	1,720	1,680	1,590	3,620	3,190	1,090	1,640	662
5	*1,700	2,130	1,420	1,850	1,570	1,560	2,030	3,830	2,150	1,520	1,570	518
6	1,580	2,140	1,810	2,000	1,040	1,010	2,280	3,540	2,650	1,300	1,590	*1,020
7	1,640	1,510	1,850	1,980	1,840	1,980	2,220	2,980	2,100	1,390	1,820	1,060
8	1,670	2,110	1,740	1,780	1,870	2,020	2,370	1,710	2,220	1,520	1,650	1,010
9	1,570	2,180	1,640	955	1,790	2,020	2,750	2,390	2,270	1,370	1,420	1,010
10	730	2,160	1,750	1,950	1,610	1,750	3,610	2,840	2,250	897	1,620	736
11	1,930	2,110	1,700	1,900	1,660	1,680	5,780	2,620	2,200	1,470	1,590	644
12	2,040	2,080	1,000	2,020	1,320	1,430	*6,840	2,520	1,400	*1,490	1,710	900
13	2,520	1,760	1,560	2,060	1,020	883	6,840	2,470	1,780	1,360	1,550	906
14	3,040	930	1,790	2,090	1,790	1,670	7,010	2,090	1,780	1,250	1,120	1,050
15	3,780	1,770	1,680	2,020	1,800	1,640	7,450	1,620	1,820	1,350	1,480	1,240
16	4,810	1,980	1,790	1,500	1,900	1,370	9,120	1,960	1,880	1,150	1,380	1,030
17	5,710	2,060	1,770	1,880	1,880	1,410	7,440	1,960	1,890	767	1,430	937
18	5,550	2,070	1,880	1,980	1,750	1,380	5,880	1,980	1,530	1,280	1,410	472
19	4,970	2,050	1,220	1,910	1,350	1,500	5,390	1,870	1,060	1,240	1,410	1,080
20	3,510	2,150	1,880	2,020	862	812	5,870	1,660	1,780	1,120	1,060	1,030
21	2,560	1,170	1,990	1,960	1,780	1,680	5,890	1,500	1,840	1,310	1,150	1,020
22	2,750	1,690	2,060	1,770	1,990	1,930	3,740	842	1,760	1,120	1,420	898
23	2,680	2,080	2,100	1,060	1,760	1,990	3,220	1,660	1,550	1,050	1,360	772
24	2,770	1,920	1,970	1,690	1,850	1,970	2,890	1,530	1,770	808	1,380	774
25	2,840	1,510	1,480	1,990	1,730	1,790	3,660	1,880	1,390	1,350	1,380	540
26	2,290	1,750	1,660	1,760	1,640	1,600	3,930	1,670	1,140	1,340	1,300	1,100
27	2,150	1,690	2,050	1,760	936	1,100	3,350	1,720	1,740	1,340	1,280	1,040
28	1,850	1,540	2,220	1,710	1,790	1,900	3,040	1,710	1,530	1,440	746	932
29	1,790	1,670	2,380	1,370	-	1,800	2,900	2,250	1,690	1,350	1,030	928
30	1,690	1,380	2,160	742	------	1,750	2,550	3,360	1,700	1,150	1,140	1,270
31	2,390	----	1,970	*1,850	-------	1,480	--------	*3,830	--------	954	1,260	--------
Total	79,940	55,250	55,250	53,767	45,358	50,185	123,620	70,862	63,420	38,464	43,146	27,987
Mean	2,579	1,842	1,782	1,734	1,620	1,619	4,121	2,286	2,114	1,241	1,392	933
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 11,700 Min 600 Mean 2,265 Cfsm - In. -
Water year 1954-55: Max 9,120 Min 472 Mean 1,938 Cfsm - In. -

* Discharge measurement made on this day.

Menominee River at Twin Falls, near Iron Mountain, Mich.

Location.--Lat 45°52'20", long 88°04'10", in sec. 12, T. 40 N., R. 31 W., Michigan meridian, at powerplant of Wisconsin-Michigan Power Co., 3½ miles north of city of Iron Mountain, 4 miles upstream from Pine River, and at mile 106.6.

Drainage area.--1,790 sq mi, approximately.

Records available.--January 1914 to September 1955.

Gage.--Headwater and tailwater gages and generation data entered hourly in daily log sheet by company employees.

Average discharge.--41 years, 1,822 cfs.

Extremes.--Maximum daily discharge during year, 9,310 cfs Apr. 16; minimum daily, 733 cfs Sept. 5.
1914-55: Maximum daily discharge, 16,700 cfs Apr. 23, 24, 1916; minimum daily, 154 cfs Aug. 9, 1925.

Remarks.--Records good. Discharge determined from powerhouse records computed on basis of load-discharge rating of hydroelectric units as developed by Geological Survey in 1932-33 and taintor-gate ratings based on theoretical formulas. Flow regulated by powerplants, and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,000 acre-ft) on Michigamme River, and by many smaller reservoirs above station.

Cooperation.--Records of daily discharge furnished by Wisconsin-Michigan Power Co.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	2,120	1,730	1,630	1,630	1,850	1,810	1,910	5,170	1,590	1,240	1,100
2	2,420	1,750	1,740	1,560	1,660	1,710	1,690	2,110	5,080	1,320	1,340	1,020
3	2,000	2,180	1,620	1,750	1,710	1,800	1,230	3,110	4,100	1,090	1,480	1,020
4	1,520	1,840	1,540	1,900	1,690	1,740	1,730	3,800	3,270	1,090	1,730	985
5	1,660	2,540	1,520	1,900	1,670	1,660	2,330	4,050	2,440	1,460	1,640	733
6	1,710	2,450	1,620	1,840	1,560	1,430	2,560	3,570	2,360	1,430	1,650	*789
7	1,650	2,240	1,750	1,890	1,680	1,830	2,500	3,210	2,380	1,400	1,890	915
8	1,630	2,040	1,910	1,920	1,680	1,920	2,450	2,060	2,210	1,510	1,700	1,050
9	1,440	2,080	1,890	1,540	1,690	1,950	2,790	2,100	2,280	1,540	1,570	1,020
10	1,440	2,180	1,810	1,820	1,740	1,890	3,920	2,600	2,350	1,340	1,640	1,030
11	1,320	2,350	1,580	1,920	1,680	1,660	5,830	3,040	2,510	1,450	1,650	948
12	2,120	2,280	1,410	2,180	1,520	1,640	7,400	2,440	2,070	1,360	1,660	1,030
13	2,540	1,880	1,770	2,140	1,370	1,330	7,200	2,410	1,700	1,240	1,570	979
14	3,200	1,420	1,770	2,260	1,690	1,830	7,380	2,400	1,650	1,180	1,310	999
15	4,080	1,780	1,810	2,130	1,820	1,690	7,380	2,010	2,020	1,200	1,580	1,030
16	4,880	2,010	1,800	1,790	1,680	1,570	9,310	2,160	2,080	1,230	1,570	1,030
17	5,970	1,980	1,930	1,940	1,720	1,640	7,720	1,920	1,970	1,040	1,400	1,000
18	6,110	2,060	2,010	2,030	1,760	1,460	6,270	1,860	1,890	1,180	1,360	872
19	4,990	2,350	1,720	2,130	1,710	1,480	5,540	1,820	1,360	1,230	1,320	997
20	3,640	2,260	1,880	2,070	1,530	1,390	6,280	1,170	1,720	1,220	1,220	954
21	2,530	1,680	2,130	2,090	1,690	1,900	*6,580	1,580	1,900	1,220	1,210	992
22	2,550	1,840	2,090	1,900	1,720	2,160	*4,120	1,380	1,760	1,220	1,260	933
23	2,850	*1,900	2,220	1,520	1,800	2,180	3,350	*1,560	1,760	1,160	1,230	845
24	3,130	2,030	2,190	1,770	1,860	2,180	3,210	*1,790	1,630	989	1,180	882
25	2,840	1,770	1,770	1,850	1,860	1,780	3,640	1,600	1,480	1,160	1,340	800
26	2,360	1,810	1,570	1,820	1,740	2,000	4,340	1,560	1,400	1,260	1,280	942
27	2,080	1,880	2,100	1,810	1,560	1,930	3,380	1,770	1,610	1,310	1,230	998
28	1,920	1,760	2,410	1,730	1,800	1,710	3,320	1,900	1,720	1,250	1,110	1,040
29	1,810	1,790	2,410	1,630	-	1,750	3,210	2,540	1,670	1,310	1,210	1,000
30	1,520	1,770	2,390	1,330	------	1,880	2,940	3,650	1,670	1,340	1,190	1,280
31	2,610	----	2,090	1,590	-------	1,880	-------	3,820	-------	1,280	1,180	-----
Total	82,120	60,020	58,180	57,380	47,220	54,820	131,410	73,440	67,210	39,599	43,940	29,213
Mean	2,649	2,001	1,877	1,851	1,686	1,768	4,380	2,369	2,240	1,277	1,417	974
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 11,200 Min 826 Mean 2,351 Cfsm - In. -
Water year 1954-55: Max 9,310 Min 733 Mean 2,040 Cfsm - In. -

* Discharge measurement made on this day.

Pine River at Pine River powerplant, near Florence, Wis.

Location.--Lat 45°49'40", long 88°14'55", in sec. 28, T. 39 N., R. 18 E., at powerplant of Wisconsin-Michigan Power Co., 5.0 miles downstream from Popple River and 6.5 miles south of Florence.

Drainage area.--528 sq mi.

Records available.--October 1923 to September 1955.

Average discharge.--32 years, 426 cfs.

Extremes.--Maximum daily discharge during year, 2,340 cfs Apr. 14; minimum daily, 104 cfs Aug. 21.
1923-55: Maximum daily discharge, 4,380 cfs Apr. 9, 1929; no flow at times in 1924, 1926-27, 1930-31, 1933, 1940.

Remarks.--Records good except those above 700 cfs, which are fair. Daily discharge determined from powerplant records. Flow regulated by powerplant at station, but pondage is small and monthly discharge is very nearly natural flow.

Cooperation.--Records of daily discharge computed by Wisconsin-Michigan Power Co. on basis of load-discharge rating of hydroelectric units as developed by Geological Survey and gate ratings based on theoretical formulas.

Revisions.--WSP 1237: Drainage area.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	416	455	312	208	156	182	520	624	824	208	572	182
2	481	455	312	286	182	208	774	649	651	208	745	195
3	442	364	312	208	182	208	984	674	613	208	726	169
4	468	412	208	208	182	208	1,060	744	609	208	678	169
5	357	468	312	208	182	208	1,100	744	634	416	600	130
6	351	364	208	312	182	182	1,100	744	669	468	573	169
7	387	364	208	208	182	182	1,060	669	624	286	589	156
8	312	390	208	208	196	182	1,180	611	611	312	481	130
9	312	416	208	208	182	182	1,340	590	704	208	429	130
10	312	312	260	208	182	188	1,700	478	744	312	312	130
11	510	416	208	312	182	208	1,650	485	724	208	312	130
12	611	351	260	208	182	312	1,700	468	624	208	312	156
13	624	364	208	208	182	208	1,770	463	624	208	312	130
14	935	364	208	208	182	208	2,340	413	624	195	208	156
15	1,390	364	208	208	182	312	2,160	364	416	195	208	130
16	1,450	364	208	208	195	312	2,000	354	442	208	169	130
17	1,330	312	312	195	182	312	1,900	312	390	208	182	156
18	1,220	364	312	208	195	368	1,820	312	312	208	156	182
19	1,110	312	296	208	195	364	1,830	312	312	197	182	182
20	944	312	208	208	208	312	1,770	208	351	191	182	208
21	744	312	208	208	208	208	1,820	416	338	169	104	182
22	624	312	304	208	208	312	*1,700	208	312	167	142	156
23	624	312	312	208	299	208	1,320	325	312	143	142	156
24	624	312	208	208	208	208	1,200	320	312	143	142	182
25	549	364	312	208	182	312	1,100	416	338	143	182	156
26	416	364	208	208	208	312	944	620	208	167	182	169
27	511	390	312	208	260	208	864	520	208	191	182	182
28	507	312	208	182	156	208	829	659	208	286	182	208
29	507	390	296	169	-	312	701	914	208	286	208	247
30	468	351	208	156	-------	273	624	984	208	286	286	234
31	455	-------	208	156	-------	390	-------	984	-------	407	182	-------
Total	19,991	10,942	7,760	6,552	5,421	7,797	40,860	16,584	14,154	7,248	9,862	4,992
Mean	645	365	250	211	194	252	1,362	535	472	234	318	166
Cfsm	1.22	0.691	0.473	0.400	0.368	0.477	2.58	1.01	0.894	0.443	0.602	0.314
In.	1.41	0.77	0.55	0.46	0.38	0.55	2.88	1.16	1.00	0.51	0.69	0.35

Calendar year 1954: Max 2,420 Min 130 Mean 498 Cfsm 0.943 In. 12.78
Water year 1954-55: Max 2,340 Min 104 Mean 417 Cfsm 0.790 In. 10.71

* Discharge measurement made on this day.

Sturgeon River near Foster City, Mich.

Location.--Lat 45°54'30", long 87°45'15", in NW¼ sec. 36, T. 41 N., R. 28 W., on left bank 30 ft downstream from bridge on County Highway 569, 1¾ miles downstream from confluence of East and West Branches, and 4 miles south of Foster City.

Drainage area.--244 sq mi.

Records available.--October 1954 to September 1955.

Gage.--Water-stage recorder.

Extremes.--Maximum daily discharge during year, 1,400 cfs Apr. 14, 15, minimum discharge, 31 cfs Sept. 9, 17 (gage height, 2.24 ft).

Remarks.--Records fair prior to May 9, good thereafter.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	28	5.0	470
2.6	69	8.7	1,410
3.5	194		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	240	195	140	81	74	92	170	380	*503	74	106	52
2	220	190	130	81	74	92	220	360	440	73	107	49
3	195	*190	125	81	74	92	270	360	371	70	114	46
4	175	185	120	82	74	92	380	380	305	68	120	42
5	160	180	115	82	74	92	450	380	269	85	111	38
6	145	175	110	81	74	93	550	380	243	114	99	34
7	135	175	105	80	74	94	650	350	226	116	91	32
8	125	170	100	80	75	95	*880	300	226	106	82	32
9	125	165	98	79	75	97	1,050	260	218	95	79	34
10	160	160	97	78	75	100	1,150	*234	205	84	*69	36
11	200	158	96	78	75	105	1,200	210	218	73	62	34
12	260	156	96	*78	76	105	*1,280	202	226	64	57	34
13	280	156	95	78	76	105	1,350	188	207	56	53	34
14	350	150	*93	78	77	105	1,400	188	192	52	52	34
15	*470	147	92	78	78	110	1,400	181	176	53	43	34
16	640	142	91	78	82	110	1,330	158	158	65	40	*33
17	680	141	90	77	86	110	1,150	148	144	67	38	35
18	640	141	88	77	92	110	*1,040	144	131	64	36	38
19	510	140	88	77	98	110	930	137	120	59	34	41
20	410	140	88	77	110	110	*900	133	120	55	34	41
21	350	138	88	76	115	*110	930	130	115	*49	34	39
22	300	135	89	74	110	110	1,010	127	110	47	34	37
23	280	133	90	74	*110	110	980	123	110	45	36	36
24	260	135	92	74	105	110	860	126	102	43	36	36
25	235	151	93	74	100	110	720	134	93	41	39	36
26	230	172	92	74	97	110	*590	145	85	41	44	36
27	220	178	90	74	94	110	530	170	77	47	48	38
28	215	178	88	74	93	115	480	234	71	56	48	43
29	210	176	86	74	-	115	440	380	68	62	49	49
30	205	169	84	74	-------	130	400	470	70	70	52	50
31	200	---	82	74	-------	150	-------	514	-------	84	50	-------
Total	8,825	4,821	3,031	2,397	2,417	3,299	24,690	7,626	5,599	2,078	1,897	1,153
Mean	285	161	97.8	77.3	86.3	106	823	246	187	67.0	61.2	38.4
Cfsm	1.17	0.660	0.401	0.317	0.354	0.434	3.37	1.01	0.766	0.275	0.251	0.157
In.	1.35	0.74	0.46	0.37	0.37	0.50	3.76	1.16	0.85	0.32	0.29	0.18

Calendar year 1954:	Max	-	Min	-	Mean	-	Cfsm	-	In.	-
Water year 1954-55:	Max	1,400	Min	32	Mean	186	Cfsm	0.762	In.	10.35

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 3. No gage-height record Oct. 1 to Nov. 10, Apr. 4-11, June 20-22; discharge estimated on basis of weather records, 3 discharge measurements, and records for nearby stations.

Menominee River near Pembine, Wis.

Location.--Lat 45°35'25", long 87°46'35", in sec. 21, T. 37 N., R. 28 W., Michigan meridian, on left bank 700 ft upstream from Pemene Creek, 4 miles west of Nathan, Mich., 15 miles southeast of Pembine, and at mile 65.3.

Drainage area.--3,240 sq mi, approximately.

Records available.--November 1949 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 745 ft (from river-profile map).

Average discharge.--5 years (1950-55), 3,426 cfs.

Extremes.--Maximum discharge during year, 15,100 cfs Apr. 17 (gage height, 9.82 ft); minimum, 1,070 cfs Sept. 12 (gage height, 1.97 ft).
1949-55: Maximum discharge, 25,500 cfs July 3, 1953 (gage height, 13.06 ft); minimum, 946 cfs Nov. 10, 1952 (gage height, 1.82 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated by powerplants and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,000 acre-ft) on Michigamme River, and by many smaller reservoirs above station.

Revisions (water years).--WSP 1277: 1952.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.1	1,190	7.0	8,460
3.0	2,110	8.0	10,500
4.0	3,380	9.0	12,800
5.0	4,900	10.0	15,600
6.0	6,550		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,280	3,020	2,260	2,500	1,800	2,200	3,200	4,230	5,830	1,680	1,910	1,650
2	3,420	3,770	2,450	2,200	1,900	2,200	3,500	3,590	7,020	2,040	1,890	1,550
3	2,880	2,740	2,500	2,200	2,100	2,200	4,000	4,440	6,440	1,840	2,600	1,290
4	3,440	2,840	2,500	2,300	2,000	2,100	4,740	5,080	5,160	1,360	2,660	1,320
5	3,200	3,000	2,320	2,400	2,000	2,100	5,670	5,590	4,710	1,480	2,400	*1,240
6	2,930	3,070	2,210	2,400	1,900	2,000	5,780	5,520	3,520	2,250	2,500	1,260
7	2,520	3,320	2,100	2,300	1,900	2,000	6,060	5,120	3,950	2,220	2,730	1,270
8	2,250	3,110	2,300	2,200	2,000	2,000	6,010	4,240	3,620	2,320	2,520	1,250
9	2,470	2,990	2,500	2,000	2,000	2,100	6,440	3,440	*3,370	1,890	2,330	1,280
10	2,290	2,620	2,500	2,000	2,000	2,200	7,940	3,580	3,510	2,010	2,320	1,270
11	2,030	3,100	2,300	2,300	1,800	2,200	9,560	3,980	4,000	1,810	1,970	1,240
12	3,350	*3,210	2,100	2,400	1,800	2,200	11,700	3,840	3,880	1,560	2,040	1,230
13	3,720	2,880	1,700	2,500	1,800	2,200	12,100	3,510	3,320	1,460	2,190	1,240
14	4,320	2,820	1,900	2,500	1,900	2,200	12,700	3,440	2,880	1,520	1,920	1,230
15	6,250	2,090	2,200	2,500	2,000	2,400	13,700	3,040	2,970	1,760	1,600	1,230
16	7,280	2,860	2,300	2,400	2,100	2,500	14,000	2,970	2,880	1,580	2,340	1,240
17	8,010	2,840	2,400	2,400	2,200	2,500	14,800	2,960	2,530	1,590	2,040	1,240
18	8,650	2,600	2,400	2,400	2,200	2,400	11,600	2,560	2,790	1,370	1,610	1,250
19	8,050	2,860	2,400	2,400	2,100	2,300	10,200	2,660	2,440	1,590	1,800	1,280
20	6,270	2,950	2,400	2,300	2,200	2,400	10,000	2,290	2,190	1,720	1,650	1,280
21	5,160	3,000	2,400	2,300	2,200	2,400	10,600	2,320	2,560	1,560	1,410	1,280
22	3,840	2,670	2,500	2,200	2,300	2,300	9,740	2,130	2,760	*1,680	1,450	1,260
23	4,010	2,430	2,600	2,200	2,200	2,400	*7,220	2,100	2,320	1,520	1,510	1,250
24	4,180	2,670	2,700	2,000	2,100	2,800	6,750	2,110	2,840	1,330	1,380	1,240
25	4,660	2,760	2,600	1,900	2,100	2,800	6,230	2,550	1,760	1,430	1,490	1,200
26	4,100	2,560	2,400	2,100	2,000	2,700	6,710	2,500	1,960	1,510	1,370	1,240
27	3,840	2,740	2,200	2,200	2,100	2,600	6,320	2,670	2,210	1,570	1,610	1,290
28	3,440	2,780	2,400	2,100	2,100	2,500	5,170	2,950	2,190	1,840	1,530	1,350
29	2,620	2,750	2,500	1,900	-	2,500	4,960	3,720	2,160	1,570	1,480	1,300
30	2,730	2,730	2,800	1,800	-------	2,600	4,880	5,590	2,110	1,610	1,450	1,350
31	2,790	-------	2,900	1,800	-------	2,900	-------	6,350	-------	2,020	1,720	-------
Total	127,980	85,780	73,740	69,100	56,800	72,900	242,280	111,070	99,880	52,690	59,420	38,600
Mean	4,128	2,895	2,379	2,229	2,029	2,352	8,076	3,583	3,329	1,700	1,917	1,287
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 19,600 Min 1,360 Mean 3,532 Cfsm - In. -
Water year 1954-55: Max 14,800 Min 1,200 Mean 2,987 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 7 to Apr. 3.

Pike River at Amberg, Wis.

Location.--Lat 45°29'50", long 87°59'40", in SW¼ sec. 15, T. 35 N., R. 20 E., on left bank 500 ft upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, 0.2 mile south of Amberg, and 1.2 miles downstream from confluence of North and South Branches.

Drainage area.--253 sq mi.

Records available.--February 1914 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 865 ft above mean sea level (from survey level line along railroad). Prior to May 23, 1931, chain gage at railway bridge at datum 1 ft higher. May 23, 1931, to Aug. 4, 1934, chain gage at highway bridge three-quarters of a mile downstream at different datum. Aug. 5, 1934, to Oct. 6, 1946, staff gage at present site and datum.

Average discharge.--41 years, 222 cfs.

Extremes.--Maximum discharge during year, 852 cfs about Apr. 15 (gage height, 4.23 ft); minimum, 82 cfs Aug. 23, 24 (gage height, 1.64 ft).
1914-55: Maximum discharge, 2,800 cfs Apr. 10, 1922 (gage height, 7.8 ft, from graph based on gage readings, site and datum then in use), from rating curve extended above 1,100 cfs; minimum observed, 26 cfs Dec. 27, 1925 (gage height, 1.30 ft, site and datum then in use).

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

Revisions (water years).--WSP 699: 1927. WSP 1207: Drainage area. WSP 1337: 1914(M), 1916-19(M), 1921-24(M), 1926(M), 1928(M), 1929, 1930(M), 1931, 1932-33(M), 1935, 1936-37(M), 1938, 1939-46(M).

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 20-22)

1.6	77	3.0	432
1.8	105	3.5	588
2.0	144	4.2	840
2.5	279		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	276	198	158	115	90	120	230	309	261	123	127	107
2	270	198	145	120	90	120	320	303	223	114	134	105
3	270	206	140	120	90	120	430	294	223	112	166	105
4	267	206	135	120	90	120	500	276	276	109	226	99
5	246	201	130	115	90	115	530	267	291	121	306	*94
6	220	193	130	110	90	115	a560	258	261	127	285	90
7	201	188	125	*108	92	115	a680	264	303	129	246	86
8	188	186	125	110	92	115	a760	252	324	119	201	90
9	180	180	125	110	92	120	a780	243	315	118	170	94
10	183	176	125	110	92	125	a780	232	*297	107	151	100
11	215	*173	125	110	92	140	764	229	303	102	136	94
12	249	170	125	110	94	150	a740	220	279	99	125	89
13	246	168	125	110	94	160	a740	206	246	98	116	94
14	298	168	125	110	94	170	a770	198	229	98	110	102
15	423	163	125	110	94	180	a830	193	206	99	105	107
16	426	158	125	105	94	180	a820	188	186	98	102	121
17	382	156	125	105	96	180	a760	183	168	100	99	121
18	327	161	120	105	100	180	a670	178	154	100	96	114
19	282	158	120	100	105	175	a650	173	146	100	93	100
20	249	156	120	100	115	165	*667	170	156	98	90	96
21	226	154	120	100	125	160	674	161	156	94	90	94
22	217	151	120	100	130	150	620	158	149	93	90	96
23	206	149	120	98	130	145	547	158	140	*93	84	98
24	198	154	120	96	130	140	482	180	134	99	85	98
25	186	163	120	96	125	140	444	186	129	90	99	96
26	180	168	115	96	*126	140	404	178	121	89	105	96
27	215	168	115	96	125	145	367	229	119	94	114	102
28	237	168	110	94	120	145	342	288	118	100	116	110
29	226	166	110	94	-	150	333	345	119	96	116	110
30	215	158	110	92	-------	160	321	370	119	100	119	107
31	201	-------	115	92	-------	180	-------	318	-------	119	114	-------
Total	7,695	5,162	3,848	3,257	2,897	4,520	17,515	7,207	6,151	3,238	4,216	3,015
Mean	248	172	124	105	103	146	584	232	205	104	136	100
Cfsm	0.980	0.680	0.490	0.415	0.407	0.577	2.31	0.917	0.810	0.411	0.538	0.395
In.	1.13	0.76	0.57	0.48	0.43	0.66	2.57	1.06	0.90	0.48	0.62	0.44

Calendar year 1954: Max 1,050 Min 93 Mean 201 Cfsm 0.794 In. 10.76
Water year 1954-55: Max 830 Min 84 Mean 188 Cfsm 0.743 In. 10.10

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for 3 nearby stations.
Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 5.

Menominee River below Koss, Mich.

Location.--Lat 45°21'50", long 87°39'20", in sec. 9, T. 34 N., R. 27 W., Michigan meridian, on left bank at powerplant of Wisconsin Public Service Corp., 0.5 mile upstream from Little Cedar River, 3.6 miles southeast of Koss, and at mile 24.7.

Drainage area.--3,790 sq mi, approximately.

Records available.--July 1913 to September 1955.

Gage.--Headwater and tailwater gages and generation data entered hourly in daily log sheet by company employees.

Average discharge.--42 years, 3,170 cfs.

Extremes.--Maximum daily discharge, 14,800 cfs Apr. 18; minimum daily, 1,200 cfs Sept. 26. 1913-55: Maximum daily discharge, 23,200 cfs Apr. 23, 25, 1916; minimum daily, 162 cfs Sept. 15, 1931.

Remarks.--Records fair. Daily discharge computed on basis of average daily load and load-discharge rating of combined hydroelectric units. Flow regulated by powerplants, and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity 33,000 acre-ft) on the Michigamme River, and by many smaller reservoirs above station.

Cooperation.--Records of daily discharge furnished by Wisconsin Public Service Corp.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,310	2,980	2,790	3,120	2,000	2,490	3,240	6,050	6,020	2,140	2,130	1,510
2	3,790	3,220	2,770	2,960	1,950	2,440	3,820	5,050	6,770	1,680	1,850	1,640
3	3,710	3,750	2,300	2,320	2,080	2,300	5,020	3,940	7,240	2,090	2,080	1,620
4	3,360	3,140	2,910	2,640	2,050	2,280	6,150	4,880	6,720	1,840	3,250	1,340
5	3,550	3,360	2,460	2,640	2,170	2,280	6,480	5,470	5,260	1,710	2,940	1,300
6	3,440	3,380	2,280	2,400	1,980	2,090	6,600	5,660	5,130	1,800	2,770	1,250
7	3,250	3,490	2,400	2,400	2,020	2,100	6,480	5,420	4,430	2,290	2,720	1,340
8	2,970	3,490	2,160	2,280	2,120	2,120	6,530	5,350	4,810	2,060	2,800	1,340
9	2,590	3,500	2,160	2,160	2,020	1,990	6,720	3,860	3,840	2,400	2,210	1,300
10	2,860	3,360	2,640	2,160	2,190	2,260	7,090	3,760	3,730	1,900	2,230	1,440
11	2,590	2,800	2,520	1,880	2,340	2,400	7,410	3,780	3,880	1,670	2,360	1,390
12	2,570	2,980	2,400	2,260	2,150	2,330	10,700	4,200	4,760	1,970	1,920	1,390
13	3,700	3,200	2,200	2,430	1,700	2,280	12,300	3,750	3,540	1,390	2,080	1,340
14	4,640	2,680	1,640	2,510	1,960	2,270	13,100	3,640	3,810	1,560	2,430	1,520
15	4,910	2,630	1,750	2,420	2,110	2,340	13,800	3,590	3,130	1,480	2,000	1,210
16	7,150	2,210	2,160	2,390	2,020	2,550	14,400	3,140	3,390	2,050	1,920	1,220
17	7,110	3,000	2,370	2,270	2,110	2,610	14,400	2,910	3,270	1,610	2,380	1,220
18	7,810	3,000	2,460	2,200	2,200	2,450	14,800	2,940	2,780	1,570	1,920	1,370
19	8,210	2,480	2,240	2,460	2,260	2,570	12,400	2,810	2,890	1,460	1,580	1,330
20	7,540	2,970	2,150	2,240	2,060	2,480	11,200	2,960	2,950	1,560	1,680	1,220
21	6,330	2,900	2,270	2,300	2,210	2,620	12,000	2,370	2,500	1,660	1,530	1,220
22	5,140	2,970	2,460	2,300	2,320	2,180	12,300	2,270	2,900	1,460	1,460	1,300
23	4,020	2,750	2,520	2,250	2,390	2,340	11,000	2,590	2,780	1,660	1,340	1,310
24	4,300	2,610	2,800	2,310	2,380	2,760	8,700	2,500	2,560	1,400	1,430	1,300
25	4,000	2,710	2,850	2,000	2,390	3,240	8,260	2,200	2,690	1,220	1,340	1,420
26	4,480	2,900	2,760	2,020	2,480	2,930	7,500	2,640	1,780	1,390	1,420	1,200
27	4,370	2,680	2,400	2,100	2,370	2,970	7,890	2,800	1,880	1,650	1,650	1,250
28	3,780	2,820	2,200	2,430	2,290	3,130	6,710	2,880	2,260	1,380	1,220	1,300
29	3,580	2,910	2,400	2,380	-	2,720	6,080	3,760	2,140	1,690	1,570	1,380
30	2,710	2,780	2,520	2,210	-------	2,730	6,070	4,960	2,300	1,860	1,670	1,300
31	2,900	-------	3,000	2,000	-------	2,880	-------	6,230	-------	1,660	1,470	-------
Total	134,670	89,650	74,940	72,440	60,320	77,130	269,150	118,160	112,140	53,260	61,350	40,270
Mean	4,344	2,988	2,417	2,337	2,154	2,488	8,972	3,812	3,738	1,718	1,979	1,342
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 16,700 Min 1,390 Mean 3,521 Cfsm - In. -
Water year 1954-55: Max 14,800 Min 1,200 Mean 3,188 Cfsm - In. -

Menominee River near McAllister, Wis.

Location.--Lat 45°19'20", long 87°39'40", in sec. 17, T. 33 N., R. 23 E., on right bank 400 ft above highway bridge, 2¼ miles downstream from Little Cedar River, 2.9 miles east of McAllister, 14.5 miles east of Wausaukee, and at mile 22.3.

Drainage area.--4,020 sq mi, approximately.

Records available.--March 1945 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 630 ft (from river-profile map).

Average discharge.--10 years, 3,434 cfs.

Extremes.--Maximum discharge during year, 16,700 cfs Apr. 18 (gage height, 15.24 ft); minimum, 901 cfs July 25 (gage height, 7.69 ft); minimum daily, 1,280 cfs July 25, Sept. 20. 1945-55: Maximum discharge, 25,700 cfs Apr. 15, 1951 (gage height, 17.83 ft); minimum observed, 538 cfs Oct. 6, 1946 (gage height, 7.29 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by powerplants and by Michigamme Reservoir (capacity, 119,950 acre-ft) and Peavy Pond (capacity, 33,000 acre-ft) on Michigamme River, and by many smaller reservoirs above station.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

8.1	1,280	12.0	7,750
9.0	2,270	13.0	10,000
10.0	3,820	14.0	12,800
11.0	5,680	15.2	16,600

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,770	3,400	3,130	2,850	2,300	2,750	3,500	5,720	6,780	2,450	2,320	1,660
2	4,110	4,070	3,030	2,820	2,200	2,750	4,400	4,970	7,100	1,810	1,890	1,790
3	4,250	4,450	3,000	2,700	2,300	2,700	6,620	4,470	7,750	2,220	2,270	1,780
4	3,750	3,320	3,160	2,550	2,350	2,600	5,960	5,310	7,530	1,880	2,620	1,470
5	4,290	3,650	3,000	2,380	2,350	2,400	7,820	6,080	6,080	1,830	3,420	*1,390
6	4,020	3,600	3,000	2,750	2,250	2,450	8,300	6,320	5,760	1,880	3,100	1,330
7	3,430	3,670	2,850	2,650	2,300	2,450	7,770	6,120	4,720	2,580	2,920	1,410
8	3,140	3,700	2,850	2,550	2,300	2,350	8,040	5,800	5,210	2,300	3,220	1,410
9	2,700	3,580	2,840	2,400	2,300	2,300	7,880	4,380	*4,360	2,610	3,060	1,310
10	2,940	3,420	2,950	2,300	2,450	2,450	8,590	4,140	4,340	2,070	2,510	1,390
11	2,580	*3,190	2,850	2,200	2,550	2,650	10,100	4,130	4,220	1,830	2,520	1,380
12	2,850	3,380	2,370	2,400	2,400	2,600	11,400	4,650	5,140	2,240	2,080	1,380
13	4,220	3,630	2,450	2,700	1,950	2,550	13,400	4,130	3,890	1,490	2,220	1,380
14	5,200	3,300	1,950	2,800	2,100	2,600	14,200	4,090	3,930	1,730	2,370	1,410
15	5,960	2,940	2,100	2,700	2,300	2,550	15,100	3,800	3,430	1,700	2,030	1,380
16	8,060	2,410	2,350	2,650	2,300	2,800	15,900	3,460	3,320	2,240	1,880	1,340
17	8,740	3,320	2,600	2,550	2,400	2,900	16,300	3,270	3,550	1,730	2,380	1,370
18	9,310	3,400	2,700	2,550	2,450	2,800	16,400	3,270	2,680	1,720	2,090	1,390
19	9,640	2,780	2,400	2,700	2,500	2,700	13,900	2,800	2,940	1,590	1,790	1,460
20	8,630	3,320	2,500	2,600	2,400	2,800	*12,200	3,060	2,910	1,760	1,830	1,280
21	6,970	3,240	2,600	2,600	2,450	2,900	12,400	2,510	2,480	1,840	1,640	1,380
22	5,840	3,480	2,760	2,550	2,550	2,550	13,000	2,520	3,000	*1,720	1,520	1,400
23	4,500	3,140	2,900	2,450	2,600	2,600	11,800	2,560	3,190	1,690	1,420	1,400
24	4,800	2,940	3,050	2,550	2,600	3,100	9,050	2,370	2,850	1,640	1,490	1,340
25	4,670	3,060	3,150	2,400	2,750	3,600	8,390	2,330	2,980	1,280	1,620	1,460
26	5,180	3,340	3,000	2,200	2,700	3,300	7,620	2,760	2,030	1,580	1,700	1,320
27	5,120	3,180	2,700	2,300	2,550	3,250	8,080	2,980	2,020	1,840	1,840	1,330
28	4,630	3,210	2,500	2,700	2,650	3,450	7,020	3,160	2,480	1,560	1,390	1,400
29	4,290	3,320	2,700	2,650	-	3,150	6,180	3,750	2,470	1,790	1,720	1,490
30	3,110	3,160	2,950	2,500	-------	3,000	5,840	4,910	2,510	1,960	1,670	1,430
31	3,400	-------	3,000	2,250	-------	3,100	-------	6,720	-------	1,660	1,590	-------
Total	154,100	100,600	85,390	78,950	67,300	86,150	297,160	126,540	121,650	58,220	66,120	42,640
Mean	4,971	3,353	2,755	2,547	2,404	2,779	9,905	4,082	4,055	1,878	2,133	1,421
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 21,600 Min 1,510 Mean 4,124 Cfsm - In. -
Water year 1954-55: Max 16,400 Min 1,280 Mean 3,520 Cfsm - In. -

* Discharge measurement made on this day.

Note.--Discharge computed from once-daily wire-weight-gage readings Nov. 1, 2, Dec. 2 to Apr. 8. Stage-discharge relation affected by ice Dec. 5, 6, 10, 11, 13-25, 27-31, Jan. 3, 4, Jan. 6 to Apr. 1.

Peshtigo River at Peshtigo, Wis.

Location.--Lat 45°02'50", long 87°44'40", in NE¼ sec. 30, T. 30 N., R. 22 E., on left bank 75 ft downstream from Chicago and North Western Railway bridge, half a mile downstream from Wisconsin Public Service Corp. dam in Peshtigo, and 11½ miles upstream from mouth.

Drainage area.--1,124 sq mi.

Records available.--June 1953 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 584.64 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 3,360 cfs Apr. 1 (gage height, 6.73 ft); minimum, 72 cfs Sept. 5 (gage height, 1.65 ft); minimum daily, 120 cfs Aug. 21.
1953-55: Maximum discharge, 4,380 cfs May 3, 1954 (gage height, 7.78 ft); minimum, 32 cfs Aug. 28, 1953 (gage height, 1.46 ft); minimum daily, that of Aug. 21, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by powerplant half a mile above station.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-31, June 27 to Sept. 30)

1.5	120	3.0	713
1.7	182	4.0	1,260
2.0	287	5.0	1,920
2.5	485	6.3	2,960

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,080	703	776	580	450	382	2,110	1,200	888	422	344	208
2	938	978	602	321	340	460	2,320	969	1,150	534	536	262
3	882	1,120	566	420	390	538	2,320	641	1,080	578	604	270
4	976	897	688	569	420	664	2,510	931	1,190	358	735	*468
5	1,090	940	674	688	450	478	2,920	930	1,390	142	874	318
6	1,000	841	442	533	400	450	2,150	1,010	894	462	978	247
7	732	568	570	*462	300	420	2,200	1,180	1,170	568	968	182
8	1,070	672	596	474	400	441	2,280	1,170	*1,510	500	731	255
9	829	1,010	466	472	600	549	2,460	639	1,470	370	794	280
10	458	*889	598	337	520	580	2,620	844	1,440	259	530	267
11	355	902	642	474	500	554	2,420	872	1,310	282	570	270
12	958	750	544	476	460	907	2,300	885	1,150	264	544	202
13	1,030	697	358	480	420	964	2,550	714	1,370	326	652	200
14	1,070	682	379	493	390	1,220	2,680	566	898	620	512	420
15	1,420	616	726	588	370	1,180	2,870	794	912	389	254	328
16	1,820	703	548	499	476	1,210	2,700	546	850	258	314	292
17	1,670	760	600	454	640	1,200	2,580	476	913	396	388	498
18	1,900	779	604	372	566	1,100	2,330	700	660	363	516	361
19	1,390	704	472	468	512	1,000	*2,580	499	546	319	426	212
20	1,490	631	473	480	432	950	2,290	682	452	374	374	384
21	1,320	606	601	455	464	850	2,780	604	500	*380	120	304
22	1,330	644	609	664	550	800	2,810	568	532	260	201	392
23	1,130	630	576	370	537	700	2,820	430	484	400	271	396
24	828	734	620	468	752	800	2,670	629	598	238	390	308
25	881	790	554	402	525	900	2,460	672	441	243	324	370
26	635	764	478	513	*410	900	2,450	755	439	228	424	204
27	907	838	474	480	616	850	2,080	609	344	270	386	300
28	1,150	748	535	480	429	810	1,670	978	293	304	412	386
29	929	754	550	450	-	740	1,320	912	504	312	304	390
30	1,220	775	592	420	-------	1,100	1,400	637	348	384	245	388
31	1,000	---	576	200	-------	1,160	-------	1,220	-------	200	268	---
Total	33,488	23,125	17,489	14,542	13,319	24,857	71,560	24,262	25,726	11,003	14,989	9,262
Mean	1,080	771	564	469	476	802	2,385	783	858	355	484	309
Cfsm	0.961	0.686	0.502	0.417	0.423	0.714	2.12	0.697	0.763	0.316	0.431	0.275
In.	1.11	0.77	0.58	0.48	0.44	0.82	2.37	0.80	0.85	0.36	0.50	0.31

Calendar year 1954: Max 3,820 Min 122 Mean 876 Cfsm 0.779 In. 10.59
Water year 1954-55: Max 2,920 Min 120 Mean 777 Cfsm 0.691 In. 9.39

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 27 to Feb. 8, Feb. 11-15, 17, Mar. 6, 7, 17-27.

Wheeler Lake near Lakewood, Wis.

Location.--Lat 45°19', long 88°29', in sec. 27, T. 33 N., R. 16 E., on southwest shore of lake at George Tyrell's cottage, 3½ miles east of Lakewood.

Drainage area.--2 sq mi, approximately.

Records available.--August 1936 to September 1955 (fragmentary).

Gage.--Staff gage. Prior to Apr. 19, 1939, gage was located at Chas. J. Vogts' across the lake.

Extremes.--Maximum elevation observed during year, 95.91 ft Apr. 23; minimum observed, 94.86 ft Sept. 9.
1936-55: Maximum elevation observed, 96.50 ft Oct. 5, Nov. 9, 1943; minimum observed, 93.45 ft Feb. 5, 1950.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. No outlet.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								-	-	-	-	5.00
2								-	5.60	5.50	5.24	-
3								-	-	-	-	5.98
4								-	5.58	5.50	-	-
5								-	5.64	-	5.32	4.94
6								-	-	-	-	-
7								-	-	5.49	5.28	4.92
8				5.33				-	5.66	-	-	4.88
9								-	-	5.48	-	4.86
10								-	5.68	-	5.22	-
11								-	-	5.44	-	4.92
12		5.38						-	-	-	5.20	-
13								-	-	5.40	-	4.88
14								-	5.70	-	5.18	4.90
15								5.62	-	5.36	-	-
16								-	5.68	-	-	4.88
17								-	-	-	5.14	-
18								5.61	5.65	5.34	-	-
19								-	-	-	-	-
20								-	5.67	5.28	5.11	-
21								5.60	-	-	-	-
22								5.58	5.64	-	5.08	-
23							5.91	-	-	5.22	-	-
24								-	-	-	5.02	-
25								5.56	5.60	5.20	-	-
26								5.62	-	-	5.02	-
27					5.50			-	5.56	-	-	-
28								-	-	5.16	-	-
29					-			-	5.54	5.14	-	-
30					-------			5.62	-	5.12	5.04	-
31		-------			-------		-------	-	-------	5.18	-	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Boot Lake near Townsend, Wis.

Location.--Lat 45°16'20", long 88°37'55", in sec. 9, T. 32 N., R. 15 E., on pier of Pine Ridge Lodge at north end of lake, 5½ miles southwest of Townsend and 6 miles southwest of Lakewood.

Drainage area.--1.5 sq mi, approximately.

Records available.--August 1936 to September 1955 (fragmentary).

Gage.--Staff gage.

Extremes.--Maximum elevation observed during year, 96.22 ft Apr. 18; minimum observed, 95.06 ft Sept. 24.
1936-55: Maximum elevation observed, 98.25 ft June 28, 1943; minimum observed, 93.82 ft Oct. 6, 1949.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. No outlet.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-					-	-	-	-	5.54	-
2	-	-					5.94	-	-	-	5.54	-
3	-	-					-	6.08	-	-	-	-
4	-	5.61					-	-	-	-	-	5.24
5	-	-	5.63				-	-	6.00	-	5.50	-
6	5.59	-					5.99	-	-	5.84	-	-
7	-	-					-	6.12	-	5.82	-	5.16
8	-	-		5.41			6.02	6.10	-	-	5.54	-
9	-	-					6.03	-	-	-	-	-
10	5.62	-					-	-	6.04	-	-	-
11	-	-					-	5.98	-	5.78	5.50	5.20
12	-	5.55					-	-	-	-	-	-
13	-	5.59					-	-	5.96	-	-	-
14	5.67	-					6.04	-	-	-	5.44	-
15	-	-					-	-	5.96	-	-	-
16	-	-					6.10	-	-	5.64	5.44	5.12
17	-	-					-	-	-	5.64	-	-
18	5.64	-					6.22	5.88	-	-	-	-
19	-	-					-	-	6.00	-	5.40	-
20	5.63	5.55					6.20	-	-	-	-	-
21	-	-					-	5.88	5.96	-	-	-
22	-	5.57					-	-	-	-	-	-
23	-	-					6.12	-	-	5.58	-	-
24	-	5.59					6.12	-	-	-	-	5.06
25	-	-					-	-	5.90	5.54	5.38	-
26	-	-					-	-	-	-	-	-
27	-	-					-	5.98	5.86	-	-	-
28	-	-					-	-	5.84	5.52	-	-
29	-	-			-		-	6.08	-	-	-	-
30	5.61	-			-------		-	-	-	-	5.34	-
31	-	-------			-------		-------	-	-------	-	-	-------

Note.--Add 90.00 ft to obtain elevation above datum assumed for this lake by the Public Service Commission of Wisconsin.

Oconto River near Gillett, Wis.

Location.--Lat 44°52', long 88°18', in sec. 34, T. 28 N., R. 18 E., on left bank just upstream from highway bridge, 2 miles upstream from Christy Brook, 2 miles south of Gillett, and at mile 29.

Drainage area.--678 sq mi.

Records available.--June 1906 to March 1909, January 1914 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 735 ft (from river-profile map). Prior to March 1909, chain gage on bridge at datum 4.0 ft lower. Jan. 6, 1914, to Aug. 24, 1938, chain gage on bridge at present datum.

Average discharge.--42 years (1907-8, 1914-55), 576 cfs.

Extremes.--Maximum discharge during year, 1,570 cfs Apr. 15 (gage height, 3.18 ft); maximum gage height, 5.51 ft Jan. 17 (backwater from ice); minimum discharge, 182 cfs Aug. 23, 24.

1906-9, 1914-55: Maximum discharge observed, 8,400 cfs Apr. 10, 1922 (gage height, 11.2 ft, from floodmarks), caused by failure of dam at Pulcifer, 4 miles above station; minimum, 93 cfs Nov. 26, 1941 (gage height, 0.13 ft), flow retarded by anchor ice above station.

Remarks.--Records excellent except those for period of ice effect, which are fair.

Revisions (water years).--WSP 384: Drainage area. WSP 1207: 1922.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.5	165	1.4	510
.7	224	2.0	820
1.0	330	3.2	1,590

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	608	539	433	360	230	310	770	864	603	296	278	231
2	668	574	400	360	230	310	910	798	520	288	315	224
3	831	588	360	350	230	310	1,080	748	608	285	326	221
4	831	588	340	360	240	310	1,200	710	643	278	334	*212
5	804	574	330	370	240	310	1,340	679	648	274	330	202
6	738	564	320	*378	240	300	1,480	658	633	268	322	196
7	663	554	320	350	240	290	1,540	598	628	268	319	190
8	603	534	320	320	240	280	1,500	579	*618	268	296	185
9	564	520	330	310	250	310	1,420	554	618	271	278	185
10	530	*505	340	310	250	450	1,340	539	653	271	268	193
11	515	495	340	310	250	870	1,340	530	668	257	254	199
12	559	466	320	310	250	720	1,400	515	668	250	244	205
13	638	456	310	310	240	730	1,480	495	603	247	234	208
14	748	452	320	300	240	730	1,520	476	569	244	224	215
15	836	443	330	290	240	720	1,560	456	534	240	218	212
16	853	443	340	280	240	720	1,540	429	500	240	212	212
17	853	447	340	280	240	710	1,480	393	461	247	205	215
18	848	447	330	280	250	690	1,420	397	415	244	202	218
19	809	438	320	270	260	670	*1,370	402	375	237	199	224
20	738	433	320	270	300	650	1,360	402	380	231	196	215
21	679	424	330	270	340	610	1,340	389	393	*221	193	208
22	613	420	340	280	350	580	1,360	384	424	215	193	208
23	554	424	360	280	350	550	1,380	380	363	212	187	208
24	549	424	370	270	340	520	1,400	415	342	208	185	212
25	544	438	380	260	*339	510	1,360	456	326	205	193	208
26	534	452	380	260	330	500	1,260	461	322	205	208	205
27	579	466	370	250	320	500	1,180	471	315	218	221	215
28	613	486	350	240	310	500	1,100	549	303	231	237	224
29	663	478	320	230	-	510	1,020	638	303	231	240	240
30	618	452	310	230	-------	550	938	588	296	231	240	240
31	554	---	340	230	-------	620	-------	633	-------	237	237	------
Total	20,737	14,522	10,613	9,169	7,579	16,140	39,388	16,586	14,732	7,618	7,588	6,330
Mean	669	484	342	296	271	521	1,313	535	491	246	245	211
Cfsm	0.987	0.714	0.504	0.437	0.400	0.768	194	0.789	0.724	0.363	0.361	0.311
In.	1.14	0.80	0.58	0.50	0.42	0.89	2.16	0.91	0.81	0.42	0.42	0.35

Calendar year 1954: Max 1,500 Min 231 Mean 505 Cfsm 0.745 In. 10.10
Water year 1954-55: Max 1,560 Min 185 Mean 468 Cfsm 0.690 In. 9.40

Peak discharge (base, 1,500 cfs).--Apr. 15 (9 to 12 p.m.) 1,570 cfs (3.18 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 6.

Silver Lake at Portage, Wis.

Location.--Lat 43°33', long 89°29', in sec. 6, T. 12 N., R. 9 E., in southeast end of lake outlet culvert on Silver Lake Street in Portage.

Drainage area.--1 sq mi, approximately.

Records available.--August 1936 to September 1955 (fragmentary).

Gage.--Staff gage.

Extremes.--Maximum elevation observed during year, 93.68 ft Apr. 24; minimum observed, 92.22 ft Sept. 25.
1936-55: Maximum elevation observed, 93.68 ft Apr. 13, 1952, Apr. 24, 1955; minimum observed, 90.85 ft Aug. 22, 24, 1937.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Outlet flows intermittently.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-			-	8.39	8.58	-	-	-	-
2	-	-	-			-	-	-	-	-	-	-
3	-	-	-			-	-	-	-	8.26	-	-
4	8.40	-	-			-	-	-	-	-	-	7.48
5	-	-	-			-	-	-	8.34	-	-	-
6	-	-	-			-	-	8.48	-	-	-	-
7	-	8.14	-			-	-	8.48	-	-	-	-
8	-	-	-			-	-	8.53	-	-	-	-
9	-	-	-			-	-	-	-	-	-	-
10	8.30	-	-			-	8.32	-	-	8.20	-	-
11	-	-	-			-	-	-	-	-	-	7.36
12	-	-	8.23			-	-	-	8.10	-	-	-
13	-	-	8.22			-	-	-	-	-	-	-
14	-	8.17	-			-	-	-	-	-	-	-
15	-	-	-			-	-	8.53	-	-	7.75	-
16	-	-	-			-	-	-	-	-	-	-
17	-	-	-			-	8.48	-	-	7.95	-	-
18	8.32	-	-			8.46	-	-	-	-	-	7.30
19	-	-	-			-	-	-	8.38	-	-	-
20	-	-	-			-	-	-	-	-	-	-
21	-	-	-			-	-	-	-	-	7.68	-
22	-	-	-			-	-	8.55	-	-	-	-
23	-	-	-			-	-	-	-	-	-	-
24	8.30	-	-			-	8.68	8.35	-	7.96	-	-
25	-	-	-			-	-	-	-	-	-	7.22
26	8.27	-	-			-	-	-	8.25	-	-	-
27	-	-	-			-	-	-	-	-	-	-
28	-	8.19	-			8.46	-	-	-	-	7.58	-
29	-	-	-		-	-	-	-	-	-	-	-
30	-	-	-		-------	-	-	-	-	-	-	-
31	-	-------	-		-------	-	-------	-	-------	-	-	-------

Note.--Add 85 ft to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Little Green Lake near Markesan, Wis.

Location.--Lat 43°44', long 88°58', in sec. 32, T. 15 N., R. 13 E., half a mile north of lake outlet and 2 miles north of Markesan.

Drainage area.--5 sq mi, approximately.

Records available.--August 1936 to September 1955 (fragmentary).

Gage.--Staff gage. Prior to Apr. 28, 1949, at site 0.5 mile to south at same datum.

Extremes.--Maximum elevation observed during year, 96.02 ft Apr. 25, 27; minimum observed, 94.95 ft Sept. 14.
1936-55: Maximum elevation observed, 96.74 ft June 23, 24, 1940; minimum observed, 94.28 ft Sept. 10, 11, 1936.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Outlet flows intermittently.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.20	5.69	5.62	-	-	5.68	-	-	5.87	-	5.72	-
2	5.25	-	-	-	5.56	5.66	5.82	5.96	-	-	-	5.41
3	-	5.67	5.62	5.65	-	-	-	-	5.88	-	5.76	-
4	5.37	-	-	-	-	5.68	-	5.94	5.90	5.96	-	-
5	-	-	-	-	-	-	-	-	-	-	5.78	5.38
6	5.47	5.66	5.62	-	-	-	5.83	-	5.92	5.94	-	-
7	-	-	-	5.65	-	-	-	5.94	-	-	-	5.36
8	5.57	5.64	5.63	-	-	5.70	-	-	5.94	-	5.77	5.24
9	5.67	-	-	-	5.58	-	-	5.98	-	5.91	-	-
10	-	5.63	-	5.62	-	-	-	-	-	-	5.75	5.18
11	5.70	-	6.63	-	-	5.73	5.86	5.96	5.97	5.88	-	-
12	-	-	-	5.46	-	-	-	-	-	-	-	5.20
13	5.70	5.62	-	-	-	-	5.88	-	5.97	5.85	5.72	5.16
14	-	-	5.62	5.62	-	-	-	5.94	-	-	-	4.95
15	-	5.61	-	-	-	5.75	5.91	-	5.98	-	5.68	-
16	5.69	-	-	-	5.59	-	-	5.94	-	5.82	-	-
17	-	5.61	5.62	-	-	-	-	-	5.97	-	5.65	5.02
18	5.70	-	-	5.62	-	5.75	5.95	5.92	-	5.81	-	-
19	-	5.61	-	-	-	-	-	-	-	-	-	5.08
20	5.69	-	-	-	-	-	5.94	5.90	6.00	5.80	5.61	-
21	-	-	-	5.59	-	5.77	-	-	-	-	-	-
22	5.70	5.62	5.62	-	-	-	5.94	-	6.01	-	5.59	5.15
23	-	-	-	-	-	-	-	5.88	-	5.79	-	-
24	-	5.63	-	-	-	-	-	-	6.00	-	5.57	5.13
25	5.70	-	-	-	5.64	5.77	6.02	5.86	-	5.76	-	-
26	-	-	-	5.57	-	-	6.01	-	-	-	-	5.11
27	5.70	5.64	-	-	-	-	6.02	5.85	5.98	5.73	5.54	-
28	-	-	-	-	-	-	-	-	-	-	-	5.10
29	-	5.63	5.63	-	-	-	-	-	5.97	-	5.51	-
30	5.71	-	-	-	-------	5.80	5.99	-	5.99	5.70	-	5.10
31	-	-------	-	-	-------	-	-------	-	-------	-	5.45	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by the Public Service Commission of Wisconsin.

Fox River at Berlin, Wis.

Location.--Lat 43°57'15", long 88°57'10", in NE¼ sec. 16, T. 17 N., R. 13 E., on left bank, 0.3 mile downstream from government lock, 1 mile south of Huron Street Bridge in Berlin, 2.5 miles upstream from Barnes Creek, and at mile 89.0 (corrected). Prior to Oct. 27, 1954, at site 0.3 mile upstream.

Drainage area.--1,430 sq mi, approximately.

Records available.--January 1898 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 744.52 ft above mean tide at New York City (by Corps of Engineers). Prior to Oct. 27, 1954, staff gage at site 0.3 mile upstream at same datum.

Average discharge.--57 years, 1,110 cfs.

Extremes.--Maximum daily discharge during year, 3,020 cfs Oct. 10-12; minimum observed, 350 cfs Sept. 12 (gage height, 6.25 ft).
1898-1955: Maximum discharge observed, 6,900 cfs Mar. 17, 18, 1946 (gage height, 15.5 ft); minimum observed, 248 cfs Sept. 16, 1948 (gage height, 6.1 ft).

Remarks.--Records good except those for period of ice effect, which are fair.

Cooperation.--Gage-height record furnished by Corps of Engineers Oct. 1-26.

Revisions (water years).--WSP 1337: 1910.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,460	1,920	1,270	780	580	880	1,600	2,180	996	960	698	500
2	1,540	1,850	1,220	790	590	*888	1,670	2,160	956	980	750	500
3	1,740	1,790	1,160	790	590	890	1,690	2,110	956	944	750	478
4	2,060	1,740	1,120	790	590	890	1,690	2,050	976	916	743	437
5	2,320	1,680	1,080	800	590	900	1,750	1,970	948	897	730	437
6	2,530	1,620	1,050	810	580	870	1,820	1,880	928	875	733	437
7	2,650	1,540	1,020	820	580	860	1,860	1,810	948	860	754	437
8	2,890	1,480	1,000	810	570	900	1,890	1,720	992	852	737	*374
9	2,960	1,420	980	800	570	1,000	1,910	1,620	1,140	860	730	403
10	3,020	1,340	970	780	560	1,150	1,910	1,540	1,360	841	720	398
11	3,020	1,290	970	*764	570	1,300	1,890	1,460	1,520	806	698	392
12	3,020	1,240	960	760	580	1,400	1,860	1,380	1,600	740	682	367
13	*2,950	1,200	950	760	590	1,550	1,830	1,300	*1,670	747	658	415
14	2,950	1,160	940	750	600	1,700	1,830	1,100	1,730	730	623	536
15	2,880	*1,100	930	740	610	1,750	1,860	928	1,740	704	557	500
16	2,810	1,090	920	740	620	1,750	1,880	823	1,710	661	589	522
17	2,740	1,060	910	730	640	1,700	1,880	717	1,640	667	589	510
18	2,740	1,050	910	720	660	1,650	1,880	733	1,560	664	570	498
19	2,670	1,020	910	710	690	1,600	1,880	740	1,500	658	546	531
20	2,600	1,000	910	710	780	1,500	1,850	767	1,440	658	534	505
21	2,530	1,000	910	700	760	1,400	1,810	757	1,400	649	524	514
22	2,470	988	910	690	750	1,300	1,750	747	1,330	637	500	517
23	2,470	976	910	670	740	1,250	1,670	730	1,240	655	457	531
24	2,350	1,030	910	650	760	1,200	1,680	867	1,170	661	457	536
25	2,290	1,050	910	630	780	1,150	*1,780	940	1,140	620	457	544
26	2,230	1,080	900	610	810	1,150	1,900	964	1,070	*617	500	526
27	2,240	1,220	860	580	840	1,150	2,010	1,020	1,030	629	524	536
28	2,160	1,310	820	580	860	1,150	2,090	1,060	952	584	478	546
29	2,110	1,340	770	580	-	1,260	2,150	1,070	920	570	524	552
30	2,040	1,320	770	580	-------	1,320	2,180	1,040	893	617	500	531
31	1,970	-------	780	580	-------	1,460	-------	1,020	-------	623	524	-------
Total	76,410	38,904	29,630	22,204	18,440	38,918	55,450	39,203	37,455	22,862	18,836	14,510
Mean	2,465	1,297	956	716	659	1,255	1,848	1,265	1,248	737	608	484
Cfsm	1.72	0.907	0.669	0.501	0.461	0.878	1.29	0.885	0.873	0.515	0.425	0.338
In.	1.99	1.01	0.77	0.58	0.48	1.01	1.44	1.02	0.97	0.59	0.49	0.38

Calendar year 1954: Max 3,020 Min 450 Mean 1,055 Cfsm 0.738 In. 10.00
Water year 1954-55: Max 3,020 Min 367 Mean 1,131 Cfsm 0.791 In. 10.73

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3 to Mar. 28.

Wolf River above West Branch Wolf River, Wis.

Location.--Lat 44°55', long 88°39', in E½ sec. 3, T. 28 N., R. 15 E., near center of span on downstream side of highway bridge half a mile upstream from West Branch Wolf River, 4 miles north of Keshena, and at mile 140.1.

Drainage area.--633 sq mi.

Records available.--March 1928 to September 1955.

Gage.--Chain gage read once daily. Datum of gage is 856.57 ft above mean sea level (levels by Wisconsin Power & Light Co.).

Average discharge.--27 years, 565 cfs.

Extremes.--Maximum discharge during year, 1,450 cfs Apr. 15 (gage height, 4.18 ft, from graph based on gage readings); minimum observed, 260 cfs July 26 (gage height, 1.51 ft).
1928-55: Maximum discharge, 2,640 cfs Apr. 8, 1929 (gage height, 6.20 ft, from graph based on gage readings); minimum observed, 199 cfs Feb. 20, 1936.

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

Revisions (water years).--WSP 1337: 1929-30(M), 1931, 1934-35(M), 1939(M), 1941(M), 1944-50(M).

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	258	2.5	578
1.7	306	3.0	794
1.9	363	3.5	1,040
2.2	464	4.2	1,460

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	603	562	423	380	330	350	750	794	687	363	457	363
2	578	570	403	390	330	350	880	713	653	a360	500	320
3	562	554	383	390	330	340	1,000	644	627	a370	554	*304
4	566	554	380	400	330	340	1,100	657	661	383	562	304
5	527	578	380	400	330	340	1,150	713	704	360	562	294
6	478	570	380	400	320	330	a1,220	632	713	311	627	291
7	464	578	390	410	320	330	a1,260	619	748	296	578	284
8	457	574	410	410	320	340	a1,210	611	865	339	562	284
9	457	578	420	*418	320	370	a1,210	582	918	330	538	294
10	457	471	410	410	320	390	a1,210	570	*953	330	523	298
11	478	457	400	410	320	390	a1,330	562	948	317	493	311
12	538	*450	400	410	320	370	1,280	558	889	363	464	298
13	603	444	400	400	320	380	1,260	546	841	298	450	a300
14	713	440	400	390	330	390	1,380	511	803	311	403	a320
15	870	433	400	380	330	420	1,440	493	766	296	383	a320
16	968	437	390	370	330	440	1,360	471	691	286	336	a290
17	909	423	380	360	330	470	1,270	450	636	286	304	a300
18	870	430	360	360	330	490	1,270	430	562	296	288	314
19	822	430	360	350	340	490	1,320	423	515	306	309	336
20	794	430	360	350	380	480	1,350	410	486	317	309	330
21	730	430	370	350	410	460	1,320	406	450	276	304	320
22	713	427	370	350	410	430	1,200	393	461	296	284	304
23	678	423	380	350	400	410	1,120	403	454	*274	274	298
24	678	410	380	350	390	390	*1,110	457	454	276	276	288
25	674	461	380	340	380	390	1,060	468	396	267	294	274
26	562	478	370	340	370	390	978	461	370	260	342	279
27	578	486	360	340	370	400	958	550	376	281	336	320
28	594	447	350	330	*358	420	918	578	396	267	360	325
29	623	478	350	330	-	450	938	653	437	286	380	380
30	582	486	360	330	------	520	832	730	427	301	393	380
31	558	----	370	330	-------	620	-------	722	-------	376	413	------
Total	19,644	14,489	11,869	11,528	9,668	12,680	34,684	17,210	18,887	9,678	12,858	9,323
Mean	634	483	383	372	345	409	1,156	555	630	312	415	311
Cfsm	1.00	0.763	0.605	0.588	0.545	0.646	1.83	0.877	0.995	0.493	0.656	0.491
In.	1.15	0.85	0.70	0.68	0.57	0.74	2.04	1.01	1.11	0.57	0.76	0.55

Calendar year 1954: Max 1,500 Min 280 Mean 528 Cfsm 0.834 In. 11.31
Water year 1954-55: Max 1,440 Min 260 Mean 500 Cfsm 0.790 In. 10.73

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for station at Keshena Falls.
Note.--Stage-discharge relation affected by ice Dec. 4 to Apr. 5.

Wolf River at Keshena Falls, Wis.

Location.--Lat 44°53', long 88°39', in E½ sec. 22, T. 28 N., R. 15 E., on right bank 500 ft downstream from Keshena Falls, 1.7 miles upstream from Keshena, 3.1 miles downstream from West Branch Wolf River, and at mile 136.4.

Drainage area.--812 sq mi.

Records available.--May 1907 to March 1909, February 1911 to September 1955. Published as "at Keshena" 1907-9, 1911 to March 1928.

Gage.--Water-stage recorder. Datum of gage is 820.00 ft above mean sea level (levels by Wisconsin Power and Light Co.). Prior to March 1909, staff gage, and February 1911 to March 1928, chain gage, at bridge in Keshena 1.7 miles downstream at datum 4.03 ft lower.

Average discharge.--45 years (1907-8, 1911-55), 770 cfs.

Extremes.--Maximum discharge during year, 1,920 cfs Apr. 7 (gage height, 7.29 ft); minimum, 252 cfs July 25 (gage height, 5.05 ft).
1907-9, 1911-55: Maximum discharge observed, 4,390 cfs Apr. 10, 1922, from rating curve extended above 2,100 cfs; maximum gage height, 13.83 ft Nov. 17, 1943 (backwater from ice); minimum discharge, 91 cfs Dec. 22, 1939 (gage height, 4.67 ft), result of ice storage.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by one powerplant upstream.

Revisions (water years).--WSP 664: Drainage area (site at Keshena). WSP 1337: 1914-15(M), 1918-19(M), 1921, 1923(M), 1926(M), 1928(M), 1933.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

5.2	321	6.5	1,230
5.6	546	7.2	1,830
6.0	840		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	810	734	a650	470	450	500	1,050	1,020	840	470	574	465
2	825	742	a620	490	450	470	1,300	924	825	476	595	413
3	986	749	a590	500	440	450	1,540	825	810	453	675	*392
4	886	749	a570	520	430	450	1,650	825	855	453	668	386
5	810	779	a570	540	420	450	1,580	878	870	453	675	355
6	727	787	570	550	410	440	1,580	840	863	419	720	365
7	675	787	570	550	410	420	1,680	802	932	386	675	370
8	653	727	560	550	400	420	1,560	794	1,040	430	675	326
9	a630	712	540	*545	400	430	1,540	764	1,130	441	675	346
10	a630	631	530	540	390	420	1,700	749	1,340	470	653	408
11	a660	588	530	520	390	430	1,700	734	*1,220	430	602	408
12	a750	581	530	510	400	460	1,630	705	1,210	413	567	408
13	863	*602	530	490	410	500	1,580	705	1,120	386	546	453
14	a1,000	616	530	500	440	540	1,700	675	1,020	397	501	465
15	a1,200	609	540	500	460	590	1,760	675	908	408	482	397
16	a1,300	581	550	500	460	640	1,680	638	840	392	441	341
17	a1,300	560	550	500	460	690	1,580	567	772	381	408	408
18	a1,240	546	550	480	460	720	1,500	527	742	397	397	459
19	a1,180	546	550	480	470	720	1,520	533	675	341	392	482
20	a1,040	588	530	470	550	730	1,570	540	653	355	397	419
21	916	588	520	470	570	710	1,560	533	616	321	381	408
22	a880	567	500	470	570	670	1,500	533	602	321	350	381
23	a860	595	480	470	560	600	1,380	514	595	370	365	386
24	a840	581	480	470	560	550	*1,340	660	602	*402	350	392
25	a830	574	490	460	550	560	1,320	653	540	321	375	397
26	a830	660	480	460	540	590	1,250	631	508	321	436	392
27	a810	660	470	440	530	610	1,170	712	453	386	465	413
28	a800	a670	460	430	*511	610	1,130	764	527	397	465	424
29	a800	a670	450	430	-	600	1,090	901	546	397	495	476
30	a800	a660	440	430	------	640	1,040	947	567	413	508	482
31	779	--	450	440	------	860	------	939	------	413	495	------
Total	27,310	19,439	16,380	15,175	13,091	17,470	44,180	22,507	24,221	12,413	16,033	12,217
Mean	881	648	528	490	468	564	1,473	726	807	400	516	407
Cfsm	1.08	0.798	0.650	0.603	0.576	0.695	1.81	0.894	0.994	0.493	0.635	0.501
In.	1.25	0.89	0.75	0.69	0.60	0.80	2.02	1.03	1.11	0.57	0.73	0.56

Calendar year 1954: Max 1,820 Min 331 Mean 685 Cfsm 0.844 In. 11.46
Water year 1954-55: Max 1,760 Min 321 Mean 659 Cfsm 0.812 In. 11.00

Peak discharge (base, 1,500 cfs).--Apr. 7 (12:30 p.m.) 1,920 cfs (7.29 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and records for station above West Branch Wolf River.
Note.--Stage-discharge relation affected by ice Dec. 6 to Mar. 31 (no gage-height record Dec. 6-11, 13-19, 21, 22, Jan. 6, 7).

Embarrass River near Embarrass, Wis.

Location.--Lat 44°43', long 88°44', in sec. 18, T. 26 N., R. 15 E., on left bank 10 ft downstream from highway bridge, three-quarters of a mile downstream from Mill Creek, and 4 miles northwest of Embarrass.

Drainage area.--395 sq mi.

Records available.--June 1919 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 800 ft (from survey level line in vicinity). Prior to Aug. 23, 1938, chain gage on downstream side of bridge at same datum.

Average discharge.--36 years, 291 cfs.

Extremes.--Maximum discharge during year, 1,340 cfs Apr. 1 (gage height, 5.40 ft); minimum, 44 cfs Sept. 1, 12 (gage height, 2.57 ft).
1919-55: Maximum discharge, 6,920 cfs Apr. 10, 1922 (gage height, 11.6 ft, from graph based on gage readings), from rating curve extended above 2,800 cfs; minimum observed, 23 cfs Aug. 3, 6, 7, 1931.

Remarks.--Records good except those for periods of ice effect, which are fair. Slight diurnal fluctuation caused by powerplants above station.

Revisions (water years).--WSP 1337: 1920-26(M), 1928, 1929-30(M), 1933-34, 1936-37, 1938(M), 1940.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.5	42	3.4	302
2.6	63	4.0	585
2.8	108	5.2	1,220
3.0	158		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	250	277	192	120	80	*141	809	315	460	145	210	50
2	286	261	196	125	78	135	1,230	290	282	127	196	59
3	660	265	224	125	78	125	1,230	290	250	110	189	*90
4	913	290	177	125	76	115	1,100	298	246	106	177	83
5	783	286	130	130	76	110	1,020	315	250	125	142	59
6	595	273	130	130	76	110	1,200	350	286	132	135	87
7	440	254	170	125	76	115	1,200	336	311	132	130	74
8	306	246	160	110	78	120	1,020	290	544	120	130	87
9	311	239	130	98	80	130	892	254	737	125	145	81
10	290	246	120	*92	82	150	814	261	1,000	113	140	76
11	269	242	120	96	84	200	737	246	*1,060	127	120	65
12	273	203	120	110	82	350	737	217	924	127	135	48
13	273	*203	120	115	80	600	712	220	712	135	110	67
14	376	192	120	115	76	560	752	239	494	127	103	83
15	539	186	120	115	78	530	866	192	345	118	106	85
16	686	186	120	115	80	500	861	192	324	101	94	83
17	660	177	125	115	84	430	783	189	282	103	87	81
18	534	231	130	110	88	360	681	174	257	106	90	78
19	412	196	140	105	92	310	595	158	189	103	99	101
20	368	189	150	100	96	280	635	180	161	115	113	120
21	302	200	170	98	100	250	625	210	161	101	78	110
22	273	192	160	96	110	230	600	214	161	94	57	94
23	269	186	150	94	115	220	484	192	177	90	55	106
24	261	220	135	90	120	210	469	231	183	*92	81	99
25	242	192	145	86	130	210	*565	332	164	103	70	87
26	203	200	150	82	140	210	645	450	127	103	83	103
27	269	231	161	80	140	210	539	412	140	120	171	99
28	386	231	150	80	140	210	455	509	142	122	155	99
29	390	228	130	80	-	220	408	620	158	125	122	101
30	332	192	120	80	------	235	332	625	150	130	110	106
31	298	-- -	120	80	-------	282	------	575	--- ---	177	94	------
Total	12,449	6,714	4,485	3,222	2,615	7,858	22,996	9,376	10,677	3,654	3,727	2,561
Mean	402	224	145	104	93.4	253	767	302	356	118	120	85.4
Cfsm	1.02	0.567	0.367	0.263	0.236	0.640	1.94	0.765	0.901	0.299	0.304	0.216
In.	1.17	0.63	0.42	0.30	0.25	0.74	2.17	0.88	1.01	0.34	0.35	0.24

Calendar year 1954: Max 1,020 Min 74 Mean 246 Cfsm 0.623 In. 8.43
Water year 1954-55: Max 1,230 Min 48 Mean 247 Cfsm 0.625 In. 8.50

Peak discharge (base, 1,100 cfs).--Apr. 1 (11 p.m.) 1,340 cfs (5.40 ft); Apr. 6 (4 p.m.) 1,280 cfs (5.30 ft); June 11 (12:30 p.m.) 1,100 cfs (4.98 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 6-23, Dec. 28 to Mar. 29.

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Wolf River at New London, Wis.

Location.--Lat 44°23', long 88°44', in sec. 12, T. 22 N., R. 14 E., on right bank 100 ft downstream from Pearl Street Bridge in New London, 0.2 mile downstream from Embarrass River, and at mile 56.3.

Drainage area.--2,240 sq mi, approximately.

Records available.--October 1913 to September 1955 in reports of Geological Survey. March 1896 to September 1930 in House Document 276, 72d Congress, 1st session.

Gage.--Water-stage recorder. Datum of gage is 749.37 ft above mean sea level (levels by Corps of Engineers). Prior to Oct. 4, 1951, staff gage at same site and datum.

Average discharge.--59 years, 1,726 cfs.

Extremes.--Maximum discharge during year, 5,830 cfs Apr. 9 (gage height, 8.21 ft); minimum, 478 cfs Sept. 12 (gage height, -0.04 ft).
1896-1955: Maximum discharge observed, 15,500 cfs Apr. 13, 1922 (gage height, 11.4 ft); minimum, 261 cfs Sept. 6, 1933.
Maximum stage known, 11.6 ft Apr. 16, 1888, from information by Corps of Engineers.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1114: 1943(M). WSP 1337: 1931.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,680	2,080	1,380	930	700	990	2,790	3,700	2,020	984	841	678
2	1,760	1,950	1,360	910	700	1,000	3,510	3,500	1,970	984	908	*666
3	2,780	1,890	1,270	890	700	1,000	4,040	3,310	1,830	988	912	646
4	3,540	1,870	1,300	880	700	1,000	4,360	3,120	1,660	915	1,020	592
5	3,950	1,830	1,250	900	700	1,000	4,820	2,920	1,570	872	988	568
6	4,060	1,820	1,150	910	700	1,000	5,270	2,690	1,400	824	953	559
7	4,030	1,800	1,100	910	690	1,000	5,590	2,510	1,440	837	972	511
8	3,970	1,760	1,100	910	680	1,000	5,780	2,270	1,520	851	942	511
9	3,800	1,730	1,100	900	670	1,050	5,810	1,980	1,760	834	915	574
10	3,580	1,680	1,050	*892	670	1,150	5,780	1,810	2,160	803	879	601
11	3,290	1,610	1,050	890	670	1,600	5,670	1,720	2,290	827	879	517
12	2,990	1,540	1,050	890	670	2,100	5,490	1,640	*2,460	784	854	481
13	2,590	1,480	1,050	890	670	2,200	5,350	1,520	*2,570	778	837	544
14	2,630	*1,430	1,050	880	670	2,300	5,240	1,440	2,580	774	820	577
15	2,730	1,380	1,050	870	680	2,400	5,100	1,390	2,550	762	762	571
16	2,830	1,360	1,050	860	690	2,500	4,970	1,370	2,520	762	720	650
17	2,920	1,340	1,050	850	710	2,500	*4,850	1,290	2,400	726	682	662
18	2,960	1,310	1,100	840	740	2,500	4,770	1,240	2,040	714	634	604
19	2,960	1,350	1,100	830	780	2,500	4,680	1,240	1,800	714	640	598
20	2,930	1,350	1,100	820	830	2,500	4,620	1,210	1,580	694	613	553
21	2,860	1,260	1,050	810	820	2,400	4,550	1,160	1,380	662	619	601
22	2,760	1,220	1,050	800	820	2,200	4,450	1,160	1,220	631	565	669
23	2,610	1,230	1,050	790	830	2,000	4,310	1,170	1,110	640	514	675
24	2,460	1,240	1,050	780	860	1,900	4,230	1,230	1,070	678	544	595
25	2,300	1,270	1,000	770	880	1,800	4,210	1,230	1,060	*672	580	532
26	2,090	1,320	1,000	760	900	1,800	4,200	1,330	1,040	628	562	571
27	2,080	1,340	980	740	920	1,750	4,140	1,540	1,010	619	580	637
28	2,100	1,390	960	720	960	1,750	4,070	1,580	950	701	604	598
29	2,160	1,440	940	710	-	1,800	4,000	1,690	950	685	707	619
30	2,190	1,420	930	700	------	1,850	3,860	1,850	950	704	762	698
31	2,160	-- --	920	690	------	2,000	------	1,970	------	807	710	------
Total	87,750	45,690	33,640	25,922	21,010	54,540	140,510	57,780	50,860	23,854	23,518	17,858
Mean	2,831	1,523	1,085	836	750	1,759	4,684	1,864	1,695	769	759	595
Cfsm	1.26	0.680	0.484	0.373	0.335	0.785	2.09	0.832	0.757	0.343	0.339	0.266
In.	1.46	0.76	0.56	0.43	0.35	0.91	2.33	0.96	0.84	0.40	0.39	0.30

Calendar year 1954: Max 4,060 Min 575 Mean 1,539 Cfsm 0.687 In. 9.35
Water year 1954-55: Max 5,810 Min 481 Mean 1,597 Cfsm 0.713 In. 9.69

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5, 6, Dec. 9 to Mar. 31.

Little Wolf River at Royalton, Wis.

Location.--Lat 44°24', long 88°51', in sec. 1, T. 22 N., R. 13 E., on right bank 50 ft upstream from highway bridge in Royalton and 4 miles upstream from mouth.

Drainage area.--485 sq mi.

Records available.--January 1914 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 774.00 ft above mean sea level, datum of 1929. Prior to Aug. 20, 1915, chain gage at highway bridge at datum 0.75 ft lower. Aug. 20, 1915, to Apr. 23, 1934, staff gage at present site and datum.

Average discharge.--41 years, 413 cfs.

Extremes.--Maximum discharge during year, 2,890 cfs Oct. 3 (gage height, 4.67 ft); minimum, 78 cfs Sept. 10 (gage height, 0.84 ft).
1914-55: Maximum discharge, 6,950 cfs Mar. 30, 1943 (gage height, 8.00 ft), from rating curve extended above 3,500 cfs; maximum gage height, 11.95 ft Mar. 28, 1950 (backwater from ice); minimum discharge, 57 cfs Feb. 10, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by powerplant 6 miles above station.

Revisions (water years).--WSP 1337: 1914-16(M), 1918-19(M), 1921-25(M), 1927(M), 1928-37, 1939(M), 1940, 1945-46(M), 1948(M), 1950(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 24 to Sept. 30)

0.8	90	2.0	591
1.0	126	2.5	929
1.2	179	3.0	1,310
1.4	251	4.0	2,230
1.7	407	4.5	2,750

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	540	425	300	200	140	*222	1,150	390	521	170	296	126
2	559	396	290	195	140	230	1,720	390	413	209	220	*128
3	2,440	436	270	190	140	230	1,660	378	292	179	218	126
4	2,670	431	270	195	140	220	1,200	378	323	179	239	126
5	2,320	419	270	210	140	200	1,290	378	339	162	148	122
6	1,570	401	270	232	140	180	1,330	413	247	153	148	122
7	1,080	378	250	209	140	170	1,260	390	390	209	199	122
8	839	373	280	167	145	170	1,100	318	442	156	138	120
9	631	350	260	170	145	170	950	318	716	159	138	120
10	572	356	250	175	140	280	894	312	860	192	179	98
11	565	334	220	*182	120	400	644	312	888	212	143	122
12	553	328	220	210	100	600	690	287	*936	145	136	124
13	546	328	250	200	100	840	750	282	743	145	138	124
14	697	*328	230	190	100	800	819	287	546	140	136	122
15	764	318	220	180	100	720	860	220	350	140	133	128
16	798	287	220	190	125	600	798	278	367	143	133	128
17	791	296	220	160	145	480	860	173	323	148	136	128
18	683	312	230	164	135	410	*710	228	282	162	136	126
19	572	367	270	212	140	360	657	282	282	143	133	126
20	509	356	220	164	230	320	670	235	235	140	136	172
21	431	247	200	209	260	280	670	292	228	140	133	133
22	431	287	200	173	260	170	559	224	235	143	124	131
23	419	269	240	190	250	170	521	228	228	186	88	131
24	419	334	251	160	230	180	521	345	220	159	128	131
25	339	378	224	145	210	240	805	361	186	*143	138	124
26	334	367	247	150	210	250	826	413	239	140	145	128
27	527	390	228	145	220	240	677	378	162	173	145	136
28	527	413	210	140	220	240	585	378	209	145	143	136
29	604	378	210	135	-	240	533	697	167	148	202	182
30	565	361	210	140	------	250	460	540	212	164	131	179
31	478	--	200	140	------	500	------	533	------	247	128	------
Total	24,773	10,643	7,430	5,522	4,565	10,362	26,169	10,638	11,581	5,074	4,788	3,921
Mean	799	355	240	178	163	334	872	343	386	164	154	131
Cfsm	1.65	0.732	0.495	0.367	0.336	0.689	1.80	0.707	0.796	0.338	0.318	0.270
In.	1.90	0.82	0.57	0.42	0.35	0.79	2.01	0.82	0.89	0.39	0.37	0.30

Calendar year 1954: Max 2,670 Min 100 Mean 342 Cfsm 0.705 In. 9.59
Water year 1954-55: Max 2,670 Min 88 Mean 344 Cfsm 0.709 In. 9.63

Peak discharge (base, 1,600 cfs).--Oct. 3 (9:30 a.m.) 2,890 cfs (4.67 ft); Apr. 3 (1 a.m.) 1,880 cfs (3.64 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 1-23, Dec. 28 to Jan. 5, Jan. 9-17, Jan. 23 to Mar. 31.

Waupaca River near Waupaca, Wis.

Location.--Lat 44°21', long 88°59', near north line of sec. 1, T. 21 N., R. 12 E., on right bank 10 ft downstream from highway bridge, 1½ miles downstream from Crystal River, and 4 miles downstream from Waupaca.

Drainage area.--305 sq mi.

Records available.--June 1916 to September 1955. Published as "near Weyauwega" June 1916 to October 1917.

Gage.--Water-stage recorder. Altitude of gage is 780 ft (from survey level line along railroad). Prior to Oct. 19, 1917, chain gage at site 1 mile downstream at different datum. Oct. 19, 1917, to Nov. 23, 1938, chain gage on bridge at present site and datum.

Average discharge.--39 years, 245 cfs.

Extremes.--Maximum discharge during year, 950 cfs Oct. 4 (gage height, 3.52 ft), but may have been exceeded during ice breakup; maximum gage height, 4.45 ft Mar. 12, 22 (backwater from ice); minimum discharge, 69 cfs Sept. 14 (gage height, 0.94 ft); minimum daily, 128 cfs Sept. 12.

1916-55: Maximum discharge, 2,520 cfs Mar. 20, 1948 (gage height, 6.90 ft); maximum gage height, 8.06 ft Mar. 28, 1950 (backwater from ice); minimum discharge, 38 cfs June 7, 1947; minimum daily, 50 cfs Jan. 22, 28, 1926.

Remarks.--Records good except those for periods of ice effect, which are fair. Considerable diurnal fluctuation caused by powerplants above station.

Revisions (water years).--WSP 1054: 1926(m). WSP 1084: 1919, 1922-24, 1938, 1940, 1942(M), 1944(M), 1945-46. WSP 1337: 1917-28(M), 1930, 1931-35(M), 1937-38(M), 1946, 1947(m), 1950(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	129
1.5	202
2.0	367
2.5	560
3.4	920

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	251	222	190	190	145	230	521	218	210	167	185	156
2	245	232	180	195	150	220	427	206	211	169	183	145
3	626	231	180	200	150	*217	337	218	217	174	166	140
4	904	232	190	210	150	210	291	218	207	158	162	150
5	551	223	180	221	155	210	345	219	199	169	158	134
6	358	218	180	224	160	210	354	209	207	159	160	143
7	303	219	175	210	160	210	317	204	237	155	172	*151
8	291	211	175	200	160	210	282	211	269	155	161	136
9	270	221	180	195	160	300	265	196	307	157	165	143
10	259	211	185	190	155	560	256	209	312	158	153	142
11	252	212	185	185	145	680	246	203	283	160	161	150
12	278	211	180	185	135	740	251	203	*256	147	152	128
13	253	209	180	185	135	335	262	202	240	147	140	146
14	291	209	180	180	140	273	303	194	237	147	150	132
15	303	*206	200	175	145	287	299	193	208	147	151	153
16	284	205	220	165	160	287	263	189	205	148	146	146
17	270	216	230	155	170	251	260	181	193	155	150	140
18	261	207	204	150	185	234	*246	180	181	163	146	143
19	252	204	210	155	200	216	269	189	183	154	144	146
20	238	198	200	160	220	219	254	207	178	149	137	139
21	232	203	190	160	230	213	240	193	184	148	146	151
22	230	199	200	160	220	150	226	191	163	147	145	132
23	226	214	210	160	220	210	217	186	160	154	142	145
24	226	212	205	155	230	220	247	211	161	157	149	140
25	221	224	201	150	240	210	282	218	154	*147	152	143
26	230	237	191	145	250	205	280	211	154	155	167	147
27	260	227	203	140	240	205	247	210	157	146	165	132
28	264	229	205	140	230	203	239	218	152	152	174	154
29	248	222	200	140	-	198	234	259	150	161	156	154
30	245	221	195	140	------	202	221	258	168	163	163	150
31	222	-- --	190	145	------	342	--------	233	--------	172	163	-------
Total	9,344	6,485	5,994	5,365	5,040	8,457	8,481	6,438	6,143	4,840	4,864	4,311
Mean	301	216	193	173	180	273	283	208	205	156	157	144
Cfsm	0.987	0.708	0.633	0.567	0.590	0.895	0.928	0.682	0.672	0.511	0.515	0.472
In.	1.14	0.79	0.73	0.65	0.61	1.03	1.03	0.78	0.75	0.59	0.59	0.53

Calendar year 1954: Max 904 Min 135 Mean 204 Cfsm 0.669 In. 9.13
Water year 1954-55: Max 904 Min 128 Mean 208 Cfsm 0.682 In. 9.22

Peak discharge (base, 670 cfs).--Oct. 4 (2 p.m.) 950 cfs (3.52 ft); Mar. 12 (time and discharge unknown).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 1-17, 19-23, Dec. 29 to Jan. 4, Jan. 7 to Mar. 12, Mar. 22-27.

Lake Winnebago at Oshkosh, Wis.

Location.--Lat 44°00'40", long 88°32'00", in sec. 24, T. 18 N., R. 17 E., in mouth of upper Fox River at Chicago and North Western Railway bridge, 0.2 mile downstream from Main Street Bridge in Oshkosh and 18 miles up the lake from Menasha Dam and outlet.

Drainage area.--6,030 sq mi, approximately, at lake outlet at Menasha Dam.

Records available.--October 1938 to September 1955 in reports of Geological Survey. Records from 1857 to 1938 in files of Corps of Engineers. A report on Fox River by Corps of Engineers, published as House Document No. 146, 67th Congress, 2d session, contains semi-monthly records of inflow to Lake Winnebago for the period 1896-1917.

Gage.--Staff gage read once daily. Datum of gage is 745.05 ft above mean tide at New York City (levels by Corps of Engineers). Prior to 1882, lake levels were referred to Deuchman gage at lake outlet of Menasha Dam. Datum of Deuchman gage, which is still in existence, is 745.00 ft above mean tide at New York City.

Extremes.--Maximum gage height observed during year, 3.35 ft Oct. 4; minimum observed, 0.98 ft Feb. 19.
1857-1955: Maximum gage height observed, 5.33 ft (Deuchman gage) Nov. 8, 1881; minimum observed, -2.00 ft (Deuchman gage) Nov. 28, 1891.

Remarks.--Lake elevations controlled by dams at Menasha and Neenah, which are operated in the interest of navigation. Crests of both dams are at elevation 746.73 ft. Present limits of regulation are from 21½ in. above the crest of Menasha Dam down to the crest during navigation season, plus additional 18 to 24 in. below crest during winter. Oshkosh staff gage gives true level of lake, while Deuchman gage readings are affected by loss of head in the channel between lake and dam.

Cooperation.--Records furnished by Corps of Engineers.

Gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.00	2.96	2.79	2.15	1.44	1.08	1.71	3.02	2.92	3.08	2.67	2.23
2	3.02	2.98	2.77	2.10	1.47	1.06	1.75	3.10	2.98	3.04	2.71	2.21
3	3.10	2.96	2.77	2.06	1.40	1.04	1.77	3.13	2.92	3.02	2.71	2.19
4	3.35	2.98	2.73	2.02	1.38	1.02	1.81	2.96	2.96	3.00	2.69	2.19
5	3.31	2.98	2.71	2.00	1.33	1.04	1.90	2.92	2.98	2.92	2.69	2.17
6	3.21	2.98	2.69	1.98	1.33	1.04	2.02	3.06	3.00	3.02	2.71	2.15
7	3.23	2.94	2.67	1.98	1.31	1.02	2.13	2.91	2.94	2.96	2.71	2.12
8	3.08	2.96	2.65	1.98	1.29	1.02	2.19	2.92	3.10	3.04	2.62	2.08
9	3.08	2.98	2.63	1.96	1.25	1.00	2.23	2.90	3.10	3.08	2.58	2.00
10	3.19	2.96	2.60	1.94	1.23	1.04	2.27	2.83	3.10	3.10	2.58	1.92
11	3.10	2.92	2.58	1.94	1.21	1.06	2.42	2.83	3.25	3.02	2.56	2.00
12	3.12	2.98	2.56	1.92	1.17	1.08	2.48	2.90	3.15	3.06	2.56	2.00
13	3.08	2.94	2.54	1.90	1.15	1.10	2.52	2.94	3.15	2.88	2.54	1.96
14	3.06	2.92	2.52	1.88	1.12	1.13	2.58	2.94	3.21	2.88	2.50	1.77
15	3.17	2.90	2.50	1.85	1.10	1.17	2.71	2.92	3.19	2.88	2.50	1.94
16	3.12	2.90	2.48	1.81	1.08	1.19	2.67	3.00	3.19	2.90	2.48	1.92
17	3.15	2.90	2.48	1.79	1.04	1.25	2.77	2.90	3.19	2.85	2.50	1.88
18	3.17	2.90	2.46	1.77	1.02	1.27	2.91	2.90	3.17	2.83	2.50	1.90
19	3.10	2.90	2.44	1.75	.98	1.29	2.92	3.00	3.17	2.81	2.48	1.90
20	3.06	2.88	2.42	1.73	1.02	1.33	2.90	2.90	3.17	2.79	2.42	2.00
21	3.08	2.85	2.40	1.69	1.06	1.40	2.90	2.81	3.19	2.77	2.44	2.04
22	3.08	2.83	2.33	1.69	1.08	1.52	2.90	2.79	3.12	2.73	2.48	1.90
23	3.06	2.81	2.31	1.65	1.08	1.54	2.94	2.77	3.17	2.75	2.40	1.90
24	3.08	2.85	2.31	1.60	1.10	1.58	3.15	2.88	3.12	2.71	2.33	1.88
25	3.08	2.85	2.31	1.58	1.08	1.60	2.99	2.90	3.12	2.69	2.31	1.85
26	3.06	2.83	2.27	1.56	1.06	1.60	3.04	2.90	3.10	2.67	2.29	1.81
27	3.06	2.81	2.21	1.52	1.08	1.60	3.02	2.79	3.12	2.60	2.27	1.81
28	3.04	2.77	2.17	1.50	1.10	1.62	3.17	2.90	3.10	2.58	2.29	1.90
29	3.06	2.73	2.17	1.48	-	1.62	3.06	2.88	3.08	2.67	2.27	1.85
30	3.02	2.85	2.19	1.46	-------	1.65	3.04	2.94	3.19	2.73	2.21	1.90
31	3.02	-------	2.19	1.44	-------	1.67	-------	2.96	-------	2.63	2.25	-------

Lake de Neveu near Fond du Lac, Wis.

Location.--Lat 43°44', long 88°24', in sec. 30, T. 15 N., R. 18 E., at boathouse at north end of lake on farm of Nick Giebel, 4 miles southeast of Fond du Lac.

Drainage area.--2 sq mi, approximately.

Records available.--August 1936 to September 1955 (fragmentary).

Gage.--Reference point in lake bed.

Extremes.--Maximum elevation observed during year, 97.89 ft Oct. 5; minimum observed, 96.99 ft Sept. 13.
1936-55: Maximum elevation observed, 98.32 ft Mar. 27, 1950; minimum observed, 96.90 ft Aug. 15, 1936.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Natural outlet.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.78	-	-	-	7.46	7.59	7.60	-	-	7.45	-	7.11
2	-	7.49	-	-	-	-	-	-	-	-	7.36	7.10
3	-	-	7.47	-	-	-	-	7.54	7.48	-	-	-
4	-	-	-	7.50	7.45	7.59	-	-	-	-	-	-
5	7.89	7.45	-	7.50	-	-	7.66	-	-	7.57	7.38	-
6	-	-	-	-	-	-	-	7.52	-	-	-	7.06
7	-	-	7.47	7.50	-	-	-	-	7.46	-	-	-
8	7.74	-	-	-	7.45	7.54	7.64	-	-	7.52	-	-
9	-	7.43	-	-	-	-	-	-	-	-	7.34	-
10	-	-	7.48	-	-	-	-	7.46	7.56	-	-	7.03
11	-	-	-	7.50	7.44	7.60	-	-	-	-	-	-
12	7.64	7.44	-	-	-	-	7.60	-	-	7.46	7.30	-
13	-	-	-	-	-	-	-	7.44	-	-	-	6.99
14	-	-	7.48	7.50	-	-	-	-	7.51	-	-	-
15	7.59	-	-	-	7.45	7.58	7.61	-	-	7.38	-	-
16	-	7.44	-	-	-	-	7.60	-	-	-	7.25	7.05
17	-	-	7.48	-	-	-	-	7.40	7.48	-	-	-
18	-	-	-	7.50	7.46	7.54	-	-	-	-	-	-
19	7.50	7.44	-	-	-	-	7.59	-	-	7.35	7.23	-
20	-	-	-	-	-	-	-	7.40	-	7.33	-	7.05
21	-	-	7.48	7.50	-	-	-	-	7.47	-	-	-
22	7.50	-	-	-	-	7.56	7.55	-	-	7.33	-	-
23	-	7.44	-	-	-	-	-	-	-	-	7.19	7.05
24	-	-	7.47	-	7.63	-	-	7.58	7.44	-	-	-
25	-	-	-	7.50	7.60	7.54	-	-	-	-	-	-
26	7.50	7.45	-	-	-	-	7.74	-	-	7.33	7.16	-
27	-	-	-	-	-	-	-	7.56	-	-	-	7.04
28	-	-	7.51	7.50	-	-	-	-	7.39	-	-	-
29	7.48	-	-	-	-	7.53	7.65	-	-	7.33	-	-
30	-	7.45	-	-	-------	-	-	-	-	-	7.16	7.03
31	-	-------	7.51	-	-------	-	-------	7.52	-------	-	-	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Fox River at Rapide Croche Dam, near Wrightstown, Wis.

Location.--Lat 44°19', long 88°12', in sec. 4, T. 21 N., R. 19 E., at Rapide Croche Dam, 2 miles upstream from Wrightstown and 18 miles upstream from mouth.

Drainage area.--6,150 sq mi, approximately.

Records available.--March 1896 to September 1955.

Gage.--Recording headwater and tailwater gages and electric generation data taken each half hour are used to compute discharge records.

Average discharge.--59 years, 4,228 cfs.

Extremes.--Maximum daily discharge during year, 12,800 cfs Oct. 8; minimum daily, 1,190 cfs Sept. 19.
1918-55: Maximum daily discharge, 24,000 cfs Apr. 18, 1952; minimum daily, 138 cfs Aug. 2, 1936.

Remarks.--Records good. Flow regulated by storage in Lake Winnebago (see p. 91). Daily discharge determined from records of flow through turbines, head, gate openings, and lockages through navigation canal.

Cooperation.--Figures of daily discharge furnished by Corps of Engineers. Records reviewed by Geological Survey.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,860	7,750	5,510	5,140	3,990	3,480	5,360	8,380	2,780	3,540	2,740	1,810
2	3,530	5,740	5,200	4,840	4,130	3,510	4,480	9,220	3,120	3,350	2,420	1,710
3	5,500	5,820	6,020	5,200	3,900	3,590	4,250	8,880	3,460	3,070	2,720	1,740
4	6,400	4,430	5,260	4,490	3,890	3,470	4,390	8,800	3,330	2,960	2,700	1,680
5	9,700	4,530	5,250	4,710	3,750	3,710	5,160	7,650	3,140	3,420	2,570	1,510
6	11,700	4,760	5,180	4,810	3,420	3,310	5,180	7,740	3,500	2,720	3,410	1,800
7	12,300	4,800	5,190	4,710	3,880	3,670	4,780	7,280	3,440	2,700	1,980	1,430
8	12,800	4,420	5,330	4,460	3,670	3,380	4,890	6,870	3,300	2,490	2,070	1,630
9	11,700	4,400	5,300	4,740	3,780	3,740	4,680	7,160	3,750	2,970	2,240	1,830
10	10,400	4,590	5,080	4,460	3,460	4,120	5,130	4,640	3,580	2,560	2,180	1,470
11	11,700	4,380	5,140	4,560	3,460	4,060	6,100	3,750	3,000	3,380	2,170	1,340
12	11,600	4,520	4,900	4,590	3,540	3,730	5,550	3,700	2,740	2,920	2,190	1,440
13	11,000	4,850	4,900	4,590	3,400	3,080	5,750	4,080	3,430	3,270	2,170	1,590
14	7,990	4,180	3,720	4,200	3,490	4,070	6,090	3,890	3,720	3,050	1,710	1,750
15	5,980	4,340	3,830	3,910	3,430	3,620	6,060	3,640	4,160	2,900	1,920	1,500
16	8,390	4,610	4,280	4,680	3,600	3,630	6,250	3,430	4,960	2,850	2,160	1,680
17	8,480	4,460	4,630	4,380	3,450	3,790	5,560	3,650	5,900	2,660	1,970	1,650
18	8,530	4,510	5,410	4,420	3,540	3,590	6,760	3,240	5,380	2,670	1,790	1,340
19	8,870	4,030	5,480	4,320	3,660	3,780	6,380	3,650	5,270	2,750	2,010	1,190
20	9,000	4,340	5,900	4,280	4,690	3,440	7,790	3,610	4,930	2,870	2,240	1,540
21	7,870	3,540	5,240	4,160	3,390	3,840	7,840	3,630	3,940	2,820	1,920	1,520
22	7,680	4,680	5,610	4,060	3,490	3,870	8,090	3,270	3,910	2,820	1,530	1,400
23	7,570	4,720	5,650	4,020	3,570	4,000	7,960	2,990	3,510	2,700	1,860	1,580
24	7,440	4,450	4,600	4,230	3,660	3,910	7,490	3,110	3,760	1,980	2,120	1,500
25	7,330	3,600	4,930	4,140	3,570	4,020	8,200	2,860	3,680	2,860	1,750	1,300
26	7,140	5,110	4,710	4,040	3,260	4,000	8,500	3,080	3,570	2,360	1,890	1,270
27	6,870	4,860	5,190	3,880	3,070	3,890	9,200	3,290	3,430	2,220	1,860	1,540
28	7,730	3,520	5,120	4,130	3,350	3,860	8,880	3,250	3,430	2,450	1,720	1,510
29	7,160	5,240	5,260	4,170	-	4,150	8,620	2,830	3,710	2,620	1,830	1,470
30	6,700	5,670	5,140	3,760	-------	4,510	9,000	2,790	3,710	2,650	1,910	1,440
31	6,880	-------	4,920	3,700	-------	4,570	-------	3,630	-------	2,360	1,820	-------
Total	258,800	140,850	157,880	135,780	101,490	117,390	194,370	147,990	113,540	86,940	65,570	46,160
Mean	8,348	4,695	5,093	4,380	3,625	3,787	6,479	4,774	3,785	2,805	2,115	1,539
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 12,800 Min 1,180 Mean 3,573 Cfsm - In. -
Water year 1954-55: Max 12,800 Min 1,190 Mean 4,292 Cfsm - In. -

Cedar Lake near Kiel, Wis.

Location.--Lat 43°55', long 87°56', in sec. 24, T. 17 N., R. 21 E., at Cedar Lake Resort on narrows of lake, 5 miles east of Kiel.

Drainage area.--3 sq mi, approximately.

Records available.--August 1936 to September 1942, April 1945 to September 1955 (fragmentary).

Gage.--Staff gage.

Extremes.--Maximum elevation observed during year, 97.53 ft June 18; minimum observed, 96.20 ft Oct. 2.
1936-42, 1945-55: Maximum elevation observed, 98.72 ft Mar. 9, 1946; minimum observed, 94.95 ft Aug. 14, 1936.
An elevation of 99.22 ft was observed Mar. 31, 1943.

Remarks.--Gage heights have been reduced to elevations above datum assumed for this lake by Public Service Commission of Wisconsin. Natural outlet; rarely flows.

Elevation, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	6.68	-	-	-	-	-	-	-	-
2	6.20	-	-	-	-	-	6.91	-	-	6.83	6.61	-
3	-	-	-	-	-	-	-	-	-	-	-	6.63
4	-	-	6.52	-	-	-	-	-	7.33	-	-	-
5	-	-	-	-	6.74	6.74	-	-	-	-	-	-
6	-	6.54	-	6.63	-	-	-	-	-	-	6.77	-
7	-	-	-	-	-	-	-	7.19	-	-	-	-
8	-	-	-	6.70	-	-	-	-	7.35	-	-	-
9	6.58	-	-	-	-	-	6.95	-	-	6.87	-	-
10	-	6.54	-	-	-	-	-	-	-	-	-	6.63
11	-	-	6.52	-	-	-	-	-	7.39	-	-	-
12	-	-	-	-	6.74	6.81	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-	6.73	-
14	-	-	-	-	-	-	-	7.13	-	-	-	-
15	-	-	-	6.70	-	-	-	-	-	-	-	-
16	6.52	-	-	-	-	-	7.03	-	-	6.85	-	-
17	-	-	-	-	-	-	7.09	-	-	-	-	6.55
18	-	-	6.54	-	-	-	-	-	7.53	-	-	-
19	-	-	-	-	6.76	6.83	-	-	-	-	-	-
20	-	6.52	-	-	-	-	-	-	-	-	6.71	-
21	-	-	-	-	-	-	-	7.17	-	6.99	-	-
22	-	-	-	6.72	-	-	-	-	-	-	-	-
23	6.50	-	-	-	-	-	7.13	-	-	6.79	-	-
24	-	-	-	-	-	-	-	-	-	-	-	6.43
25	-	-	-	-	-	-	-	-	7.21	-	-	-
26	-	-	-	-	6.76	6.87	-	-	-	-	-	-
27	-	6.50	-	-	-	-	-	-	-	-	6.69	-
28	-	-	-	-	-	-	-	7.23	-	-	-	-
29	-	-	-	6.72	-	-	-	-	-	-	-	-
30	6.54	-	-	-	-------	-	7.23	-	7.19	6.81	-	6.33
31	-	-------	6.60	-	-------	6.89	-------	-	-------	-	-	-------

Note.--Add 90 ft to obtain elevation above datum assumed for this lake by Public Service Commission of Wisconsin.

Sheboygan River at Sheboygan, Wis.

Location.--Lat 43°44', long 87°46', in E½ sec. 29, T. 15 N., R. 23 E., on left bank near State Highway 28, 0.7 mile west of bridge over Sheboygan River on State Highway 28 and 4 miles upstream from mouth.

Drainage area.--403 sq mi.

Records available.--June 1916 to June 1924 (published as "near Sheboygan"), November 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage 584.00 ft above mean sea level, datum of 1929. June 1916 to June 1924 chain gage at site 0.7 mile downstream at different datum. November 1950 to June 1951 staff gage at site 0.3 mile downstream at datum 3.15 ft lower.

Average discharge.--11 years (1916-23, 1951-55), 239 cfs.

Extremes.--Maximum discharge during year, 3,260 cfs Apr. 25 (gage height, 8.92 ft); minimum, 10 cfs Sept. 6, 7 (gage height, 1.37 ft).
1916-24, 1950-55: Maximum discharge observed, 7,140 cfs Mar. 26, 1920 (gage height, 9.40 ft, datum then in use); minimum observed, about 1 cfs Aug. 27, 1922 (gage height, 1.48 ft, datum then in use), caused by shutdown of powerplants.

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation caused by numerous powerplants above station.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	8	3.0	266
1.4	13	3.5	418
1.6	27	4.0	614
1.9	60	6.0	1,660
2.2	104	8.0	2,770
2.5	155		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	248	150	139	140	54	182	711	515	214	90	233	*25
2	172	141	101	140	54	190	686	463	164	86	194	31
3	792	192	98	150	54	210	686	442	176	80	146	26
4	2,580	233	94	160	56	300	624	369	168	72	123	24
5	1,890	218	92	180	56	340	770	305	155	79	104	22
6	1,220	192	90	*280	54	290	850	274	146	98	88	12
7	755	184	90	340	52	260	760	226	*148	90	79	12
8	614	168	92	210	50	200	667	203	268	91	76	19
9	548	*166	94	180	48	203	605	172	470	120	73	27
10	523	137	90	170	46	582	548	180	452	104	61	23
11	596	128	84	150	46	1,040	481	172	366	86	46	26
12	552	135	85	130	44	1,120	452	127	748	80	46	13
13	481	125	84	120	40	960	432	102	765	74	42	16
14	428	128	82	110	42	770	481	94	531	78	37	29
15	425	135	85	100	44	700	662	93	408	64	33	32
16	382	130	87	98	46	600	*496	85	319	63	30	36
17	322	125	87	92	46	540	442	70	280	85	33	31
18	271	114	78	86	46	460	395	85	238	82	32	31
19	221	110	75	82	44	420	418	80	205	70	25	31
20	180	106	80	76	300	350	366	73	190	*63	25	23
21	166	109	88	72	420	390	341	70	174	56	23	27
22	223	99	89	70	390	415	308	68	151	52	18	21
23	256	109	89	66	330	206	263	74	134	47	24	25
24	233	115	89	64	*270	210	1,500	90	123	56	25	33
25	209	137	91	62	207	210	2,700	118	122	48	30	25
26	190	141	95	60	178	200	1,790	127	99	50	39	22
27	176	150	190	58	184	200	1,080	325	78	30	47	26
28	186	151	170	58	182	210	795	466	80	175	36	35
29	180	148	150	56	-	319	696	353	79	305	46	37
30	174	150	130	54	-------	481	600	308	84	250	25	32
31	161	-------	130	54	-------	691	-------	277	-------	277	22	-------
Total	15,354	4,326	3,118	3,668	3,383	13,249	21,605	6,408	7,535	3,001	1,861	772
Mean	495	144	101	118	121	427	720	207	251	96.8	60.0	25.7
Cfsm	1.23	0.357	0.251	0.293	0.300	1.06	1.79	0.514	0.623	0.240	0.149	0.064
In.	1.42	0.40	0.29	0.34	0.31	1.23	2.01	0.59	0.70	0.28	0.17	0.07

Calendar year 1954: Max 2,580 Min 18 Mean 145 Cfsm 0.360 In. 4.91
Water year 1954-55: Max 2,700 Min 12 Mean 231 Cfsm 0.573 In. 7.81

Peak discharge (base, 1,500 cfs).--Oct 4 (7 a.m.) 2,780 cfs (8.04 ft); Apr. 25 (1 a.m.) 3,260 cfs (8.92 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3 to Feb. 24, Mar. 2-8, 15-21, 24-28.

Cedar Creek near Cedarburg, Wis.

Location.--Lat 43°19'25", long 87°58'50", on line between secs. 14 and 23, T. 10 N., R. 21 E., on upstream side of highway bridge, 2 miles north of Cedarburg and 6 miles upstream from mouth.

Drainage area.--113 sq mi.

Records available.--August 1930 to September 1955.

Gage.--Chain gage read once daily. Altitude of gage is 790 ft (from topographic map).

Average discharge.--25 years, 64.0 cfs.

Extremes.--Maximum discharge during year, 1,920 cfs Oct. 4 (gage height, 9.45 ft, from graph based on gage readings); minimum observed, 6.1 cfs Sept. 12, 13.
1930-55: Maximum discharge observed, 3,500 cfs Mar. 20, 1952 (gage height, 11.40 ft); maximum gage height observed, 12.00 ft Feb. 7, 1938 (backwater from ice); minimum discharge observed, 0.2 cfs Aug. 9-12, 1936.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions.--WSP 804: Drainage area.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

5.1	4.0	5.7	72
5.2	7.0	6.1	182
5.3	12	7.0	500
5.4	20	8.0	1,000
5.5	33	9.0	1,610

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	50	54	60	16	120	135	113	86	63	18	10
2	130	54	50	65	16	140	135	107	20	68	16	10
3	368	59	46	68	16	160	118	86	17	59	16	8.5
4	1,610	63	42	75	16	190	107	72	40	54	16	8.5
5	1,610	63	38	201	16	350	107	72	50	54	16	8.5
6	1,350	63	37	400	17	320	102	68	63	86	14	7.5
7	1,000	57	35	336	17	290	102	63	72	59	14	7.5
8	609	57	32	240	17	280	91	63	124	68	*16	7.5
9	517	50	29	146	16	290	86	86	208	72	16	6.7
10	379	50	28	86	16	380	86	*104	273	63	16	6.7
11	220	47	20	68	16	520	86	107	508	57	16	6.7
12	176	43	20	64	16	879	91	96	1,100	48	14	6.1
13	135	40	21	43	15	415	102	82	1,170	42	14	6.1
14	118	40	23	36	15	152	102	72	814	32	13	8.0
15	107	40	25	33	15	*146	130	63	357	29	13	9.0
16	96	36	28	33	15	118	135	50	214	26	11	9.0
17	86	36	33	33	16	107	135	47	130	29	11	9.0
18	86	*36	33	33	40	91	135	47	113	29	10	8.0
19	82	40	30	*33	75	77	146	43	96	26	9.0	8.0
20	77	43	31	30	120	68	146	40	86	24	9.0	8.0
21	77	43	33	28	240	72	130	40	*77	24	8.0	7.0
22	68	47	33	25	210	107	130	40	63	21	9.0	7.0
23	63	50	36	23	170	273	152	47	59	21	9.0	8.0
24	63	50	36	22	150	350	670	72	63	21	9.0	8.0
25	59	54	36	20	130	343	1,340	135	68	21	9.0	8.0
26	59	54	36	19	120	290	868	170	68	19	10	8.0
27	54	50	50	19	110	253	214	287	59	19	11	10
28	50	47	54	18	110	158	152	445	50	19	11	11
29	50	47	56	17	-	96	135	386	47	19	11	12
30	47	50	50	17	-------	113	124	273	43	19	11	*14
31	47	----	----	55	16	-------	141	-------	158	-------	18	10	-------
Total	9,489	1,459	1,130	2,307	1,746	7,289	6,192	3,534	6,138	1,209	386.0	252.3
Mean	306	48.6	36.5	74.4	62.4	235	206	114	205	39.0	12.5	8.41
Cfsm	2.71	0.430	0.323	0.658	0.552	2.08	1.82	1.01	1.81	0.345	0.111	0.074
In.	3.12	0.48	0.37	0.76	0.57	2.40	2.04	1.16	2.02	0.40	0.13	0.08

Calendar year 1954: Max 1,610 Min 7.0 Mean 76.9 Cfsm 0.681 In. 9.24
Water year 1954-55: Max 1,610 Min 6.1 Mean 113 Cfsm 1.00 In. 13.53

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2-9, 13, 19, 20, Dec. 29 to Jan. 4, Jan. 12, Jan. 21 to Mar. 11, Mar. 26.

Milwaukee River at Milwaukee, Wis.

Location.--Lat 43°06'00", long 87°54'30", in NE¼ sec. 5, T. 7 N., R. 22 E., on left bank near north limits of Milwaukee, 2,000 ft downstream from Port Washington Road Bridge and 6 miles upstream from mouth.

Drainage area.--661 sq mi.

Records available.--April 1914 to September 1955. Published as "near Milwaukee" prior to 1936.

Gage.--Water-stage recorder. Datum of gage is 607.3 ft above mean sea level, adjustment of 1912. Prior to Apr. 6, 1929, staff gage or chain gage near present site at different datum. Apr. 6, 1929, to Jan. 8, 1934, chain gage at bridge half a mile upstream at different datum.

Average discharge.--41 years, 394 cfs.

Extremes.--Maximum discharge during year, 4,590 cfs Oct. 4 (gage height, 5.92 ft); minimum, 4.6 cfs May 4 (gage height, 1.59 ft).
1914-55: Maximum discharge, 15,100 cfs Mar. 20, 1918, Aug. 6, 1924 (gage height, 9.00 ft, datum then in use, from floodmark for 1918); no flow Sept. 8, 1943.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Occasional regulation caused by dams above station.

Revisions (water years).--WSP 564: 1918(M). WSP 924: 1940. WSP 1207: 1936(M). WSP 1337: 1915-17(M), 1918, 1919-21(M), 1922, 1923(M), 1924, 1925-33(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.8	29	3.0	584
2.0	69	3.5	1,030
2.2	132	4.0	1,600
2.4	224	5.0	3,000
2.7	391	5.9	4,550

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	344	235	338	390	129	428	772	781	584	a200	112	67
2	458	266	288	434	129	503	864	694	452	a220	158	62
3	3,010	288	250	415	132	497	950	645	415	a210	200	58
4	4,470	321	224	458	136	607	930	349	348	a205	200	53
5	4,400	362	272	997	141	700	902	346	385	a200	195	55
6	3,660	332	240	1,100	149	640	911	385	344	a225	154	51
7	2,560	326	200	864	145	570	902	350	332	a210	141	48
8	1,760	310	200	728	140	520	558	272	422	a220	129	53
9	1,430	277	235	560	140	471	620	294	781	a230	*118	53
10	1,220	299	210	500	140	543	622	*344	854	a210	112	46
11	950	266	180	440	130	940	720	422	2,390	a200	108	39
12	799	229	180	390	120	1,590	599	344	3,990	a200	101	39
13	736	245	220	340	110	1,760	570	362	3,100	a200	95	44
14	607	245	204	280	110	1,760	630	304	2,150	a195	89	154
15	472	240	195	240	110	1,680	835	250	1,390	a195	86	80
16	490	229	229	210	120	*1,330	892	288	980	a220	86	69
17	490	266	240	190	130	720	808	209	677	a240	86	75
18	440	*250	229	180	154	570	660	200	510	a270	81	69
19	391	250	220	*175	288	540	745	200	434	321	78	80
20	367	204	210	170	607	536	772	204	332	214	75	62
21	326	277	200	170	660	577	702	190	*344	166	69	62
22	326	209	229	150	560	763	577	272	299	175	69	60
23	321	250	245	140	520	490	458	219	250	166	64	60
24	256	266	235	130	510	523	1,970	462	266	122	64	60
25	294	310	219	130	503	480	4,060	434	245	118	62	60
26	240	332	294	120	446	450	4,250	523	229	115	62	64
27	299	373	557	120	465	460	3,020	817	219	108	69	84
28	261	350	516	115	403	450	2,020	1,620	200	105	72	78
29	294	344	350	115	-	480	1,400	1,290	a190	98	89	129
30	288	362	270	120	-------	510	1,040	1,020	185	108	78	*86
31	272	------	320	120	-------	592	-------	781	--------	118	72	-------
Total	32,231	8,513	7,999	10,491	7,327	22,680	34,759	14,871	23,297	5,784	3,174	1,960
Mean	1,040	284	258	338	262	732	1,159	480	777	187	102	65.3
Cfsm	1.57	0.430	0.390	0.511	0.396	1.11	1.75	0.726	1.18	0.283	0.154	0.099
In.	1.81	0.48	0.45	0.59	0.41	1.28	1.96	0.84	1.31	0.33	0.18	0.11

Calendar year 1954: Max 4,470 Min 12 Mean 352 Cfsm 0.533 In. 7.23
Water year 1954-55: Max 4,470 Min 39 Mean 474 Cfsm 0.717 In. 9.75

Peak discharge (base, 2,000 cfs).--Oct. 4 (4 a.m.) 4,590 cfs (5.92 ft); Apr. 25 (11 p.m.) 4,570 cfs (5.91 ft); June 12 (10:30 a.m.) 4,230 cfs (5.73 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on the basis of weather records and records for Cedar Creek near Cedarburg and Sheboygan River at Sheboygan.

Note.--Stage-discharge relation affected by ice Dec. 7, 8, 10-13, 19, 20, Dec. 29 to Jan. 1, Jan. 9-31, Feb. 8-17, 21-24, Mar. 5-8, 17-19, 25-29 (no gage-height record Feb. 8-13, 15-17).

Hart ditch at Munster, Ind.

Location.--Lat 41°33'40", long 87°28'50", in N½ sec. 20, T. 36 N., R. 9 W., on left bank at city limit of Munster, a quarter of a mile downstream from U. S. Highway 41 and 0.4 mile upstream from mouth.

Drainage area.--69.2 sq mi.

Records available.--September 1942 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 591.21 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 59.9 cfs.

Extremes.--Maximum discharge during year, 2,600 cfs Oct. 11; maximum gage height, 7.83 ft Oct. 11; minimum, 2.2 cfs Sept. 25; minimum gage height, 0.50 ft Aug. 28, 29.
1942-55: Maximum discharge, that of Oct. 11, 1954; maximum gage height, that of Oct. 11, 1954; minimum discharge, 1.2 cfs July 29, 1946; minimum gage height, 0.47 ft July 29, 1946, Sept. 2, 1948.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow from this ditch discharges into Little Calumet River near Munster, practically all of this flow discharging into the Calumet Sag Channel or Grand Calumet River.

Revisions.--WSP 1337: Drainage area.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Backwater from Little Calumet River Oct. 10-23)

0.48	2.8	1.5	189
.6	11	2.0	348
.8	33	4.0	1,030
1.0	62		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.0	32	46	78	11	140	54	22	38	8.0	11	17
2	6.4	30	42	110	11	120	45	18	29	7.2	10	12
3	9.6	29	37	145	11	100	39	16	25	6.4	8.0	8.7
4	8.0	28	34	322	11	160	34	14	21	9.6	7.2	8.0
5	14	26	30	511	11	115	32	13	18	50	7.2	6.4
6	14	25	26	855	11	70	29	12	17	28	18	6.4
7	11	23	21	335	12	*50	27	12	22	21	12	6.4
8	9.5	22	22	165	12	47	25	11	58	14	8.7	6.4
9	10	21	*23	123	14	53	23	11	46	13	*8.7	6.4
10	1,320	*19	39	91	*17	48	22	15	76	10	8.0	6.4
11	*2,570	19	34	70	16	45	25	14	249	8.7	7.2	5.8
12	*1,780	18	28	59	16	41	29	13	137	8.0	6.4	5.8
13	*763	18	23	49	15	34	39	12	82	6.4	6.4	5.8
14	*504	17	22	42	15	30	39	13	*61	6.4	5.8	5.1
15	*389	16	22	39	14	42	33	11	46	7.2	5.8	5.1
16	*256	16	21	33	50	53	29	10	37	9.6	5.8	5.1
17	178	17	23	29	150	38	26	10	30	13	5.1	5.1
18	*140	17	27	*28	110	34	25	*9.6	27	*13	5.1	3.9
19	117	18	26	26	75	30	28	8.7	22	9.6	5.1	3.3
20	94	18	21	22	462	30	64	8.7	20	8.0	5.8	4.5
21	77	17	19	23	223	37	64	8.0	17	7.2	5.1	*3.3
22	66	17	17	21	115	89	42	13	15	7.2	7.2	3.3
23	56	18	16	20	58	128	34	15	13	62	6.4	3.3
24	51	29	21	18	49	220	39	35	13	478	5.8	3.3
25	45	36	22	17	43	121	70	141	11	171	5.1	2.8
26	43	34	29	16	41	90	62	56	10	76	5.1	2.8
27	42	37	172	15	90	55	45	187	8.7	42	5.1	5.8
28	42	59	319	14	160	72	*36	198	8.7	29	4.5	5.1
29	39	89	180	13	-	94	30	146	8.7	23	8.7	8.0
30	36	53	105	12	------	82	26	78	8.7	17	94	6.4
31	33	------	76	11	------	64	------	49	------	14	32	------
Total	8,731.5	818	1,545	3,312	1,823	2,332	1,115	1,180.0	1,174.8	1,183.5	336.3	177.7
Mean	282	27.3	49.8	107	65.1	75.2	37.2	38.1	39.2	38.2	10.8	5.92
Cfsm	4.08	0.395	0.720	1.55	0.941	1.09	0.538	0.551	0.566	0.552	0.156	0.086
In.	4.70	0.44	0.83	1.79	0.98	1.26	0.60	0.64	0.63	0.64	0.18	0.10

Calendar year 1954: Max 2,570 Min 3.1 Mean 66.0 Cfsm 0.954 In. 12.97
Water year 1954-55: Max 2,570 Min 2.8 Mean 65.0 Cfsm 0.939 In. 12.79

Peak discharge (base, 800 cfs).--Oct. 11 (5 to 10 a.m.) 2,600 cfs (7.83 ft, 4 to 8 p.m.); Jan. 6 (11:30 a.m.) 925 cfs (3.73 ft).
* Discharge measurement made on this day.
Note.--No gage-height record Jan. 23 to Feb. 19, Feb. 27 to Mar. 8, Mar. 26-28; discharge estimated on basis of weather records and records for stations on nearby streams.

Thorn Creek at Glenwood, Ill.

Location.--Lat 41°31'50", long 87°36'20", in SW¼SE¼ sec. 9, T. 35 N., R. 14 E., on right bank 20 ft downstream from Baltimore & Ohio Chicago Terminal Railroad bridge, 0.7 mile north of Chicago Heights, 0.8 mile south of Glenwood, and 1 mile upstream from Deer Creek.

Drainage area.--25.4 sq mi.

Records available.--May 1949 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 610.97 ft above mean sea level, datum of 1929.

Average discharge.--6 years, 30.3 cfs.

Extremes.--Maximum discharge during year, 916 cfs Oct. 10 (gage height, 9.88 ft); minimum daily, 12 cfs Sept. 11.
1949-55: Maximum discharge, that of Oct. 10, 1954; minimum daily, 6.0 cfs July 4, Aug. 21, Sept. 5, 11, 25, 1949.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Figures of discharge include about 6 cfs pumped from ground-water sources for municipal supply of Chicago Heights and undetermined amount of ground-water pumpage for industrial use above station. Undetermined amount of pumpage diverted by commercial livestock feeding pens above station.

Revisions.--WSP 1207: Drainage area.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 29 to Dec. 27, May 30 to July 22)

2.8	11	6.0	278
3.2	25	8.0	593
3.8	56	8.8	729
4.5	110		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	21	22	a28	18	51	27	16	32	30	16	21
2	17	22	21	a40	19	40	24	19	28	22	16	18
3	18	22	20	58	19	62	21	19	27	19	16	16
4	21	22	19	100	18	48	23	19	25	20	16	14
5	36	22	18	302	18	34	23	19	21	38	18	15
6	22	21	17	198	16	27	23	19	36	40	90	16
7	19	20	18	64	17	26	22	17	42	28	34	18
8	19	*19	19	a55	19	*25	21	15	52	25	21	16
9	23	20	19	a49	19	25	20	19	55	26	20	15
10	727	21	19	a45	22	24	19	22	79	21	18	15
11	*682	21	18	a41	20	23	24	18	216	22	18	12
12	243	20	17	a37	17	21	23	19	67	22	17	13
13	96	20	16	a33	16	19	26	20	47	22	15	*16
14	60	19	*18	a30	18	21	23	18	40	21	14	16
15	56	19	18	a28	20	30	21	14	34	21	16	15
16	54	20	18	a25	21	30	20	18	30	20	18	16
17	44	20	17	*23	21	26	17	19	27	28	18	13
18	40	21	18	21	24	25	19	19	25	27	17	13
19	39	21	17	20	71	23	26	19	21	22	17	13
20	34	20	16	20	176	20	57	20	25	20	15	16
21	30	19	16	20	65	26	37	18	23	20	14	16
22	30	19	16	18	39	46	27	30	23	19	24	17
23	30	20	17	16	30	55	23	*30	23	66	18	16
24	29	25	17	18	28	63	25	55	23	29	18	15
25	28	25	16	19	26	42	*32	54	21	*20	17	13
26	28	20	15	19	29	32	27	31	19	19	17	15
27	27	20	42	19	169	29	24	112	*20	18	15	25
28	27	25	78	19	83	*32	23	220	22	17	13	18
29	27	32	a65	18	-	35	21	117	22	17	43	28
30	25	24	a40	18	-------	32	19	44	28	16	186	19
31	22	---	a30	18	-------	30	-------	36	-------	14	54	------
Total	2,572	640	717	1,419	1,058	1,022	737	1,115	1,153	749	829	489
Mean	83.0	21.3	23.1	45.8	37.8	33.0	24.6	36.0	38.4	24.2	26.7	16.3
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 727 Min 9.1 Mean 32.3 Cfsm - In. - cfs days 1250
Water year 1954-55: Max 727 Min 12 Mean 34.2 Cfsm - In. - 1830

Peak discharge (base, 240 cfs).--Oct. 10 (10 to 11 p.m.) 916 cfs (9.88 ft); Jan. 5 (7 p.m.) 512 cfs (7.49 ft); Feb. 27 (2 p.m.) 252 cfs (5.78 ft); May 28 (5 p.m.) 306 cfs (6.22 ft); June 11 (11 a.m.) 314 cfs (6.25 ft); July 23 (10:30 a.m.) 272 cfs (5.95 ft); Aug. 6 (4:30 a.m.) 306 cfs (6.20 ft); Aug. 30 (2 a.m.) 464 cfs (7.16 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for stations in Thorn Creek basin.

Deer Creek near Chicago Heights, Ill.

Location.--Lat 41°31'15", long 87°35'25", 0.1 mile west of center of sec. 14, T. 35 N., R. 14 E., on left bank at downstream side of bridge on Joe Orr Road, 0.4 mile east of Cottage Grove Avenue, 1 mile north of U. S. Highway 30, 1.5 miles northeast of Chicago Heights, and 1.6 miles west of Torrence Avenue.

Drainage area.--24.4 sq mi.

Records available.--May 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 615.95 ft above mean sea level, datum of 1929. Prior to Jan. 11, 1949, wire-weight gage at same site and datum.

Average discharge.--7 years, 14.3 cfs.

Extremes.--Maximum discharge during year, 637 cfs Oct. 11 (gage height, 11.19 ft); minimum, 0.1 cfs May 20, 21, Sept. 19, 20.
1948-55: Maximum discharge, 663 cfs May 10 or 11, 1948 (gage height, 11.52 ft, from floodmark); no flow Sept. 21 to Oct. 3, 1949, Sept. 30 to Oct. 3, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Undetermined amount of flow diverted for irrigation.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	4.3	12	24	b2.6	37	a12	3.2	26	1.3	1.6	15
2	.3	3.6	11	28	b2.5	26	a10	2.8	18	1.2	1.4	5.1
3	.3	3.5	10	53	b2.4	24	a8.2	2.4	13	.9	1.2	2.3
4	.3	3.7	9.5	103	b2.3	36	7.0	2.4	8.0	1.0	1.0	1.6
5	.6	3.5	8.3	144	2.6	28	a5.8	2.0	5.8	5.8	.8	1.3
6	1.0	3.5	7.1	196	2.6	22	a5.0	1.3	5.1	11	5.3	1.2
7	.9	3.2	6.5	71	2.5	13	a4.5	1.5	6.2	9.8	4.8	1.0
8	.7	*2.9	5.3	37	2.4	*12	a4.8	1.4	14	8.7	3.6	.8
9	1.1	2.7	5.0	30	2.5	12	a4.0	1.7	14	8.3	2.6	.7
10	323	2.5	4.6	24	3.4	11	a3.7	2.2	25	7.8	2.0	.6
11	*594	2.4	3.9	18	b3.0	11	4.1	2.4	87	6.8	1.5	.6
12	316	2.2	3.8	15	b2.6	9.5	a4.8	2.3	63	6.2	1.2	*.5
13	*129	2.3	3.8	12	b2.4	7.6	a5.0	2.0	41	5.7	1.0	.4
14	75	2.4	*3.6	10	b2.4	6.9	a4.6	2.0	28	5.2	.9	.4
15	72	2.0	3.5	9.4	b2.6	8.0	a3.7	2.0	16	4.2	.8	.4
16	44	2.0	3.4	8.0	2.8	9.5	a3.3	1.7	10	3.2	.8	.3
17	32	2.0	3.5	*7.0	3.6	7.5	a3.0	1.3	8.3	3.9	.8	.3
18	24	2.0	4.1	6.5	7.0	6.9	2.8	1.1	6.8	2.1	.7	.3
19	20	2.0	3.7	6.1	59	6.2	a3.5	1.1	5.6	1.3	.7	.2
20	16	1.8	3.9	5.2	155	5.9	a10	.6	5.0	1.2	.5	.1
21	13	1.6	3.0	5.5	67	7.6	a18	.6	4.1	.7	.5	.2
22	11	1.6	2.6	5.2	29	29	a13	1.1	3.4	.6	.7	.3
23	9.8	1.7	2.6	4.9	21	33	a10	8.6	2.7	14	.6	.3
24	8.2	3.2	2.9	4.3	16	41	a10	25	2.4	64	.7	.3
25	7.4	4.2	3.0	4.2	12	28	12	57	2.1	38	.7	.3
26	6.8	4.4	4.0	3.8	14	16	*10	33	1.8	*23	.6	.3
27	6.4	4.9	26	3.6	85	15	8.2	84	*1.1	11	.5	.6
28	5.9	9.0	58	b3.3	70	17	6.3	150	1.2	5.6	.4	.7
29	5.6	12	52	b3.1	-	22	4.9	97	1.0	3.4	2.8	1.5
30	5.1	11	34	b2.9	--------	22	3.9	41	.9	2.4	35	1.8
31	4.6	-- ---	25	b2.7	--------	17	--------	31	----------	2.0	28	--------
Total	1,734.3	108.1	329.6	850.7	580.2	547.6	206.1	565.7	426.5	260.3	103.7	39.4
Mean	55.9	3.60	10.6	27.4	20.7	17.7	6.87	18.1	14.2	8.40	3.35	1.31
Cfsm	2.29	0.148	0.434	1.12	0.848	0.725	0.282	0.742	0.582	0.344	0.137	0.054
In.	2.64	0.16	0.50	1.30	0.88	0.83	0.31	0.86	0.65	0.40	0.16	0.06

Calendar year 1954: Max 594 Min 0.2 Mean 15.4 Cfsm 0.631 In. 8.55
Water year 1954-55: Max 594 Min 0.1 Mean 15.7 Cfsm 0.643 In. 8.75

Peak discharge (base, 250 cfs).--Oct. 11 (11 a.m.) 637 cfs (11.19 ft); Jan. 6 (1 to 4 a.m.) 254 cfs (8.83 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for North Creek at Lansing and Lansing ditch near Lansing.

b Stage-discharge relation affected by ice.

Butterfield Creek at Flossmoor, Ill.

Location.--Lat 41°32'25", long 87°38'55", in NE¼NW¼ sec. 8, T. 35 N., R. 14 E., on left bank at downstream side of Riegle Road Bridge at Homewood city limits, 0.1 mile north of Holbrook Road and three-quarters of a mile east of Flossmoor.

Drainage area.--22.9 sq mi.

Records available.--May 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 616.80 ft above mean sea level, datum of 1929. Prior to Sept. 9, 1948, wire-weight gage at same site and datum.

Average discharge.--7 years, 17.3 cfs.

Extremes.--Maximum discharge during year, 788 cfs Oct. 10 (gage height, 10.92 ft); minimum, 0.2 cfs Sept. 16.
1948-55: Maximum discharge, that of Oct. 10, 1954; no flow at times in 1948.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.7	0.2	5.0	38
3.8	.6	6.0	105
4.0	2.1	7.0	198
4.1	3.4	8.5	405
4.3	7.8	10.0	635
4.7	23		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	7.6	b8.4	24	b3.6	53	14	5.6	4.0	9.6	1.6	11
2	1.6	7.3	b7.6	33	b3.3	39	12	5.3	3.1	7.3	1.3	5.3
3	1.9	7.0	6.6	50	b3.0	60	10	4.9	2.8	5.1	1.2	3.0
4	2.4	6.3	6.0	91	b3.0	80	8.4	4.2	2.6	5.1	1.2	1.9
5	5.4	5.8	5.3	204	b3.5	48	7.8	3.8	2.6	12	1.8	1.5
6	3.0	4.9	4.7	197	b3.5	34	7.3	3.6	9.1	22	28	1.2
7	1.7	4.7	3.8	86	b3.3	24	6.8	3.8	11	12	25	.9
8	1.4	*4.2	4.0	61	b3.3	*20	5.8	3.0	16	7.3	11	.8
9	2.8	4.0	4.4	50	b4.3	19	5.3	3.0	18	6.0	5.0	.6
10	492	3.4	4.0	38	b5.4	18	4.9	4.0	40	5.1	2.9	.6
11	608	3.4	3.3	30	b5.0	17	6.3	3.3	98	4.4	1.9	.8
12	253	3.3	3.3	26	b4.5	14	7.3	3.2	57	3.6	1.5	*.7
13	116	3.0	3.4	21	b4.0	11	8.1	2.9	36	3.3	1.2	.6
14	87	3.4	*3.6	19	b4.0	10	8.4	2.8	26	3.0	1.1	.7
15	75	3.0	3.6	15	b4.5	23	7.3	2.2	20	3.4	1.0	.4
16	59	2.9	3.4	b11	b5.5	30	6.6	2.1	15	3.8	.8	.4
17	49	2.9	3.4	*b12	b6.5	19	6.0	2.0	11	7.3	.6	.6
18	39	2.8	4.4	8.4	b15	16	5.1	1.9	9.4	8.8	.8	.4
19	35	2.8	4.4	7.8	115	13	5.8	2.0	8.8	6.8	.6	.6
20	30	2.8	3.6	7.7	155	12	21	2.2	8.4	5.3	.7	.8
21	26	2.6	3.1	7.1	52	13	19	2.2	7.0	4.5	.7	.7
22	22	2.4	3.1	6.5	33	29	13	3.3	6.0	4.4	5.3	.8
23	20	3.2	3.4	5.6	22	36	9.7	*4.2	5.3	18	1.5	.8
24	16	5.1	3.6	5.1	18	50	10	7.9	4.9	10	.8	.8
25	14	5.6	3.8	5.3	15	34	*12	17	4.7	*5.3	.7	.6
26	12	4.7	4.4	b4.8	18	20	10	13	4.5	3.8	.5	.7
27	11	4.7	46	b4.5	118	18	8.1	32	4.0	2.6	.6	1.8
28	10	11	71	b4.7	76	21	7.0	22	3.8	2.4	.6	1.7
29	10	17	47	b4.5	-	24	6.6	19	3.8	2.0	2.1	1.7
30	9.1	10	33	b4.2	-------	21	6.0	11	4.0	1.7	80	2.3
31	8.4	----	24	b3.9	-------	17	-------	6.3	-------	1.7	33	----
Total	2,023.4	151.6	333.6	1,048.1	707.2	843	265.6	203.7	446.8	197.6	215.0	44.7
Mean	65.3	5.05	10.8	33.8	25.3	27.2	8.85	6.57	14.9	6.37	6.94	1.49
Cfsm	2.85	0.221	0.472	1.48	1.10	1.19	0.386	0.287	0.651	0.278	0.303	0.065
In.	3.29	0.25	0.54	1.70	1.15	1.37	0.43	0.33	0.73	0.32	0.35	0.07

Calendar year 1954: Max 608 Min 0.3 Mean 18.7 Cfsm 0.817 In. 11.08
Water year 1954-55: Max 608 Min 0.4 Mean 17.8 Cfsm 0.777 In. 10.53

Peak discharge (base, 240 cfs).--Oct. 10 (12 p.m.) 788 cfs (10.92 ft); Jan. 5 (11 p.m.) 297 cfs (7.73 ft); Feb. 20 (4 a.m.) 242 cfs (7.35 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

Lansing ditch near Lansing, Ill.

Location.--Lat 41°31'40", long 87°31'45", at north boundary of sec. 17, T. 35 N., R. 15 E., on right bank at upstream side of bridge on farm road, 0.2 mile west of Indiana State line, 0.5 mile east of Burnham Avenue, and 2 miles south of Lansing.

Drainage area.--8.3 sq mi, approximately.

Records available.--May 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 607.16 ft above mean sea level, datum of 1929. Prior to Sept. 20, 1948, wire-weight gage at same site and datum.

Average discharge.--7 years, 8.68 cfs.

Extremes.--Maximum discharge during year, 302 cfs Oct. 11 (gage height, 10.18 ft); minimum, 0.5 cfs Aug. 27, 28, Sept. 18.
1948-55: Maximum discharge, 461 cfs May 10 or 11, 1948 (gage height, 9.24 ft, from floodmark); maximum gage height, that of Oct. 11, 1954; no flow at times.

Remarks.--Records good except those below 1 cfs, which are fair, and those for periods of ice effect, which are poor. Undetermined amount of flow diverted for irrigation above station.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-31)

2.5	0.5	4.0	23
2.6	.9	5.0	62
2.8	2.0	7.0	176
3.0	3.3	8.0	269
3.2	5.1	8.2	294
3.5	10		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	2.6	4.9	10	b1.6	32	7.1	3.0	7.1	2.2	1.0	3.6
2	.8	2.5	4.2	21	b1.5	20	5.9	2.8	5.4	1.9	.9	2.3
3	.9	2.4	3.9	39	b1.3	16	4.9	2.7	4.6	1.6	.8	2.0
4	1.0	2.3	3.5	69	1.2	17	4.4	2.6	3.9	2.0	.8	1.1
5	3.0	2.1	3.0	126	b1.5	12	4.2	2.4	3.5	5.1	.9	1.4
6	1.8	2.1	3.0	168	b1.5	8.5	3.9	2.4	3.4	5.0	2.3	4.8
7	1.1	2.0	2.8	72	1.1	7.0	3.6	2.5	3.6	3.0	1.7	2.3
8	1.0	1.9	2.7	35	.8	*5.1	4.5	2.4	7.8	2.2	1.2	.8
9	1.8	*1.8	2.7	19	.9	7.2	3.4	2.3	5.8	3.0	.9	2.1
10	171	1.8	2.4	11	b1.3	6.1	3.2	2.6	7.1	3.7	.8	1.3
11	293	1.8	2.4	8.1	1.5	6.1	3.4	2.3	52	2.0	.8	1.0
12	*282	1.8	2.4	6.7	1.5	5.2	3.9	2.1	27	1.6	.7	1.0
13	*205	1.8	2.7	5.2	1.5	4.0	4.1	2.1	12	1.5	.7	*.7
14	101	1.8	*2.5	4.6	1.7	3.9	3.8	2.1	7.8	1.4	.7	1.1
15	63	1.9	2.6	4.1	1.9	4.1	3.2	1.9	5.8	1.5	.8	.8
16	39	1.9	2.5	3.5	1.9	4.6	3.1	1.8	4.9	1.4	.7	.7
17	25	1.9	2.7	3.4	2.1	4.3	2.8	1.8	4.2	2.3	.6	.6
18	18	1.9	2.8	*3.5	6.1	3.9	2.8	1.8	3.7	4.7	.6	.5
19	15	1.8	2.7	3.0	60	3.7	3.1	1.8	3.5	2.0	.7	.6
20	11	2.0	2.5	3.1	66	3.5	7.1	1.6	3.2	1.5	.6	.6
21	9.3	2.2	2.2	2.9	13	3.9	7.5	1.6	3.1	1.3	.6	.7
22	7.8	2.8	2.4	3.0	6.2	7.3	4.9	2.2	2.7	1.2	.8	.6
23	6.7	1.9	2.2	3.0	4.2	18	4.2	2.7	2.7	16	**.6	.7
24	6.1	2.8	2.7	2.6	4.9	32	4.2	*24	2.4	15	.6	.6
25	5.6	3.0	2.4	2.3	5.4	19	5.2	43	2.3	3.8	.6	.6
26	5.2	3.1	3.0	2.2	8.9	22	*5.1	13	2.2	*2.4	.6	.6
27	4.9	3.5	36	2.0	80	13	4.1	52	2.2	1.8	.5	1.0
28	4.4	9.0	58	2.2	57	12	3.7	109	2.0	1.4	.5	1.6
29	4.3	11	26	b2.1	-	*17	3.2	59	1.9	1.2	1.7	1.8
30	3.8	5.5	13	b2.0	-------	14	3.1	21	2.0	1.1	24	.9
31	3.4	----	9.4	b1.8	-------	9.8	-------	11	-------	1.0	6.0	-------
Total	1,296.7	84.9	216.2	641.3	336.5	342.2	127.6	383.5	199.8	95.8	54.7	38.4
Mean	41.8	2.83	6.97	20.7	12.0	11.0	4.25	12.4	6.66	3.09	1.76	1.28
Cfsm	5.04	0.341	0.840	2.49	1.45	1.33	0.512	1.49	0.802	0.372	0.212	0.154
In.	5.81	0.38	0.97	2.87	1.51	1.53	0.57	1.72	0.90	0.43	0.25	0.17

Calendar year 1954: Max 293 Min 0.1 Mean 11.6 Cfsm 1.40 In. 18.94
Water year 1954-55: Max 293 Min 0.5 Mean 10.5 Cfsm 1.27 In. 17.11

Peak discharge (base, 140 cfs).--Oct. 11 (4 p.m.) 302 cfs (10.18 ft); Jan. 6 (1 a.m.) 217 cfs (7.48 ft).
* Discharge measurement made on this day.
** Field estimate made on this day.
b Stage-discharge relation affected by ice.

North Creek near Lansing, Ill.

Location.--Lat 41°32'45", long 87°33'30", in SE¼SE¼ sec. 1, T. 35 N., R. 14 E., on right bank at downstream side of Torrence Avenue Bridge, 1.1 miles south of Lansing and 2.7 miles north of U. S. Highway 30.

Drainage area.--18.2 sq mi.

Records available.--May 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 599.29 ft above mean sea level, datum of 1929. Prior to Dec. 16, 1948, wire-weight gage at same site and datum.

Average discharge.--7 years, 16.9 cfs.

Extremes.--Maximum discharge during year, 692 cfs Oct. 10 (gage height, 8.96 ft); minimum, 0.3 cfs Oct. 2, 3.
1948-55: Maximum discharge, 730 cfs Mar. 20, 1948 (gage height, 8.51 ft, from floodmark); maximum gage height, that of Oct. 10, 1954; no flow at times.

Remarks.--Records good except those below 2 cfs, which are fair, and those for periods of ice effect, which are poor. Undetermined amount of flow diverted for irrigation above station.

Revisions (water years).--WSP 1337: 1948(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-31, July 23 to Sept. 30)

2.7	0.1	5.5	51
2.8	.4	6.0	76
2.9	.8	6.5	110
3.0	1.4	7.0	157
3.2	2.9	7.5	232
3.5	6.1	8.0	335
4.0	14	8.7	555
5.0	36		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	6.2	14	21	b3.4	47	16	4.4	13	1.4	0.9	3.9
2	.3	5.9	12	32	b3.1	35	13	4.0	8.6	1.4	.9	2.4
3	.4	5.5	10	43	b2.6	40	10	3.6	6.7	1.2	.8	1.4
4	.6	5.5	8.9	85	b2.5	57	7.5	3.4	5.5	1.1	.7	1.3
5	1.8	5.0	6.9	138	b2.8	37	6.4	3.2	4.6	2.2	.7	.9
6	2.7	4.9	5.5	186	b2.8	26	5.6	3.0	4.2	3.9	1.5	1.6
7	1.2	4.5	4.9	88	b2.6	19	4.8	2.9	4.2	3.1	3.0	2.7
8	.7	4.4	b4.5	50	b2.5	*15	5.4	2.8	11	2.2	2.2	1.3
9	.8	3.9	b4.5	37	b2.5	14	4.4	2.6	10	1.8	1.4	.8
10	426	3.7	b4.0	27	b3.0	14	4.1	2.7	14	2.3	1.0	1.4
11	*555	3.7	3.6	21	b3.0	14	4.7	2.7	52	2.3	.8	.8
12	484	3.6	3.6	18	b3.2	12	5.1	2.4	40	1.6	.7	.6
13	*397	3.5	3.8	14	b3.2	11	5.6	2.3	22	1.3	.6	.6
14	282	3.6	*4.0	12	b3.4	9.3	5.1	2.3	14	1.1	.6	*.6
15	180	3.6	3.9	10	b3.7	13	4.1	2.1	9.2	1.2	.6	.6
16	97	3.8	3.4	8.9	3.8	20	3.8	1.9	6.5	1.2	.5	.5
17	64	3.9	3.7	7.4	4.5	14	3.4	1.8	5.3	1.4	.5	.5
18	45	3.8	4.6	*6.8	9.0	12	3.4	1.7	4.5	4.3	.5	.5
19	38	4.0	4.2	6.1	43	9.2	3.8	1.5	3.9	3.3	.5	.4
20	33	3.6	3.4	5.1	91	8.2	11	1.5	3.6	2.3	.5	.5
21	26	3.8	3.1	5.7	42	9.8	15	1.5	3.4	1.7	.5	.6
22	22	4.7	2.8	5.1	24	23	9.3	2.1	3.2	1.3	.5	.6
23	18	4.2	3.2	4.6	16	37	6.9	4.6	2.7	12	.6	.6
24	15	6.0	3.5	4.5	14	51	6.9	*14	2.5	18	.5	.5
25	13	8.1	3.5	4.4	11	37	8.2	47	2.3	6.1	.5	.5
26	12	8.0	4.4	4.0	15	25	*8.7	26	2.0	*3.8	.4	.5
27	11	9.0	43	b3.8	81	22	6.5	51	*1.9	2.4	.4	.6
28	9.7	19	85	b4.0	93	23	5.6	149	1.7	1.8	.4	.8
29	9.2	29	51	b4.0	-	*29	4.6	79	1.5	1.5	.8	1.4
30	8.2	18	32	b3.8	------	26	4.1	37	1.3	1.2	30	1.0
31	6.8	---	22	b3.7	-------	22	-------	22	-- ----	1.1	8.6	----- --
Total	2,760.7	196.4	366.9	863.9	491.6	731.5	203.0	486.0	265.3	91.5	62.1	30.4
Mean	89.1	6.55	11.8	27.9	17.6	23.6	6.77	15.7	8.84	2.95	2.00	1.01
Cfsm	4.90	0.360	0.648	1.53	0.967	1.30	0.372	0.863	0.486	0.162	0.110	0.055
In.	5.64	0.40	0.75	1.77	1.00	1.49	0.41	0.99	0.54	0.19	0.13	0.06

Calendar year 1954: Max 555 Min 0.1 Mean 22.9 Cfsm 1.26 In. 17.10
Water year 1954-55: Max 555 Min 0.3 Mean 17.9 Cfsm 0.984 In. 13.37

Peak discharge (base, 210 cfs).--Oct. 10 (10 to 12 p.m.) 692 cfs (8.96 ft); Jan. 5 (12 p.m.) 232 cfs (7.49 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

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Thorn Creek at Thornton, Ill.

Location.--Lat 41°34'05", long 87°36'30", near center of N½ sec. 34, T. 36 N., R. 14 E., on right bank at downstream side of Ridge Road Bridge in Thornton, 1 mile downstream from North Creek and 1½ miles upstream from Grand Trunk Railway.

Drainage area.--106 sq mi.

Records available.--May 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 586.43 ft above mean sea level, datum of 1929. Prior to Dec. 18, 1948, wire-weight gage at same site and datum.

Average discharge.--7 years, 91.5 cfs.

Extremes.--Maximum discharge during year, 3,370 cfs Oct. 11 (gage height, 14.70 ft); minimum daily, 14 cfs Sept. 25.

1948-55: Maximum discharge, 4,040 cfs Mar. 20, 1948 (gage height, 14.08 ft, from floodmark); maximum gage height, that of Oct. 11, 1954; minimum daily discharge, 4.4 cfs Sept. 11, 1949.

Flood of Apr. 5, 1947, reached a stage of 14.34 ft, from floodmark (discharge, 4,200 cfs).

Remarks.--Records good. Some diurnal fluctuation caused by pumping operations above station. Figures of discharge include about 6 cfs pumped from ground-water sources for municipal supply of Chicago Heights and undetermined amount of ground-water pumpage for industrial use above station.

Revisions.--WSP 1207: Drainage area.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 10-14)

Oct. 1 to Dec. 26

2.5	22	5.0	386
2.6	30	7.0	655
2.8	52	9.0	1,020
3.0	85	10.0	1,350
3.5	187	12.0	2,500
4.0	263	12.9	3,180

Dec. 27 to Sept. 30

2.3	10	3.0	102
2.4	17	3.5	189
2.6	35	4.0	264
2.8	63	5.0	386

Note.--Same as preceding table above 5.0 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	37	71	130	32	342	89	36	96	39	19	72
2	22	38	62	161	32	228	76	36	76	29	21	44
3	28	38	55	220	32	229	63	36	57	23	21	31
4	28	37	48	519	29	422	58	36	48	23	22	25
5	59	35	44	700	28	272	57	35	43	53	25	23
6	42	32	42	1,130	28	167	54	35	57	76	139	22
7	33	29	40	586	28	114	51	34	71	51	87	23
8	30	31	40	337	31	*96	47	32	114	39	44	23
9	31	*31	39	245	33	92	44	34	104	40	33	20
10	1,260	32	38	177	42	87	40	45	196	34	27	20
11	*3,140	29	35	137	38	83	45	38	446	32	25	19
12	*2,090	31	33	116	34	76	50	38	374	30	23	19
13	*1,110	29	34	102	30	65	58	42	204	28	22	18
14	717	27	35	83	32	62	57	42	137	27	19	*19
15	583	31	*37	77	35	94	50	33	102	26	20	19
16	416	33	36	67	39	130	43	36	77	25	23	19
17	295	35	38	60	42	96	39	39	63	45	22	17
18	206	35	44	*57	54	81	36	42	52	41	22	16
19	156	36	41	52	203	68	49	40	44	33	23	17
20	124	33	37	48	611	60	160	40	42	27	22	19
21	103	34	36	50	436	67	122	40	39	25	19	21
22	84	34	35	45	196	159	79	58	35	23	40	19
23	69	43	35	42	128	211	62	72	34	106	26	18
24	60	47	35	39	104	351	63	110	34	139	23	18
25	55	45	34	39	85	252	79	242	31	87	22	14
26	52	39	35	38	92	137	*74	151	26	57	23	18
27	48	45	217	38	445	102	60	351	*26	38	21	30
28	46	83	446	35	517	114	52	508	26	28	18	23
29	45	130	362	32	-	*139	47	522	26	26	28	36
30	40	89	219	28	-------	133	42	249	31	23	362	31
31	35	----	148	29	-------	110	-------	130	-------	19	160	-------
Total	11,032	1,248	2,451	5,419	3,436	4,639	1,846	3,182	2,711	1,292	1,401	713
Mean	356	41.6	79.1	175	123	150	61.5	103	90.4	41.7	45.2	23.8
Cfsm	3.36	0.392	0.746	1.65	1.16	1.42	0.580	0.972	0.853	0.393	0.426	0.225
In.	3.87	0.44	0.86	1.90	1.21	1.63	0.65	1.12	0.95	0.45	0.49	0.25

Calendar year 1954: Max 3,140 Min 10 Mean 109 Cfsm 1.03 In. 13.96
Water year 1954-55: Max 3,140 Min 14 Mean 108 Cfsm 1.02 In. 13.82

Peak discharge (base, 520 cfs).--Oct. 11 (9 a.m.) 3,370 cfs (14.70 ft); Jan. 6 (8 a.m.) 1,240 cfs (9.72 ft); Feb. 20 (8 p.m.) 685 cfs (7.23 ft); Feb. 27 (11 p.m.) 640 cfs (6.92 ft); May 29 (3 p.m.) 640 cfs (6.91 ft); June 11 (4 p.m.) 580 cfs (6.49 ft).

* Discharge measurement made on this day.

Little Calumet River at South Holland, Ill.

Location.--Lat 41°36'05", long 87°34'38", in SW¼SW¼ sec. 13, T. 36 N., R. 14 E., on right bank at downstream side of bridge on U. S. Highway 6, 0.6 mile downstream from Thorn Creek, 1.6 miles east of South Holland, and 4.1 miles upstream from former gaging station at Harvey.

Records available.--October 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 575.00 ft above mean sea level. Auxiliary water-stage recorder at Dixmoor, 6.1 miles downstream.

Average discharge.--8 years, 169 cfs.

Extremes.--Maximum discharge during year, 4,210 cfs Oct. 11 (gage height, 19.39 ft); minimum daily, 21 cfs Sept. 19.
1947-55: Maximum discharge, that of Oct. 11, 1954; minimum daily, 7.9 cfs Oct. 6, 1950; minimum gage height, 3.99 ft Sept. 26, 1949.
Flood of Apr. 6, 1947, reached a stage of 19.24 ft, from floodmark (discharge, 4,760 cfs).

Remarks.--Records fair. Calumet Sag Channel, 8 miles below station, usually diverts the entire low flow to the Mississippi River basin.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	93	a120	178	64	671	183	97	156	45	39	112
2	31	94	a105	219	86	477	164	97	129	38	37	72
3	77	111	a95	264	97	374	137	89	109	41	39	62
4	78	86	a85	529	93	683	125	97	98	43	37	53
5	67	104	a76	760	88	574	128	100	95	70	33	38
6	90	77	a72	1,380	80	412	127	92	98	83	110	45
7	69	89	a68	1,000	88	*261	121	88	118	75	144	39
8	55	73	a66	519	89	202	118	91	163	62	74	43
9	58	79	a65	377	84	197	117	85	165	52	59	47
10	1,930	*89	a65	289	86	202	108	101	235	47	52	34
11	*3,940	71	a60	224	104	200	105	105	507	45	42	39
12	*3,850	73	a55	189	91	201	128	85	623	51	44	37
13	*2,650	74	a56	166	88	183	146	86	332	47	48	36
14	1,510	79	a60	149	61	180	146	89	207	51	51	38
15	1,030	69	a64	138	73	191	143	95	155	39	44	28
16	762	64	65	117	73	310	122	75	120	38	44	30
17	555	61	59	104	90	262	124	107	96	53	37	27
18	454	62	66	*104	91	216	112	99	76	58	41	25
19	399	64	82	104	147	217	119	82	68	43	37	21
20	353	67	69	97	542	186	216	82	61	42	40	24
21	301	63	63	95	873	209	282	84	56	40	32	31
22	268	60	65	104	463	277	197	96	54	36	33	30
23	231	71	60	95	277	389	151	124	48	56	44	35
24	198	76	57	89	223	484	145	*122	50	192	37	29
25	181	87	62	93	197	524	202	304	52	280	34	25
26	164	86	53	91	176	372	220	219	46	168	29	28
27	153	77	154	93	499	311	140	340	44	77	31	38
28	143	100	462	87	918	337	114	587	*41	61	25	41
29	118	179	456	93	-	340	107	716	37	56	32	39
30	115	a150	309	85	-------	*312	105	389	36	45	246	54
31	114	----	212	85	-------	217	-------	214	-------	38	272	------
Total	19,981	2,528	3,406	7,917	5,841	9,971	4,352	5,037	4,075	2,072	1,867	1,200
Mean	645	84.3	110	255	209	322	145	162	136	66.8	60.2	40.0
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 3,940 Min 14 Mean 177 Cfsm - In. -
Water year 1954-55: Max 3,940 Min 21 Mean 187 Cfsm - In. -

* Discharge measurement made on this day.
a No auxiliary gage-height record; discharge estimated on basis of available gage heights, weather records, and records for Thorn Creek at Thornton.

Midlothian Creek at Oak Forest, Ill.

Location.--Lat 41°36'51", long 87°43'46", in SE¼NW¼ sec. 15, T. 36 N., R. 13 E., on right bank at downstream side of Kilbourn Avenue Bridge in Oak Forest, 4.4 miles upstream from mouth.

Drainage area.--12.7 sq mi.

Records available.--October 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 620.41 ft above mean sea level, datum of 1929 (Cook County Highway Department benchmark).

Average discharge.--5 years, 12.5 cfs.

Extremes.--Maximum discharge during year, 569 cfs Oct. 10 (gage height, 8.49 ft); minimum, 0.2 cfs Sept. 12, 14.
1950-55: Maximum discharge, that of Oct. 10, 1954; no flow at times most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation at low flow caused by small industrial plants upstream.

Revisions (water years).--WSP 1337: 1951-53.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 15 to Dec. 10, Jan. 8 to Feb. 18)

Oct. 1-31				Nov. 1 to Sept. 30			
1.3	0.6	2.5	62	1.3	0.1	2.2	27
1.4	1.4	4.0	183	1.4	.5	2.5	46
1.5	3.2	7.0	435	1.5	1.2	3.0	87
1.6	6.8	7.2	453	1.6	2.9	4.3	204
1.9	22			1.9	13		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	8.8	7.8	13	2.9	48	8.8	3.9	3.9	1.2	1.2	0.7
2	1.0	8.5	7.1	15	2.9	34	8.1	3.5	3.2	1.2	a1.1	.5
3	5.3	8.1	6.8	34	2.6	57	7.1	3.2	2.9	1.1	a1.1	.5
4	2.8	7.8	6.4	118	2.7	121	6.8	2.7	2.4	1.3	a1.1	.4
5	12	7.5	5.8	187	2.6	52	6.1	2.4	2.6	2.0	a1.5	.3
6	12	6.8	4.8	197	2.6	27	5.8	2.2	4.2	1.5	a5.0	.3
7	6.1	6.1	4.8	93	2.2	20	5.5	2.2	6.1	1.3	a3.5	.4
8	3.3	5.1	4.8	48	2.0	15	5.1	2.2	11	1.5	2.0	.3
9	7.9	4.5	5.5	31	2.4	14	4.8	2.0	28	3.2	a1.6	.3
10	*427	*4.5	4.2	16	3.9	*14	4.5	3.5	38	3.2	a1.4	.3
11	*448	4.2	2.7	12	2.9	13	6.1	2.4	86	2.6	a1.3	.4
12	325	4.2	2.9	10	b2.4	11	6.4	2.0	29	2.4	a1.2	.2
13	232	3.5	2.7	8.1	b2.0	9.2	7.1	2.0	17	a2.2	a1.1	.3
14	167	3.5	2.7	6.8	b2.0	6.8	6.4	2.4	13	a2.0	a1.1	.3
15	107	2.7	3.2	6.1	2.2	18	5.5	1.7	9.5	a2.5	a1.1	.4
16	76	2.6	*2.9	b5.5	2.9	22	5.1	1.5	7.8	a3.5	1.1	.4
17	59	2.6	2.9	b5.5	3.5	14	4.5	1.5	6.4	2.7	1.3	.4
18	46	2.2	6.1	4.2	5.5	12	4.2	1.3	5.1	2.2	1.3	.3
19	39	1.8	5.5	3.9	75	10	7.1	1.2	4.2	1.5	1.3	.3
20	33	1.7	3.5	*5.5	133	9.5	44	1.2	6.1	1.3	1.3	.4
21	28	1.7	2.4	b5.1	60	10	18	1.2	4.2	1.2	1.3	*.7
22	24	1.3	2.2	b4.8	35	15	13	1.7	2.7	a1.2	1.3	.6
23	21	1.9	2.9	b4.5	22	18	10	2.2	2.4	a2.6	1.2	.5
24	19	6.5	4.5	4.2	15	24	10	4.1	2.2	2.4	1.1	.4
25	17	7.5	2.9	4.2	13	15	10	11	1.8	1.8	**2.4	.3
26	16	6.1	5.1	3.9	14	b10	8.5	*6.8	1.7	1.7	2.6	.3
27	15	6.8	46	3.2	113	b11	7.1	6.8	1.7	**1.5	2.6	.9
28	14	10	70	3.5	74	11	*6.1	18	*1.5	a1.5	2.4	.7
29	12	12	27	b3.3	-	11	5.5	11	1.3	a1.4	3.9	.8
30	12	8.5	17	b3.1	------	10	4.5	7.1	1.3	a1.3	10	1.0
31	11	---	13	b3.0	-------	9.5	-------	5.1	-------	a1.2	1.1	-----
Total	2,199.4	159.0	286.1	862.4	604.2	674.0	251.7	120.0	307.2	58.2	61.5	13.6
Mean	71.0	5.30	9.23	27.8	21.6	21.7	8.39	3.87	10.2	1.88	1.98	0.45
Cfsm	5.58	0.417	0.727	2.19	1.70	1.71	0.661	0.305	0.803	0.148	0.156	0.035
In.	6.44	0.47	0.84	2.53	1.77	1.97	0.74	0.35	0.90	0.17	0.18	0.04

Calendar year 1954: Max 448 Min 0.3 Mean 15.5 Cfsm 1.22 In. 16.60
Water year 1954-55: Max 448 Min 0.2 Mean 15.3 Cfsm 1.20 In. 16.40

Peak discharge (base, 220 cfs).--Oct. 10 (12 p.m.) 569 cfs (8.49 ft); Jan. 5 (11 p.m.) 273 cfs (5.10 ft).

* Discharge measurement made on this day.
** Field estimate made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for Tinley Creek near Palos Park (Part 5) and stations in Thorn Creek basin.
b Stage-discharge relation affected by ice.

Wolf Lake at Chicago, Ill.

Location.--Lat 41°40'00", long 87°32'15", in SW¼ sec. 29, T. 37 N., R. 15 E., at outlet on west shore in Chicago.

Records available.--December 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 580.45 ft above mean sea level, datum of 1929 (Cook County Highway Department benchmark). Prior to Apr. 6, 1941, staff gage at same site and datum.

Extremes.--Maximum mean hourly gage height during year, 3.00 ft Oct. 11, 12; minimum mean hourly, 1.16 ft Sept. 15.
1939-55: Maximum mean hourly gage height, that of Oct. 11, 12, 1954; minimum gage height observed, 0.76 ft Aug. 3, 1940.

Remarks.--Mean hourly values used to determine extremes in order to dampen effects of wind action.

Gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.65	1.94	1.49	1.47	1.31	g1.35	1.91	1.74	1.84	1.57	g1.75	1.74
2	1.66	1.91	1.49	1.47	1.31	a1.37	1.91	1.70	1.83	1.56	a1.72	1.73
3	2.00	1.87	1.48	1.47	1.31	a1.40	1.90	1.68	1.82	1.55	a1.69	1.70
4	2.17	1.86	1.47	1.47	1.31	a1.45	1.88	1.68	1.78	1.53	a1.65	1.67
5	2.29	1.84	1.46	1.47	1.29	a1.50	1.83	1.63	1.74	1.57	a1.62	1.65
6	2.30	1.81	1.44	1.50	1.28	a1.54	1.80	1.60	1.73	1.59	a1.85	1.62
7	2.30	1.77	1.43	1.52	1.27	1.57	1.81	1.61	1.73	1.63	a1.83	1.63
8	2.29	1.75	1.42	1.52	1.26	1.60	1.82	1.61	1.75	1.63	g1.81	1.60
9	2.34	1.74	1.41	1.51	1.24	1.60	1.81	1.61	1.78	1.64	a1.78	1.58
10	2.82	1.73	1.40	1.50	1.23	1.63	1.80	1.61	1.80	1.65	a1.75	1.56
11	2.98	1.68	1.39	1.50	1.23	1.65	1.80	1.61	1.82	1.65	a1.71	1.54
12	2.98	1.67	1.38	1.50	1.23	1.67	1.81	1.61	1.83	1.65	a1.67	1.52
13	2.96	1.62	1.37	1.50	1.23	1.68	a1.83	1.63	1.83	1.65	a1.63	1.48
14	2.89	1.60	1.36	1.48	1.23	1.70	a1.81	1.65	1.83	1.65	a1.60	1.41
15	2.87	1.56	1.36	1.47	1.23	1.73	a1.78	1.65	1.83	1.65	g1.57	1.23
16	2.82	1.53	1.36	1.44	1.23	1.78	a1.76	1.65	1.82	1.64	a1.54	a1.22
17	2.76	1.52	1.37	1.41	1.23	1.83	a1.75	1.66	1.82	1.64	a1.50	f1.28
18	2.71	1.52	1.38	1.39	1.23	1.83	a1.76	1.66	1.80	1.64	a1.47	f1.32
19	2.70	1.52	1.38	1.38	1.23	1.85	1.78	1.66	1.76	1.64	a1.43	f1.35
20	2.65	1.52	1.38	1.38	1.24	1.86	1.84	1.66	1.74	1.64	a1.40	f1.40
21	2.60	1.51	1.38	1.38	a1.24	1.88	a1.86	1.67	1.73	1.64	g1.37	f1.45
22	2.52	1.50	1.38	1.38	g1.23	1.85	a1.87	1.67	1.71	1.64	1.52	1.50
23	2.44	1.49	1.38	1.37	a1.23	1.87	1.88	1.70	1.70	1.65	1.52	1.53
24	2.36	1.50	1.37	1.32	a1.23	1.90	1.88	1.73	1.69	1.87	1.51	1.55
25	2.30	1.51	1.36	1.31	a1.23	1.91	1.87	1.80	1.68	1.93	1.51	1.55
26	2.26	1.52	1.35	1.31	a1.25	1.91	1.87	1.83	1.64	1.93	1.51	1.54
27	2.20	1.52	1.35	1.30	a1.30	1.91	1.87	1.85	1.62	1.92	1.51	1.56
28	2.13	1.52	1.40	1.30	a1.33	1.91	1.84	1.87	1.60	a1.90	1.49	1.59
29	2.07	1.50	1.43	1.30	-	1.91	1.82	1.87	1.58	a1.86	1.51	1.62
30	2.04	1.49	1.45	1.30	-------	1.91	1.79	1.87	1.58	a1.82	1.71	1.58
31	2.00	-------	1.47	1.31	-------	1.91	-------	1.85	-------	a1.78	1.73	-------

a Computed on basis of recorded range in stage, weather records, and records for Des Plaines River at Riverside.
f Fragmentary record; gage height partly estimated.
g Computed from once-daily gage reading.

Deep River at Lake George Outlet, at Hobart, Ind.

Location.--Lat 41°32'10", long 87°15'25", in NW¼ sec. 32, T. 36 N., R. 7 W., on left bank at upstream side of highway bridge, 300 ft upstream from Duck Creek and 400 ft downstream from Lake George Dam. Prior to July 21, 1955, at site 400 ft upstream.

Drainage area.--125 sq mi.

Records available.--April 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 588.17 ft above mean sea level, datum of 1929. April 1947 to July 7, 1952, staff gage and July 7, 1952, to July 20, 1955, water-stage recorder, at site 400 ft upstream at datum 11.80 ft higher.

Average discharge.--8 years, 96.0 cfs.

Extremes.--Maximum discharge during year, 3,880 cfs Oct. 11 (gage height, 7.68 ft); minimum, 3.5 cfs Sept. 15 (gage height, 3.34 ft).
1947-55: Maximum discharge, that of Oct. 11, 1954; minimum, that of Sept. 15, 1955.

Remarks.--Records poor.

Revisions (water years).--WSP 1337: 1953, drainage area.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 13-17, Sept. 6-28; stage-discharge relation affected by ice Jan. 21, 23-25, 29, 30, Feb. 1-3, 5-8)

Oct. 1 to July 20				July 21 to Sept. 30			
1.8	1.0	2.6	210	3.2	3.3	4.0	37
1.9	8.8	3.0	390	3.3	4.9	5.0	153
2.0	22	3.5	660	3.5	9.9	6.0	283
2.1	42	4.5	1,400	3.7	18		
2.2	70	7.0	3,400				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	58	105	150	25	336	154	64	26	7.8	8.8	116
2	22	55	94	154	25	259	133	55	22	6.8	8.5	56
3	32	52	88	164	25	226	108	50	19	6.8	8.5	27
4	28	50	77	222	24	326	88	45	18	8.8	7.9	18
5	30	48	64	340	25	420	88	38	16	16	9.1	12
6	30	45	58	807	25	318	70	32	16	32	24	9.6
7	26	42	52	779	25	210	61	28	22	30	30	7.4
8	22	38	45	475	26	172	58	28	26	26	*23	7.1
9	22	*38	*45	304	28	144	52	28	28	18	17	7.1
10	729	38	42	230	38	136	50	30	34	14	13	7.4
11	3,340	38	42	196	36	126	50	30	52	11	10	6.9
12	*2,600	36	40	168	34	112	*55	28	55	8.8	8.8	6.4
13	*1,480	38	42	136	30	91	67	28	55	6.8	7.7	6.2
14	*961	34	42	116	28	80	91	26	*40	8.8	7.9	7.1
15	738	34	42	98	30	88	91	24	30	11	7.9	4.6
16	599	34	42	77	32	102	84	22	24	25	7.4	6.9
17	458	34	42	64	*40	*91	67	*21	21	45	7.9	6.2
18	*381	34	45	*58	77	80	67	21	18	*45	8.2	5.8
19	*320	36	48	50	130	74	61	19	16	30	7.4	5.8
20	253	36	45	45	373	58	91	18	15	22	7.9	6.4
21	210	36	40	43	528	67	136	16	12	19	8.5	*6.9
22	188	36	36	40	370	130	136	18	12	15	23	7.7
23	162	38	36	37	238	168	112	21	9.9	34	14	9.1
24	144	45	36	36	186	250	105	24	9.9	47	11	7.7
25	126	52	40	34	150	282	108	26	8.8	35	8.5	6.4
26	108	67	48	34	136	218	119	26	8.8	23	8.2	6.4
27	98	84	102	32	192	164	108	32	7.8	*17	8.5	11
28	88	94	218	30	340	158	94	34	7.8	14	8.5	9.9
29	77	122	300	28	-	168	77	36	7.8	12	13	16
30	70	122	246	27	-------	189	64	34	6.8	11	257	15
31	64	-------	182	26	-------	186	-------	30	-------	9.6	218	-------
Total	13,434	1,514	2,384	5,000	3,216	5,429	2,645	932	644.6	616.2	809.1	426.0
Mean	433	50.5	76.9	161	115	175	88.2	30.1	21.5	19.9	26.1	14.2
Cfsm	3.46	0.404	0.615	1.29	0.920	1.40	0.706	0.241	0.172	0.159	0.209	0.114
In.	3.99	0.45	0.71	1.49	0.96	1.61	0.79	0.28	0.19	0.18	0.24	0.13

Calendar year 1954: Max 3,340 Min 6.8 Mean 108 Cfsm 0.864 In. 11.72
Water year 1954-55: Max 3,340 Min 4.6 Mean 102 Cfsm 0.816 In. 11.02

Peak discharge (base, 1,000 cfs).--Oct. 11 (1:30 p.m.) 3,880 cfs (7.68 ft).
* Discharge measurement made on this day.

Burns ditch at Gary, Ind.

Location.--Lat 41°34'30", long 87°17'20", in N½ sec. 13, T. 36 N., R. 8 W., on left bank on downstream side of bridge on Central Avenue, 0.4 mile east of Gary and 0.4 mile downstream from confluence of Deep River and Little Calumet River.

Drainage area.--About 160 sq mi.

Records available.--October 1943 to September 1955 (high-water records only since October 1950).

Gage.--Water-stage recorder. Datum of gage is 577.04 ft above mean sea level, datum of 1929. Prior to July 28, 1955, wire-weight gage at same site and datum.

Average discharge.--7 years (1943-50), 139 cfs.

Extremes.--Maximum discharge during year, 3,430 cfs Oct. 11; maximum gage height, 15.90 ft Oct. 12.
1943-55: Maximum discharge, that of Oct. 11, 1954; maximum gage height, 16.44 ft Mar. 16, 1944, from graph based on gage readings.

Remarks.--Records fair. Burns ditch is an artificial channel which reverses the direction of flow of part of Little Calumet River and flows into Lake Michigan at Wickliffe. Due to backwater from Lake Michigan, discharge not published on days when gage height of Burns ditch is less than about 6 ft.

Revisions (water years).--WSP 1034: 1944. WSP 1337: Drainage area.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-		-	-	-	489					-	
2	-		-	-	-	408					-	
3	-		-	-	-	-					-	
4	-		-	390	-	489					-	
5	-		-	545	-	545					-	
6	-		-	922	-	489					-	
7	-		-	970	-	-					-	
8	-		-	778	-	-					†42	
9	-		†74	564	-	-					-	
10	1,140		-	471	-	-					-	
11	*3,230		-	390	-	-					-	
12	3,110		-	-	-	-	†77				-	
13	*2,490		-	-	-	-					-	
14	*1,870		-	-	-	-			†90		-	
15	*1,540		-	-	-	-				†20	-	
16	*1,300		-	-	-	-					-	
17	1,130		-	-	†72	†145		†38			-	
18	*985		-	†112	-	-					-	
19	*872		-	-	-	-					-	
20	749		-	-	381	-					-	
21	627		-	-	603	-					-	†12
22	542		-	-	545	-					-	
23	465		-	-	-	-					-	
24	415		-	-	-	390					-	
25	374		-	-	-	399					-	
26	-		-	-	-	381					-	
27	-		-	-	381	-					-	
28	-		453	-	507	-					-	
29	-		489	-	-	-					-	
30	-		489	-	-------	-					408	
31	-	-------	408	-	-------	-	-------	-------	-------	-------	-	-------

* Discharge measurement made on this day.
† Result of discharge measurement.

Little Calumet River at Porter, Ind.

Location.--Lat 41°37'18", long 87°05'13", in NE¼ sec. 34, T. 37 N., R. 6 W., near center of span on downstream side of highway bridge, three-quarters of a mile northwest of Porter and 4.5 miles upstream from Salt Creek.

Drainage area.--62.9 sq mi.

Records available.--May 1945 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 603.48 ft above mean sea level, datum of 1929. Prior to June 26, 1952, wire-weight gage at same site and datum.

Average discharge.--10 years, 74.4 cfs.

Extremes.--Maximum discharge during year, 3,110 cfs Oct. 10 (gage height, 11.66 ft); minimum, 25 cfs Sept. 19; minimum gage height, 2.35 ft Aug. 5.
1945-55: Maximum discharge, that of Oct. 10, 1954; minimum, 18 cfs Aug. 10, 11, 1946, Sept. 30, 1953, Jan. 11-13, 1954; minimum gage height, 2.14 ft Aug. 22, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair.

Revisions (water years).--WSP 1084: 1945. WSP 1337: 1946-47, drainage area.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 23 to Dec. 26, Dec. 30 to Jan. 2, Jan. 9-20, Feb. 10-12, 14-19, 23-27, Mar. 2-4, 6-22, Sept. 3-30)

2.3	25	6.0	305
2.5	30	6.8	490
3.0	47	8.0	1,020
4.0	97	11.0	2,670
5.0	175		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	69	91	104	32	157	104	55	41	31	28	120
2	37	74	82	141	32	118	85	53	40	31	28	57
3	327	74	74	157	32	104	74	51	38	31	28	42
4	*1,220	72	69	175	32	247	66	48	37	31	28	35
5	*460	72	64	195	32	200	64	46	36	35	29	31
6	385	64	57	460	32	125	59	44	39	34	68	29
7	229	62	51	294	32	79	57	44	47	35	122	28
8	145	57	50	161	32	66	55	45	57	37	*55	27
9	118	*55	*53	129	42	72	55	45	51	33	40	26
10	1,780	54	53	104	57	72	52	52	64	33	35	26
11	*2,600	53	52	88	43	72	*54	50	96	31	33	29
12	*1,110	54	54	79	54	64	64	47	82	30	31	28
13	546	53	57	74	51	57	78	46	66	30	30	27
14	374	53	55	66	50	54	108	45	66	30	30	27
15	420	51	53	64	49	85	91	43	55	*41	30	27
16	672	51	52	59	59	133	74	42	48	49	29	27
17	638	51	54	*53	*88	*97	62	*40	*44	40	29	28
18	330	51	62	52	97	76	57	40	40	36	28	27
19	*231	52	66	50	118	64	95	39	39	34	28	26
20	180	53	66	47	348	62	167	39	38	32	28	26
21	144	51	62	45	351	69	217	38	36	31	28	27
22	122	51	59	42	180	134	122	40	35	30	38	*30
23	100	57	62	40	114	161	85	43	34	34	32	42
24	91	88	74	38	94	229	94	47	33	45	30	35
25	82	94	94	36	82	190	133	72	33	35	29	30
26	79	97	104	35	94	122	129	52	32	32	29	29
27	79	94	161	34	175	100	91	51	33	31	28	33
28	79	114	305	33	236	104	74	43	31	30	28	35
29	74	149	229	33	-	118	66	62	31	31	32	38
30	74	114	149	33	------	137	59	51	31	29	244	48
31	69	--	118	33	-------	133	-------	44	-------	28	363	------
Total	12,839	2,084	2,632	2,954	2,638	3,501	2,591	1,467	1,353	1,039	1,638	1,040
Mean	414	69.5	84.9	95.3	94.2	113	86.4	47.3	45.1	33.5	52.8	34.7
Cfsm	6.58	1.10	1.35	1.52	1.50	1.80	1.37	0.752	0.717	0.533	0.839	0.552
In.	7.59	1.23	1.56	1.75	1.56	2.08	1.53	0.87	0.80	0.61	0.97	0.62

Calendar year 1954: Max 2,600 Min 18 Mean 98.0 Cfsm 1.56 In. 21.17
Water year 1954-55: Max 2,600 Min 26 Mean 98.0 Cfsm 1.56 In. 21.17

Peak discharge (base, 700 cfs).--Oct. 4 (5 a.m.) 1,540 cfs (9.03 ft); Oct. 10 (9 p.m.) 3,110 cfs (11.66 ft); Oct. 16 (8 p.m.) 1,110 cfs (8.17 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 21 to Feb. 9, Feb. 13.

Salt Creek near McCool, Ind.

Location.--Lat 41°35'48", long 87°08'40", in SE¼ sec. 6, T. 36 N., R. 6 W., on left bank on downstream side of highway bridge, 50 ft downstream from New York Central Railroad bridge, 1¼ miles north of McCool, and 1.5 miles upstream from Little Calumet River.

Drainage area.--78.7 sq mi.

Records available.--May 1945 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 594.10 ft above mean sea level, datum of 1929. Prior to July 25, 1955, wire-weight gage at same site and datum.

Average discharge.--10 years, 73.2 cfs.

Extremes.--Maximum discharge during year, 3,180 cfs Oct. 11 (gage height, 14.12 ft); minimum, 6.3 cfs Aug. 24 (gage height, 2.31 ft).
1945-55: Maximum discharge, that of Oct. 11, 1954; minimum, that of Aug. 24, 1955.

Remarks.--Records fair except those for periods of ice effect, which are poor.

Revisions (water years).--WSP 1337: 1946-48(M), 1950(M), drainage area.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 19-31, Feb. 11-19, June 26 to July 7, July 9-23)

Oct. 1-31				Nov. 1 to Sept. 30			
3.4	40	10.0	775	3.0	21	7.0	315
4.5	105	11.0	1,110	4.0	64	8.0	425
6.0	230	13.0	2,400	5.0	132	9.0	575
8.0	430	14.0	3,100				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	56	73	102	30	156	88	54	40	32	25	85
2	42	58	67	164	30	116	78	51	37	30	26	51
3	335	56	61	156	30	102	70	48	35	30	25	40
4	410	58	56	198	30	235	64	46	33	28	24	33
5	*250	54	54	225	30	198	61	44	33	44	26	30
6	180	51	48	485	30	116	58	40	33	32	54	28
7	98	51	44	392	30	88	56	40	48	35	64	26
8	73	51	42	189	30	70	54	42	73	70	*32	25
9	62	*48	*46	132	30	76	51	40	78	40	28	25
10	1,190	48	46	109	76	76	48	46	88	35	26	23
11	*2,740	48	44	102	42	70	*51	46	95	32	26	33
12	*1,280	51	46	82	48	64	64	42	82	30	24	30
13	*662	48	46	76	44	60	70	40	*64	30	24	28
14	415	48	46	67	46	56	88	40	61	30	24	26
15	385	46	46	64	48	76	85	37	51	*33	24	25
16	382	46	44	56	54	102	70	35	44	40	23	25
17	416	48	46	*54	*78	*76	56	*35	42	64	23	25
18	*273	46	54	51	88	67	54	33	37	51	22	24
19	185	48	56	51	109	61	61	33	37	40	22	24
20	130	48	51	46	326	58	140	33	35	33	22	24
21	107	48	48	42	337	67	148	33	35	30	22	26
22	89	46	51	40	164	156	95	35	33	33	49	*28
23	82	46	48	37	102	148	73	44	32	37	24	30
24	77	67	56	36	85	198	102	37	32	46	26	28
25	76	73	64	34	76	140	207	58	32	33	26	26
26	72	76	82	33	76	102	156	44	32	30	26	26
27	71	78	172	32	180	95	102	54	30	30	24	30
28	68	102	285	31	225	95	82	48	30	28	24	33
29	66	132	216	31	-	140	70	76	30	28	32	35
30	62	88	140	31	------	132	58	54	30	26	275	46
31	55	-- --	109	30	-------	109	--------	44	-------	25	255	- - -
Total	10,373	1,764	2,287	3,178	2,474	3,305	2,460	1,352	1,362	1,105	1,347	938
Mean	335	58.8	73.8	103	88.4	107	82.0	43.6	45.4	35.6	43.5	31.3
Cfsm	4.26	0.747	0.938	1.31	1.12	1.36	1.04	0.554	0.577	0.452	0.553	0.398
In.	4.91	0.83	1.08	1.51	1.17	1.57	1.16	0.64	0.64	0.52	0.64	0.44

Calendar year 1954: Max 2,740 Min 20 Mean 89.3 Cfsm 1.13 In. 15.42
Water year 1954-55: Max 2,740 Min 22 Mean 87.5 Cfsm 1.11 In. 15.11

Peak discharge (base, 600 cfs).--Oct. 11 (6 a.m.) 3,180 cfs (14.12 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 21 to Feb. 9, Mar. 11-13.

East Branch Coldwater River at Coldwater, Mich.

Location.--Lat 41°56'25", long 85°01'00", in NW¼ sec. 21, T. 6 S., R. 6 W., on downstream side of Jay Street Bridge at Coldwater, 1 mile upstream from mouth.

Drainage area.--About 60 sq mi.

Records available.--December 1937 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 930.72 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Oct. 1, 1947 (corrected), staff gage at site 400 ft downstream at same datum.

Average discharge.--16 years (1938-55), 48.0 cfs.

Extremes.--Maximum discharge during year, 215 cfs Mar. 4 (gage height, 5.65 ft, from graph based on gage readings); minimum, 0.1 cfs Sept. 21, 22; minimum gage height, 3.83 ft Sept. 11, 12-16, 26, 27, 28, 29.
1937-55: Maximum discharge, 735 cfs Apr. 24, 1950 (gage height, 6.60 ft); minimum, 0.1 cfs Dec. 13, 15-18, 1946, Sept. 12-18, 24, 1953, Sept. 21, 22, 1955.

Remarks.--Records good above 10 cfs and poor below. Flow infrequently affected by contribution to or from Coldwater Lake. Regulation caused by dam at outlet of Marble Lake.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 10-22)

Oct. 1 to Dec. 28		Dec. 29 to Sept. 30			
4.0	3.8	3.6	0	4.3	18
4.2	10	3.7	.3	4.6	40
4.4	21	3.8	.8	5.0	77
4.7	47	3.9	2.3	5.3	125
5.0	87	4.0	4.6	5.7	230
5.3	134	4.1	8.1		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.9	68	81	76	48	165	89	51	19	16	8.9	2.1
2	4.6	66	76	84	45	145	87	50	19	14	5.5	1.7
3	14	66	76	*84	34	84	84	46	17	13	4.0	1.3
4	14	65	73	94	42	203	75	46	16	12	3.1	1.3
5	*18	64	68	109	38	173	75	43	16	12	4.3	.9
6	12	*63	63	194	39	152	72	39	16	11	5.2	.8
7	10	56	57	148	40	137	68	37	21	11	8.1	.6
8	10	55	57	141	38	141	63	35	24	13	4.6	.7
9	9.7	52	56	141	38	133	62	32	20	12	*5.8	.6
10	22	50	56	137	38	133	60	36	19	11	5.8	.4
11	46	47	55	133	38	170	56	33	23	10	5.8	.4
12	43	45	52	125	35	158	60	30	20	9.8	5.5	.4
13	47	43	50	119	32	133	62	28	20	8.9	5.5	.3
14	55	42	47	113	*35	131	60	27	21	8.1	4.6	.3
15	119	39	47	109	35	135	58	26	19	12	5.2	.2
16	110	38	45	105	38	137	56	*26	18	11	4.3	.3
17	110	35	44	84	38	113	55	23	17	9.8	4.0	.3
18	117	39	*45	82	38	111	54	24	*16	8.5	4.0	.3
19	111	65	43	77	38	105	60	24	16	7.3	4.0	.2
20	110	63	43	66	59	92	59	22	16	5.5	3.5	.2
21	108	57	41	75	87	95	*60	22	16	5.2	2.8	*.1
22	105	57	41	68	82	113	57	21	14	4.3	6.2	.1
23	102	55	39	65	81	125	54	21	14	9.8	3.8	*15
24	96	65	41	60	78	*119	60	23	14	5.2	2.8	1.2
25	90	81	41	60	77	121	68	24	13	4.0	2.8	.8
26	84	79	40	54	81	99	66	22	12	3.5	2.4	.8
27	79	76	50	51	125	95	63	22	12	*3.5	2.4	1.3
28	80	77	96	51	131	92	61	22	11	22	3.1	.7
29	76	87	85	45	-	95	60	22	11	5.2	2.6	2.3
30	76	84	78	50	------	99	54	22	22	4.0	5.5	.7
31	72	--- --	77	48	-------	95	-------	21	----- -	3.3	2.8	----- --
Total	1,955.2	1,779	1,763	2,848	1,528	3,899	1,918	920	512	285.9	138.9	36.3
Mean	63.1	59.3	56.9	91.9	54.6	126	63.9	29.7	17.1	9.22	4.48	1.21
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 170 Min 0.5 Mean 44.0 Cfsm - In. -
Water year 1954-55: Max 203 Min 0.1 Mean 48.2 Cfsm - In. -

* Discharge measurement made on this day.

St. Joseph River at Three Rivers, Mich.

Location.--Lat 41°56'25", long 85°38'00", in S½ sec. 18, T. 6 S., R. 11 W., on right bank in Scidmore Park at Three Rivers, 250 ft downstream from Rocky River and at mile 112.

Drainage area.--1,320 sq mi, approximately.

Records available.--May 1953 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 781.34 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 2,620 cfs Mar. 25 (gage height, 5.91 ft); minimum, 98 cfs Sept. 27 (gage height, 2.01 ft); minimum daily, 187 cfs Sept. 22.
1953-55: Maximum discharge, 3,200 cfs Mar. 29, 1954 (estimated on basis of records for station at Mottville); minimum daily, 96 cfs Aug. 30, 1953.

Remarks.--Records good except those below 300 cfs, which are fair. Flow regulated by powerplants above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 24, May 27 to Sept. 30)

2.0	160	5.0	1,950
2.5	370	5.8	2,540
3.0	625		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	428	1,240	1,390	1,650	1,090	2,360	1,950	1,470	820	566	306	517
2	304	1,200	1,390	1,630	1,050	2,400	1,820	1,410	766	511	320	533
3	234	1,200	1,440	*1,750	1,090	2,440	1,920	1,280	640	475	382	492
4	597	1,270	1,360	1,810	1,050	2,460	1,960	1,260	564	500	404	479
5	718	1,180	1,360	1,960	998	2,470	1,530	1,190	500	594	418	446
6	*692	1,150	1,210	2,090	958	2,490	1,570	1,100	*664	650	566	394
7	509	1,110	1,190	2,330	1,080	2,530	1,530	938	874	441	500	444
8	674	*1,190	*1,090	2,390	1,000	2,370	1,500	973	900	695	411	424
9	529	1,080	1,230	2,350	986	2,290	1,360	*1,160	868	740	414	422
10	727	1,020	1,040	2,380	994	2,240	1,390	878	858	710	*420	532
11	1,060	992	968	2,240	984	2,210	1,430	965	781	768	423	452
12	1,210	942	1,090	2,120	904	2,080	1,310	960	878	742	428	307
13	1,230	924	1,030	2,030	976	2,090	1,310	946	1,010	719	467	*308
14	1,390	873	1,090	2,000	1,020	*1,930	1,350	870	902	438	411	378
15	1,640	962	1,010	1,940	*994	2,110	1,320	909	713	609	378	226
16	1,500	954	997	1,680	1,010	1,990	1,190	982	726	695	411	294
17	1,750	870	1,000	1,780	1,040	2,110	1,240	938	823	603	422	460
18	1,730	908	972	1,550	1,090	1,970	*1,320	870	630	678	444	410
19	1,800	957	994	1,360	1,080	2,000	1,350	835	564	708	504	364
20	1,740	996	1,040	1,450	1,120	1,920	1,430	741	641	550	503	366
21	1,720	1,050	964	1,400	1,560	1,820	1,440	634	620	504	416	385
22	1,640	1,120	970	1,300	2,030	1,870	1,470	592	624	370	380	187
23	1,530	1,100	956	1,190	2,120	2,040	1,390	802	620	541	411	270
24	1,490	1,160	883	1,110	2,100	2,180	1,590	848	620	484	399	512
25	1,420	1,230	906	1,160	2,080	2,400	1,620	878	468	492	289	414
26	1,380	1,260	941	1,120	2,050	2,330	1,820	682	386	560	274	254
27	1,310	1,260	1,170	1,080	2,140	2,210	1,920	680	357	524	360	251
28	1,220	1,460	1,330	1,070	2,180	2,140	1,900	648	342	*508	490	267
29	1,040	1,350	1,590	1,040	-	2,010	1,730	775	302	514	444	280
30	1,240	1,380	1,550	1,000	-------	1,910	1,520	868	466	609	578	394
31	1,260	------	1,590	1,050	-------	2,010	-------	890	-------	545	532	-------
Total	35,712	33,388	35,741	50,810	36,774	67,380	46,180	28,972	19,927	18,043	13,105	11,462
Mean	1,152	1,113	1,153	1,639	1,313	2,174	1,539	935	664	582	423	382
Cfsm	0.873	0.843	0.873	1.24	0.995	1.65	1.17	0.732	0.503	0.441	0.320	0.289
In.	1.01	0.94	1.01	1.43	1.04	1.90	1.30	0.82	0.56	0.51	0.37	0.32

Calendar year 1954: Max 3,100 Min 152 Mean 1,112 Cfsm 0.842 In. 11.43
Water year 1954-55: Max 2,530 Min 187 Mean 1,089 Cfsm 0.825 In. 11.21

* Discharge measurement made on this day.

St. Joseph River at Mottville, Mich.

Location.--Lat 41°48'05", long 85°45'15", in SW¼ sec. 6, T. 8 S., R. 12 W., Michigan meridian, on right bank 500 ft upstream from bridge on U. S. Highway 112 at Mottville, 0.4 mile downstream from Michigan Gas and Electric Co. hydroelectric plant, 4 miles upstream from Pigeon River, and at mile 96.

Drainage area.--1,860 sq mi, approximately.

Records available.--December 1923 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 755.3 ft above mean sea level (Michigan Gas and Electric Co. benchmark). Prior to Oct. 1, 1951, at site 0.4 mile upstream at datum 4.2 ft higher.

Average discharge.--31 years (1924-55), 1,550 cfs.

Extremes.--1929-30: Maximum discharge during water year, 6,020 cfs Feb. 24 (gage height, 3.14 ft); minimum daily, 281 cfs Oct. 6.

1939-40: Maximum discharge during water year, 3,220 cfs (revised) Sept. 3 (gage height, 1.38 ft); minimum daily, 151 cfs July 21.

1954-55: Maximum discharge during water year, 3,410 cfs Mar. 7 (gage height, 5.52 ft); minimum daily, 245 cfs Aug. 27.

1924-55: Maximum discharge, 10,700 cfs Apr. 27, 1950 (gage height, 6.56 ft, site and datum then in use); minimum daily, 44 cfs Oct. 17, 1937.

Revisions.--The maximum discharge for water year 1940 has been revised to 3,220 cfs Sept. 3, 1940 (gage height, 1.38 ft), superseding figure published in WSP 894.

Remarks.--Records good. Flow regulated by powerplants above station.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1930, 1932, 1938, 1940-42, 1945, superseding those published in WSP 699, 729, 854, 894, 924, 954, and 1034, are given herein. Complete daily tables are given for water years 1930 and 1940, but only revised discharges are given for other water years.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1932		1932-Con.		1938-Con.		1941-Con.		1941-Con.	
June 22	750	July 22	720	Sept.19	1,400	Aug. 17	175	Sept.19	390
23	650	23	680	20	1,600	18	440	20	240
24	540	24	560	21	1,100	19	420	21	140
25	670	25	620	22	1,000	20	390	22	380
26	600	26	700	23	1,350	21	380	25	370
27	750	27	560	24	1,000	22	410	26	365
28	900	28	540	25	750	23	260	27	240
29	600	29	600	26	1,050	27	420	28	260
30	800	30	650	27	980	28	400	29	460
July 1	850	31	600	28	1,050	29	400	30	440
2	550			29	930	30	280	Oct. 1	720
3	500	1938		30	900	31	230	2	500
4	700	Sept. 1	950			Sept. 1	570	3	620
5	900	2	900	1941		2	475	4	800
6	1,050	3	850	Aug. 1	510	3	560	5	410
7	900	4	480	2	410	4	550	6	1,760
8	800	5	720	3	280	5	510	7	1,330
9	1,200	6	900	4	580	6	380	8	2,050
10	800	7	1,050	5	520	7	300	9	1,280
11	1,500	8	960	6	440	8	475	10	1,430
12	1,200	9	960	7	470	9	490	11	1,340
13	800	10	800	8	470	10	490	12	975
14	1,000	11	600	9	320	11	500	13	1,110
15	900	12	1,100	10	210	12	500	14	1,000
16	820	13	750	11	480	13	440	15	970
17	760	14	1,200	12	520	14	330	16	855
18	720	15	1,000	13	510	15	525		
19	740	16	1,250	14	480	16	480	1945	
20	740	17	950	15	440	17	460	Sept. 1	863
21	780	18	1,050	16	400	18	450		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June 1932	-	1,840	401	971	0.522	0.58
July	-	1,500	500	788	.424	.49
Water year 1931-32	-	3,500	293	1,240	.667	9.10
Calendar year 1932	-	4,100	401	1,360	.731	9.94
September 1938	29,580	1,600	480	986	.530	.59
Water year 1937-38	623,023	5,060	44	1,707	.918	12.45
Calendar year 1938	602,614	5,060	232	1,651	.888	12.05
August 1941	12,523	712	175	404	.217	.25
September	12,439	570	140	415	.223	.25
Water year 1940-41	411,351	2,790	140	1,127	.606	8.22
October 1941	36,928	2,050	410	1,191	.640	.74
Calendar year 1941	453,103	2,790	140	1,241	.667	9.06
Water year 1941-42	685,653	5,480	410	1,879	1.01	13.71
September 1945	24,777	1,270	439	826	.444	.50
Water year 1944-45	458,708	4,500	333	1,257	.676	9.17
Calendar year 1945	493,668	4,500	333	1,353	.727	9.86

St. Joseph River at Mottville, Mich.--Continued

Discharge, in cubic feet per second, water year October 1929 to September 1930

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	615	1,200	760	1,140	2,100	4,400	1,730	1,610	1,140	760	580	480
2	580	1,100	1,050	1,850	2,000	3,890	1,730	1,500	1,310	835	448	460
3	580	800	1,150	1,850	2,000	3,890	1,980	1,400	1,220	760	409	400
4	760	1,100	1,050	1,980	1,950	3,550	1,730	1,310	1,140	545	580	680
5	615	1,250	810	2,120	1,900	3,380	1,730	1,850	948	512	378	450
6	281	1,050	1,020	2,420	1,850	3,210	1,500	1,610	985	480	722	580
7	685	1,080	940	3,050	1,730	3,210	1,850	1,500	1,140	650	545	510
8	700	1,220	650	3,210	1,850	2,890	1,500	1,610	615	760	448	470
9	640	880	1,050	3,380	1,610	2,420	1,400	1,310	910	760	512	450
10	680	800	1,050	2,890	1,980	2,420	1,400	1,310	872	798	480	610
11	780	1,250	1,050	2,420	1,610	2,120	1,500	1,060	910	685	512	600
12	540	1,300	1,050	2,900	1,610	2,270	1,400	1,310	722	615	448	560
13	580	1,250	950	2,900	1,730	2,120	1,310	1,310	798	409	545	350
14	800	1,250	1,120	3,200	1,850	2,120	1,400	1,310	910	580	580	360
15	940	1,300	860	3,700	1,850	2,120	1,500	1,220	615	545	580	460
16	800	1,150	1,450	3,700	1,610	1,610	1,500	1,400	722	650	545	380
17	630	1,080	1,200	3,800	2,420	1,980	1,610	1,140	872	580	448	540
18	550	1,450	1,120	3,200	2,120	1,850	2,270	1,400	910	545	380	540
19	450	1,450	1,150	2,600	2,120	1,610	2,270	1,500	798	512	390	470
20	520	1,350	1,050	2,300	2,730	1,730	2,120	1,400	835	415	420	400
21	780	1,300	980	2,300	3,550	1,850	2,730	1,730	985	580	420	370
22	960	1,220	780	2,500	4,230	1,730	2,270	1,730	760	685	360	480
23	1,020	1,140	1,100	2,600	4,230	1,730	1,980	1,850	910	545	380	620
24	1,120	1,030	1,230	2,600	4,940	1,850	1,980	1,400	910	512	380	500
25	1,200	1,030	985	2,400	4,940	1,850	1,850	1,310	872	580	420	380
26	1,150	1,100	1,500	2,300	4,940	1,500	1,850	1,730	910	480	480	640
27	1,100	1,220	1,500	2,200	4,580	1,730	1,310	1,500	835	448	560	520
28	1,180	1,100	1,220	2,200	4,400	1,730	1,850	1,400	948	545	470	400
29	1,350	1,000	1,140	2,150	-	1,730	1,730	1,310	580	545	650	370
30	1,100	900	1,400	2,100	-------	1,500	1,500	985	650	545	600	550
31	1,150	-- --	1,400	2,100	-------	1,850	-------	1,140	-------	615	430	----- -
Total	24,836	34,350	33,765	80,060	74,430	71,840	52,480	44,145	26,732	18,476	15,100	14,580
Mean	801	1,140	1,090	2,580	2,660	2,320	1,750	1,420	891	596	487	486
Cfsm	0.431	0.613	0.586	1.39	1.43	1.25	0.941	0.763	0.479	0.320	0.262	0.261
In.	0.50	0.69	0.68	1.60	1.49	1.44	1.05	0.88	0.53	0.37	0.30	0.29

Calendar year 1929: Max 5,940 Min 78 Mean 1,660 Cfsm 0.892 In. 12.09
Water year 1929-30: Max 4,940 Min 281 Mean 1,340 Cfsm 0.720 In. 9.82

Note.--Stage-discharge relation affected by ice Jan. 12 to Feb. 5. Stage-discharge relation indefinite Oct. 8 to Dec. 24, Aug. 18 to Sept. 30; discharge estimated on basis of records for nearby stations.

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	580	1,050	770	850	880	780	2,450	1,340	2,020	2,570	660	2,700
2	780	1,050	830	800	860	585	2,450	1,800	1,750	2,330	700	2,830
3	900	1,150	930	780	830	397	2,700	1,830	1,730	2,210	480	2,960
4	760	1,050	1,000	800	800	1,610	2,450	1,930	1,800	1,970	300	2,570
5	700	1,000	980	800	920	1,170	2,450	2,330	1,730	1,970	780	2,570
6	800	1,050	1,150	760	910	1,280	2,570	1,730	1,620	1,610	740	2,090
7	600	1,050	1,050	720	900	1,280	2,570	1,970	1,610	1,850	740	2,090
8	450	1,050	1,050	740	870	1,340	1,730	1,790	1,630	1,500	600	1,730
9	650	950	1,100	800	850	1,390	1,730	1,850	1,430	1,500	550	1,850
10	800	900	930	800	810	1,500	1,970	1,500	1,840	970	500	1,970
11	870	1,020	1,000	800	800	1,610	1,970	1,560	1,840	920	250	1,340
12	920	800	1,050	840	1,000	1,730	2,090	1,600	1,680	1,390	650	1,610
13	900	800	1,150	930	980	1,730	1,970	1,070	1,870	920	700	1,610
14	800	1,050	1,050	1,080	930	1,850	1,970	1,500	1,710	920	750	1,500
15	580	1,000	1,000	1,000	910	1,500	1,730	1,460	1,370	1,170	900	1,170
16	760	970	1,000	980	870	1,500	1,730	1,220	1,120	1,170	680	1,500
17	870	900	940	970	825	1,610	1,730	1,500	1,620	870	670	1,170
18	840	900	1,000	950	1,070	1,610	1,850	1,170	1,140	870	350	1,280
19	900	750	1,000	950	1,500	1,730	1,730	825	1,140	920	800	1,020
20	800	800	980	920	1,220	1,610	1,970	1,500	1,610	550	810	920
21	740	870	980	900	1,120	1,850	1,970	1,390	1,500	151	850	740
22	600	870	980	830	1,020	1,970	1,610	1,480	1,730	780	900	515
23	640	760	900	800	1,120	1,970	1,610	1,450	2,090	660	920	1,220
24	900	760	800	800	970	1,730	1,500	1,400	2,450	700	700	970
25	800	750	700	770	660	2,090	1,390	1,270	2,700	620	450	920
26	800	750	950	760	1,390	1,610	1,390	1,140	2,700	660	1,280	1,070
27	1,000	750	1,100	880	870	1,500	1,390	1,480	2,830	515	1,970	870
28	960	750	780	980	870	1,610	515	1,340	2,960	344	1,970	870
29	930	750	825	960	825	1,610	1,500	1,540	2,960	920	2,090	285
30	1,200	750	1,120	900	-------	1,610	1,070	1,160	2,700	660	2,210	740
31	1,300	--- ----	1,020	850	-------	1,610	-------	1,700	-------	700	2,450	-- - -
Total	25,130	27,050	30,115	26,700	27,580	46,972	55,755	46,825	56,880	34,890	28,400	44,680
Mean	811	902	971	861	951	1,515	1,858	1,510	1,896	1,125	916	1,489
Cfsm	0.436	0.485	0.522	0.463	0.511	0.815	0.999	0.812	1.02	0.605	0.492	0.801
In.	0.50	0.54	0.60	0.53	0.55	0.94	1.11	0.94	1.14	0.70	0.57	0.89

Calendar year 1939: Max 5,060 Min 223 Mean 1,638 Cfsm 0.881 In. 11.94
Water year 1939-40: Max 2,960 Min 151 Mean 1,232 Cfsm 0.662 In. 9.01

Note.--Stage-discharge relation affected by ice Jan. 1 to Feb. 16. Stage-discharge relation indefinite Oct. 1 to Dec. 27, May 3 to June 19, Aug. 8-25; discharge estimated on basis of records for nearby stations.

St. Joseph River at Mottville, Mich.--Continued

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-27, Apr. 26 to Sept. 30)

1.8	218	4.0	1,820
2.5	585	5.5	3,410
3.0	940		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	766	2,010	2,090	2,260	1,490	3,060	2,690	1,860	1,150	775	730	681
2	719	1,900	2,060	2,200	1,420	3,200	2,580	1,760	1,220	849	532	706
3	558	1,840	2,110	2,180	1,300	3,210	2,500	1,740	908	608	390	657
4	990	1,990	2,050	*2,420	1,420	3,320	2,550	1,660	896	820	696	656
5	*1,170	1,990	1,990	2,500	1,310	3,340	2,460	1,580	748	690	618	774
6	*1,120	1,910	1,840	2,820	1,250	3,350	2,220	1,480	*1,020	940	705	713
7	980	1,890	*1,830	2,960	1,070	3,390	2,110	1,190	*1,050	762	1,030	576
8	1,020	1,880	1,780	3,290	1,450	3,320	1,970	1,300	1,490	845	751	511
9	980	*1,880	1,750	3,250	1,260	3,170	2,000	*1,520	1,410	1,060	606	585
10	1,090	1,760	1,820	3,260	1,410	3,130	1,880	1,470	1,300	914	*628	429
11	1,610	1,780	1,500	3,200	1,400	3,060	1,970	1,050	1,230	936	618	766
12	1,860	1,680	1,520	3,040	1,200	3,000	1,890	1,240	1,120	924	653	703
13	1,810	1,590	1,820	2,940	1,100	2,880	1,780	1,280	1,590	960	557	*610
14	1,940	1,770	1,730	2,820	1,400	*2,860	1,860	1,210	1,230	823	575	554
15	2,310	1,330	1,670	2,740	1,410	2,760	1,930	996	1,170	782	504	534
16	2,330	1,350	1,640	2,420	*1,330	2,830	1,700	1,430	1,110	950	*641	511
17	2,430	1,610	1,650	2,620	1,470	2,780	1,730	1,280	1,090	831	548	324
18	2,630	1,460	1,650	2,300	1,560	2,800	*1,840	1,280	1,050	886	546	334
19	2,610	1,450	1,590	1,990	1,550	2,730	1,820	1,230	940	865	584	664
20	2,640	1,720	1,520	1,960	1,570	2,650	1,850	1,240	858	870	496	548
21	2,580	1,530	1,350	1,990	1,890	2,600	1,920	1,000	954	842	504	598
22	2,520	1,870	1,480	1,950	2,330	2,520	1,930	916	922	746	786	484
23	2,470	1,690	1,470	1,820	2,710	2,690	1,890	1,270	884	548	586	576
24	2,290	1,720	1,460	1,840	2,770	2,840	2,000	1,230	955	768	652	368
25	2,210	1,620	1,170	1,640	2,760	3,060	2,230	1,220	698	772	692	828
26	2,140	1,930	1,420	1,680	2,740	3,260	2,150	1,380	526	724	658	712
27	2,100	1,910	1,640	1,490	2,830	3,070	2,360	994	705	*774	245	718
28	1,970	1,920	1,810	1,460	2,890	2,960	2,400	953	625	*772	572	550
29	1,870	2,140	1,970	1,420	-	2,880	2,330	1,140	575	746	706	551
30	1,840	1,980	2,140	1,380	------	2,610	2,190	1,160	810	712	1,070	620
31	2,020	------	2,060	1,480	------	2,580	------	1,300	------	759	738	------
Total	55,573	53,100	53,580	71,320	48,290	91,910	62,730	40,359	30,234	25,253	19,617	17,841
Mean	1,793	1,770	1,728	2,301	1,725	2,965	2,091	1,302	1,008	815	633	595
Cfsm	0.964	0.952	0.929	1.24	0.927	1.59	1.12	0.700	0.542	0.438	0.340	0.320
In.	1.11	1.06	1.07	1.43	0.97	1.84	1.25	0.81	0.60	0.50	0.39	0.36

Calendar year 1954: Max 4,010 Min 369 Mean 1,591 Cfsm 0.855 In. 11.60
Water year 1954-55: Max 3,390 Min 245 Mean 1,561 Cfsm 0.839 In. 11.39

* Discharge measurement made on this day.

Pigeon Creek at Hogback Lake Outlet, near Angola, Ind.

Location.--Lat 41°37'24", long 85°05'44", in NE¼NW¼ sec. 36, T. 37 N., R. 12 E., on right bank 200 ft north of lake outlet, 2 miles southeast of Flint, and 5.1 miles west of Angola.

Drainage area.--102 sq mi.

Records available.--October 1945 to September 1955. Prior to October 1947, published as "near Flint."

Gage.--Water-stage recorder. Datum of gage is 940.00 ft above mean sea level, datum of 1929. Prior to October 1947, wire-weight gage at site 1½ miles downstream at different datum. October 1947 to Aug. 3, 1953, staff gage at site 600 ft downstream at same datum.

Average discharge.--10 years, 81.9 cfs.

Extremes.--Maximum daily discharge during year, 339 cfs Oct. 17, 18; minimum daily, 12 cfs Sept. 21, 22, 25, 26.
1945-55: Maximum discharge, 744 cfs Apr. 8, 1950 (gage height, 14.95 ft); minimum, 5.2 cfs Oct. 19-25, 1953; minimum gage height, 7.24 ft Sept. 9, 10, 1953.

Remarks.--Records good.

Revisions (water years).--WSP 1144: 1948. WSP 1337: Drainage area.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-9, Jan. 30 to Feb. 20, Mar. 25 to May 17, July 21 to Aug. 15)

7.3	11	9.0	85
7.4	13	10.0	179
8.0	30	12.0	394
8.5	53		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	89	121	169	54	234	130	84	34	22	29	*24
2	15	84	126	169	52	262	130	78	34	23	29	22
3	18	*81	121	169	52	284	130	72	*32	23	28	21
4	23	79	116	169	51	295	121	67	31	26	25	20
5	28	77	104	179	48	295	116	*63	30	28	24	19
6	33	75	*95	214	48	284	*108	58	30	28	26	18
7	39	72	86	256	46	268	103	54	32	29	29	17
8	42	70	78	295	46	251	97	51	34	30	32	16
9	44	68	74	306	*46	*229	90	48	35	32	36	15
10	52	66	69	306	47	209	84	44	36	32	36	14
11	77	63	65	284	47	194	79	44	38	30	35	15
12	130	60	63	251	43	179	79	42	40	28	33	15
13	194	57	60	*229	43	164	79	42	40	26	31	15
14	262	54	57	204	43	149	80	39	41	26	29	14
15	306	51	55	179	43	134	80	38	40	27	28	14
16	328	49	54	159	44	126	83	37	39	28	26	14
17	339	47	52	144	46	121	82	36	36	30	25	14
18	339	47	52	130	46	116	81	35	34	31	24	13
19	328	51	51	116	55	111	82	35	33	32	23	13
20	306	57	50	106	62	108	82	33	31	32	22	13
21	284	66	48	96	89	108	83	32	29	32	21	12
22	251	71	47	88	134	107	82	32	28	32	24	12
23	224	74	45	82	174	110	81	32	26	31	26	13
24	199	77	44	77	199	121	82	32	26	33	27	13
25	174	78	43	73	199	130	83	32	24	35	29	12
26	154	82	44	69	194	139	88	32	23	35	30	12
27	139	90	47	66	194	139	93	33	*22	*33	30	13
28	121	97	63	62	209	134	95	33	22	33	30	13
29	112	104	90	60	-	130	93	35	22	32	29	13
30	102	112	130	58	------	126	89	34	22	31	27	13
31	95	----	159	57	-------	126	--------	34	--------	30	26	------
Total	4,771	2,148	2,309	4,822	2,354	5,383	2,785	1,361	944	920	869	452
Mean	154	71.6	74.5	156	84.1	174	92.8	43.9	31.5	29.7	28.0	15.1
Cfsm	1.51	0.702	0.730	1.53	0.825	1.71	0.910	0.430	0.309	0.291	0.275	0.148
In.	1.74	0.78	0.84	1.76	0.86	1.97	1.02	0.50	0.34	0.34	0.32	0.16

Calendar year 1954: Max * 339 Min 9.8 Mean 72.0 Cfsm 0.706 In. 9.56
Water year 1954-55: Max 339 Min 12 Mean 79.8 Cfsm 0.782 In. 10.63

* Discharge measurement made on this day.

Elkhart River at Goshen, Ind.

Location.--Lat 41°35', long 85°50', near line between secs. 8 and 9, T. 36 N., R. 6 E., on right bank 20 ft downstream from River Avenue Bridge at Goshen and half a mile upstream from Rock Run.

Drainage area.--580 sq mi.

Records available.--April 1931 to September 1955 in reports of Geological Survey. September 1924 to March 1928 in reports of Indiana Department of Conservation.

Gage.--Water-stage recorder. Datum of gage is 769.43 ft above mean sea level, datum of 1929. Prior to Nov. 20, 1931, chain gage at same site and datum.

Average discharge.--27 years (1924-27, 1931-55), 500 cfs.

Extremes.--Maximum discharge during year, 5,260 cfs Oct. 11 (gage height, 10.27 ft); minimum, 17 cfs Sept. 26 (gage height, 1.60 ft); minimum daily, 80 cfs Sept. 21.
1931-55: Maximum discharge, 5,440 cfs Apr. 4, 1950 (gage height, 10.15 ft); maximum gage height, 10.33 ft July 10, 1951; minimum daily discharge, 11 cfs Oct. 15, 1953.

Remarks.--Records fair. Flow regulated by three powerplants above station.

Revisions (water years).--WSP 1337: 1939(M), drainage area.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*215	1,050	712	858	570	1,600	830	670	386	257	254	282
2	222	995	690	1,020	550	1,540	780	610	380	246	268	200
3	288	*940	690	1,160	*530	1,320	758	570	344	236	268	209
4	830	885	670	1,130	512	1,440	735	570	344	226	271	128
5	1,160	830	670	1,380	512	1,600	690	570	352	397	271	88
6	1,300	780	630	2,150	495	1,440	650	512	320	425	505	257
7	1,100	758	570	2,150	495	1,270	630	495	383	320	940	194
8	830	735	*590	1,710	495	1,160	*610	495	404	310	735	132
9	780	712	610	1,540	495	*1,160	590	460	422	362	590	130
10	1,270	690	610	1,440	550	1,130	550	478	432	425	495	215
11	4,110	670	590	1,380	449	1,080	550	478	446	404	*478	95
12	4,320	650	570	1,320	425	1,020	570	478	439	432	453	148
13	*3,050	650	550	1,300	495	940	590	446	450	355	414	155
14	2,260	610	550	*1,240	478	885	630	414	442	*296	397	142
15	*2,700	630	530	1,160	512	830	630	404	442	271	394	145
16	2,560	610	530	1,080	495	830	590	408	439	320	320	132
17	2,380	590	530	995	550	780	550	404	*432	383	306	164
18	2,200	590	530	940	590	758	550	394	397	386	310	110
19	2,040	610	530	885	630	712	570	358	380	383	288	132
20	1,980	670	495	780	968	690	610	348	362	383	260	128
21	1,880	650	512	758	1,270	712	690	344	327	383	250	80
22	1,760	630	478	758	1,100	780	670	355	327	355	250	123
23	1,660	650	478	630	940	912	610	352	243	355	268	*127
24	1,540	670	512	670	885	968	670	366	236	327	288	154
25	1,490	735	512	670	885	885	1,020	*380	271	296	288	115
26	1,380	735	512	590	858	858	1,100	386	264	313	282	110
27	1,300	712	550	530	1,240	805	*940	372	257	285	250	170
28	1,220	712	858	590	1,710	780	830	372	250	271	209	118
29	1,190	735	1,050	630	-	805	758	400	240	330	229	117
30	1,130	712	912	610	------	858	712	400	232	352	302	176
31	1,080	----	858	650	-------	885	--------	390	--------	278	288	--------
Total	51,225	21,596	19,079	32,704	19,684	31,433	20,663	13,679	10,643	10,362	11,121	4,476
Mean	1,652	720	615	1,055	703	1,014	689	441	355	334	359	149
Cfsm	2.85	1.24	1.06	1.82	1.21	1.75	1.19	0.760	0.612	0.576	0.619	0.257
In.	3.29	1.38	1.22	2.10	1.26	2.02	1.33	0.88	0.68	0.66	0.71	0.29

Calendar year 1954: Max 4,320 Min 51 Mean 678 Cfsm 1.17 In. 15.86
Water year 1954-55: Max 4,320 Min 80 Mean 676 Cfsm 1.17 In. 15.82

Peak discharge (base, 2,000 cfs).--Oct. 11 (10 p.m.) 5,260 cfs (10.27 ft); Jan. 6 (10:30 p.m.) 2,440 cfs (6.48 ft).

* Discharge measurement made on this day.

St. Joseph River at Elkhart, Ind.

Location.--Lat 41°41'30", long 85°58'25", in NE¼ sec. 5, T. 37 N., R. 5 E., on left bank 100 ft downstream from Elkhart River, 200 ft upstream from Main Street Bridge, and 1,900 ft downstream from Christiana Creek.

Drainage area.--3,339 sq mi.

Records available.--August 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 700.00 ft above mean sea level, datum of 1929.

Average discharge.--8 years, 3,371 cfs.

Extremes.--Maximum daily discharge during year, 9,000 cfs Oct. 12; minimum daily, 968 cfs Sept. 18.
1947-55: Maximum discharge, 18,400 cfs Apr. 5, 1950 (gage height, 27.82 ft); minimum, 335 cfs Oct. 11, 1948 (gage height, 17.24 ft); minimum daily, 649 cfs Oct. 4, 1953.

Remarks.--Records good. Flow regulated by Elkhart Hydroelectric Plant, 2,400 ft upstream, and by hydroelectric plant on Elkhart River at Goshen.

Revisions.--WSP 1337: Drainage area.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-4, Oct. 14 to Nov. 30, July 8 to Sept. 30)

Oct. 1-17				Oct. 18 to Sept. 30			
18.0	1,080	21.0	5,540	17.9	910	21.0	5,160
18.5	1,680	23.0	9,020	18.5	1,580	22.0	6,850
19.0	2,370			19.0	2,200	23.0	8,800

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*1,500	4,070	3,860	4,170	3,320	5,900	4,690	3,650	2,190	1,850	1,800	1,800
2	1,680	4,120	3,740	4,280	3,200	6,080	4,560	3,470	2,290	2,020	1,430	1,680
3	1,740	3,900	3,770	4,540	*3,660	5,910	4,430	3,370	2,140	1,840	1,060	1,560
4	2,510	3,860	3,750	4,650	2,850	6,100	4,310	3,200	1,930	1,790	1,380	1,550
5	2,850	3,910	3,620	5,060	2,750	6,180	4,310	3,110	1,700	1,820	1,590	1,350
6	3,100	3,770	3,550	6,800	2,910	6,080	3,970	2,910	2,040	2,150	1,860	1,620
7	3,000	3,650	3,430	6,820	2,520	5,960	*4,590	2,530	2,160	2,310	2,820	1,420
8	2,800	3,620	*4,040	6,170	3,030	5,700	3,630	2,760	2,880	2,000	2,690	1,390
9	2,600	3,520	3,280	5,970	2,730	5,620	3,610	2,850	2,690	2,350	2,180	1,240
10	3,300	3,320	3,300	5,800	3,030	*6,210	3,450	2,900	2,630	2,330	2,020	1,150
11	6,200	3,300	3,220	5,690	2,840	5,430	3,450	2,430	2,700	2,260	1,860	1,480
12	9,000	3,150	2,860	5,510	2,300	5,350	3,450	2,480	2,590	2,210	*2,620	1,220
13	7,600	3,120	3,200	5,370	2,400	5,070	3,450	2,620	3,030	2,220	1,630	1,370
14	6,730	3,220	3,180	*5,910	2,840	4,800	3,520	2,480	2,670	2,830	1,730	1,120
15	*7,400	2,740	3,110	5,040	3,060	4,730	3,600	2,290	2,650	2,060	1,780	1,280
16	7,760	2,820	3,070	4,460	2,940	4,900	3,380	2,390	2,430	2,080	1,620	1,100
17	7,580	2,950	3,140	4,740	3,000	4,700	3,280	2,310	*3,160	2,230	1,480	990
18	7,410	2,850	3,030	4,420	3,210	4,730	3,280	2,460	2,290	2,110	1,440	968
19	7,030	2,830	3,030	3,920	3,270	4,530	3,390	2,130	2,210	2,080	1,460	1,350
20	6,670	3,170	2,940	3,740	3,770	4,430	3,520	2,120	1,980	2,060	1,320	1,190
21	6,490	3,040	2,760	3,820	4,550	4,440	3,650	1,940	2,030	1,910	1,540	1,280
22	5,890	3,330	2,740	3,700	4,730	4,580	3,570	1,910	2,040	1,780	1,770	1,090
23	5,630	3,200	2,710	3,270	4,940	4,850	3,480	2,030	1,940	1,480	1,590	1,450
24	5,250	3,360	2,940	3,290	4,930	5,060	3,580	2,270	1,840	1,800	1,610	1,050
25	4,960	3,440	2,660	3,350	4,780	5,120	4,560	*3,100	1,720	1,860	1,550	1,730
26	4,730	3,670	2,830	2,930	4,820	5,330	4,640	2,540	1,550	1,760	1,590	1,350
27	4,630	3,640	3,140	2,610	5,280	5,130	*5,370	2,120	1,760	1,660	1,080	1,520
28	4,240	3,490	3,750	2,470	5,910	4,460	4,460	2,030	1,600	1,830	1,300	1,330
29	4,310	3,970	4,120	2,610	-	4,900	4,320	2,210	1,420	1,730	1,510	1,220
30	4,130	3,720	4,200	3,030	------	4,720	4,020	2,300	1,600	1,760	2,080	1,400
31	4,260	---	3,980	3,180	-------	4,690	-------	2,440	-------	1,690	1,910	------
Total	152,980	102,750	102,950	137,320	99,570	161,690	117,520	79,350	65,860	61,860	53,300	40,248
Mean	4,935	3,425	3,321	4,430	3,556	5,216	3,917	2,560	2,195	1,995	1,719	1,342
Cfsm	1.48	1.03	0.995	1.33	1.06	1.56	1.17	0.767	0.657	0.597	0.515	0.402
In.	1.71	1.15	1.15	1.53	1.10	1.80	1.30	0.88	0.73	0.69	0.59	0.45

Calendar year 1954: Max 9,020 Min 798 Mean 3,246 Cfsm 0.972 In. 13.20
Water year 1954-55: Max 9,000 Min 968 Mean 3,220 Cfsm 0.964 In. 13.08

* Discharge measurement made on this day.

St. Joseph River at Niles, Mich.

Location.--Lat 41°49'45", long 86°15'35", in SW¼ sec. 26, T. 7 S., R. 17 W., on right bank 100 ft upstream from Main Street Bridge at Niles, 0.6 mile downstream from dam at French Paper Co., 1 mile upstream from Dowagiac River, and at mile 44.

Drainage area.--3,620 sq mi, approximately.

Records available.--October 1930 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 635.02 ft above mean sea level, datum of 1929. Oct. 1, 1930, to Feb. 11, 1931, tape gage on Main Street Bridge, and Feb. 12 to June 30, 1931, staff gage at site 50 ft upstream from present site (gage heights referred to mean sea level). Since Oct. 1, 1943, auxiliary gage is headwater gage at hydroelectric plant at Buchanan Dam, 8 miles downstream.

Average discharge.--23 years (1930-37, 1938-39, 1940-55), 3,168 cfs.

Extremes.--Maximum and minimum discharges for water years 1931, 1933, 1945-46, 1949, and 1955, some of which have been revised, are contained in the following table:

Water year	Maximum			Minimum daily	
	Date	Discharge (cfs)	Gage height (feet)	Date	Discharge (cfs)
1931	Mar. 30, 1931	3,220	a638.66	Aug. 30, 1931	420
1933	Apr. 18, 1933	10,000	7.53	Sept. 2,3, 1933	1,000
1945	May 18, 1945	*10,000	8.21	-	-
1946	Mar. 8, 1946	*7,080	6.56	-	-
1949	Feb. 16, 1949	*10,300	8.28	-	-
1955	Oct. 12, 1954	12,000	9.09	Sept. 18, 1955	633

* Revised.
a Maximum observed.

1930-55: Maximum discharge, 20,200 cfs Apr. 5, 1950 (gage height, 13.10 ft); minimum daily (revised), 420 cfs Aug. 30, 1931.

Remarks.--Records good. Flow regulated by powerplants above station.

Cooperation.--Gage-height record at auxiliary gage furnished by Indiana and Michigan Electric Co.

Revisions.--Revised figures of discharge, in cubic feet per second, for water years 1931, 1933-36, 1940-43, superseding those published in WSP 714, 744, 759, 784, 804, 894, 924, 954, 974 are given herein. Complete daily tables are given for water years 1931 and 1933, but only revised discharges are given for other water years.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1934		1935-Con.		1936-Con.		1940-Con.		1942-Con.	
Sept.12	1,200	Feb. 18	2,060	June 13	1,300	Jan. 28	1,700	Jan. 9	2,100
13	1,500	19	2,130	14	1,000	29	1,900	10	2,100
14	1,300	20	2,130	July 15	1,300	30	2,200	11	2,100
15	1,200	21	2,060	16	1,200	31	1,800	12	2,200
16	1,300	22	2,180	17	1,200			13	2,200
17	1,200	23	1,390	18	1,100	1941			
18	1,000			23	900	Sept. 1	550	1943	
19	1,100	1936		24	800	2	800	Apr. 6	4,600
20	1,000	May 8	3,800	25	850	3	1,200	7	4,500
21	1,000	9	3,600	26	750	4	1,100	8	4,500
22	1,100	10	3,100	27	1,100	5	1,000	9	4,300
23	1,000	11	3,300	28	1,000	6	1,100	10	4,100
24	1,100	12	3,700	29	900	7	700	11	4,000
25	1,000	13	3,400	30	880	8	800	12	4,000
26	1,100	14	3,100	31	850	9	1,100	13	4,000
27	1,100	15	2,800	Aug. 1	950	10	950	14	4,200
28	1,100	16	2,700	2	650	11	1,100	15	4,000
29	1,100	17	2,500	3	800	12	1,000	16	4,000
30	1,100	18	2,500	4	950	13	1,000	17	4,000
		19	2,600	5	1,000	14	650	18	3,700
1935		20	2,500	10	1,000	15	700	19	4,000
Jan. 1	1,760	21	2,700	11	1,100	16	1,000	20	3,900
2	1,640	22	2,200	12	900	17	1,100	21	4,000
3	1,530	23	1,700	13	950	18	1,000	22	4,000
4	1,210	24	1,900	14	1,000	19	1,100	23	4,100
23	1,870	25	2,100	15	1,000	25	700	24	3,800
24	1,770	26	2,000	17	1,000	26	750	25	3,500
25	1,700	27	2,100	18	1,100	27	670	26	4,000
26	1,690	28	2,000	19	1,100	28	600	27	5,000
27	1,650	29	1,800	20	950	29	900	Sept. 6	5,400
28	1,930	30	1,700	21	900	30	850	7	5,600
29	1,880	31	1,500	22	1,000	Oct. 3	1,500	8	4,500
30	1,650	June 1	2,400			4	1,900	9	4,400
31	1,740	2	2,100	1940		5	1,800	10	4,300
Feb. 1	1,780	3	1,900	Jan. 18	2,000	6	2,500	11	3,700
2	1,560	4	1,800	19	1,700	7	3,600	12	3,500
3	1,670	5	1,900	20	1,600	8	2,900	13	4,000
4	1,770	6	1,600	21	1,700	9	3,100	14	4,200
5	1,680	7	1,500	22	2,000	10	2,600	15	4,200
6	1,340	8	2,000	23	2,200			16	3,800
7	1,570	9	1,900	24	2,100	1942		17	3,600
8	1,850	10	1,700	25	1,900	Jan. 6	2,200		
16	2,420	11	1,600	26	1,700	7	2,100		
17	1,920	12	1,500	27	1,700	8	2,100		

St. Joseph River at Niles, Mich.--Continued

Revised figures of monthly discharge, in cubic feet per second, 1934-36, 1940-43

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
September 1934	-	1,500	657	1,048	0.290	0.32
Water year 1933-34	-	8,050	466	1,946	.538	7.30
Calendar year 1934	621,816	8,050	466	1,704	.471	6.40
January 1935	59,332	3,180	842	1,914	.529	.61
February	54,070	3,320	1,340	1,931	.533	.56
Water year 1934-35	789,730	6,400	763	2,164	.598	8.12
Calendar year 1935	862,722	6,400	842	2,364	.653	8.87
May 1936	97,800	7,300	1,500	3,155	.872	1.00
June	44,828	2,400	838	1,494	.413	.46
July	33,394	1,440	724	1,077	.298	.34
August	30,437	1,170	650	982	.271	.31
Water year 1935-36	867,779	7,670	650	2,371	.655	8.90
Calendar year 1936	994,809	7,670	650	2,718	.751	9.18
January 1940	58,730	2,490	1,520	1,895	.523	.60
Water year 1939-40	883,758	7,770	950	2,415	.667	9.08
Calendar year 1940	897,748	7,770	950	2,453	.678	9.23
September 1941	26,538	1,200	550	885	.244	.27
Water year 1940-41	724,645	4,800	433	1,985	.548	7.43
October 1941	67,870	3,600	850	2,189	.605	.70
Calendar year 1941	803,055	5,290	433	2,200	.608	8.24
January 1942	75,630	2,940	2,070	2,440	.674	.78
Water year 1941-42	1,224,850	12,400	850	3,356	.927	12.59
Calendar year 1942	1,230,250	12,400	1,440	3,371	.931	12.64
April 1943	134,420	5,910	3,500	4,481	1.24	1.38
September	110,760	5,600	2,880	3,692	1.02	1.14
Water year 1942-43	1,788,900	17,100	1,440	4,901	1.35	18.37
Calendar year 1943	1,785,780	17,100	1,620	4,893	1.35	18.34

Discharge, in cubic feet per second, water year October 1930 to September 1931

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a1,200	a1,400	2,300	a1,400	a1,600	a1,400	2,590	1,860	1,520	1,220	750	1,010
2	a1,200	a1,300	2,000	1,400	1,520	1,860	2,740	1,110	1,520	1,400	920	965
3	a1,200	1,400	2,000	1,300	1,800	1,520	2,590	a1,500	1,460	1,220	1,160	920
4	a1,200	a1,500	2,000	a1,600	1,660	1,860	2,440	1,860	1,400	1,010	1,010	1,010
5	a1,200	a1,400	2,000	1,500	1,730	1,720	a2,440	1,660	1,400	965	1,060	965
6	a1,300	a1,500	2,000	1,600	1,330	1,520	2,440	2,000	1,590	1,400	1,110	830
7	a1,200	a1,200	a1,800	1,600	1,220	1,860	2,590	1,860	a2,000	1,400	1,060	965
8	a1,300	1,300	2,100	1,600	a1,500	a1,860	3,060	1,860	2,590	1,340	1,110	1,160
9	a1,400	a1,200	2,300	1,500	1,800	1,860	2,440	1,280	2,900	1,160	1,010	1,060
10	a1,400	a1,300	2,100	1,400	1,950	1,460	2,590	1,280	2,440	875	1,280	1,060
11	a1,400	1,300	1,900	a1,500	1,330	1,720	1,520	1,860	2,290	1,110	1,160	a900
12	a1,300	1,400	1,900	1,600	1,660	1,720	a1,800	2,000	1,660	1,110	1,060	a800
13	a1,300	a1,400	1,800	1,500	1,720	1,860	2,140	2,000	1,660	1,460	965	a750
14	a1,300	1,400	a1,700	1,300	1,590	1,280	2,290	1,720	a1,900	1,400	1,060	a900
15	1,300	1,200	1,800	1,500	a1,700	a1,500	2,740	2,000	2,140	1,220	1,010	a1,200
16	1,400	a1,200	1,800	1,400	1,860	1,720	2,140	750	1,660	1,280	875	a1,500
17	a1,500	1,400	1,800	a1,200	1,860	2,000	2,140	a1,200	1,590	965	965	a1,600
18	a1,400	1,400	1,600	1,400	1,860	2,140	920	1,660	1,400	1,220	965	a1,600
19	a1,300	1,400	1,500	1,500	2,290	2,140	a1,500	1,590	1,220	1,010	1,010	a1,600
20	1,500	1,400	1,400	1,500	1,660	2,140	2,140	2,000	920	1,460	965	a1,200
21	1,400	1,400	a1,400	1,500	1,400	1,340	2,440	1,460	a1,200	1,400	750	a1,200
22	1,500	a1,200	1,600	1,500	a1,500	a2,050	2,140	1,720	1,460	1,520	830	a1,300
23	1,600	a1,000	1,600	1,500	a1,600	2,740	2,000	1,160	1,280	1,860	750	a1,200
24	1,400	1,300	1,600	1,200	1,720	2,440	2,000	a1,500	1,400	1,340	920	a1,200
25	1,500	1,300	a1,500	a1,400	1,520	2,440	1,160	1,860	1,400	1,220	1,010	a1,300
26	a1,300	1,300	1,400	1,590	1,460	2,590	a1,650	1,160	1,340	1,060	920	a1,500
27	1,200	a1,400	1,400	1,800	1,660	2,900	2,140	1,340	920	1,400	920	a1,600
28	1,300	a1,400	a1,400	1,660	1,010	2,590	2,000	1,400	a1,200	1,460	920	a1,400
29	1,400	a1,400	1,400	1,520	-	a2,800	2,140	1,400	1,460	1,280	875	a1,300
30	1,300	a1,600	1,500	1,330	------	3,060	2,000	a1,450	1,060	1,220	420	a1,300
31	1,400	------	1,500	1,660	-------	2,590	-------	a1,450	-------	875	965	-------
Total	41,600	40,300	54,100	45,960	45,510	62,680	64,920	48,950	47,980	38,860	29,785	35,295
Mean	1,342	1,343	1,745	1,483	1,630	2,020	2,160	1,580	1,600	1,250	961	1,176
Cfsm	0.371	0.371	0.482	0.410	0.450	0.558	0.597	0.436	0.442	0.345	0.265	0.325
In.	0.43	0.41	0.56	0.47	0.47	0.64	0.67	0.50	0.49	0.40	0.31	0.36

Calendar year 1930: Max - Min - Mean - Cfsm - In. -
Water year 1930-31: Max 3,060 Min 420 Mean 1,523 Cfsm 0.421 In. 5.71

a No gage-height record; discharge estimated on basis of powerplant records and records for nearby stations.

Note.--Stage-discharge relation indefinite Oct. 15 to Jan. 25; discharge computed on same basis as for footnote "a."

St. Joseph River at Niles, Mich.--Continued

Discharge, in cubic feet per second, water year October 1932 to September 1933

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,260	2,200	2,060	6,040	3,400	4,850	6,580	4,850	3,000	2,130	1,500	1,200
2	1,420	2,320	2,130	4,520	3,640	4,520	7,480	5,020	3,000	3,020	1,400	1,000
3	1,460	2,280	2,200	5,870	3,400	4,040	7,480	4,850	3,000	3,320	2,100	1,000
4	1,770	2,060	1,920	5,020	3,100	4,040	7,300	5,360	3,000	3,180	2,300	1,200
5	1,420	2,420	2,200	5,020	2,500	3,560	6,940	5,020	3,000	2,880	1,800	1,500
6	1,680	1,800	2,420	4,850	2,130	3,720	7,300	5,530	3,000	2,950	1,500	1,300
7	1,400	1,920	2,650	4,360	2,400	3,320	8,240	6,040	2,650	2,500	1,600	1,500
8	1,700	2,200	3,320	4,360	2,500	3,320	8,500	6,760	2,420	2,500	1,700	1,300
9	1,600	2,280	3,250	4,200	2,450	2,800	8,500	7,860	2,350	2,500	1,600	1,200
10	1,300	2,420	2,720	4,360	2,400	2,580	8,500	8,240	1,800	2,500	1,500	1,200
11	1,600	1,990	2,500	3,430	2,400	2,200	8,500	8,240	1,780	2,500	1,500	1,300
12	1,800	2,060	2,400	3,400	2,350	2,350	8,500	8,620	2,060	2,200	1,500	1,400
13	1,900	1,690	2,300	3,180	2,350	2,720	8,500	8,240	1,780	2,000	1,500	1,600
14	1,800	2,420	2,200	3,250	2,300	4,710	6,220	7,480	1,850	1,800	1,500	1,600
15	1,600	2,720	2,100	2,950	2,300	7,120	6,580	7,670	1,770	1,700	1,500	1,600
16	1,300	2,350	2,100	3,100	2,400	4,850	6,220	7,300	1,800	1,800	1,500	1,400
17	1,540	2,420	2,050	3,020	2,500	6,760	7,120	6,940	1,800	1,990	1,400	1,500
18	1,920	2,280	2,000	2,950	2,580	2,760	9,600	6,760	1,800	1,230	1,500	1,500
19	1,770	2,130	2,000	3,880	3,320	6,400	8,810	6,400	1,800	1,430	1,400	1,600
20	1,780	2,350	2,000	4,680	2,880	5,870	7,480	5,750	1,700	1,460	1,300	1,500
21	1,630	2,350	2,100	4,520	3,400	4,200	6,760	5,750	1,700	1,610	1,400	1,500
22	1,550	2,060	2,300	4,520	3,480	3,720	6,220	5,750	1,800	1,280	1,500	1,700
23	1,670	2,280	3,720	4,360	3,960	4,680	5,870	5,750	1,800	1,170	1,500	1,700
24	1,780	1,850	6,580	5,020	4,200	5,190	5,020	5,750	1,700	1,680	1,500	1,500
25	1,920	1,920	8,810	5,020	4,360	5,530	5,020	5,750	1,700	1,260	1,400	1,600
26	2,280	2,720	8,430	3,880	5,530	5,020	4,200	4,250	1,800	1,430	1,300	2,000
27	2,200	1,960	7,860	4,040	4,850	5,700	4,850	4,250	1,900	1,380	1,200	2,400
28	2,650	2,130	7,670	3,880	5,020	6,040	4,360	4,250	1,900	1,700	1,400	2,300
29	2,130	2,200	7,300	3,460	-	5,360	4,040	4,250	1,900	1,500	1,400	2,200
30	2,090	1,920	6,580	3,320	-------	5,700	3,800	4,250	2,720	1,400	1,400	2,200
31	2,130	----	6,580	3,480	-------	5,700	-------	4,250	-------	1,600	1,300	----
Total	54,050	65,700	114,450	127,940	88,100	143,330	204,490	187,180	64,280	61,600	46,900	46,500
Mean	1,744	2,190	3,690	4,130	3,150	4,620	6,820	6,040	2,143	1,987	1,513	1,550
Cfsm	0.482	0.605	1.02	1.14	0.870	1.28	1.88	1.67	0.592	0.549	0.418	0.428
In.	0.56	0.68	1.18	1.31	0.91	1.48	2.10	1.92	0.66	0.63	0.48	0.48

Calendar year 1932: Max 8,810 Min - Mean 2,552 Cfsm 0.705 In. 9.60
Water year 1932-33: Max 9,600 Min 1,000 Mean 3,300 Cfsm 0.912 In. 12.39

Note.--No gage-height record Apr. 8-13, May 20 to June 6, July 9-16, 28-31, Aug. 4 to Sept. 30, Stage-discharge relation indefinite Oct. 7-16, June 16-29, July 7-16, July 28 to Sept. 30; discharge estimated on basis of powerplant records and records for nearby stations.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,600	4,910	4,250	4,370	3,240	6,520	5,160	4,290	2,490	1,430	1,740	1,430
2	1,260	4,930	4,290	4,750	3,500	6,680	5,140	5,860	2,460	2,030	1,560	1,480
3	2,190	4,760	4,060	5,130	3,290	6,310	4,920	3,640	2,360	1,770	1,560	1,200
4	2,670	4,730	4,210	*5,400	2,920	6,680	4,890	3,500	2,000	1,530	1,390	1,240
5	3,690	4,640	4,150	4,650	3,420	6,750	4,320	3,360	1,780	1,930	1,470	1,170
6	*3,890	4,560	*3,790	7,450	2,900	6,420	4,430	3,340	1,990	1,870	2,300	1,520
7	3,560	4,360	3,610	7,500	3,010	6,370	4,290	3,250	*2,250	2,400	2,460	1,430
8	3,340	4,160	3,460	6,770	3,050	6,150	3,990	2,720	2,730	2,410	2,700	1,230
9	3,100	*4,130	3,820	6,610	3,280	5,940	3,900	3,290	2,870	1,930	2,250	1,190
10	4,430	4,090	3,580	6,680	3,000	5,900	3,800	*2,990	2,740	2,150	1,830	1,280
11	7,460	3,930	3,250	6,530	3,340	5,810	3,790	3,030	2,700	2,390	1,920	895
12	11,300	3,990	3,490	6,030	2,580	5,640	3,840	2,570	2,670	2,510	1,710	1,510
13	9,640	3,510	3,120	5,700	2,450	5,580	3,920	2,620	2,900	1,970	1,570	*1,310
14	8,090	3,480	3,470	5,780	2,740	5,230	3,790	2,880	2,920	2,040	1,490	1,290
15	7,960	3,550	3,580	5,530	3,250	*5,260	3,900	2,510	2,580	2,200	1,790	1,160
16	9,640	3,290	3,320	4,930	3,580	5,340	3,800	2,540	2,410	1,820	*1,580	1,130
17	9,320	3,390	3,220	5,340	*3,080	5,320	3,740	2,850	2,380	1,870	1,390	1,190
18	9,000	3,370	3,250	4,900	3,340	5,180	3,600	2,760	2,320	1,920	1,790	663
19	8,330	3,430	3,280	4,530	3,540	5,000	*3,420	2,110	1,940	2,220	1,170	1,200
20	7,500	3,410	3,260	4,100	4,220	4,950	4,120	2,400	2,380	2,020	1,220	1,350
21	7,600	3,440	3,090	4,220	5,430	4,870	4,100	2,390	1,830	1,860	1,200	1,120
22	6,860	3,760	3,190	4,040	5,400	5,180	4,610	1,760	1,900	1,780	2,000	1,120
23	6,540	3,640	2,820	3,520	5,270	5,370	4,040	2,180	2,010	1,920	1,700	1,510
24	6,350	4,000	3,010	3,630	5,240	5,820	4,070	2,430	1,750	1,280	1,300	1,390
25	6,070	4,200	3,190	3,640	5,220	5,910	4,900	2,510	2,080	1,940	1,360	882
26	5,570	4,400	3,060	3,260	5,310	5,690	5,260	2,650	1,380	1,700	1,300	1,690
27	5,410	4,600	3,650	3,190	5,690	5,630	4,990	2,450	1,770	1,770	1,320	1,310
28	5,540	4,400	4,280	2,510	6,550	5,450	4,820	2,390	1,730	*1,580	833	1,430
29	4,670	4,650	4,760	2,620	-	5,330	4,810	2,410	1,430	1,660	1,580	1,420
30	5,060	4,370	4,700	2,850	------	5,450	4,590	2,500	1,350	1,440	2,220	1,570
31	4,850	----	4,310	3,160	-------	5,180	-------	2,610	-------	1,530	2,180	----
Total	182,490	122,080	112,520	149,320	107,840	176,910	128,950	86,790	66,100	58,870	51,883	38,310
Mean	5,887	4,069	3,630	4,817	3,851	5,707	4,298	2,800	2,203	1,899	1,674	1,277
Cfsm	1.63	1.12	1.00	1.33	1.06	1.58	1.19	0.773	0.609	0.525	0.462	0.353
In.	1.87	1.25	1.16	1.53	1.11	1.82	1.32	0.89	0.68	0.60	0.53	0.39

Calendar year 1954: Max 11,300 Min 880 Mean 3,555 Cfsm 0.982 In. 13.33
Water year 1954-55: Max 11,300 Min 663 Mean 3,513 Cfsm 0.970 In. 13.15

* Discharge measurement made on this day.

St. Joseph River at Berrien Springs, Mich.

Location.--Lat 41°56'55", long 86°20'00", in SW¼ sec. 18, T. 6 S., R. 17 W., on right bank 30 ft upstream from bridge on U. S. Highway 31 at Berrien Springs and at mile 24.

Drainage area.--4,081 sq mi.

Records available.--June 1951 to September 1955 in reports of the Geological Survey. January 1909 to December 1931 (figures of maximum and minimum days and monthly average discharge) in House Document 94, 73d Congress, 1st session.

Gage.--Water-stage recorder. Datum of gage is 594.38 ft above mean sea level (Indiana and Michigan Electric Co. benchmark).

Extremes.--Maximum discharge during year, 14,200 cfs Oct. 16 (gage height, 11.70 ft); minimum daily, 1,030 cfs Sept. 19.
1941-55: Maximum discharge, that of Oct. 16, 1954; minimum daily, 840 cfs Nov. 16, 1953.

Remarks.--Records good. Flow regulated by powerplants above station.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-16		Oct. 17 to Sept. 30	
3.7	1,830	2.6	1,030
4.0	2,070	3.0	1,310
6.0	4,370	4.0	2,100
10.0	11,000	6.0	4,550
11.0	12,800	10.2	11,400

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,130	5,680	5,000	5,150	3,980	7,840	5,810	5,260	3,210	2,140	2,300	2,280
2	1,880	6,020	5,050	5,400	4,240	7,600	5,770	4,930	3,090	2,340	2,050	2,120
3	2,580	5,690	5,030	6,310	4,190	7,450	5,550	4,490	2,720	2,450	2,050	2,030
4	3,090	5,680	4,810	*6,330	3,570	7,710	5,510	4,310	2,860	2,090	1,820	1,960
5	4,540	5,480	4,920	6,830	4,120	8,040	5,260	3,990	2,560	2,320	1,820	1,780
6	4,510	5,450	4,760	8,250	3,580	7,560	5,420	4,050	2,610	2,390	2,310	1,940
7	4,370	5,360	*4,400	9,680	3,700	7,320	5,050	3,920	*2,980	3,250	3,280	1,960
8	3,950	4,990	4,500	8,300	3,640	7,210	4,660	3,040	3,480	3,330	4,080	1,890
9	3,560	*4,820	4,600	7,960	4,070	6,710	4,750	3,600	3,700	2,860	2,840	1,840
10	4,650	5,020	4,200	7,560	3,800	7,100	4,620	*3,840	3,730	2,630	2,490	1,790
11	*8,550	4,610	4,110	7,420	3,990	6,680	4,480	3,740	3,540	2,910	2,470	1,710
12	*12,800	4,740	4,090	7,050	3,370	6,580	4,550	3,220	3,290	3,070	2,450	1,580
13	11,600	4,250	3,920	6,900	3,110	6,480	4,730	3,180	3,600	2,710	2,510	1,930
14	9,580	4,120	4,120	6,700	3,180	6,040	4,480	3,470	3,830	2,430	1,860	1,780
15	9,060	4,300	4,220	6,340	3,850	*6,000	4,560	3,030	3,360	3,050	2,250	1,720
16	11,400	4,000	4,030	6,130	4,160	6,100	4,530	3,010	3,250	2,620	2,250	1,560
17	11,300	3,990	3,970	5,820	4,020	6,020	4,290	3,360	2,950	2,710	*2,090	1,850
18	10,800	3,940	4,060	5,850	3,970	5,670	3,970	3,400	3,150	2,570	2,490	1,280
19	9,910	4,050	4,050	5,630	4,170	5,710	*4,070	2,580	2,490	2,770	1,930	1,030
20	8,830	4,050	4,120	4,570	4,580	5,530	4,780	2,910	3,380	2,580	1,770	1,870
21	8,810	4,340	3,730	4,760	6,900	5,450	4,830	2,810	2,360	2,550	1,540	1,440
22	8,060	4,290	3,700	4,730	6,590	5,960	5,360	2,450	2,580	2,340	2,120	1,770
23	7,640	4,460	3,650	4,650	*6,380	6,000	4,880	2,740	2,570	2,840	2,400	1,660
24	7,610	4,680	3,750	4,320	6,240	6,580	4,650	3,080	2,380	2,190	2,020	2,090
25	6,970	4,980	3,740	4,430	6,050	6,540	5,920	3,150	2,390	2,360	1,940	1,350
26	6,700	5,170	3,690	4,080	6,240	6,490	6,460	3,220	2,080	2,280	1,470	2,140
27	6,350	5,390	4,060	4,070	6,380	6,610	6,330	3,130	2,180	2,410	2,350	1,780
28	6,110	5,110	5,270	3,150	8,080	6,260	5,790	3,030	2,540	2,110	1,450	2,060
29	5,350	4,970	5,810	3,400	-	6,070	5,540	3,170	3,030	2,430	1,510	1,930
30	6,230	5,450	5,680	3,660	-------	6,110	5,360	3,190	2,000	2,370	3,560	1,930
31	5,830	------	5,390	4,010	-------	6,050	-------	3,280	-------	2,020	2,680	------
Total	214,750	145,080	136,430	179,440	130,150	203,470	151,960	106,580	86,890	79,120	70,150	54,050
Mean	6,927	4,836	4,401	5,788	4,648	6,564	5,065	3,438	2,896	2,552	2,263	1,802
Cfsm	1.70	1.19	1.08	1.42	1.14	1.61	1.24	0.842	0.710	0.625	0.555	0.442
In.	1.96	1.32	1.24	1.64	1.19	1.85	1.38	0.97	0.79	0.72	0.64	0.49

Calendar year 1954: Max 12,800 Min 1,390 Mean 4,276 Cfsm 1.05 In. 14.22
Water year 1954-55: Max 12,800 Min 1,030 Mean 4,269 Cfsm 1.05 In. 14.19

* Discharge measurement made on this day.

Paw Paw River at Riverside, Mich.

Location.--Lat 42°11'10", long 86°22'05", in SE¼ sec. 23, T. 3 S., R. 18 W., on left bank at upstream side of county highway bridge, three-quarters of a mile east of Riverside.

Drainage area.--391 sq mi.

Records available.--October 1951 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 588.80 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 1,570 cfs Oct. 18 (gage height, 8.69 ft); minimum, 174 cfs Aug. 22; minimum gage height, 3.12 ft Sept. 26.
1951-55: Maximum discharge, 1,650 cfs Jan. 23, 1952 (gage height, 8.72 ft); minimum, 151 cfs Sept. 7, 28, Oct. 5, 1953; minimum gage height, 2.92 ft Sept. 7, 1953.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation, principally during low flow, caused by paper mill above station.

Revisions.--WSP 1337: Drainage area.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 9 to May 26, Aug. 5-31)

3.1	180	7.5	760
5.0	310	8.0	1,020
6.0	414	8.7	1,570
7.0	605		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	265	580	720	720	b400	930	675	618	345	355	198	279
2	286	645	705	720	b370	930	675	557	336	336	198	294
3	294	705	690	720	b350	900	660	478	310	272	192	294
4	310	740	675	760	b340	930	618	345	294	265	186	258
5	375	800	645	*800	b340	930	592	318	286	286	186	210
6	*375	850	*618	850	b330	900	557	345	286	302	192	210
7	365	875	580	900	345	825	528	387	*294	279	230	216
8	355	850	517	875	387	780	355	345	327	286	230	223
9	327	825	444	875	400	740	375	336	365	286	230	223
10	355	*800	429	875	414	705	375	*375	387	302	230	223
11	557	760	414	900	400	675	345	310	460	272	210	230
12	*740	705	365	850	355	645	400	272	497	210	204	230
13	780	660	365	780	310	630	387	279	460	210	198	*230
14	740	618	444	705	345	592	400	400	444	210	198	223
15	960	568	478	660	365	*592	414	365	414	210	198	204
16	1,120	557	478	618	414	580	400	318	387	216	198	210
17	1,390	517	444	568	*478	580	365	310	345	223	*192	216
18	1,520	460	444	517	478	568	336	294	318	223	186	204
19	1,440	375	414	429	478	557	*414	279	286	230	186	198
20	1,440	365	365	387	557	557	444	251	272	251	186	210
21	1,440	375	429	318	760	517	478	310	265	230	180	216
22	1,310	375	414	355	875	580	497	294	272	216	180	210
23	1,160	460	444	355	825	645	537	310	265	198	186	210
24	1,020	537	517	336	800	675	557	318	251	198	192	204
25	875	645	592	b350	825	705	557	318	210	204	244	210
26	760	720	605	b350	850	705	660	318	216	204	210	192
27	705	705	645	b330	900	720	675	327	216	198	180	216
28	645	705	740	b310	960	705	675	310	216	*198	186	223
29	605	720	780	b330	-	720	690	327	223	204	186	230
30	580	740	740	b350	-------	720	660	365	265	198	223	237
31	580	------	740	b330	-------	690	-------	365	-------	204	258	------
Total	23,674	19,237	16,880	18,223	14,651	21,928	15,301	10,744	9,512	7,476	6,253	6,733
Mean	764	641	545	588	523	707	510	347	317	241	202	224
Cfsm	1.95	1.64	1.39	1.50	1.34	1.81	1.30	0.887	0.811	0.616	0.517	0.573
In.	2.25	1.83	1.61	1.73	1.39	2.09	1.46	1.02	0.90	0.71	0.59	0.64

Calendar year 1954: Max 1,520 Min 186 Mean 451 Cfsm 1.15 In. 15.65
Water year 1954-55: Max 1,520 Min 180 Mean 467 Cfsm 1.19 In. 16.22

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

Kalamazoo River at Marshall, Mich.

Location.--Lat 42°15'55", long 84°57'55", on line between secs. 25 and 26, T. 2 S., R. 6 W., on left bank at upstream side of bridge on U. S. Highway 27 at Marshall.

Drainage area.--449 sq mi.

Records available.--January to October 1948 (gage heights only), November 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 877.09 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 11, 1948, wire-weight gage at same site and datum.

Average discharge.--6 years (1949-55), 371 cfs.

Extremes.--Maximum discharge during year, 872 cfs Oct. 14 (gage height, 6.12 ft); minimum, 39 cfs Aug. 18 (gage height, 3.34 ft); minimum daily, 110 cfs Sept. 22.
1948-55: Maximum discharge, 2,130 cfs Mar. 29, 1950 (gage height, 8.20 ft); minimum, 26 cfs Aug. 30, 1952; minimum daily, 78 cfs Aug. 24, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Diurnal fluctuation caused by powerplant above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 26 to May 8)

3.7	101
4.0	173
5.0	480
5.8	770

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	190	328	393	434	328	685	443	380	251	380	185	201
2	141	345	390	396	280	674	428	367	194	244	160	190
3	232	334	365	416	*258	652	417	332	233	218	162	184
4	621	355	361	446	279	636	410	364	216	276	a190	174
5	514	372	354	492	232	630	386	348	249	275	a200	161
6	490	*311	252	602	298	600	382	291	194	352	a300	166
7	492	329	354	650	230	554	390	324	293	246	a270	134
8	427	272	282	612	298	496	377	300	329	418	a200	198
9	364	315	313	540	270	473	384	342	332	202	a260	176
10	463	294	286	498	310	484	355	198	348	186	a230	150
11	675	296	283	447	224	498	335	352	374	322	a250	154
12	720	308	269	418	220	518	330	305	398	218	a200	156
13	755	212	303	*434	300	522	404	246	340	202	a150	138
14	760	276	229	399	274	510	412	312	362	207	a200	157
15	766	208	307	380	247	479	392	270	340	276	a220	164
16	711	270	300	270	266	550	327	211	358	258	*a200	180
17	683	268	298	368	290	558	388	246	261	252	188	123
18	626	276	244	359	256	494	363	248	*253	228	187	170
19	568	350	276	334	261	469	400	*250	286	246	185	154
20	510	356	*310	280	419	450	447	243	154	238	250	142
21	*464	366	215	354	616	458	411	171	282	228	122	141
22	415	340	243	241	652	a520	400	230	260	258	153	*110
23	392	343	286	296	624	a540	413	266	268	234	172	140
24	308	344	307	250	543	*a580	422	252	244	193	140	182
25	321	378	264	322	472	574	492	242	230	250	165	170
26	352	369	280	300	474	529	516	263	162	202	191	168
27	328	392	347	232	504	505	508	231	245	*151	191	172
28	306	362	437	240	608	464	*492	202	190	208	186	171
29	335	363	514	251	-	470	444	282	186	214	192	208
30	310	404	508	288	-------	489	427	222	406	292	258	180
31	338	-------	433	206	-------	502	-------	269	-------	150	198	-------
Total	14,577	9,736	9,983	11,755	10,033	16,563	12,295	8,559	8,238	7,624	6,155	4,914
Mean	470	325	322	379	358	534	410	276	275	246	199	164
Cfsm	1.05	0.724	0.717	0.844	0.797	1.19	0.913	0.615	0.612	0.548	0.443	0.365
In.	1.21	0.81	0.83	0.97	0.83	1.37	1.02	0.71	0.68	0.63	0.51	0.41

Calendar year 1954: Max 836 Min 90 Mean 320 Cfsm 0.713 In. 9.70
Water year 1954-55: Max 766 Min 110 Mean 330 Cfsm 0.735 In. 9.98

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of powerplant records and records for stations at Battle Creek and at Comstock.

Battle Creek at Battle Creek, Mich.

Location.--Lat 42°19'55", long 85°09'15", in sec. 5, T. 2 S., R. 7 W., on right bank 350 ft upstream from Emmett Street Bridge in city of Battle Creek and 3 miles upstream from mouth.
Drainage area.--241 sq mi.
Records available.--October 1930 to July 1931, October 1932 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 823.24 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to May 14, 1951, staff gage at same site and datum.
Average discharge.--21 years (1934-55), 209 cfs.
Extremes.--Maximum discharge during year, 901 cfs Feb. 23 (gage height, 1.99 ft); minimum, 34 cfs Sept. 19 (gage height, 0.55 ft).
1930-31, 1932-55: Maximum discharge, 3,640 cfs Apr. 7, 1947 (gage height, 4.48 ft, from floodmark); minimum, 22 cfs Aug. 14, 1934; minimum gage height, about -0.5 ft in July 1936 and on Aug. 31, 1939, due to opening of gates at dam forming control.
Remarks.--Records excellent except those for periods of no gage-height record, which are good. Occasional slight regulation prior to November 1943.
Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1931 and 1944, superseding those published in WSP 714 and 1004, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1930		1931-Con.		1944-Con.		1944-Con.	
Nov. 26	62	Jan. 21	90	Aug. 14	57	Aug. 24	66
27	64	22	90	15	56	25	70
		23	90	16	60	26	65
1931		24	90	17	65	27	55
Jan. 15	90			18	70	28	64
16	90	1944		19	66	29	62
17	90	Aug. 10	54	20	64	30	66
18	90	11	62	21	68	31	70
19	90	12	60	22	70	Sept. 1	75
20	90	13	58	23	68	2	65

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
November 1930	-	111	59	62.5	0.259	0.29
January 1931	-	111	74	87.8	.364	.42
August 1944	1,888	70	48	60.9	.253	.29
September	1,981	85	51	66.0	.274	.31
Water year 1943-44	74,788	1,370	48	204	.846	11.56
Calendar year 1944	68,108	1,370	48	186	.772	10.53

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	166	262	485	110	640	344	180	107	78	48	55
2	75	170	272	409	110	721	333	162	101	72	46	53
3	80	170	272	338	*107	658	316	148	114	70	46	50
4	152	170	262	322	101	592	284	140	107	68	48	46
5	284	175	245	367	101	530	256	129	78	65	41	44
6	515	180	209	485	104	515	235	125	78	65	48	44
7	584	175	170	712	107	464	219	114	95	70	58	44
8	515	170	175	811	110	373	203	107	129	80	55	48
9	403	166	180	721	110	367	188	104	148	89	53	48
10	333	152	a180	592	114	322	175	110	148	92	50	46
11	306	148	a170	471	114	300	170	118	157	83	*48	39
12	316	148	a170	391	118	300	170	*125	175	70	44	39
13	403	144	a170	328	114	316	175	118	184	65	41	44
14	471	140	a170	272	114	322	175	107	180	65	44	46
15	450	137	a170	245	118	306	170	104	166	78	46	46
16	403	137	a160	193	125	300	166	98	144	80	50	39
17	385	133	a160	180	129	300	170	95	125	80	50	37
18	385	137	a150	175	129	316	162	95	110	78	48	37
19	379	170	a150	170	129	311	175	89	95	72	48	37
20	*350	214	*129	133	170	289	180	80	92	68	41	37
21	316	250	133	140	284	*262	*188	83	89	62	41	41
22	272	289	125	140	492	272	188	89	86	62	44	*46
23	235	300	133	125	730	316	175	95	78	62	44	46
24	198	289	137	125	793	450	184	98	78	62	48	46
25	180	272	140	125	632	632	214	104	78	60	48	41
26	162	250	148	125	522	676	240	107	70	62	48	48
27	152	245	180	110	443	600	256	101	68	62	48	48
28	148	245	262	114	471	508	256	104	68	58	44	48
29	148	245	322	114	-	422	235	114	65	*55	44	50
30	157	245	391	110	------	373	209	121	72	55	62	50
31	162	--	500	110	------	344	------	118	------	53	62	- - -
Total	8,991	5,832	6,297	9,138	6,701	13,097	6,411	3,482	3,285	2,141	1,486	1,343
Mean	290	194	203	295	239	422	214	112	110	69.1	47.9	44.8
Cfsm	1.20	0.805	0.842	1.22	0.992	1.75	0.888	0.465	0.456	0.287	0.199	0.186
In.	1.39	0.90	0.97	1.41	1.03	2.02	0.99	0.54	0.51	0.33	0.23	0.21

Calendar year 1954: Max 1,200 Min 50 Mean 193 Cfsm 0.801 In. 10.88
Water year 1954-55: Max 811 Min 37 Mean 187 Cfsm 0.776 In. 10.53

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Kalamazoo River near Battle Creek, Kalamazoo River at Marshall and Grand River near Eaton Rapids.

Kalamazoo River near Battle Creek, Mich.

Location.--Lat 42°20'45", long 85°15'45", in NE¼ sec. 32, T. 1 S., R. 8 W., on left bank 0.4 mile upstream from Wabascon Creek and 4.3 miles northwest of mouth of Battle Creek in city of Battle Creek.

Drainage area.--849 sq mi.

Records available.--July 1937 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 796.49 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1937, at datum 2.00 ft higher.

Average discharge.--18 years, 699 cfs.

Extremes.--1944-45: Maximum discharge during water year, 3,150 cfs May 18, 19 (gage height, 7.34 ft); minimum, 143 cfs Oct. 17.
1954-55: Maximum discharge during water year, 1,650 cfs Jan. 8, Mar. 2; maximum gage height, 5.63 ft Oct. 15; minimum discharge, 157 cfs Aug. 14.
1937-55: Maximum discharge, 7,290 cfs Apr. 7, 1947 (gage height, 9.13 ft); minimum, 50 cfs Sept. 22, 1939; minimum daily, 143 cfs Aug. 21, 1941; minimum gage height, 1.51 ft Feb. 22, 1940.

Remarks.--Records good except those below 400 cfs, which are fair. Diurnal fluctuation, below 1,500 cfs, caused by powerplants above station.

Revisions (water years).--WSP 924: 1938-39. Revised figures of discharge, in cubic feet per second, for the water years 1938, 1945-46, and 1948, superseding those published in WSP 854, 1034, 1054, and 1114 are given herewith. A complete table of daily discharge is given for the water year 1945, but only revised discharges are given for other water years.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1937		1945-Con.		1945-Con.		1947-Con.	
Nov. 6	476	Oct. 18	375	Nov. 27	454	Dec. 12	951
7	343	19	402	28	470	13	830
8	393	20	410	29	630	14	743
9	389	21	458	30	550	15	718
10	343	22	454			16	693
11	480	23	434	1946		17	676
12	517	24	486	Sept.10	264	18	690
13	450	25	510	11	341	19	648
14	465	26	490	12	326	20	576
15	498	27	446	13	289	21	641
16	498	28	510	14	231	22	610
17	400	29	422	15	238	23	602
18	454	30	418	16	256	24	598
19	443	31	438	17	206	25	533
20	555	Nov. 1	522	18	242	26	619
21	414	2	510	19	231	27	545
22	450	3	462	20	246	28	598
23	396	4	482	21	260	29	576
24	343	5	494	22	267	30	534
25	378	6	434	23	256	31	543
26	425	7	454	24	186		
		8	426	25	289	1948	
1945		9	490	26	242	Jan. 1	568
Oct. 1	770	10	506	27	285	2	516
2	878	11	522	28	260	3	576
3	1,010	12	466	29	260	4	626
4	922	13	502	30	196	5	574
5	900	14	482			6	572
6	878	15	502	1947		7	566
7	790	16	466	Dec. 1	518	8	582
8	630	17	506	2	558	9	593
9	650	18	458	3	696	10	572
10	590	19	550	4	776	11	563
11	530	20	442	5	912	12	565
12	470	21	398	6	954	13	574
13	498	22	570	7	1,050	14	522
14	482	23	446	8	1,120	15	464
15	474	24	422	9	1,180		
16	379	25	450	10	1,090		
17	394	26	530	11	1,020		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
November 1937.....	13,036	640	291	†435	0.512	0.57
October 1945.....	17,498	1,010	375	564	.664	.77
November.....	14,596	630	398	487	.574	.64
Calendar year 1945.....	214,316	3,150	235	587	.691	9.39
September 1946.....	7,253	341	186	242	.285	.32
Water year 1945-46.....	194,115	2,940	178	532	.627	8.52
Calendar year 1946.....	175,527	2,940	176	481	.567	7.70
December 1947.....	22,798	1,180	518	735	.866	1.00
Calendar year 1947.....	353,465	7,130	308	968	1.14	15.48
January 1948.....	14,963	626	380	483	.569	.66
Water year 1947-48.....	312,937	5,650	317	855	1.01	13.72
Calendar year 1948.....	291,498	5,650	272	796	.938	12.78

† Partly estimated.

Kalamazoo River near Battle Creek, Mich.--Continued

Discharge, in cubic feet per second, water year October 1944 to September 1945

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	341	307	411	325	275	845	618	565	1,170	544	383	333
2	344	356	378	325	300	745	765	548	1,420	496	390	310
3	*337	311	400	325	325	785	1,010	565	1,420	451	356	311
4	352	337	400	335	325	825	*1,120	582	1,400	438	344	267
5	341	330	376	350	325	765	1,220	670	1,390	469	341	235
6	438	282	376	350	325	845	1,260	582	1,290	445	406	292
7	352	311	366	350	*325	785	1,170	652	1,110	501	348	350
8	379	318	*426	350	353	885	865	785	909	426	348	430
9	333	394	396	335	326	945	765	705	796	396	318	430
10	308	414	400	*325	325	900	635	785	752	*420	337	426
11	307	367	416	353	350	750	600	725	726	450	418	410
12	367	375	370	346	350	800	565	745	683	408	430	410
13	356	326	394	352	350	700	530	670	666	443	383	410
14	329	402	451	380	400	*700	512	845	658	437	348	410
15	333	422	405	337	425	548	495	1,540	735	499	402	410
16	314	422	436	378	495	618	478	1,740	777	531	341	420
17	296	442	353	380	548	618	530	2,560	859	536	418	*420
18	300	363	396	380	495	688	530	3,150	768	562	314	300
19	327	434	400	350	425	635	*495	*3,150	*758	541	322	282
20	341	414	400	350	425	688	478	2,940	733	495	329	314
21	292	311	380	350	530	705	450	2,560	756	495	351	341
22	274	371	380	350	652	725	453	2,100	740	372	282	303
23	344	462	380	330	688	725	422	1,720	747	415	350	379
24	282	414	380	300	705	688	453	1,380	715	387	330	388
25	292	371	350	300	688	652	478	1,250	644	381	330	462
26	329	371	325	300	725	582	565	1,100	581	381	330	510
27	333	398	325	300	825	478	652	926	574	365	330	550
28	322	356	325	275	785	565	688	1,100	543	389	300	454
29	371	363	325	275	-	478	635	1,140	523	372	*300	630
30	231	458	325	275	-------	478	582	1,140	529	342	314	610
31	274	-- -	325	275	-------	548	--------	1,040	--------	297	325	--- - --
Total	10,139	11,202	11,770	10,306	13,065	21,694	20,019	39,960	25,372	13,684	10,818	11,797
Mean	327	373	380	332	467	700	667	1,289	846	441	349	393
Cfsm	0.385	0.439	0.448	0.391	0.550	0.824	0.786	1.52	0.996	0.519	0.411	0.463
In.	0.44	0.49	0.52	0.45	0.57	0.95	0.88	1.75	1.11	0.60	0.47	0.52

Calendar year 1944: Max 2,840 Min 225 Mean 637 Cfsm 0.750 In. 10.19
Water year 1944-45: Max 3,150 Min 231 Mean 547 Cfsm 0.644 In. 8.75

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 3, 4, Dec. 19 to Jan. 10, Jan. 17 to Feb. 7, Feb. 10-14, Mar. 10-14, Aug. 23-29, 31, Sept. 2, 7, 9, 11-17; discharge estimated on basis of records for station at Comstock.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	329	625	865	1,100	457	1,460	985	665	473	625	265	325
2	301	645	865	1,060	525	1,650	925	605	445	525	253	301
3	329	665	845	965	*485	1,600	865	585	421	397	257	293
4	1,020	665	785	985	465	1,550	785	545	433	353	277	269
5	1,140	685	765	1,100	469	1,460	805	565	377	393	305	253
6	1,100	*685	725	1,320	457	1,370	685	545	425	425	305	249
7	1,190	645	605	1,500	525	1,280	705	477	501	493	421	257
8	1,140	625	665	1,650	457	1,100	685	505	605	525	389	241
9	965	585	625	1,550	505	1,020	645	505	625	585	297	277
10	1,100	605	625	1,370	525	1,000	585	545	625	401	373	265
11	1,280	585	605	1,240	525	1,020	585	433	725	353	*341	253
12	1,370	585	585	1,060	413	1,000	625	*525	725	425	373	225
13	1,420	565	585	*965	445	985	625	505	705	341	281	241
14	1,460	461	605	885	545	985	665	445	645	313	253	241
15	1,500	545	565	825	525	985	665	493	625	429	273	249
16	1,460	501	585	705	525	1,020	645	469	565	453	321	253
17	1,320	545	605	685	545	1,020	605	413	545	417	277	245
18	1,240	565	585	685	545	985	625	433	*461	397	277	213
19	1,140	725	565	685	525	945	665	453	409	377	297	225
20	*1,060	805	565	625	705	885	685	429	429	377	261	225
21	945	805	*585	565	1,140	*945	*725	401	349	373	285	221
22	845	825	461	625	1,280	1,100	685	361	417	357	237	225
23	765	825	525	493	1,460	1,140	665	425	409	385	253	*205
24	705	845	545	545	1,550	1,240	705	473	417	345	249	229
25	605	845	565	545	1,420	1,370	805	497	405	305	245	245
26	585	825	525	545	1,240	1,420	865	473	377	341	265	261
27	585	825	705	485	1,240	1,320	865	457	329	329	289	261
28	565	825	925	450	1,280	1,190	845	525	385	317	281	285
29	565	825	1,000	450	-	1,100	805	493	361	*329	261	281
30	625	825	1,060	450	-------	1,020	705	505	441	305	429	325
31	585	-- --	1,100	450	-------	1,000	--------	449	--------	361	397	----- --
Total	29,239	20,582	21,216	26,563	20,778	36,165	21,730	15,199	14,654	12,351	9,287	7,638
Mean	943	686	684	857	742	1,167	724	490	488	398	300	255
Cfsm	1.11	0.808	0.806	1.01	0.874	1.37	0.853	0.577	0.575	0.469	0.353	0.300
In.	1.28	0.90	0.93	1.16	0.91	1.58	0.95	0.67	0.64	0.54	0.41	0.33

Calendar year 1954: Max 2,300 Min 161 Mean 649 Cfsm 0.764 In. 10.37
Water year 1954-55: Max 1,650 Min 205 Mean 645 Cfsm 0.760 In. 10.30

* Discharge measurement made on this day.

Kalamazoo River at Comstock, Mich.

Location.--Lat 42°17'05", long 85°30'50", in NE¼ sec. 19, T. 2 S., R. 10 W., on left bank at downstream side of bridge on River Street in Comstock, a quarter of a mile downstream from Comstock Creek.

Drainage area.--1,010 sq mi, approximately.

Records available.--April to August 1931, October 1932 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 759.12 ft above mean sea level, datum of 1929. Prior to October 1936, staff gage and October 1936 to October 1945 wire-weight gage, at same site and datum.

Average discharge.--21 years (1934-55), 877 cfs.

Extremes.--Maximum discharge during year, 2,000 cfs Mar. 4 (gage height, 3.14 ft); minimum, 250 cfs Aug. 2 (gage height, 0.78 ft).
1931, 1932-55: Maximum discharge, 6,910 cfs Apr. 8, 1947 (gage height, 7.94 ft); minimum observed, 185 cfs Aug. 7, 1934; minimum gage height observed, 0.56 ft May 4, 1931.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
759	1934	Apr. 7,8, 1934	2,830	4.40
804	1936	Mar. 2, 1936	2,750	4.28
854	1938	June 1,2, 1938	2,500	4.16
894	1940	Sept. 2, 1940	2,080	3.80

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by powerplants above station.

Revisions (water years).--WSP 824: 1933-36. Revised figures of discharge, in cubic feet per second, for the water years 1933, 1935, and 1941, superseding those published in WSP 744, 784, and 924, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1933		1933-Con.		1935-Con.		1935-Con.		1941-Con.	
Feb. 5	900	Feb. 20	920	Aug. 11	660	Aug. 26	560	Aug. 9	280
6	900	21	960	12	630	27	520	10	280
7	880	22	1,000	13	610	28	450	11	280
8	860			14	500	29	420	12	280
9	850	1935		15	500	30	430	13	280
10	850	Aug. 1	280	16	500	31	430	14	280
11	840	2	330	17	560			15	290
12	840	3	540	18	660	1941		16	300
13	840	4	760	19	780	Aug. 2	320	17	300
14	840	5	700	20	750	3	310	18	300
15	840	6	700	21	730	4	310	19	310
16	850	7	770	22	660	5	310	20	320
17	860	8	820	23	600	6	290	21	320
18	870	9	710	24	600	7	290	22	320
19	890	10	660	25	570	8	300	23	330

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
February 1933	-	1,370	840	965	0.96	1.00
August 1935	18,390	820	280	593	.587	.68
Water year 1934-35	220,436	1,840	199	604	.598	8.12
Calendar year 1935	246,623	1,840	244	654	.648	8.80
August 1941	9,598	389	232	310	.307	.35
Water year 1940-41	259,743	1,590	202	712	.705	9.55
Calendar year 1941	275,961	1,590	202	756	.749	10.15

Kalamazoo River at Comstock, Mich.--Continued

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

0.8	260
1.0	360
1.5	710
2.0	1,150
3.0	1,920

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	487	935	1,050	1,310	719	1,640	1,230	854	574	566	462	543
2	536	917	1,150	1,270	737	1,640	1,190	782	550	809	396	444
3	522	926	1,110	*1,350	710	1,800	1,150	728	536	630	350	366
4	1,230	926	1,020	1,230	662	1,920	944	710	414	480	350	378
5	1,540	908	980	1,350	646	1,840	944	670	462	614	370	345
6	1,610	890	953	1,540	646	1,720	971	686	*606	501	400	456
7	*1,430	872	764	1,700	670	1,640	872	622	622	536	430	414
8	1,470	*890	*746	1,800	662	1,500	818	566	827	719	520	408
9	1,430	809	863	1,800	662	1,390	845	582	863	863	500	378
10	1,470	791	800	1,700	791	1,270	809	630	836	764	400	355
11	1,640	764	694	1,500	700	1,270	800	702	818	755	450	320
12	1,720	728	773	1,400	650	1,270	818	590	1,020	536	430	*372
13	1,800	710	809	1,300	700	1,270	863	606	1,110	468	450	366
14	1,800	702	694	1,200	750	1,270	678	543	899	515	370	360
15	1,840	614	719	1,100	750	1,230	746	574	809	574	330	335
16	1,880	702	702	1,000	*755	1,230	782	662	782	590	*390	360
17	1,920	614	728	950	746	1,270	818	508	782	606	400	340
18	1,680	670	737	950	755	1,270	*818	450	686	678	360	315
19	1,580	926	764	900	746	1,230	791	468	606	566	360	384
20	1,470	1,040	686	800	818	1,190	881	536	622	487	360	384
21	1,350	1,060	646	750	1,310	1,110	917	515	529	487	360	396
22	1,230	1,040	654	750	1,580	1,190	890	402	468	474	350	390
23	1,070	998	622	700	1,580	1,500	827	508	456	432	350	372
24	1,010	1,040	622	700	1,640	1,470	953	529	529	366	345	295
25	980	1,060	719	700	1,680	1,500	1,110	574	487	494	315	270
26	854	1,150	728	719	1,640	1,580	1,110	*614	462	462	310	290
27	845	980	800	562	1,610	1,580	1,110	574	536	462	350	285
28	863	1,030	1,110	390	1,610	1,540	1,070	536	474	494	370	285
29	836	1,150	1,230	566	-	1,470	1,040	678	456	*501	370	300
30	890	1,040	1,270	582	-------	1,350	962	630	501	444	529	310
31	962	----	1,310	630	-------	1,310	-------	622	-------	420	638	----
Total	39,945	26,882	26,453	33,199	26,925	44,460	27,757	18,651	19,322	17,293	12,365	10,816
Mean	1,289	896	853	1,071	962	1,434	925	602	644	558	399	361
Cfsm	1.28	0.887	0.845	1.06	0.952	1.42	0.916	0.596	0.638	0.552	0.395	0.357
In.	1.47	0.99	0.97	1.22	0.99	1.64	1.02	0.69	0.71	0.64	0.46	0.40

Calendar year 1954: Max 2,400 Min 250 Mean 835 Cfsm 0.827 In. 11.22
Water year 1954-55: Max 1,920 Min 270 Mean 833 Cfsm 0.825 In. 11.20

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 7-25, Feb. 11-15, Aug. 4-15, 17-23, 27-29; discharge estimated on basis of records for stations near Battle Creek and near Fennville.

Portage Creek at Kalamazoo, Mich.

Location.--Lat 42°16'30", long 85°34'35", on line between secs. 22 and 27, T. 2 S., R. 11 W., on upstream side of Reed Street Bridge at Kalamazoo, 1½ miles upstream from mouth.

Drainage area.--48 sq mi, approximately.

Records available.--December 1947 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 761.50 ft above mean sea level, datum of 1929. Prior to Feb. 25, 1948, staff gage at same site and datum.

Average discharge.--7 years (1948-55), 58.7 cfs.

Extremes.--Maximum discharge observed during year, 80 cfs Dec. 6 (gage height, 2.76 ft); minimum observed, 3.0 cfs Nov. 18 (gage height, 1.56 ft).
1947-55: Maximum discharge, 580 cfs sometime in July 1954, from rating curve extended above 165 cfs by logarithmic plotting (gage height, 5.25 ft), caused by momentary gate opening of millpond; minimum observed, that of Nov. 18, 1954.

Remarks.--Records good except those for periods of no gage-height record and those below 20 cfs, which are poor. Flow regulated by St. Regis Paper Co. ponds above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.5	2.0	2.0	20
1.6	4.0	2.4	47
1.8	10	2.8	88

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	52	49	a45	47	64	56	45	49	57	45	a35
2	70	52	48	a50	42	64	54	56	45	a50	41	a35
3	74	49	41	*58	42	61	a50	52	43	a50	41	a35
4	87	50	41	64	42	54	a50	49	41	a50	40	a35
5	61	49	41	64	42	54	a50	48	a50	a45	37	a35
6	53	45	79	65	41	54	49	47	*57	a45	55	35
7	*50	42	40	65	45	54	49	41	58	a45	41	36
8	49	*65	*39	56	45	52	49	41	62	a45	41	34
9	45	64	39	56	49	52	45	47	57	a45	40	36
10	45	46	41	55	49	53	45	50	55	a40	39	36
11	67	46	41	55	42	52	52	49	53	a40	38	36
12	67	46	42	53	42	51	54	49	53	a40	36	*36
13	67	41	41	52	42	51	56	49	53	41	36	41
14	67	a20	41	52	43	*48	54	43	a40	39	35	41
15	74	3.6	40	45	*44	49	52	43	3.8	53	35	36
16	74	7.6	40	44	50	62	50	45	43	45	*35	38
17	70	58	41	49	51	52	45	45	43	37	37	36
18	62	20	38	47	52	47	*47	45	41	42	37	28
19	52	52	37	45	56	44	56	45	41	42	36	38
20	52	40	39	45	56	44	57	45	41	41	36	70
21	49	40	a40	45	68	48	57	40	42	38	32	40
22	49	6.1	43	45	58	66	53	40	42	36	32	37
23	41	6.1	43	45	53	73	50	51	43	36	38	41
24	41	52	43	45	51	66	56	67	39	36	37	40
25	46	50	41	45	52	70	66	52	34	38	36	39
26	46	46	41	44	74	64	68	*52	36	42	a35	39
27	46	46	41	44	74	57	58	52	41	44	a35	45
28	45	51	43	44	67	55	58	50	38	45	a35	41
29	47	51	44	43	-	55	55	49	47	*45	a35	39
30	47	52	45	43	------	55	45	45	68	41	a40	39
31	52	----	44	43	-------	56	-------	46	------	45	a35	-----
Total	1,718	1,248.4	1,326	1,551	1,419	1,727	1,586	1,478	1,358.8	1,338	1,171	1,152
Mean	55.4	41.6	42.8	50.0	50.7	55.7	52.9	47.7	45.3	43.2	37.8	38.4
Cfsm	1.15	0.867	0.892	1.04	1.06	1.16	1.10	0.994	0.944	0.900	0.788	0.800
In.	1.33	0.97	1.03	1.20	1.10	1.34	1.23	1.15	1.05	1.04	0.91	0.89

Calendar year 1954: Max 111 Min 3.6 Mean 48.6 Cfsm 1.01 In. 13.73
Water year 1954-55: Max 79 Min 3.6 Mean 46.8 Cfsm 0.975 In. 13.24

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for nearby stations.

Kalamazoo River near Fennville, Mich.

Location.--Lat 42°36', long 85°59', in NE¼ sec. 5, T. 2 N., R. 14 W., on left bank 40 ft upstream from highway bridge, 2 miles downstream from Swan Creek, 3½ miles downstream from Calkins Dam, and 6½ miles east of Fennville.

Drainage area.--1,600 sq mi, approximately.

Records available.--April 1929 to September 1936, October 1937 to September 1955. Published as "near Allegan" April 1929 to September 1932; as "at Calkins Bridge, near Allegan" October 1932 to September 1936, October 1937 to September 1938; as "at Calkins Dam, near Allegan" October 1938 to September 1950.

Gage.--Water-stage recorder. Datum of gage is 586.51 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). April 1929 to September 1936 at bridge and October 1937 to September 1950 in powerplant, 3½ miles upstream at mean sea level datum (levels by city of Allegan).

Average discharge.--24 years (1930-36, 1937-55), 1,352 cfs.

Extremes.--Maximum discharge during year, 5,420 cfs Oct. 12 (gage height, 12.87 ft); minimum, 108 cfs Aug. 28 (gage height, 3.68 ft); minimum daily, 454 cfs Aug. 28.

1929-36, 1937-55: Maximum discharge, 17,500 cfs Apr. 11, 1947 (gage height, 606.76 ft, site and datum then in use); minimum daily, 73 cfs Aug. 31, 1941.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
684	1929	May 4, 1929	4,250	603.69
699	1930	-	(‡)	-
744	1933	May 10, 1933	2,800	602.70
759	1934	Apr. 10, 1934	3,970	603.50
784	1935	Mar. 12, 1935	3,180	602.94
804	1936	Feb. 28, 1936	3,970	603.50
874	1939	Apr. 23, 1939	†4,250	-
894	1940	Aug. 27, 1940	†5,000	-
954	1942	Mar. 17, 1942	†7,470	-

† Maximum daily.
‡ Not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by powerplants above station and since June 1936 by Calkins Dam and powerplant, 3½ miles above station. Flow includes slight diversion above station due to natural flow into Gerber Swamp in Allegan State Forest game preserve.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1930, 1933, 1939, 1940, and 1942, superseding those published in WSP 699, 744, 874, 894, and 954, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1929		1929-Con.		1932-Con.		1939		1940-Con.	
Oct. 24	1,280	Nov. 15	1,300	Dec. 30	2,260	Feb. 21	3,180	Sept. 1	3,000
25	1,460	16	1,300	31	2,210	22	3,060	2	3,000
26	1,410	17	1,300			23	2,950	3	2,200
27	1,320	18	1,300	1933		24	3,430	4	2,500
28	1,250	19	1,300	Apr. 17	1,990	25	3,430	5	2,400
29	1,200	20	1,300	18	1,950	26	3,690	6	2,500
30	1,200	21	1,300	19	1,950	Apr. 19	3,430	7	2,000
31	1,200	22	1,250	20	1,950	20	3,690	8	2,800
Nov. 1	1,200	23	1,250	21	1,910	21	3,300		
2	1,200	24	1,200	22	1,830	22	3,830	1942	
3	1,200	25	1,200	23	1,750	23	4,250	Mar. 15	5,150
4	1,200			24	1,670	24	3,300	16	4,860
5	1,200	1932		25	1,630	25	3,430	17	7,470
6	1,200	Dec. 21	1,300	26	1,550	26	3,060	18	6,600
7	1,150	22	1,600	27	1,510	27	3,180	19	4,580
8	1,100	23	1,800	28	1,430			20	5,440
9	1,100	24	2,200	29	1,270	1940		21	5,730
10	1,100	25	2,400	30	1,350	Aug. 27	5,000	22	4,860
11	1,200	26	2,520	May 1	1,510	28	3,100	23	4,860
12	1,250	27	2,390	2	1,830	29	3,700		
13	1,300	28	2,300	3	2,030	30	2,800		
14	1,300	29	2,260			31	3,100		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1929	-	1,460	584	911	0.592	0.68
November	-	-	-	1,180	.766	.85
December 1932	-	2,520	-	1,460	.948	1.09
Calendar year 1932	-	2,630	-	1,140	.740	10.11
April 1933	-	2,640	1,270	2,040	1.32	1.48
May	-	2,760	1,300	2,040	1.32	1.53
Water year 1932-33	-	2,760	230	1,290	.838	11.38
Calendar year 1933	-	2,760	230	1,351	.877	11.90
February 1939	51,964	3,430	818	1,856	1.21	1.25
April	72,450	4,250	1,360	2,415	1.57	1.75
Water year 1938-39	453,307	4,250	491	1,242	.806	10.93
Calendar year 1939	454,384	4,250	491	1,245	.808	10.96
August 1940	37,944	5,000	542	1,224	.795	.92
September	43,786	3,000	868	1,460	.948	1.06
Water year 1939-40	395,732	5,000	467	1,081	.702	9.56
Calendar year 1940	433,528	5,000	467	1,185	.769	10.48
March 1942	104,090	7,470	940	3,358	2.18	2.51
Water year 1941-42	596,360	7,470	442	1,634	1.06	14.41
Calendar year 1942	612,045	7,470	652	1,677	1.09	14.77

Kalamazoo River near Fennville, Mich.--Continued

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 11 to Mar. 6, May 2-28)

5.2	442
8.0	1,300
11.0	2,430
12.0	3,550
12.6	4,770

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	874	1,800	1,950	1,980	1,100	3,100	2,310	1,530	1,190	959	760	658
2	842	1,800	1,850	2,030	1,300	2,740	2,100	1,510	1,050	872	794	826
3	676	1,700	1,800	2,130	1,500	2,430	2,050	1,480	1,050	796	798	996
4	922	1,700	1,810	2,220	1,400	3,040	1,970	1,340	1,060	1,150	718	645
5	1,270	1,700	1,810	*2,910	1,300	3,100	1,880	1,350	936	1,180	778	634
6	1,450	1,700	1,640	3,320	1,300	2,800	1,780	1,320	1,180	1,320	758	852
7	*1,690	1,700	1,610	3,470	1,300	2,560	1,740	1,320	1,190	1,030	626	676
8	1,990	1,700	*1,580	2,850	1,100	2,500	1,640	1,160	*1,170	1,070	1,130	741
9	1,780	1,700	1,550	2,490	1,100	2,300	1,610	1,220	1,250	1,120	810	746
10	2,040	*1,600	1,540	2,640	1,500	2,300	1,640	1,300	1,340	1,220	1,000	758
11	2,640	1,610	1,460	2,800	1,500	2,300	1,620	*1,150	1,370	1,250	1,160	615
12	*4,650	1,590	1,440	2,600	1,500	2,200	1,560	1,200	1,400	1,120	1,270	902
13	*3,240	1,540	1,460	2,510	1,400	2,200	*1,570	1,260	1,460	1,050	1,030	918
14	2,560	1,520	1,480	2,280	1,330	2,200	1,590	1,260	1,480	*875	633	*656
15	3,100	1,460	1,300	2,210	1,590	2,100	1,570	1,150	1,430	665	1,060	638
16	3,900	1,350	1,290	1,970	1,690	*2,100	1,530	1,130	1,400	600	814	642
17	3,700	1,300	1,290	1,890	1,720	2,020	1,490	808	1,370	538	*852	682
18	3,400	1,270	1,270	1,890	1,640	1,970	1,470	818	1,310	1,050	632	633
19	3,100	1,240	1,420	1,830	1,550	1,990	1,490	1,030	1,320	1,100	857	676
20	2,800	1,300	1,490	1,710	1,640	2,030	1,540	1,060	1,280	1,090	932	648
21	2,500	1,410	1,420	1,700	1,800	1,890	1,530	1,020	941	804	478	696
22	2,400	1,510	1,400	1,670	2,540	1,970	1,560	954	1,070	890	580	770
23	2,200	1,590	1,380	1,500	*2,510	2,500	1,580	1,120	1,060	894	646	764
24	2,000	1,610	1,350	1,500	2,710	2,330	1,660	1,130	1,080	618	554	682
25	1,900	1,620	1,310	1,500	2,670	2,400	1,760	1,200	1,040	822	726	692
26	1,800	1,760	1,320	1,500	2,580	2,400	2,240	1,150	863	845	588	710
27	1,600	1,740	1,440	1,500	2,850	2,340	1,890	1,060	864	640	544	708
28	1,600	1,860	1,660	1,500	3,100	2,360	1,900	1,090	948	774	454	692
29	1,600	1,810	2,140	1,500	-	2,320	1,800	1,220	926	785	600	774
30	1,700	1,940	2,540	1,200	------	2,330	1,540	1,250	926	814	695	902
31	1,800	------	1,990	1,300	------	2,380	------	1,290	------	976	879	------
Total	67,724	48,130	48,990	64,100	49,220	73,200	51,610	36,880	34,754	28,917	24,156	21,940
Mean	2,185	1,604	1,580	2,068	1,758	2,361	1,720	1,190	1,158	933	779	731
Cfsm	1.37	1.00	0.988	1.29	1.10	1.48	1.08	0.744	0.724	0.583	0.487	0.457
In.	1.57	1.12	1.14	1.49	1.14	1.70	1.20	0.86	0.81	0.67	0.56	0.51

Calendar year 1954: Max 4,650 Min 384 Mean 1,437 Cfsm 0.898 In. 12.18
Water year 1954-55: Max 4,650 Min 454 Mean 1,506 Cfsm 0.941 In. 12.77

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 23 to Feb. 13. No gage-height record Oct. 17 to Nov. 10, Mar. 8-16; discharge estimated on basis of powerplant records and records for station at Comstock.

Grand River at Jackson, Mich.

Location.--Lat 42°17'05", long 84°24'30", in sec. 22, T. 2 S., R. 1 W., on left bank at sewage-treatment plant, 1 mile north of Jackson, 2¼ miles upstream from Portage River, and at mile 216.
Drainage area.--174 sq mi.
Records available.--April 1935 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 900.00 ft above mean sea level Fargo Engineering Co. benchmark). Prior to Sept. 24, 1935, staff gage at same site and datum.
Average discharge.--20 years, 122 cfs.
Extremes.--Maximum discharge during year, 600 cfs Oct. 14 (gage height, 11.61 ft); minimum, 13 cfs Sept. 5; minimum daily, 19 cfs Sept. 5.
1935-55: Maximum discharge, 1,070 cfs June 25, 1937 (gage height, 13.50 ft); minimum, 9.2 cfs Aug. 22, 1936.
Remarks.--Records good except those for periods of no gage-height record, which are fair. Slight regulation by mills above station.
Revisions (water years).--WSP 974: 1937(M). Revised figures of discharge, in cubic feet per second, for the water year 1936, superseding those published in WSP 804, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1936		1936-Con.		1936-Con.	
Feb. 4	40	Feb. 12	40	Feb. 20	40
5	35	13	40	21	40
6	35	14	40	22	40
7	35	15	35	23	40
8	35	16	30	24	60
9	35	17	30	25	120
10	35	18	35	26	140
11	35	19	40		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
February 1936	1,721	206	30	59.3	0.341	0.37
Water year 1935-36	25,885	303	12	70.7	.406	5.53
Calendar year 1936	24,903	303	12	68.0	.391	5.32

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 20, July 11 to Sept. 30)

8.3	18
8.5	37
9.0	101
10.0	277
10.6	397

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	90	162	140	60	268	186	160	74	76	45	33
2	39	94	157	150	60	286	177	121	73	63	46	36
3	96	90	150	148	60	296	166	112	70	55	45	30
4	166	93	144	205	60	326	166	105	65	56	*42	22
5	124	98	138	326	60	316	*162	100	54	*70	44	19
6	114	180	133	366	60	306	159	91	69	66	96	34
7	115	188	133	356	60	306	153	83	102	65	70	34
8	115	186	135	346	60	296	146	70	135	66	59	34
9	118	175	120	326	65	286	138	72	162	54	63	34
10	171	168	115	316	65	277	132	84	171	47	60	38
11	203	127	112	212	70	286	133	79	197	54	58	23
12	316	118	116	173	70	277	97	79	186	54	58	34
13	346	72	118	162	70	258	93	76	*188	50	49	33
14	386	64	*114	151	75	258	94	70	190	49	46	34
15	376	66	81	136	80	239	95	63	146	88	52	35
16	*346	68	83	101	85	233	91	66	127	53	53	38
17	336	66	80	107	85	222	84	66	121	47	52	28
18	326	70	63	104	90	216	84	65	108	60	52	20
19	326	104	76	102	109	209	147	70	88	63	44	32
20	306	*91	76	77	126	201	121	65	86	63	38	33
21	248	90	75	141	162	209	143	59	81	64	31	*31
22	216	98	85	143	162	226	212	55	73	61	48	32
23	162	101	90	120	168	222	210	59	69	60	45	52
24	135	108	90	132	*169	218	239	106	64	48	39	30
25	127	98	90	130	168	*214	248	90	54	53	37	22
26	115	124	90	121	178	212	248	79	45	54	42	32
27	104	162	100	*120	209	205	248	77	52	54	38	42
28	93	166	130	66	207	201	239	87	50	52	29	39
29	100	164	140	68	-	203	212	76	49	49	33	41
30	86	164	140	61	-------	199	178	69	114	44	54	41
31	80	------	140	60	------	192	--------	*73	--------	38	37	--------
Total	5,833	3,483	3,476	5,166	2,893	7,663	4,801	2,527	3,063	1,776	1,505	986
Mean	188	116	112	167	103	247	160	81.5	102	57.3	48.5	32.9
Cfsm	1.08	0.667	0.644	0.960	0.592	1.42	0.920	0.468	0.586	0.329	0.279	0.189
In.	1.25	0.74	0.74	1.10	0.62	1.64	1.03	0.54	0.65	0.38	0.32	0.21

Calendar year 1954: Max 386 Min 20 Mean 112 Cfsm 0.644 In. 8.69
Water year 1954-55: Max 386 Min 19 Mean 118 Cfsm 0.678 In. 9.22

* Discharge measurement made on this day.
Note.--No gage-height record Dec. 21 to Jan. 1, Jan. 31 to Feb. 18; discharge estimated on basis of recorded range in stage, weather records, and records for Grand River at Eaton Rapids and Orchard Creek at Munith.

Portage River below Little Portage Lake, near Munith, Mich.

Location.--Lat 42°20'55", long 84°13'45", in NW¼ sec. 32, T. 1 S., R. 2 E., on upstream side of highway bridge on Portage Lake Road, 0.3 mile downstream from Little Portage Lake and 3¼ miles southeast of Munith.

Drainage area.--55 sq mi, approximately.

Records available.--April 1944 to September 1955.

Gage.--Wire-weight gage read once daily. Datum of gage is 900.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 9, 1945, staff gage at same site and datum.

Average discharge.--11 years, 41.8 cfs.

Extremes.--Maximum discharge during year, 156 cfs Oct. 17, 18; maximum gage height, 10.42 ft Oct. 17; minimum discharge, 2.1 cfs Sept. 23 (gage height, 7.36 ft).
1944-55: Maximum discharge, 800 cfs Apr. 6, 7, 1947 (gage height, 13.0 ft, from graph based on gage readings); no flow at times in 1946 and 1949; minimum gage height, 7.36 ft Sept. 23, 1955.

Remarks.--Records good.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 23				Feb. 24 to Sept. 30			
7.7	4.0	9.0	54	7.3	1.7	8.5	31
8.0	12	10.0	119	7.5	3.3	9.0	59
8.5	30	10.4	156	7.7	6.4	10.1	136
				8.0	14		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.9	44	65	63	14	102	68	45	30	9.8	4.4	4.3
2	7.4	43	64	65	13	112	66	40	27	9.8	4.3	4.3
3	10	46	58	67	12	116	63	36	23	9.5	4.0	3.4
4	46	48	56	72	12	128	58	33	21	7.7	3.9	3.3
5	*94	46	53	77	12	132	*55	30	19	*7.4	3.6	3.2
6	111	46	45	92	12	124	53	26	17	7.9	3.9	3.0
7	119	46	40	100	12	112	51	23	17	7.4	6.4	2.8
8	115	44	44	100	12	102	48	20	22	6.8	9.5	2.8
9	100	42	34	100	13	86	45	19	22	6.8	12	2.6
10	91	40	32	93	14	83	43	19	29	7.0	*14	2.5
11	92	38	31	83	16	94	40	20	27	6.8	13	2.6
12	103	36	34	73	16	108	42	20	29	6.2	11	2.6
13	107	34	31	67	15	112	45	20	*31	5.7	9.2	2.4
14	119	33	30	59	14	116	45	19	31	5.4	8.3	2.4
15	137	33	*29	53	14	112	43	17	30	6.4	7.9	2.4
16	151	32	30	46	15	116	42	16	28	10	7.7	2.5
17	156	30	29	42	15	112	41	14	25	12	7.2	2.5
18	156	30	30	38	16	108	38	13	21	13	6.6	2.4
19	142	34	30	34	15	102	36	12	18	12	6.2	2.4
20	128	*48	28	29	25	90	44	12	18	11	5.7	2.4
21	111	54	26	27	38	85	52	11	18	9.2	5.0	*2.3
22	95	57	26	25	55	83	53	11	17	8.3	5.0	2.2
23	83	57	22	23	61	82	48	13	15	7.4	5.0	2.1
24	71	54	20	22	*58	90	46	16	14	6.8	4.7	2.7
25	62	61	22	20	58	*91	55	31	12	6.4	4.3	2.9
26	55	60	25	19	60	88	61	49	11	5.9	4.3	3.0
27	52	58	30	*18	68	78	67	52	10	5.6	4.3	3.0
28	48	59	52	17	87	70	64	49	9.0	5.2	4.4	3.1
29	48	61	62	16	-	70	58	42	7.4	5.2	4.4	3.2
30	47	64	67	15	------	72	51	42	9.0	4.9	4.7	3.3
31	48	--	65	14	------	70	--------	*34	----	4.6	4.3	---- -
Total	2,710.3	1,378	1,210	1,569	772	3,046	1,523	804	607.4	238.1	199.2	84.6
Mean	87.4	45.9	39.0	50.6	27.6	98.3	50.8	25.9	20.2	7.68	6.43	2.82
Cfsm	1.59	0.835	0.709	0.920	0.502	1.79	0.924	0.471	0.367	0.140	0.117	0.051
In.	1.83	0.93	0.82	1.06	0.52	2.06	1.03	0.54	0.41	0.16	0.13	0.06

Calendar year 1954: Max 204 Min 2.0 Mean 49.5 Cfsm 0.900 In. 12.21
Water year 1954-55: Max 156 Min 2.1 Mean 38.7 Cfsm 0.704 In. 9.55

* Discharge measurement made on this day.

Orchard Creek at Munith, Mich.

Location.--Lat 42°23'35", long 84°15'50', on line between secs. 12 and 13, T. 1 S., R. 1 E., on left upstream wing wall of bridge on State Highway 106, half a mile west of Munith and 3 miles upstream from mouth.
Drainage area.--49 sq mi, approximately.
Records available.--March 1944 to September 1955.
Gage.--Staff gage and crest-stage indicator; gage read twice daily. Datum of gage is 900.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).
Average discharge.--11 years, 37.7 cfs.
Extremes.--Maximum discharge during year, 201 cfs Oct. 4, Jan. 6; maximum gage height, 10.71 ft Feb. 21 (ice jam); minimum discharge, 2.7 cfs Sept. 21, 22 (gage height, 7.44 ft).

1944-55: Maximum discharge, 1,470 cfs Apr. 5, 1947 (gage height, 14.88 ft, from graph based on gage readings); minimum observed, 1.6 cfs Sept. 5-7, 22, 23, 1946.

Revisions.--The maximum discharge for the water year 1946 has been revised to 281 cfs Mar. 5, 1946 (gage height, 10.40 ft), superseding figure published in WSP 1054.
Remarks.--Records fair except for those for periods of ice effect or no gage-height record, which are poor.
Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1946 and 1948, superseding those published in WSP 1054 and 1114, are given herewith:

1946		1948-Con.	
June 18	38	Mar. 23	329
19	48	24	273
1948		25	224
Mar. 21	406	26	196
22	406	27	168

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June 1946	788	48	11	26.3	0.537	0.60
Water year 1945-46	9,242.5	224	1.6	25.3	.516	7.02
Calendar year 1946	7,974.1	224	1.6	21.8	.445	6.07
March 1948	5,220	585	36	168	3.43	3.96
Water year 1947-48	17,489.9	612	3.2	47.8	.976	13.26
Calendar year 1948	15,746.0	612	3.2	43.0	.878	11.94

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.4	36	59	64	15	98	a50	a28	13	8.9	5.1	4.4
2	7.4	35	57	70	12	78	a45	25	12	9.5	4.8	4.1
3	12	38	52	76	12	67	a45	24	11	a9	4.8	4.1
4	152	40	42	104	12	48	a40	20	12	a10	4.8	a4.1
5	*88	40	33	112	12	89	*39	19	a 11	*8.9	4.8	4.1
6	64	38	32	176	12	66	37	18	10	7.8	4.8	4.1
7	49	36	32	116	12	62	35	15	15	7.8	a8	4.1
8	34	32	32	86	12	59	32	a15	28	7.8	6.9	4.1
9	30	31	33	72	12	55	30	17	22	6.4	6.0	4.1
10	53	30	32	66	15	50	29	21	18	a7	*5.1	4.1
11	93	30	32	58	15	44	28	20	20	6.9	4.8	a3.5
12	120	28	32	52	15	34	35	18	a20	6.9	4.4	3.3
13	94	26	30	48	15	76	33	16	*20	6.9	4.1	3.3
14	88	24	29	45	15	63	31	16	18	6.4	a5	3.3
15	120	23	*28	42	15	64	30	a15	16	9.5	6.0	3.3
16	95	22	27	38	15	92	28	14	14	11	5.5	3.3
17	77	22	26	33	15	72	26	13	13	a9	4.8	3.3
18	57	22	25	30	15	60	24	11	11	6.9	4.4	a3
19	42	47	25	26	17	53	34	10	a 11	6.4	4.1	2.9
20	38	*53	25	30	52	48	34	12	12	6.4	4.1	*2.9
21	34	50	25	30	88	58	37	11	13	6.4	a4.1	2.7
22	32	46	25	25	86	86	32	a15	11	6.4	6.4	2.7
23	31	40	20	25	72	112	29	18	10	6.9	5.5	2.9
24	30	45	20	25	*58	108	a35	20	9.5	a6.5	4.4	3.7
25	31	48	20	22	46	*76	56	34	8.9	6.0	4.4	a3.5
26	30	52	24	25	61	52	53	22	a8.5	6.0	4.4	3.3
27	30	50	58	*25	112	29	45	18	8.4	6.0	4.4	3.7
28	29	52	136	20	116	26	39	16	8.1	6.0	a5	3.7
29	32	56	98	15	-	60	33	a15	7.8	6.0	6.4	3.7
30	38	58	78	15	-------	64	*30	15	8.4	5.5	6.0	3.7
31	36	-------	66	15	-------	57	-------	15	-------	a5.3	5.1	-------
Total	1,673.8	1,150	1,253	1,586	954	2,006	1,074	546	400.6	226.4	158.4	107.0
Mean	54.0	38.3	40.4	51.2	34.1	64.7	35.8	17.6	13.4	7.30	5.11	3.57
Cfsm	1.10	0.782	0.824	1.04	0.696	1.32	0.731	0.359	0.273	0.149	0.104	0.073
In.	1.27	0.87	0.95	1.20	0.72	1.52	0.82	0.41	0.30	0.17	0.12	0.08

Calendar year 1954: Max 366 Min 4 Mean 45.4 Cfsm 0.927 In. 12.57
Water year 1954-55: Max 176 Min 2.7 Mean 30.5 Cfsm 0.622 In. 8.43

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for nearby stations.
Note.--Stage-discharge relation affected by ice Dec. 18-25, Jan. 20 to Feb. 16.

Grand River near Eaton Rapids, Mich.

Location.--Lat 42°32'05", long 84°37'25", in NE¼ sec. 26, T. 2 N., R. 3 W., on right bank 400 ft upstream from bridge on Petrieville Highway, 2 miles northeast of Eaton Rapids, 2½ miles downstream from Spring Brook, 25 miles upstream from Cedar River, and at mile 178.

Drainage area.--661 sq mi.

Records available.--October 1950 to September 1955. Gage-height records for flood seasons collected in this vicinity 1905-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 852.68 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--5 years, 506 cfs.

Extremes.--Maximum discharge during year, 1,660 cfs Feb. 21 (gage height, 5.03 ft); minimum, 43 cfs Sept. 8, 21, 22; minimum gage height, 1.21 ft Sept. 8; minimum daily discharge, 44 cfs Sept. 22.
1950-55: Maximum discharge, 2,910 cfs Apr. 15, 1952 (gage height, 6.96 ft); minimum, 18 cfs Sept. 12, 1951; minimum daily, that of Sept. 22, 1955.

Remarks.--Records good. Diurnal fluctuation caused by powerplant at Smithville and mills at Eaton Rapids.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	44	2.5	365
1.5	85	3.0	580
2.0	197	4.9	1,600

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	142	478	706	812	b300	1,210	830	680	283	167	104	125
2	178	510	734	789	b250	1,240	805	596	a280	237	58	112
3	182	487	728	770	b250	1,220	780	465	a270	228	106	110
4	835	488	*718	816	b260	1,270	730	456	a250	227	80	147
5	736	518	623	941	b270	1,240	680	376	a230	203	114	53
6	790	510	604	1,210	b260	1,240	606	358	a230	188	100	103
7	866	472	556	1,330	b270	1,160	550	318	*a250	192	186	74
8	862	522	560	1,370	b260	1,010	586	265	430	176	252	52
9	818	*504	485	1,290	274	1,000	518	306	376	164	238	36
10	883	515	456	1,180	292	955	512	284	450	178	226	81
11	881	520	456	1,060	302	980	516	312	428	156	184	114
12	996	496	433	976	290	1,000	461	a320	511	152	*154	66
13	1,230	446	428	878	262	1,050	488	a320	464	148	145	68
14	1,390	434	404	778	332	1,060	*484	a320	474	144	167	107
15	1,580	374	420	734	337	1,030	468	a250	429	150	119	60
16	1,510	305	409	b600	326	1,060	463	a300	374	178	96	100
17	1,520	332	410	b600	*326	1,060	421	a200	365	184	147	68
18	1,400	338	321	b500	350	1,030	412	a250	345	200	128	119
19	1,290	468	444	b450	324	980	432	*a200	260	175	116	52
20	*1,170	508	301	a500	742	905	490	230	278	132	129	45
21	1,070	590	288	a450	1,520	880	544	200	226	136	131	84
22	988	588	359	a400	1,250	930	528	226	206	148	104	44
23	898	594	318	a400	1,220	955	518	242	202	140	68	100
24	828	559	346	a350	1,090	*1,060	611	219	194	166	102	91
25	746	600	349	*a400	928	1,080	752	280	189	139	71	120
26	664	622	335	b350	849	1,060	788	385	175	134	121	*97
27	570	605	526	b300	1,030	1,000	836	345	173	128	91	66
28	552	606	730	b280	1,130	930	840	302	141	*142	126	114
29	498	660	768	b290	-	880	815	336	134	135	76	123
30	514	684	794	b280	------	855	742	346	134	148	134	114
31	524	----	841	b270	------	855	------	322	------	169	132	------
Total	27,111	15,333	15,851	21,354	15,294	32,195	18,206	10,009	8,751	5,164	4,005	2,675
Mean	875	511	511	689	546	1,039	607	323	292	167	129	89.2
Cfsm	1.32	0.773	0.773	1.04	0.826	1.57	0.918	0.489	0.442	0.253	0.195	0.135
In.	1.53	0.86	0.89	1.20	0.86	1.81	1.02	0.56	0.49	0.29	0.23	0.15

Calendar year 1954: Max 2,130 Min 63 Mean 567 Cfsm 0.858 In. 11.63
Water year 1954-55: Max 1,580 Min 44 Mean 482 Cfsm 0.729 In. 9.89

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, powerplant records, and records for stations at Jackson and at Lansing.
b Stage-discharge relation affected by ice.

Deer Creek near Dansville, Mich.

Location.--Lat 42°36'30", long 84°19'15", in E½ sec. 33, T. 3 N., R. 1 E., on right bank 15 ft upstream from bridge on Clark Road, 3½ miles north of Dansville, and 7¼ miles upstream from mouth.

Drainage area.--16.3 sq mi.

Records available.--May 1954 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 889.08 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 155 cfs Jan. 5, Feb. 27; maximum gage height, 6.50 ft Feb. 20 (ice jam); minimum discharge, 0.3 cfs Sept. 13, 14, 15, 17.
1954-55: Maximum discharge, 280 cfs June 17, 1954 (gage height, 5.91 ft), from rating curve extended above 150 cfs by logarithmic plotting; minimum, that of Sept. 13, 14, 15, 17, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 1 cfs, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 14-18, 22-24)

Oct. 1 to July 23				July 23 to Sept. 30	
2.4	0.6	2.9	8.3	2.1	0.3
2.5	1.1	3.0	12	2.2	.6
2.6	2.0	3.2	20	2.3	1.0
2.7	3.4	3.5	37	2.4	2.1
2.8	5.6	4.2	89	2.5	3.7

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.1	5.4	14	15	3	35	17	5.9	2.6	1.6	1.0	0.8
2	2.4	6.1	13	25	3	25	14	5.2	2.4	2.1	.9	.7
3	3.2	6.7	11	29	3	33	12	5.2	2.1	1.9	.8	*.7
4	*11	7.2	*9.0	39	3	62	10	4.5	2.0	3.1	.7	.7
5	4.9	6.7	8.3	*82	3	30	9.4	4.1	2.0	3.0	.7	.6
6	4.3	6.1	7.8	74	3	21	8.3	3.4	2.5	2.0	*1.8	.6
7	3.0	a5	5.6	35	3	18	7.8	3.3	4.9	1.6	2.6	.5
8	2.7	4.7	5.2	24	3	18	7.0	3.0	11	1.5	1.0	.5
9	2.4	4.5	5	22	3	15	6.4	3.0	7.0	1.6	.9	.5
10	2.8	4.1	5	a20	3	18	6.1	4.1	6.7	1.6	.8	*.4
11	9.0	4.1	5	a17	3	30	5.9	4.3	8.7	1.3	.8	.4
12	16	3.8	4.5	a15	3	23	6.7	3.6	9.8	1.1	.6	.4
13	11	3.6	4.5	13	3	18	6.7	3.3	9.4	1.0	*.5	.4
14	11	3.6	4.5	12	3	16	*6.4	2.8	7.2	1.0	.7	.4
15	17	3.3	4.5	10	3	21	6.1	2.8	5.2	1.9	.8	.4
16	11	*3.4	4.5	8	3	32	5.4	2.7	4.1	1.7	.7	.4
17	11	3.4	4.5	7	*3	24	4.9	2.7	3.3	1.4	.6	.4
18	8.3	3.8	4.5	6	3	16	4.7	2.7	2.8	1.2	.6	*.4
19	7.0	12	4.5	5.5	3	15	16	2.8	2.6	1.0	*.5	.4
20	5.9	13	3.5	5	60	12	14	a2.7	2.8	1.0	.5	.6
21	5.4	9.4	3	5	70	17	12	2.6	2.3	1.0	.5	.6
22	4.7	7.8	3	4.5	39	38	8.0	2.7	2.0	.9	1.0	.6
23	4.3	7.2	3	4.5	25	39	7.0	2.7	1.9	*.9	1.0	.6
24	3.8	11	3.5	4	18	38	11	4.1	1.8	.9	.7	*.7
25	3.6	13	4	3.5	15	24	19	6.1	1.8	1.0	.6	.6
26	3.6	11	6.6	3.5	25	*19	17	4.5	1.6	1.0	*.6	.6
27	4.5	9.8	27	3.5	*86	18	13	3.4	1.6	1.8	.7	.6
28	4.3	12	49	3.5	51	21	10	3.8	1.5	3.0	.8	.7
29	5.4	19	27	3.5	-	19	8.0	4.1	*1.4	1.7	.8	.6
30	7.2	17	19	3	------	21	6.7	3.4	1.7	*1.2	1.7	.7
31	6.1	----	16	3	-------	19	-------	*2.8	----	1.2	1.2	-
Total	198.9	227.7	289.5	505.0	446	755	286.5	112.3	116.7	47.2	27.1	16.5
Mean	6.42	7.59	9.34	16.3	15.9	24.4	9.55	3.62	3.89	1.52	0.874	0.550
Cfsm	0.394	0.466	0.573	1.00	0.975	1.50	0.586	0.222	0.239	0.093	0.054	0.034
In.	0.45	0.52	0.66	1.15	1.02	1.72	0.65	0.26	0.27	0.11	0.06	0.04

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 86 Min 0.4 Mean 8.30 Cfsm 0.509 In. 6.91

Peak discharge (base, 100 cfs).--Jan. 5 (8:30 p.m.) 155 cfs (4.90 ft); Feb. 20 (10:30 p.m.) about 150 cfs (6.50 ft); Feb. 27 (3:30 p.m.) 155 cfs (4.88 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Sloan Creek near Williamston and Sebewa Creek near Sunfield.

Note.--Stage-discharge relation affected by ice Dec. 9-25, Jan. 15 to Feb. 21, Feb. 23, 25.

Sloan Creek near Williamston, Mich.

Location.--Lat 42°40'30", long 84°21'50", in E½ sec. 1, T. 3 N., R. 1 W., on left bank 30 ft downstream from bridge on Meridian Road, 2 miles upstream from mouth, and 4¼ miles west of Williamston.

Drainage area.--9.34 sq mi.

Records available.--June 1954 to September 1955.

Gage.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 862.12 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 186 cfs Mar. 3 (gage height, 3.78 ft); minimum, 0.02 cfs July 22 (gage height, 1.13 ft), caused by pumpage from stream above gage; minimum natural discharge, 0.04 cfs Sept. 18-21.
1954-55: Maximum discharge, that of Mar. 3, 1955; minimum, 0.01 cfs Sept. 11, 1954 (gage height, 1.10 ft), caused by pumpage from stream above gage; minimum natural discharge, that of Sept. 18-21, 1955.

Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.2	0.04	2.0	3.0
1.3	.11	2.2	5.5
1.4	.27	2.4	9.0
1.5	.48	2.7	18
1.6	.76	3.0	33
1.8	1.6	3.3	58

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.17	0.99	4.0	4.3	1.1	21	6.8	1.8	0.48	0.42	0.11	0.17
2	.24	1.0	3.5	8.8	.96	12	5.6	1.7	.44	.99	.09	.17
3	1.4	1.1	3.1	12	.62	31	4.4	1.6	.42	.62	.09	.14
4	*4.0	1.2	*2.8	20	.84	54	3.7	1.5	.40	.42	.08	.11
5	1.8	1.2	2.5	*52	.92	26	3.4	1.4	.38	.48	.07	.10
6	1.2	1.2	2.0	43	.96	16	3.3	1.2	.42	.51	.13	.10
7	.84	1.1	1.8	24	.96	8.2	2.9	1.1	.77	.33	.20	.16
8	.70	.99	2.1	14	.96	6.2	2.7	1.1	1.9	.29	.17	.07
9	.59	.92	1.9	8.8	1.1	6.4	2.6	.99	1.4	.31	*.14	.06
10	.56	.84	1.7	6.6	1.2	8.0	2.3	1.2	1.2	.29	.13	.05
11	1.2	.84	1.6	5.2	1.2	13	2.2	1.2	1.6	.20	.11	.05
12	1.6	.84	1.5	4.6	1.1	9.6	2.4	.96	2.2	.20	.11	.05
13	1.5	.80	1.4	4.0	.96	7.2	2.3	.96	2.1	.18	.09	.05
14	2.5	.80	1.4	3.6	.99	6.1	*2.2	.84	1.6	.17	.14	.06
15	5.0	.76	1.5	3.4	.99	11	2.1	.73	1.1	.47	.17	.07
16	3.3	*.76	1.4	2.9	1.0	18	2.0	.73	.88	.40	.16	.06
17	2.9	.70	1.4	2.6	*.96	7.8	1.9	.70	.73	.29	.16	.05
18	2.4	.73	1.6	2.3	.96	6.2	1.8	.68	.62	.25	.13	*.04
19	2.0	2.0	1.4	2.1	.99	5.0	2.7	.68	.54	.22	*.09	.04
20	1.6	2.6	1.1	1.9	*49	4.6	2.7	.65	.62	.20	.07	.04
21	1.5	2.1	.88	1.8	42	6.6	2.6	.59	.62	.18	.06	.04
22	1.4	1.8	.84	2.0	24	*28	2.2	.73	.51	.13	.10	a.1
23	1.2	1.6	1.0	1.8	15	24	2.0	.88	.44	*.18	.09	a.1
24	1.1	2.2	1.2	1.6	7.8	24	2.6	.76	.42	.18	.08	a.1
25	.96	3.8	1.2	1.6	6.0	14	3.3	.84	.38	.16	.07	a.1
26	.92	3.4	1.6	1.5	13	*8.6	3.3	.70	.33	.16	*.07	a.1
27	.96	3.2	14	1.4	47	7.0	2.9	.62	.31	.16	.08	a.1
28	.88	3.2	*29	1.2	32	6.4	2.6	.59	.29	.17	.11	a.1
29	.99	6.1	12	1.1	-	7.8	2.2	a.55	*.25	.18	.13	a.1
30	1.1	5.0	6.6	.96	-------	9.3	2.0	a.55	.35	*.16	.26	a.1
31	1.0	----	4.9	1.0	-------	8.6	-------	*.51	-------	.13	.20	------
Total	47.51	53.77	112.92	242.06	254.57	421.6	85.7	29.04	23.70	9.03	3.69	2.58
Mean	1.53	1.79	3.64	7.81	9.09	13.6	2.86	0.937	0.790	0.291	0.119	0.086
Cfsm	0.164	0.192	0.390	0.836	0.973	1.46	0.306	0.100	0.085	0.031	0.013	0.0092
In.	0.19	0.21	0.45	0.96	1.01	1.68	0.34	0.12	0.09	0.04	0.01	0.01

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 54 Min 0.04 Mean 3.52 Cfsm 3.77 In. 5.11

Peak discharge (base, 60 cfs).--Jan. 5 (3 to 9 p.m.) 91 cfs (3.48 ft); Feb. 20 (4 p.m.) 159 cfs (3.70 ft); Feb. 27 (3 to 4 p.m.) 74 cfs (3.40 ft); Mar. 3 (10 p.m.) 186 cfs (3.78 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Deer Creek near Dansville and Sebewa Creek near Sunfield.

Cedar River at East Lansing, Mich.

Location.--Lat 42°43'40", long 84°28'40", in SW¼ sec. 18, T. 4 N., R. 1 W., in left downstream bridge abutment of Farm Lane Bridge on Michigan State University campus in East Lansing, 3 miles upstream from Sycamore Creek and 4 miles upstream from mouth.

Drainage area.--355 sq mi, approximately.

Records available.--August 1902 to December 1903, March 1931 to September 1955. August 1902 to December 1903 published as Red Cedar River at Agricultural College, Mich. Gage-height records collected in this vicinity 1911-19, and for flood seasons only 1920-28, are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder and concrete control. Datum of gage is 824.39 ft above mean sea level, datum of 1929. August 1902 to December 1903 chain gage at site three-quarters of a mile downstream at different datum. March 1931 to November 1940 water-stage recorder at site 250 ft upstream at present datum.

Average discharge.--24 years (1931-55), 200 cfs.

Extremes.--Maximum discharge during year, 1,440 cfs Mar. 4 (gage height, 6.27 ft); minimum, 4.0 cfs Sept. 21 (gage height, 3.00 ft).
1902-3, 1931-55: Maximum discharge, 5,920 cfs Apr. 7, 1947 (gage height, 11.58 ft); minimum, 3 cfs July 31, 1931.

Remarks.--Records good. Occasional regulation at low flow by mill at Williamston 16 miles above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

3.0	4	4.0	259
3.1	15	5.0	718
3.2	32	6.1	1,350
3.5	105		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	127	263	311	86	1,080	372	139	81	50	22	36
2	39	125	239	307	86	824	326	133	76	50	30	32
3	66	127	220	372	86	692	291	127	73	52	25	24
4	200	136	194	468	86	1,230	256	119	68	54	12	25
5	307	145	178	610	86	1,320	233	111	66	66	7.3	25
6	239	142	154	1,020	83	962	220	102	61	66	11	12
7	191	136	119	1,080	83	666	207	97	86	59	30	15
8	148	130	136	851	83	487	191	92	111	54	47	27
9	116	119	133	625	83	421	178	89	116	59	47	24
10	105	113	127	506	86	412	169	92	102	54	45	18
11	116	111	125	408	89	473	160	97	105	50	24	17
12	163	108	122	326	89	536	169	97	116	47	11	8.4
13	220	105	116	288	92	502	178	92	125	47	8.4	*7.3
14	226	105	119	259	97	435	175	86	127	47	22	7.3
15	291	105	119	233	92	412	166	81	116	68	43	20
16	288	100	116	188	92	540	166	78	97	64	34	29
17	259	100	113	178	94	536	172	73	86	54	30	24
18	236	100	119	169	92	440	139	68	76	52	32	25
19	207	127	116	157	92	372	188	68	68	47	32	20
20	178	191	78	130	179	322	223	68	83	41	30	7.3
21	157	223	94	136	786	314	216	66	92	36	32	5.1
22	142	210	*102	145	1,230	459	207	66	76	34	30	5.1
23	127	188	97	119	1,140	605	175	76	71	34	29	9.5
24	119	175	100	105	878	661	169	89	68	34	29	14
25	111	194	108	122	646	630	213	97	68	34	29	27
26	105	207	116	113	*516	506	246	116	66	34	29	25
27	105	*191	191	97	718	416	220	111	59	36	32	25
28	108	185	516	100	1,080	355	204	105	47	36	34	25
29	*111	220	605	100	-	*347	175	108	*43	36	32	22
30	119	263	482	92	-------	380	*156	102	*47	*32	43	*11
31	130	-- --	372	*86	-------	390	-------	*89	--- ----	30	*43	-- -- -
Total	4,958	4,508	5,689	9,701	8,850	17,725	6,160	2,934	2,476	1,457	904.7	572.0
Mean	160	150	184	313	316	572	205	94.6	82.5	47.0	29.2	19.1
Cfsm	0.451	0.423	0.518	0.882	0.890	1.61	0.577	0.266	0.232	0.132	0.082	0.054
In.	0.52	0.47	0.60	1.02	0.93	1.86	0.65	0.31	0.26	0.15	0.09	0.06

Calendar year 1954: Max 2,240 Min 12 Mean 219 Cfsm 0.617 In. 8.38
Water year 1954-55: Max 1,320 Min 5.1 Mean 181 Cfsm 0.510 In. 6.92

Peak discharge (base, 1,100 cfs).--Jan. 7 (1 to 5 a.m.) 1,140 cfs (5.75 ft); Feb. 22 (6 to 9 p.m.) 1,320 cfs (6.07 ft); Feb. 28 (8 to 11 p.m.) 1,170 cfs (5.87 ft); Mar. 4 (12 p.m.) 1,440 cfs (6.27 ft).
* Discharge measurement made on this day.

Grand River at Lansing, Mich.

Location.--Lat 42°45'05", long 84°33'20", in NW¼ sec. 9, T. 4 N., R. 2 W., on right bank 30 ft upstream from North Grand River Avenue Bridge in Lansing, 2 miles downstream from Cedar River, and at mile 152.

Drainage area.--1,230 sq mi, approximately.

Records available.--March 1901 to August 1906, November 1934 to September 1955. Published as "at North Lansing" 1901-6. Gage-height records collected in this vicinity 1907-10 (flood seasons only), 1911-19, 1920-28 (flood seasons only), and since 1931 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 805.53 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to August 1906, staff gage at same site at different datum. November 1934 to June 1949 water-stage recorder at site 1¾ miles downstream at datum 2.42 ft lower.

Average discharge.--18 years (1935-37, 1938-39, 1940-55), 854 cfs.

Extremes.--Maximum discharge during year, 3,280 cfs Mar. 3 (gage height, 7.49 ft); minimum, 6.3 cfs Oct. 2 (gage height, 0.99 ft); minimum daily, 84 cfs Sept. 24.
1901-6, 1934-55: Maximum discharge, 24,500 cfs Mar. 26, 1904 (gage height, 18.60 ft, datum then in use), from rating curve extended above 15,000 cfs by logarithmic plotting; minimum, 4.0 cfs Aug. 28, 1952, July 17, 1954 (gage height, 0.90 ft); minimum daily, 20 cfs Aug. 25, 1941.
Maximum discharge since 1901, that of Mar. 26, 1904.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
-	1901	Mar. 20, 1901	‡8,650	-
-	1903	Apr. 15, 1903	‡8,490	g11.44
-	1904	Mar. 26, 1904	‡24,500	18.60
784	1935	Mar. 12, 1935	4,020	7.57

‡ Not previously published.
g From graph based on gage readings.

Remarks.--Records good except those for period of indefinite stage-discharge relation, which are fair. Large diurnal fluctuation at medium and low flows caused by powerplants above station.

Revisions (water years).--WSP 1174: 1949. Rivised figures of discharge, in cubic feet per second, for the water years 1901, 1903, 1904, 1935, 1937, and 1942, superseding those published in WSP 83, 97, 129, 784, 824, and 954, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1901		1904-Con.		1935-Con.		1936-Con.		1936-Con.	
Mar. 20	7,730	Apr. 4	6,690	Mar. 15	2,420	Oct. 2	300	Oct. 16	270
21	7,870			16	1,640	3	280	17	270
22	6,690	1935		17	1,820	4	270	18	260
		Mar. 4	1,750	18	1,820	5	270	19	250
1903		5	2,000	19	1,730	6	280	20	250
Apr. 14	6,690	6	2,970	20	1,560	7	290	21	260
15	8,330	7	2,410	21	1,860	8	300	22	270
16	8,170	8	1,650	22	2,330	9	300	23	270
17	6,570	9	1,360	23	1,990	10	300	24	280
		10	1,480	24	1,860	11	300	25	290
1904		11	3,130	25	1,510	12	300	26	300
Mar. 7	6,690	12	3,660			13	300	27	310
13	6,930	13	2,970	1936		14	290		
30	7,730	14	2,510	Oct. 1	310	15	280	1942	
								Mar. 20	5,200

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1901	-	7,870	456	†3,076	2.50	2.88
April 1903	-	8,330	1,068	2,895	2.35	2.63
Water year 1902-3	-	8,330	248	1,296	1.05	14.32
Calendar year 1903	-	8,330	290	1,220	.992	13.48
March 1904	-	22,700	942	†7,242	5.89	6.79
April	-	9,130	1,105	†3,297	2.68	2.99
March 1935	-	3,660	258	1,766	1.44	1.66
Calendar year 1935	175,076	3,660	72	480	.390	5.31
October 1936	8,749	317	248	282	.229	.26
Calendar year 1936	156,640	2,490	25	428	.348	4.73
Water year 1936-37	301,223	6,930	66	825	.671	9.10
March 1942	98,732	7,290	427	3,185	2.59	2.99
Water year 1941-42	284,623	7,290	92	780	.634	8.60
Calendar year 1942	312,060	7,290	92	855	.695	9.42

† Partly estimated.

Grand River at Lansing, Mich.--Continued

Rating table, water year 1954-55, except period of indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Oct. 5 to Dec. 6)

1.5	70	4.0	1,100
1.7	120	7.0	2,930
2.0	220	7.3	3,140

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	188	760	1,100	1,390	410	2,860	1,510	978	415	250	282	186
2	156	692	1,120	1,360	349	2,580	1,450	902	404	250	327	184
3	401	692	1,080	1,390	354	2,510	1,300	711	411	300	259	106
4	1,110	628	996	1,540	371	3,000	1,250	671	370	320	190	150
5	1,420	762	952	2,020	356	3,140	1,150	658	326	350	163	160
6	1,300	741	834	2,650	380	2,720	1,050	534	284	350	181	156
7	963	716	736	2,930	339	2,260	878	526	468	320	126	150
8	1,480	640	666	2,650	373	1,840	902	447	638	320	164	153
9	723	682	768	2,320	378	1,780	884	404	803	300	428	147
10	1,050	655	674	2,080	392	1,660	800	476	730	280	300	96
11	1,390	646	652	1,900	396	1,840	770	452	877	270	252	90
12	1,330	670	632	1,600	410	1,900	814	440	804	270	218	114
13	1,420	570	574	1,480	396	1,900	790	474	864	280	158	114
14	1,960	567	602	1,280	416	1,780	804	454	832	300	180	120
15	2,020	654	584	1,110	482	1,780	770	358	761	600	264	123
16	2,080	367	612	928	458	1,960	783	340	704	370	165	141
17	1,900	454	582	882	476	1,960	798	409	605	320	158	114
18	2,020	427	600	750	477	1,840	687	282	565	300	184	96
19	1,720	624	534	621	496	1,660	726	340	485	320	196	138
20	1,600	801	534	593	932	1,510	856	336	560	300	171	123
21	1,540	900	376	618	2,200	1,510	908	306	552	280	182	111
22	938	878	*377	671	2,790	1,840	882	317	434	260	277	90
23	1,070	892	542	612	2,650	2,020	848	356	366	250	176	180
24	1,090	830	484	548	2,320	2,140	974	428	315	200	158	84
25	996	900	560	542	1,960	2,140	1,180	403	298	180	156	100
26	884	908	587	592	*1,780	2,080	1,290	552	350	250	134	138
27	827	*896	865	468	2,140	1,840	1,260	642	272	300	136	*154
28	704	895	1,510	462	2,860	1,660	*1,280	624	357	320	145	126
29	*746	958	1,780	403	-	1,510	1,150	548	*273	300	151	146
30	645	1,070	1,600	443	-----	1,540	1,120	462	250	*262	310	143
31	679	-----	1,450	*430	-----	*1,660	-----	*507	-----	193	*202	-----
Total	36,350	21,875	24,963	37,263	27,341	62,360	29,864	15,337	15,373	9,165	6,393	3,933
Mean	1,173	729	805	1,202	976	2,012	995	495	512	296	206	131
Cfsm	0.954	0.593	0.654	0.977	0.793	1.64	0.809	0.402	0.416	0.241	0.167	0.107
In.	1.10	0.66	0.75	1.13	0.83	1.89	0.90	0.46	0.46	0.28	0.19	0.12

Calendar year 1954: Max 4,450 Min 89 Mean 929 Cfsm 0.755 In. 10.25
Water year 1954-55: Max 3,140 Min 84 Mean 795 Cfsm 0.646 In. 8.77

Peak discharge (base, 2,800 cfs).--Jan. 7 (9 a.m. to 2 p.m.) 2,930 cfs (7.00 ft); Feb. 22 (9:30 a.m.) 3,000 cfs (7.08 ft); Feb. 28 (11 to 12 p.m.) 3,000 cfs (7.11 ft); Mar. 3 (9 p.m.) 3,280 cfs (7.49 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite June 30 to July 29; discharge computed on basis of records for Grand River at Portland, Grand River near Eaton Rapids, and Cedar River at East Lansing.

Sebewa Creek near Sunfield, Mich.

Location.--Lat 42°45'21", long 84°57'23", in SE¼ sec. 1, T. 4 N., R. 6 W., on right bank 30 ft downstream from bridge on State Highway 43, 0.2 mile downstream from outlet of Gregg Lake, and 1.8 miles east of Sunfield.

Drainage area.--24.1 sq mi.

Records available.--July 1954 to September 1955.

Gage.--Water-stage recorder and control with V-notch sharp-crested weir. Datum of gage is 813.49 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 242 cfs Mar. 4 (gage height, 4.57 ft); minimum, 3.8 cfs Sept. 20 (gage height, 2.03 ft).
1954-55: Maximum discharge, that of Mar. 4, 1955; minimum, that of Sept. 20, 1955.

Remarks.--Records excellent.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

2.0	3.5	3.1	33
2.1	4.6	3.5	64
2.3	7.6	4.0	130
2.5	12	4.5	225
2.8	21		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	12	37	26	8.6	49	33	16	8.8	6.5	4.9	5.4
2	5.4	*12	28	29	8.4	36	29	14	8.2	6.8	4.9	5.0
3	11	13	25	38	7.8	51	26	14	7.6	6.5	4.7	4.7
4	*35	14	21	62	7.6	*217	22	13	7.3	6.3	4.6	4.6
5	*26	13	19	96	8.2	109	20	12	7.1	6.0	4.9	*4.5
6	19	12	16	*165	8.0	57	18	11	7.1	6.0	*6.0	4.5
7	13	12	14	87	8.0	41	17	11	13	6.0	6.8	4.4
8	*10	11	13	53	8.0	34	16	10	28	6.5	5.7	4.4
9	9.2	10	13	41	8.2	32	15	10	21	7.0	5.2	4.4
10	16	9.4	13	35	8.8	37	14	12	42	7.3	5.0	4.4
11	*53	9.4	12	30	8.6	46	14	12	49	6.3	4.9	4.7
12	51	9.0	12	27	8.4	41	14	11	60	5.9	4.7	4.5
13	38	9.0	12	24	8.2	34	14	10	45	5.9	4.6	4.3
14	30	8.8	*11	21	8.4	30	14	9.6	32	5.9	5.0	4.5
15	47	9.0	11	19	*8.6	31	14	9.2	24	6.5	5.3	4.9
16	36	10	11	16	8.8	48	13	8.8	19	*6.3	5.0	4.7
17	35	10	11	15	8.8	33	14	8.4	15	6.0	5.2	4.3
18	30	11	12	13	8.6	28	13	8.2	13	5.9	5.2	4.2
19	23	39	11	12	9.0	25	32	8.4	11	5.6	4.9	4.0
20	19	60	10	11	79	22	25	*9.4	11	5.4	5.2	4.2
21	17	43	9.8	11	148	24	*21	9.0	9.4	5.4	4.7	4.0
22	15	32	9.4	11	144	82	18	8.8	8.6	5.4	4.6	4.0
23	13	26	9.6	11	45	81	16	9.4	8.0	5.4	4.7	4.4
24	12	28	10	11	34	82	37	9.4	7.6	5.2	4.6	4.9
25	11	34	11	11	30	58	59	9.0	7.3	5.0	4.3	4.6
26	11	30	12	10	33	*44	43	8.4	7.1	5.0	5.2	4.5
27	11	27	33	9.6	60	37	33	8.0	7.0	5.7	5.0	4.9
28	11	30	82	9.6	62	34	25	13	6.6	6.3	5.0	4.9
29	11	41	55	9.4	-	34	21	17	*6.5	5.6	4.9	4.9
30	13	38	38	9.0	------	38	18	12	6.5	5.0	7.3	5.3
31	12	--	30	8.8	------	37	------	9.8	------	4.9	6.5	--
Total	648.8	622.6	611.8	931.4	794.0	1,552	668	331.8	503.7	183.5	159.5	137.0
Mean	20.9	20.8	19.7	30.0	28.4	50.1	22.3	10.7	16.8	5.92	5.15	4.57
Cfsm	0.867	0.863	0.817	1.24	1.18	2.08	0.925	0.444	0.697	0.246	0.214	0.190
In.	1.00	0.96	0.94	1.44	1.23	2.39	1.03	0.51	0.78	0.28	0.25	0.21

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 217 Min 4.0 Mean 19.6 Cfsm 0.813 In. 11.02

Peak discharge (base, 150 cfs).--Jan. 6 (5 to 7 a.m.) 185 cfs (4.30 ft); Feb. 21 (1 to 3 a.m.) 193 cfs (4.34 ft); Mar. 4 (11 a.m. to 12 m.) 242 cfs (4.57 ft).

* Discharge measurement made on this day.

Grand River at Portland, Mich.

Location.--Lat 42°51'20", long 84°54'45", in NW¼ sec. 4, T. 5 N., R. 5 W., on left bank at downstream side of bridge on Kent Street, 1.0 mile south of Portland, 1.9 miles upstream from Lookingglass River, and at mile 115.

Drainage area.--1,385 sq mi.

Records available.--August 1952 to September 1955. Gage-height records for flood seasons collected in this vicinity 1907-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 705.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 6, 1953, wire-weight gage at same site and datum.

Extremes.--Maximum discharge during year, 4,370 cfs Mar. 4 (gage height, 8.98 ft); maximum gage height, 9.51 ft Feb. 21 (ice jam); minimum discharge, 87 cfs Sept. 13 (gage height, 4.30 ft); minimum daily, 114 cfs Sept. 13.
1952-55: Maximum discharge, 5,350 cfs Feb. 18, 1954 (gage height, 9.69 ft); minimum, 55 cfs Sept. 9, 1953 (gage height, 4.07 ft); minimum daily, 68 cfs Sept. 9, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Slight diurnal fluctuation caused by powerplants above station.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 18 to Sept. 30)

4.2	107	6.0	1,030
4.5	194	8.0	3,040
5.0	400	8.6	3,810
5.5	670		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	467	742	1,230	1,540	a500	3,290	1,730	1,150	552	253	226	226
2	414	812	1,230	1,500	a500	3,040	1,630	1,010	541	269	201	223
3	462	770	1,230	1,540	a450	*2,680	1,540	*966	502	261	277	187
4	935	784	1,190	1,730	a450	3,810	1,400	742	487	324	307	194
5	1,540	709	1,110	2,240	a450	3,810	1,320	702	457	355	329	135
6	1,500	840	990	3,290	a450	3,420	1,230	683	428	409	277	155
7	1,360	777	890	3,420	450	2,740	1,110	575	428	396	238	158
8	1,150	735	847	3,220	*450	2,300	942	541	670	355	253	178
9	1,400	722	763	2,860	450	1,930	990	502	716	364	171	178
10	749	735	819	2,460	450	1,930	928	477	847	351	397	174
11	1,500	722	709	*2,180	450	1,930	*868	569	833	333	337	174
12	1,500	716	696	1,880	450	2,180	882	519	1,010	294	329	127
13	1,110	722	670	1,680	450	2,080	875	536	854	*329	290	114
14	*1,680	622	622	1,540	500	2,080	890	569	861	315	242	146
15	2,180	*616	646	1,360	500	1,830	890	558	805	342	201	144
16	2,240	670	640	1,150	550	2,130	854	487	722	709	294	158
17	2,180	447	640	1,110	550	2,130	928	472	664	409	261	158
18	1,980	530	640	1,010	550	2,080	840	541	593	360	*174	174
19	2,030	652	628	875	600	1,780	950	452	524	342	184	144
20	1,730	898	575	800	1,500	1,730	920	482	497	373	216	*127
21	1,580	974	558	750	2,500	1,630	1,030	472	482	337	184	198
22	1,540	1,010	450	700	3,100	2,080	1,030	452	524	320	187	152
23	912	990	450	700	3,100	2,400	982	452	378	303	268	161
24	1,070	998	560	700	2,800	2,620	1,070	482	*337	286	250	200
25	1,110	966	560	600	2,400	2,520	1,500	575	315	250	184	210
26	998	1,010	593	600	2,080	2,400	1,500	514	294	205	184	120
27	920	1,020	749	a600	2,130	2,130	1,500	628	273	333	191	138
28	854	1,020	1,580	a500	2,920	1,930	1,450	735	250	333	171	184
29	770	1,070	1,930	a500	-	1,780	1,360	709	246	368	152	208
30	812	1,190	1,930	a500	-------	1,730	1,230	593	286	342	242	174
31	722	-------	1,680	a500	-------	1,780	-------	524	-------	294	373	-------
Total	39,395	24,469	27,805	44,035	31,730	71,900	34,369	18,669	16,376	10,514	7,590	5,019
Mean	1,271	816	897	1,420	1,133	2,319	1,146	602	546	339	245	167
Cfsm	0.918	0.589	0.648	1.03	0.818	1.67	0.827	0.435	0.394	0.245	0.177	0.121
In.	1.06	0.66	0.75	1.18	0.85	1.93	0.93	0.50	0.44	0.28	0.20	0.13

Calendar year 1954: Max 5,210 Min 130 Mean 1,013 Cfsm 0.731 In. 9.94
Water year 1954-55: Max 3,810 Min 114 Mean 909 Cfsm 0.656 In. 8.91

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations at Lansing and at Ionia.
Note.--Stage-discharge relation affected by ice Dec. 22-25, Jan. 20-26, Feb. 7-21.

Lookingglass River near Eagle, Mich.

Location.--Lat 42°49'45", long 84°46'40", in sec. 10, T. 5 N., R. 4 W., on upstream side of highway bridge, 1½ miles northeast of Eagle and 10 miles upstream from mouth.

Drainage area.--281 sq mi.

Records available.--August 1944 to September 1955.

Gage.--Wire-weight gage read twice daily. Datum of gage is 747.09 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--11 years, 188 cfs.

Extremes.--Maximum discharge observed during year, 790 cfs Mar. 4 (gage height, 4.35 ft); maximum gage height observed, 5.54 ft Feb. 20 (ice jam); minimum discharge, 20 cfs Sept. 22 (gage height, 1.12 ft).

1944-55: Maximum discharge, 2,860 cfs Apr. 5, 1947 (gage height, 7.70 ft, from graph based on gage readings), from rating curve extended above 1,900 cfs by logarithmic plotting; minimum, 18 cfs Aug. 31, 1953 (gage height, 1.11 ft).

Revisions.--The maximum discharge for the water year 1946 has been revised to 1,700 cfs Mar. 6, 1946 (gage height, 5.9 ft, from graph based on gage readings), superseding figure published in WSP 1054. The minimum daily discharge for the water year 1947 has been found in error and should not be used. The minimum instantaneous discharge for water year 1947 has been determined as 24 cfs Oct. 6-8, 1946 (gage height, 1.18 ft).

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

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1946 and 1947, superseding those published in WSP 1054 and 1084, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1946		1946-Con.		1947-Con.	
Mar. 2	300	Dec. 31	50	Mar. 15	400
3	700			16	370
4	900	1947		17	350
5	1,200	Jan. 1	50	18	300
Dec. 28	103	2	50	19	270
29	79	3	50	20	290
30	50	Mar. 14	350	21	310

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1946	22,880	1,630	160	738	2.63	3.03
Water year 1945-46	67,050	1,630	22	184	.655	8.89
December 1946	1,760	111	30	56.8	.202	.23
Calendar year 1946	53,170	1,630	22	146	.520	7.03
January 1947	3,450	250	35	111	.395	.46
March	7,913	535	45	255	.907	1.05
Water year 1946-47	85,879	2,400	24	235	.836	11.35
Calendar year 1947	98,643	2,400	35	270	.961	13.05

Lookingglass River near Eagle, Mich.--Continued

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	19	2.5	225
1.3	33	3.0	350
1.5	55	4.0	650
2.0	125	4.3	770

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a30	71	143	270	70	700	350	127	79	34	28	40
2	a40	71	141	285	70	600	325	120	70	42	27	35
3	a60	74	141	310	70	*462	302	113	62	51	27	33
4	187	74	135	338	70	750	280	106	*57	51	27	30
5	151	76	122	375	70	670	255	102	55	48	27	28
6	127	76	104	425	70	610	230	90	55	47	33	27
7	127	77	96	438	70	552	*213	82	74	45	46	27
8	114	79	98	425	*70	500	189	74	104	50	44	27
9	100	76	96	412	70	500	171	71	110	48	42	25
10	94	71	92	400	70	500	155	72	118	44	37	24
11	90	68	86	*350	70	488	147	71	119	41	32	24
12	92	66	80	300	70	462	139	70	124	36	30	23
13	90	63	80	250	70	450	131	66	116	36	29	23
14	90	63	80	200	70	450	131	63	107	34	27	24
15	106	*62	77	180	70	425	127	61	101	*50	34	25
16	112	61	77	150	75	425	124	59	88	50	33	24
17	118	60	75	140	75	412	118	54	75	55	31	23
18	120	d60	74	130	75	400	114	52	65	61	30	22
19	120	d70	72	120	75	375	187	*51	60	65	27	21
20	120	d100	70	110	250	362	197	a50	57	59	*25	21
21	114	d150	*70	100	450	362	181	*48	57	51	24	*21
22	106	d160	70	95	600	375	175	56	53	45	24	20
23	96	d160	70	90	600	400	171	57	52	43	24	24
24	82	d150	70	80	590	412	211	70	51	38	24	25
25	79	a150	70	80	550	388	219	143	51	37	29	23
26	76	a150	83	80	540	388	195	113	47	36	30	22
27	71	a140	116	80	540	375	183	108	42	36	31	28
28	70	a140	185	80	600	375	175	119	36	34	29	29
29	70	a140	235	80	-	375	151	119	*35	31	31	28
30	*70	a140	245	80	------	362	135	98	34	30	53	27
31	70	--	260	75	------	362	-------	92	--	29	45	--
Total	2,992	2,898	3,413	6,528	6,070	14,267	5,681	2,577	2,154	1,357	980	773
Mean	96.5	96.6	110	211	217	460	189	83.1	71.8	43.8	31.6	25.8
Cfsm	0.343	0.344	0.391	0.751	0.772	1.64	0.673	0.296	0.256	0.156	0.112	0.092
In.	0.40	0.38	0.45	0.86	0.80	1.89	0.75	0.34	0.29	0.18	0.13	0.10

Calendar year 1954: Max 910 Min 21 Mean 135 Cfsm 0.480 In. 6.53
Water year 1954-55: Max 750 Min 20 Mean 136 Cfsm 0.484 In. 6.57

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Cedar River at East Lansing and Thornapple River near Hastings.
d Doubtful gage-height record; discharge computed as for footnote "a" above.
Note.--Stage-discharge relation affected by ice Dec. 20-25, Jan. 10 to Mar. 2.

Maple River at Maple Rapids, Mich.

Location.--Lat 43°06'35", long 84°41'35", in sec. 5, T. 8 N., R. 3 W., on upstream side of highway bridge at Maple Rapids, 300 ft downstream from Pine Creek and three-quarters of a mile upstream from Hayworth Creek.

Drainage area.--434 sq mi.

Records available.--August 1944 to September 1955.

Gage.--Wire-weight gage read twice daily. Datum of gage is 642.58 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--11 years, 258 cfs.

Extremes.--Maximum discharge during year, 1,120 cfs Mar. 6 (gage height, 8.0 ft, from graph based on gage readings); minimum, 13 cfs Sept. 22; minimum gage height, 1.97 ft Aug. 3, 4, 5.

1944-55: Maximum daily discharge, 6,500 cfs Mar. 20, 1948; maximum gage height, 11.22 ft Mar. 20, 1948, from floodmark (backwater from ice); minimum discharge observed, 8.2 cfs Aug. 11, 1944 (gage height, 1.61 ft).

Flood in March 1904 reached a stage of 13.8 ft, from information by local resident.

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

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 7 to Dec. 30, Feb. 25 to Apr. 13, Apr. 19 to May 6, Sept. 22-30)

1.9	13	5.0	215
2.0	16	6.0	350
2.5	37	7.0	545
3.0	62	8.0	940
4.0	124	8.3	1,120

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	*78	243	261	70	940	575	394	210	38	16	44
2	*22	75	255	281	65	970	537	358	194	36	15	50
3	32	74	255	303	65	970	514	334	179	40	15	43
4	91	72	243	326	60	1,090	472	303	*164	44	15	38
5	100	71	237	394	60	1,090	441	274	155	*40	16	36
6	97	69	220	589	60	1,090	403	249	138	35	36	*28
7	91	68	204	750	60	970	*385	220	131	34	46	24
8	85	66	194	865	60	840	350	204	142	32	50	22
9	79	66	179	940	60	730	318	184	155	31	*55	20
10	75	60	174	840	60	690	296	169	160	32	52	18
11	69	56	*164	*750	60	770	274	160	160	29	44	23
12	88	55	155	670	*60	*815	255	146	160	26	36	23
13	91	53	142	589	60	865	243	138	215	24	30	21
14	100	51	134	525	60	790	226	128	220	23	27	20
15	179	50	131	450	60	750	215	120	210	24	30	19
16	174	48	124	400	60	710	199	110	199	28	31	19
17	179	46	117	350	60	652	189	100	184	30	29	18
18	179	48	114	320	60	619	174	91	169	39	27	17
19	164	64	110	280	60	562	261	*83	164	40	25	16
20	160	106	106	250	100	525	318	75	146	38	23	15
21	150	124	97	220	350	503	350	68	131	34	21	14
22	142	131	91	200	450	537	394	64	114	29	20	14
23	131	134	85	170	652	652	412	62	100	26	18	14
24	128	138	83	150	865	790	412	75	85	24	17	14
25	117	150	80	130	940	915	492	124	71	21	17	14
26	106	169	83	120	940	915	514	179	63	20	18	15
27	103	174	103	100	970	865	514	174	55	19	18	16
28	97	179	179	90	915	750	492	179	49	18	18	18
29	91	220	215	80	-	690	461	215	44	17	22	18
30	88	237	232	75	-------	635	432	226	39	17	38	*19
31	85	-------	249	70	-------	619	-------	220	-------	16	43	-------
Total	3,312	2,932	4,998	11,538	7,342	24,309	11,118	5,426	4,206	904	868	670
Mean	107	97.7	161	372	262	784	371	175	140	29.2	28.0	22.3
Cfsm	0.247	0.225	0.371	0.857	0.604	1.81	0.855	0.403	0.322	0.067	0.065	0.051
In.	0.28	0.25	0.43	0.99	0.63	2.08	0.95	0.46	0.36	0.08	0.07	0.06

Calendar year 1954: Max 915 Min 11 Mean 168 Cfsm 0.387 In. 5.25
Water year 1954-55: Max 1,090 Min 14 Mean 213 Cfsm 0.491 In. 6.64

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan 15 to Feb. 22.

Grand River at Ionia, Mich.

Location.--Lat 42°58'20", long 85°04'10", in NW¼ sec. 30, T. 7 N., R. 6 W., on left bank 15 ft downstream from bridge on State Highway 66 at Ionia, 2.7 miles downstream from Prairie Creek, and at mile 87.

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

Records available.--March to September 1931 (fragmentary), July 1951 to September 1955. Gage-height records for flood seasons collected in this vicinity 1907-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 615.38 ft above mean sea level, datum of 1929. Mar. 19 to Sept. 24, 1931, chain gage at site 1½ miles upstream at different datum.

Extremes.--Maximum discharge during year, 7,700 cfs Mar. 5, estimated from reconstructed gage-height graph; maximum gage height, 17.20 ft Feb. 23 (ice jam); minimum discharge, 148 cfs Sept. 21 (gage height, 6.39 ft); minimum daily, 216 cfs Sept. 21.
1931, 1951-55: Maximum discharge, 14,000 cfs Apr. 15, 1952 (gage height, 19.78 ft); minimum, 105 cfs Sept. 8, 9, 1954 (gage height, 6.20 ft); minimum daily, 115 cfs Aug. 27, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diurnal fluctuation below about 5,000 cfs caused by powerplants above station.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

6.6	201	14.0	4,920
7.0	330	16.9	7,590
10.0	1,900		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	394	1,260	2,740	2,670	1,000	6,360	3,800	2,460	1,330	605	425	773
2	464	1,240	2,880	2,670	1,000	5,910	3,720	2,180	1,220	531	332	647
3	736	1,280	2,880	2,950	1,000	*5,640	3,400	*2,040	1,160	506	320	541
4	3,480	1,250	2,950	3,320	950	6,270	3,020	1,900	945	592	388	490
5	2,810	1,280	1,920	4,360	900	a7,500	2,810	1,700	869	608	410	348
6	2,740	1,270	1,800	6,540	900	a7,400	2,670	1,490	962	616	570	416
7	2,280	1,250	1,500	*6,990	900	a6,000	2,460	1,460	880	660	616	370
8	1,460	1,250	1,530	6,810	*900	a5,000	2,110	1,300	1,500	658	472	431
9	1,860	1,140	1,520	6,180	900	4,440	2,040	1,280	1,610	626	460	332
10	1,910	1,160	1,440	5,370	900	4,280	1,920	1,240	1,630	559	420	388
11	1,580	1,100	1,400	4,600	900	4,600	*1,800	1,140	1,830	585	606	362
12	2,600	1,150	1,310	4,200	900	4,920	1,660	1,180	2,040	510	514	392
13	2,180	972	1,220	3,720	900	5,100	1,720	1,000	2,020	*482	535	312
14	*2,320	1,100	1,190	3,320	900	4,920	1,730	1,090	1,800	478	454	322
15	3,960	*897	1,160	3,090	900	4,440	1,670	938	1,680	527	445	295
16	3,560	1,040	1,190	2,740	1,200	4,800	1,720	1,230	1,570	734	445	*346
17	3,560	1,060	1,120	2,250	1,300	4,600	1,520	826	1,450	812	488	349
18	3,240	793	1,140	2,000	1,200	4,360	1,760	788	1,280	450	*466	312
19	2,950	1,110	1,100	1,600	1,200	3,960	1,900	864	1,160	597	391	332
20	2,950	1,570	1,000	1,500	1,800	3,640	2,530	798	1,100	530	345	390
21	2,600	1,780	900	1,600	4,000	3,480	2,460	756	1,020	562	344	216
22	2,040	1,780	700	1,500	6,200	4,040	2,530	741	928	507	380	389
23	2,320	1,740	800	1,400	6,400	5,480	2,040	831	938	483	380	241
24	1,510	1,720	1,000	1,300	6,400	5,820	2,390	1,040	*623	440	490	286
25	1,500	1,920	1,180	1,300	6,000	5,910	a3,000	1,130	740	350	374	424
26	1,620	1,800	1,100	1,200	5,500	5,550	a3,500	1,320	732	404	422	351
27	1,480	1,880	1,490	1,100	5,500	5,100	3,640	1,360	536	386	272	338
28	1,360	1,970	3,160	900	5,550	4,600	3,240	1,480	556	468	390	388
29	1,310	2,340	3,720	1,000	-	4,120	3,020	2,020	594	445	406	382
30	1,300	2,370	3,320	1,000	-------	3,960	2,670	1,520	562	498	820	331
31	1,200	-------	2,950	1,000	-------	3,720	-------	1,400	-------	418	667	-------
Total	65,274	42,472	53,310	90,180	66,100	155,700	74,450	40,502	35,265	16,627	14,047	11,474
Mean	2,106	1,416	1,720	2,909	2,361	5,023	2,482	1,307	1,176	536	453	382
Cfsm	0.742	0.499	0.606	1.02	0.831	1.77	0.874	0.460	0.414	0.189	0.160	0.135
In.	0.85	0.56	0.70	1.18	0.87	2.04	0.97	0.53	0.46	0.22	0.18	0.15

Calendar year 1954: Max 7,700 Min 181 Mean 1,834 Cfsm 0.646 In. 8.76
Water year 1954-55: Max 7,500 Min 216 Mean 1,823 Cfsm 0.642 In. 8.71

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of reconstructed gage-height graph and records for stations at Portland and at Grand Rapids.
Note.--Stage-discharge relation affected by ice Dec. 19-24, Jan. 18 to Feb. 27.

Flat River at Smyrna, Mich.

Location.--Lat 43°03'10", long 85°15'50", in NW¼ sec. 28, T. 8 N., R. 8 W., on right bank at downstream side of highway bridge, 600 ft downstream from Consumers Power Co. powerplant and half a mile south of Smyrna.

Drainage area.--528 sq mi.

Records available.--December 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 729.53 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 1,560 cfs Oct. 3 (gage height, 5.90 ft); minimum not determined; minimum gage height, 2.37 ft Jan. 16; minimum daily discharge, 141 cfs Aug. 24.
1950-55: Maximum discharge, 1,800 cfs Mar. 21, 1952 (gage height, 6.20 ft); minimum, 7.4 cfs Sept. 9, 1953; minimum daily, 107 cfs Sept. 7, 1954.

Remarks.--Records excellent prior to July 10, good thereafter. Diurnal fluctuation caused by powerplants above station.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 1 to Sept. 30)

3.1	140	5.0	960
3.5	260	5.4	1,200
4.0	440		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	188	342	440	410	317	482	578	586	452	216	247	686
2	202	352	426	431	284	428	604	588	382	261	147	538
3	534	365	396	418	280	500	545	506	380	298	242	378
4	900	368	375	434	288	551	524	498	331	220	166	360
5	890	361	374	505	291	551	490	484	316	222	218	308
6	926	356	308	568	279	533	518	413	297	282	240	269
7	774	347	257	*540	288	482	460	401	367	207	238	197
8	629	334	290	518	299	440	430	412	497	200	242	222
9	532	314	368	508	320	511	464	338	500	218	145	239
10	499	318	*312	474	373	544	418	*349	*530	344	227	230
11	488	306	318	454	264	649	*382	365	592	215	213	224
12	472	356	320	452	292	877	450	345	732	212	224	235
13	*409	320	322	423	291	1,040	392	364	786	*212	154	168
14	456	261	300	378	306	1,120	418	329	796	206	142	218
15	499	282	364	390	316	1,160	450	298	791	176	150	244
16	574	*299	262	259	309	1,150	399	293	664	255	175	*232
17	692	330	328	348	294	1,010	396	330	637	256	183	190
18	575	320	316	376	288	808	398	320	502	282	169	155
19	491	316	282	324	314	868	695	262	400	282	*162	219
20	495	325	254	280	362	681	740	228	456	270	179	181
21	474	347	269	256	406	622	676	333	334	272	152	212
22	460	351	278	255	442	772	633	326	350	205	164	162
23	398	355	297	306	440	804	588	340	276	228	160	164
24	360	374	333	268	*422	920	658	450	258	180	141	199
25	384	375	317	333	406	886	758	510	328	181	167	166
26	385	362	305	270	424	877	814	580	222	250	166	178
27	378	384	360	247	436	880	836	602	244	274	186	191
28	319	386	442	296	458	724	815	572	258	231	226	282
29	364	393	415	304	-	674	776	597	248	167	226	196
30	374	410	386	300	-------	644	628	567	191	207	660	195
31	384	-------	427	298	-------	596	-------	477	-------	201	670	-------
Total	15,505	10,309	10,441	11,623	9,489	22,784	16,933	13,063	13,117	7,230	6,781	7,438
Mean	500	344	337	375	339	735	564	421	437	233	219	248
Cfsm	0.947	0.652	0.638	0.710	0.642	1.39	1.07	0.797	0.828	0.441	0.415	0.470
In.	1.09	0.73	0.74	0.82	0.67	1.60	1.19	0.92	0.92	0.51	0.48	0.52

Calendar year 1954: Max 1,380 Min 107 Mean 387 Cfsm 0.733 In. 9.96
Water year 1954-55: Max 1,160 Min 141 Mean 396 Cfsm 0.750 In. 10.19

* Discharge measurement made on this day.

Quaker Brook near Nashville, Mich.

Location.--Lat 42°33'57", long 85°05'37", in NW¼ sec. 13, T. 2 N., R. 7 W., on left bank 150 ft upstream from culvert on county road, 500 ft upstream from small tributary, and 2½ miles south of Nashville.
Drainage area.--7.60 sq mi.
Records available.--August 1954 to September 1955.
Gage.--Water-stage recorder and concrete control. Datum of gage is 821.89 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).
Extremes.--1954: Maximum discharge during period August to September, 7.0 cfs Sept. 18 (gage height, 2.06 ft); minimum, 1.7 cfs Aug. 13, 14 (gage height, 1.59 ft).
1954-55: Maximum discharge during water year, 294 cfs Oct. 4 (gage height, 5.47 ft), from rating curve extended above 140 cfs; minimum, 1.9 cfs Aug. 21 (gage height, 1.62 ft).
Remarks.--Records good except those for periods of no gage-height record, which are fair.

Rating table, Aug. 1, 1954, to Sept. 30, 1955 (gage height, in feet, and discharge, in cubic feet per second)

1.6	1.8	2.1	8.1
1.8	3.3	2.3	17
2.0	5.8	3.5	125

Discharge, in cubic feet per second, 1954

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	a2	2.1	9	*2.3	1.9	17	2.4	*2.5	25	2.9	2.4
2	a2	2.1	10	2.2	2.0	18	2.7	4.4	26	2.8	2.4
3	a2	2.1	11	2.0	2.0	19	2.7	4.7	27	2.4	2.4
4	a2	2.1	12	2.1	1.9	20	2.2	2.5	28	2.4	2.3
5	a2	2.0	13	2.0	2.1	21	2.2	*3.3	29	2.4	3.1
6	1.9	1.9	14	2.4	2.7	22	2.1	3.4	30	2.1	6.0
7	1.9	1.9	15	2.6	2.7	23	2.1	2.7	31	2.1	-
8	2.1	1.8	16	2.4	2.4	24	2.2	2.4			
Total										69.6	78.2
Mean										2.25	2.61
Cubic feet per second per square mile										0.296	0.343
Runoff in inches										0.34	0.38

Peak discharge (base, 50 cfs).--No peak above base.
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Sebewa Creek near Sunfield and Thornapple River near Hastings.

Discharge, in cubic feet per second, water year October 1954 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	5.5	8.4	7.5	4.4	15	a9	4.4	3.8	3.2	2.4	2.7
2	4.9	*7.5	8.1	10	4.3	11	a9	4.4	3.6	3.3	2.2	2.4
3	30	7.2	6.8	11	3.7	12	a8	4.5	3.5	2.8	3.1	2.4
4	*116	8.1	6.6	17	4.0	26	a7	4.2	3.4	2.7	2.4	2.4
5	*28	6.8	6.2	*26	4.3	12	a7	3.8	3.2	2.6	2.4	2.2
6	14	6.0	4.8	35	4.6	9.0	a6	3.7	3.6	2.4	3.2	2.2
7	8.7	5.3	4.2	14	4.6	6.8	a6	3.7	8.5	2.7	4.8	2.2
8	6.6	5.0	4.3	9.3	4.6	6.6	a5	3.7	11	4.0	2.9	2.2
9	6.4	4.9	5.0	8.7	4.9	8.4	5.0	3.8	7.8	4.2	2.6	2.2
10	14	4.8	5.3	7.5	5.2	10	5.0	6.6	5.5	3.4	2.4	2.1
11	41	4.8	5.3	6.2	4.8	14	5.0	5.5	11	2.5	2.3	2.7
12	*20	4.6	5.5	6.4	4.8	10	7.0	4.4	11	2.5	2.3	2.4
13	11	4.6	4.9	6.6	4.5	8.1	7.0	4.2	6.4	2.4	*2.2	2.4
14	10	4.6	*4.9	6.4	4.6	7.0	7.0	3.9	5.3	2.4	2.4	2.4
15	17	4.5	5.0	5.8	*4.6	9.0	6.0	3.6	4.4	3.8	2.7	2.4
16	10	4.5	5.2	5.5	5.2	13	5.5	3.5	3.9	*3.6	2.4	2.3
17	13	4.6	5.3	4.8	5.0	7.2	5.3	3.4	3.6	3.2	2.2	*2.2
18	9.6	5.3	5.8	4.5	4.6	7.0	5.0	3.3	3.4	2.9	2.2	2.1
19	7.2	22	5.2	4.4	5.5	6.4	6.8	*3.5	3.2	2.7	2.2	2.1
20	6.4	21	5.0	4.2	59	6.4	6.6	3.5	3.2	2.6	2.1	2.1
21	6.2	10	4.5	4.3	49	9.0	*6.0	3.3	3.1	2.5	2.1	2.1
22	5.6	7.8	4.4	4.5	20	22	4.9	4.2	3.0	2.3	2.1	2.3
23	5.0	7.0	4.9	4.5	12	19	4.6	6.8	3.0	2.8	2.2	2.9
24	4.8	9.3	6.0	4.6	9.3	18	12	7.5	3.0	2.9	2.1	3.3
25	4.6	9.6	6.4	4.8	9.0	11	*16	7.5	2.9	2.4	2.1	3.6
26	4.6	7.8	7.5	4.4	12	*9.0	9.6	5.5	2.9	2.5	2.1	2.6
27	5.3	7.2	23	4.4	*34	8.7	7.0	4.3	2.9	2.6	2.2	3.0
28	4.9	8.4	36	4.3	22	11	5.8	7.8	2.8	2.7	2.4	3.1
29	6.0	11	14	3.9	-	9.3	5.2	8.7	*2.7	2.5	2.3	3.0
30	7.5	10	10	3.8	------	11	4.8	5.5	3.3	2.4	7.2	3.3
31	6.4	-- ---	8.4	4.0	------	a9.5	------	4.3	------	2.3	3.4	----- -
Total	439.5	229.7	236.9	248.3	314.5	342.4	204.1	147.0	138.9	87.8	81.6	75.2
Mean	14.2	7.66	7.64	8.01	11.2	11.0	6.80	4.74	4.63	2.83	2.63	2.51
Cfsm	1.87	1.01	1.01	1.05	1.47	1.45	0.895	0.624	0.609	0.372	0.346	0.330
In.	2.15	1.12	1.16	1.22	1.54	1.68	1.00	0.72	0.68	0.43	0.40	0.37

Calendar year 1954: Max - Min - Mean - Cfsm - In. -
Water year 1954-55: Max 116 Min 2.1 Mean 6.98 Cfsm 0.918 In. 12.47

Peak discharge (base, 50 cfs).--Oct. 4 (2:30 a.m.) 294 cfs (5.47 ft); Oct. 11 (8 a.m.) 51 cfs (2.65 ft); Jan. 6 (1 a.m.) 51 cfs (2.65 ft); Feb. 20 (7 p.m.) 125 cfs (3.52 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Sebewa Creek near Sunfield and Thornapple River near Hastings.

Thornapple River near Hastings, Mich.

Location.--Lat 42°36'55", long 85°14'15", in sec. 27, T. 3 N., R. 8 W., on downstream side of highway bridge, half a mile downstream from Cedar Creek, 2 miles downstream from Thornapple Lake, and 3½ miles southeast of Hastings.

Drainage area.--385 sq mi.

Records available.--October 1944 to September 1955.

Gage.--Wire-weight gage read twice daily. Datum of gage is 786.71 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--11 years, 325 cfs.

Extremes.--Maximum discharge during year, 1,520 cfs Jan. 7 (gage height, 5.68 ft); maximum gage height, 5.86 ft Feb. 22 (ice jam); minimum discharge, 58 cfs Aug. 26, Sept. 10; minimum gage height, 2.85 ft Aug. 24, 26, Sept. 10.
1944-55: Maximum discharge, 6,810 cfs Apr. 7, 1947 (gage height, 10.20 ft, from graph based on gage readings); minimum, 43 cfs Aug. 26-28, 1946.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-3, Aug. 26 to Sept. 25)

2.7	50	4.0	455
3.0	105	5.0	1,040
3.4	210	5.7	1,520
3.7	319		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	123	262	499	855	173	1,040	560	262	185	114	82	105
2	134	265	494	631	176	1,010	532	236	162	123	78	92
3	159	273	466	604	173	945	504	220	149	125	76	86
4	735	273	425	653	162	1,010	430	210	137	116	74	76
5	1,100	269	378	795	159	1,140	378	191	134	107	74	73
6	1,070	269	335	1,200	168	1,140	344	185	132	103	78	69
7	975	250	288	1,480	165	975	307	173	179	107	92	64
8	825	243	269	1,450	171	825	296	168	280	120	105	62
9	653	236	254	1,380	173	631	280	162	352	134	99	59
10	565	233	254	1,100	179	576	273	182	396	146	92	59
11	723	213	250	855	173	565	262	194	510	132	84	73
12	*915	207	250	658	b170	582	262	198	604	118	82	78
13	945	210	233	538	b180	576	*265	185	642	105	80	76
14	915	204	230	445	b180	543	265	173	609	101	78	73
15	855	198	226	382	*185	494	254	165	510	105	82	71
16	825	194	226	331	188	*499	250	151	387	116	80	69
17	795	188	223	311	188	543	236	141	303	125	80	67
18	711	194	230	303	191	526	233	137	247	123	76	67
19	620	243	226	269	198	477	243	139	213	116	73	65
20	543	396	204	217	230	455	280	146	185	107	69	*64
21	445	494	*194	230	885	400	284	*149	168	97	65	65
22	396	532	191	230	b1,300	460	280	151	151	94	62	64
23	344	*488	204	204	1,380	687	265	188	141	94	60	65
24	292	455	210	198	1,310	915	269	217	137	97	60	73
25	288	455	220	*210	1,140	1,140	378	226	127	90	60	74
26	273	455	223	204	855	1,100	455	217	123	88	58	80
27	258	445	296	201	777	1,010	466	191	118	88	59	82
28	250	425	582	191	945	795	405	191	109	92	62	86
29	250	440	795	201	-	653	344	223	*105	*88	62	94
30	250	488	885	179	-------	582	300	240	105	88	97	101
31	269	----	915	179	-------	576	-------	217	-------	86	*112	------
Total	17,501	9,497	10,675	16,684	12,174	22,870	9,900	5,828	7,600	3,345	2,391	2,232
Mean	565	317	344	538	435	738	330	188	253	108	77.1	74.4
Cfsm	1.47	0.823	0.894	1.40	1.13	1.92	0.857	0.488	0.657	0.281	0.200	0.193
In.	1.69	0.92	1.03	1.61	1.18	2.21	0.96	0.56	0.73	0.32	0.23	0.22

Calendar year 1954: Max 1,810 Min 61 Mean 304 Cfsm 0.790 In. 10.72
Water year 1954-55: Max 1,480 Min 58 Mean 331 Cfsm 0.860 In. 11.66

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

Thornapple River near Caledonia, Mich.

Location.--Lat 42°48'40", long 85°29'00", in NW¼ sec. 22, T. 5 N., R. 10 W., on right bank 200 ft downstream from LaBarge powerplant, 2.3 miles northeast of Caledonia, and 3.3 miles downstream from Coldwater River.

Drainage area.--773 sq mi.

Records available.--October 1930 to September 1938, October 1951 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 676.31 ft above mean sea level, unadjusted (Consumers Power Co. benchmark). Oct. 1, 1930, to Sept. 30, 1938, staff gage at same site at mean sea level datum (unadjusted).

Average discharge.--11 years (1930-37, 1951-55), 520 cfs.

Extremes.--Maximum discharge during year, 2,570 cfs Oct. 6 (gage height, 7.44 ft), caused by momentary gate opening; minimum, 10 cfs Sept. 19, 20, 21, 22 (gage height, 2.40 ft); minimum daily, 127 cfs Aug. 22, 24.

1930-38, 1951-55: Maximum daily discharge (not previously published), 4,220 cfs Feb. 14, 1938, from rating curve extended above 2,600 cfs; minimum not determined.

Flood of Apr. 7, 1947, reached a stage of 14.4 ft, from information by powerplant operator.

Note.--The maximum daily discharge for the water year 1938 has been determined as 4,220 cfs Feb. 14, 1938; other daily figures for period Oct. 1, 1937, to July 8, 1938, are not available.

Remarks.--Records good. Large diurnal fluctuation at low and medium flow caused by powerplant above station.

Revisions (water years).--WSP 824: 1931-36.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

3.3	110	4.0	380
3.5	155	6.0	1,590
3.7	220	6.8	2,150

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	177	602	890	1,220	410	1,490	1,040	614	391	279	208	321
2	291	608	860	1,130	440	1,490	980	596	242	282	190	229
3	354	602	830	1,070	394	1,460	920	560	309	279	184	270
4	1,160	510	800	1,160	370	1,800	860	542	314	270	158	231
5	1,340	578	740	1,430	470	1,870	770	448	304	248	192	206
6	1,430	578	680	*2,010	367	1,760	722	481	344	250	302	190
7	1,340	572	626	2,150	378	1,620	668	436	430	272	258	176
8	1,190	539	582	2,150	398	1,430	662	380	*564	304	206	217
9	1,040	408	506	2,010	378	1,250	608	390	572	315	241	217
10	1,010	618	573	1,800	416	1,130	584	431	608	302	236	210
11	1,190	*462	530	1,520	448	1,130	542	397	734	294	206	228
12	1,460	462	520	1,280	290	1,130	*578	486	920	264	208	153
13	1,490	456	498	1,070	412	1,070	560	452	950	242	206	170
14	*1,490	443	486	920	412	1,010	542	384	950	*247	198	228
15	1,800	436	468	830	412	950	542	334	860	241	190	214
16	1,700	519	473	740	424	980	536	434	740	242	172	*200
17	1,590	365	467	674	410	950	536	362	650	260	194	226
18	1,400	484	480	644	*406	950	530	365	584	263	*215	177
19	1,250	412	478	602	411	890	516	247	469	240	161	160
20	1,250	532	466	566	662	830	626	320	400	259	211	164
21	828	554	*490	522	1,700	800	638	310	426	242	132	153
22	830	734	384	516	1,870	920	620	302	340	219	127	153
23	770	740	391	484	1,940	1,130	596	410	284	242	278	159
24	704	770	472	455	1,870	1,400	608	476	302	188	127	159
25	644	770	400	480	1,760	1,560	860	484	310	218	145	194
26	608	740	482	454	1,560	1,590	920	450	268	221	187	199
27	602	740	532	403	1,460	1,520	890	334	270	220	171	204
28	579	770	950	325	1,430	1,370	830	472	270	222	142	254
29	530	770	1,190	474	-	1,220	740	536	256	226	181	205
30	546	860	1,250	430	------	1,130	674	530	255	222	331	228
31	586	----	1,250	413	-------	1,070	--------	422	--------	180	392	------
Total	31,179	17,634	19,744	29,932	21,898	38,900	20,698	13,385	14,316	7,753	6,349	6,095
Mean	1,006	588	637	966	782	1,255	690	432	477	250	205	203
Cfsm	1.30	0.761	0.824	1.25	1.01	1.62	0.893	0.559	0.617	0.323	0.265	0.263
In.	1.50	0.85	0.95	1.44	1.05	1.87	1.00	0.64	0.69	0.37	0.31	0.29

Calendar year 1954: Max 2,550 Min 73 Mean 570 Cfsm 0.737 In. 10.00
Water year 1954-55: Max 2,150 Min 127 Mean 624 Cfsm 0.807 In. 10.96

* Discharge measurement made on this day.

Rogue River near Rockford, Mich.

Location.--Lat 43°05'00", long 85°35'30", in NE¼ sec. 15, T. 8 N., R. 11 W., on left bank at downstream side of highway bridge, 2.2 miles upstream from mouth and 3.0 miles southwest of Rockford.

Drainage area.--234 sq mi.

Records available.--February 1952 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 625 ft (from river-profile map). Prior to Aug. 30, 1952, wire-weight gage at same site and datum.

Extremes.--Maximum discharge during year, 1,640 cfs Oct. 3 (gage height, 7.85 ft); minimum, 33 cfs Sept. 25 (gage height, 3.57 ft); minimum daily, 49 cfs Aug. 27.
1952-55: Maximum discharge, that of Oct. 3, 1954; minimum, 30 cfs Oct. 5, 13, 1952 (gage height, 3.55 ft); minimum daily, that of Aug. 27, 1955.

Remarks.--Records good except those for period of ice effect, which are fair. Some diurnal fluctuation caused by mills above station.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.7	49	5.0	378
4.0	101	6.0	715
4.5	228	7.2	1,280

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	112	214	234	257	140	378	338	251	378	135	108	328
2	119	211	231	260	140	394	332	251	325	137	99	304
3	459	208	220	242	140	442	301	231	274	108	79	133
4	1,010	208	208	251	140	542	286	222	242	130	81	99
5	1,220	206	184	347	140	542	260	220	211	125	83	108
6	841	200	173	*397	140	410	242	206	203	123	91	116
7	576	186	145	442	140	369	228	186	266	121	69	99
8	*426	197	150	400	140	347	217	170	304	130	110	87
9	353	181	160	356	140	338	211	189	*322	142	97	91
10	304	173	*160	316	140	391	192	*186	335	142	87	91
11	304	170	160	263	140	542	206	192	381	147	87	79
12	266	165	150	260	140	645	*197	192	397	137	85	101
13	251	163	170	225	140	628	200	186	475	128	81	97
14	338	152	152	211	140	559	214	173	442	103	62	95
15	356	170	147	200	140	475	222	150	410	*97	81	*99
16	353	*155	155	173	140	426	217	165	350	112	87	101
17	356	155	155	178	142	*369	197	147	295	91	81	99
18	356	155	160	160	*178	325	211	140	248	119	*91	83
19	338	163	150	152	150	301	313	137	214	108	59	89
20	304	170	150	150	192	266	366	137	195	110	70	91
21	277	160	152	140	251	292	388	137	181	114	67	89
22	251	184	147	130	251	400	372	135	178	97	93	87
23	228	168	157	130	313	475	335	145	173	97	93	85
24	195	184	160	130	338	662	362	263	163	70	79	85
25	211	176	173	130	319	628	410	675	160	105	76	58
26	178	195	181	130	301	508	442	1,280	157	99	78	99
27	195	189	266	130	316	442	442	1,020	148	95	49	103
28	186	189	307	130	341	381	426	698	155	91	87	103
29	200	234	298	140	-	362	372	559	142	93	112	105
30	208	231	277	140	------	*335	316	525	135	93	338	110
31	197	---	274	140	-------	338	-------	442	-------	69	341	-----
Total	10,968	5,512	5,806	6,710	5,332	13,512	8,815	9,610	7,859	3,468	3,101	3,294
Mean	354	184	187	216	190	436	294	310	262	112	100	110
Cfsm	1.51	0.786	0.799	0.923	0.812	1.86	1.26	1.32	1.12	0.479	0.427	0.470
In.	1.74	0.88	0.92	1.07	0.85	2.15	1.40	1.53	1.25	0.55	0.49	0.52

Calendar year 1954: Max 1,220 Min 64 Mean 219 Cfsm 0.936 In. 12.69
Water year 1954-55: Max 1,280 Min 49 Mean 230 Cfsm 0.983 In. 13.35

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 20 to Feb. 16.

Grand River at Grand Rapids, Mich.

Location.--Lat 42°57'50", long 85°40'35", in NE¼ sec. 25, T. 7 N., R. 12 W., on right bank 500 ft upstream from bridge on Fulton Street, 1.7 miles upstream from Plaster Creek, and at mile 41.

Drainage area.--4,900 sq mi, approximately.

Records available.--March 1901 to December 1905, January 1906 to August 1918 (gage heights only), October 1930 to September 1955. Gage-height records collected in this vicinity since 1907 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 585.70 ft above mean sea level, datum of 1929 (levels by city of Grand Rapids). March 1901 to December 1905 and January 1906 to August 1918, staff gage at Fulton Street Bridge 500 ft downstream and Oct. 1, 1930, to Oct. 26, 1953, water-stage recorder at sewage pumping station 1 mile downstream at datum 2.99 ft higher.

Average discharge.--25 years (1930-55), 3,394 cfs.

Extremes.--Maximum and minimum discharge for the water years 1901-5 (not previously published except for 1904 maximum), 1955, are contained in the following table:

Water year	Maximum			Minimum		
	Date	Discharge (cfs)	Gage height (feet)	Date	Discharge (cfs)	Gage height (feet)
1901	Mar. 28, 1901	30,000	g13.9	Aug. 11, 18, 1901	e890	-0.75
1902	July 9, 1902	11,200	g7.45	Sept. 3, 15, 1902	e690	-.95
1903	Apr. 18, 1903	20,600	g11.15	July 16, Aug. 19, 21, 22, 1903	e1,100	-.55
1904	Mar. 28, 1904	54,000	g19.5	Aug. 13, 1904	e940	-.70
1905	June 9, 1905	50,200	g18.6	Dec. 5, 1904	e1,040	-.60
1955	Mar. 1, 1955	10,900	10.44	Aug. 6, 1955	692	2.69

e Minimum observed.
g From graph based on gage readings.

1901-5, 1906-18, 1930-55: Maximum discharge, 54,000 cfs Mar. 28, 1904 (gage height, 19.5 ft, site then in use); minimum daily, 381 cfs Aug. 9, 17, 1936.
Maximum discharge since 1901, that of Mar. 28, 1904.

Remarks.--Records good except those for periods of ice effect, which are fair. Moderate diurnal fluctuation at low and medium flow caused by powerplants above station.

Revisions (water years).--WSP 924: 1938(M). WSP 1277: 1904(M). Revised figures of discharge, in cubic feet per second, for the water years 1901-5, 1940, superseding those published in WSP 83, 97, 129, 170 and 894, are given herein. Complete daily tables are given for the water years 1901-4, but only revised discharges are given for 1905, 1940.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1904		1904-Con.		1904-Con.		1904-Con.		1940-Con.	
Oct. 1	2,230	Oct. 25	2,340	Nov. 18	1,590	Dec. 12	1,370	Jan. 17	1,900
2	2,000	26	2,180	19	1,640	13	1,480	18	2,000
3	1,810	27	2,120	20	1,600	14	1,590	19	1,900
4	2,020	28	2,120	21	1,640	15	1,700	20	1,700
5	2,400	29	2,070	22	1,590	16	1,590	21	1,500
6	2,770	30	2,000	23	1,640	17	1,640	22	1,500
7	2,990	31	1,810	24	1,600	18	1,600	23	1,400
8	2,770	Nov. 1	1,960	25	1,590	19	1,640	24	1,400
9	2,800	2	1,860	26	1,590	20	1,590	25	1,400
10	2,770	3	1,910	27	1,500	21	1,640	26	1,400
11	3,200	4	1,810	28	1,420	22	1,590	27	1,400
12	3,200	5	1,810	29	1,540	23	1,700	28	1,400
13	3,310	6	1,700	30	1,540	24	1,810	29	1,400
14	3,200	7	1,640	Dec. 1	1,590	25	1,800	30	1,400
15	3,100	8	1,750	2	1,540	26	1,900	31	1,400
16	2,900	9	1,750	3	1,420	27	1,910	Feb. 1	1,400
17	2,660	10	1,590	4	1,400	28	2,770	2	1,400
18	2,770	11	1,640	5	1,320	29	2,990	3	1,400
19	2,450	12	1,590	6	1,420	30	3,100	4	1,400
20	2,290	13	1,600	7	1,480	31	2,770	5	1,400
21	2,390	14	1,590	8	1,480			6	1,500
22	2,550	15	1,590	9	1,540	1940		7	1,500
23	2,400	16	1,480	10	1,540	Jan. 15	1,700		
24	2,230	17	1,480	11	1,400	16	1,800		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1904	-	3,310	1,810	2,511	0.512	0.59
November	-	1,960	1,420	1,641	.335	.37
December	-	3,100	1,320	1,752	.358	.41
Calendar year 1904	-	53,300	990	4,805	.981	13.34
January 1905	-	-	-	†2,100	.429	.49
February	-	-	-	†2,200	.449	.47
Water year 1904-5	-	49,340	1,320	4,684	.956	12.97
Calendar year 1905	-	49,340	1,753	4,949	1.01	13.71
January 1940	46,140	2,000	1,200	1,488	.304	.35
February	39,850	1,540	1,240	1,374	.280	.30
Water year 1939-40	796,127	11,400	814	2,175	.444	6.04
Calendar year 1940	931,165	11,400	814	2,544	.519	7.07

† Only monthly figures revised; revised daily figures not available.

Grand River at Grand Rapids, Mich.--Continued

Discharge, in cubic feet per second, March to September 1901

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						a1,900	16,600	3,530	2,450	2,070	2,450	2,550
2						a1,900	13,700	3,310	2,230	1,860	2,390	2,340
3						a2,000	11,200	*3,100	*2,180	1,860	2,120	2,070
4						a2,200	9,520	2,880	2,180	1,540	1,860	1,960
5						a2,400	8,180	2,660	2,120	6,980	2,070	1,810
6						a2,700	7,110	2,500	2,070	9,840	1,540	1,640
7						a2,900	6,460	2,340	1,960	10,000	1,750	1,590
8						a2,700	*6,080	2,550	1,810	9,520	1,700	1,420
9						a2,700	5,480	2,770	1,590	8,460	1,640	1,370
10						a2,800	5,120	2,990	1,700	7,240	1,590	1,370
11						a3,200	*4,770	3,200	1,980	5,980	1,040	1,540
12						3,640	4,420	3,530	1,960	4,880	1,590	1,910
13						4,200	*3,970	3,530	2,180	4,080	1,540	2,070
14						5,240	3,860	3,310	2,450	3,420	1,420	1,860
15						*6,200	3,530	3,100	2,880	3,100	1,370	2,020
16						*6,460	3,420	2,770	2,770	2,770	1,260	2,070
17						6,720	3,420	2,550	2,770	2,500	1,200	2,020
18						*7,630	3,640	2,340	2,550	2,450	990	1,910
19						10,200	3,860	2,230	2,450	2,340	1,260	1,750
20						13,500	4,080	2,230	2,340	2,120	1,960	1,700
21						15,100	4,200	2,180	2,180	1,910	1,910	1,640
22						*16,900	4,080	2,230	1,960	2,020	1,700	1,480
23						*19,400	4,200	2,390	1,810	1,910	1,810	1,640
24						20,000	4,660	2,390	1,810	1,860	1,810	1,540
25						22,500	5,000	2,550	1,910	1,910	1,700	1,480
26						25,100	4,880	2,770	1,750	2,180	1,910	1,480
27						28,000	5,000	2,990	1,810	2,450	1,860	*1,480
28						30,000	4,420	2,880	*1,590	2,290	1,860	1,420
29						27,700	4,200	2,770	1,700	2,660	1,810	1,260
30					-------	24,100	3,750	2,660	1,960	2,660	1,810	1,420
31		-- ---			-------	20,000	-------	2,500	-------	2,660	2,020	------
Total						339,990	172,810	85,730	63,080	117,500	52,940	51,810
Mean						10,970	5,760	2,765	2,103	3,790	1,708	1,727
Cfsm						2.24	1.18	0.564	0.429	0.773	0.349	0.352
In.						2.58	1.31	0.65	0.48	0.89	0.40	0.39

Calendar year : Max Min Mean Cfsm In.
Water year ; Max Min Mean Cfsm In.

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for station at Lansing.

Discharge, in cubic feet per second, water year October 1901 to September 1902

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,370	1,860	1,700	2,290	1,750	5,360	6,980	2,990	a2,300	3,200	3,640	840
2	1,420	1,860	1,910	2,230	1,540	5,840	7,500	2,770	2,290	3,750	3,530	1,100
3	1,480	1,750	1,810	2,550	1,860	5,960	*7,760	2,770	2,340	8,460	a3,400	940
4	1,370	1,860	1,750	2,390	1,810	6,080	7,500	2,880	2,450	10,200	3,310	1,100
5	1,260	1,810	1,590	2,290	1,860	5,720	6,980	3,420	2,550	10,900	3,100	1,150
6	1,100	1,810	1,320	2,450	1,910	5,240	6,590	3,860	2,450	a11,000	2,880	1,320
7	1,320	1,750	1,260	2,120	1,910	4,540	6,200	5,600	2,550	10,900	2,770	a1,200
8	*1,260	1,810	1,320	1,960	1,810	4,200	5,840	6,960	a2,600	10,900	2,550	1,100
9	1,260	1,700	1,810	1,960	1,640	3,970	5,360	7,500	2,660	11,200	2,340	1,150
10	1,200	1,590	1,810	2,020	1,910	3,640	5,000	8,040	3,100	10,300	a2,200	1,480
11	1,320	1,750	1,860	2,070	1,810	3,530	4,770	7,760	3,200	8,900	2,180	1,150
12	1,480	1,860	1,910	1,960	1,640	4,540	4,420	7,370	3,100	7,630	2,120	1,320
13	2,020	2,020	2,120	2,180	1,750	8,040	3,970	6,720	2,990	a6,700	2,120	940
14	2,660	1,960	2,880	2,020	1,640	8,900	3,750	6,330	2,990	5,840	1,960	a940
15	3,200	1,960	2,230	2,020	1,640	9,200	3,640	5,840	a3,300	5,240	1,860	940
16	3,860	1,960	2,230	1,910	1,370	9,200	3,200	5,360	3,750	4,770	1,860	890
17	3,640	1,750	3,860	2,020	1,810	8,900	2,990	5,000	3,860	4,310	a1,700	940
18	3,420	1,860	3,970	1,700	1,590	8,180	2,990	a4,900	3,860	4,200	1,640	1,040
19	3,200	1,810	4,080	1,590	1,640	7,900	2,770	4,770	3,640	4,200	1,480	1,150
20	2,880	1,810	4,200	1,810	1,480	6,460	2,550	4,770	3,420	a4,400	1,540	1,150
21	2,770	1,810	3,970	1,540	1,480	6,080	2,500	4,660	3,420	4,770	1,590	a1,150
22	2,500	1,750	4,310	1,480	1,480	5,600	2,450	4,660	a3,200	5,120	1,540	1,150
23	2,450	1,810	4,420	1,910	1,420	5,120	2,340	4,540	2,990	5,480	1,480	1,260
24	2,450	1,750	4,200	1,590	1,700	4,880	2,230	4,540	2,770	5,600	a1,400	1,750
25	2,340	1,910	4,200	1,910	1,480	4,420	2,180	a4,100	2,770	5,240	1,420	2,070
26	2,180	1,910	3,970	1,420	1,750	4,200	2,340	3,860	2,660	5,120	1,480	2,290
27	1,910	1,860	3,100	2,230	2,120	3,860	2,660	3,420	2,550	a4,900	1,260	3,100
28	2,120	1,750	2,880	2,390	3,530	3,860	3,100	3,100	2,390	4,660	1,200	a3,500
29	2,020	1,910	2,500	2,070	-	4,080	3,310	2,770	a2,500	4,420	1,200	3,750
30	1,960	1,860	3,200	1,960	-------	4,770	3,200	2,770	2,770	4,200	1,200	3,860
31	1,960	------	2,340	1,810	-------	5,720	-------	2,290	-------	3,970	a1,000	------
Total	65,380	54,860	84,710	61,850	49,330	177,990	127,070	146,340	87,420	200,480	62,950	45,720
Mean	2,109	1,829	2,733	1,995	1,762	5,742	4,236	4,721	2,914	6,467	2,031	1,524
Cfsm	0.430	0.373	0.558	0.407	0.360	1.17	0.864	0.963	0.595	1.32	0.414	0.311
In.	0.50	0.42	0.64	0.47	0.37	1.35	0.96	1.11	0.66	1.52	0.48	0.35

Calendar year 1901: Max 30,000 Min - Mean - Cfsm - In. -
Water year 1901-2 : Max 11,200 Min 840 Mean 3,189 Cfsm 0.651 In. 8.83

* Discharge measurement made on this day.
a No gage-height record; discharge estimated.

Grand River at Grand Rapids, Mich.--Continued

Discharge, in cubic feet per second, water year October 1902 to September 1903

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,310	2,770	2,880	a5,000	a11,000	a9,000	4,420	4,540	2,660	2,550	1,960	5,480
2	4,310	a2,700	2,860	5,360	11,600	10,300	4,310	4,080	2,500	2,390	a1,800	5,360
3	4,200	2,550	3,310	5,600	11,800	11,200	4,310	a3,800	2,390	2,340	1,540	5,120
4	4,080	2,550	3,860	a5,600	12,800	12,000	4,310	3,640	2,180	a2,400	1,640	4,770
5	a3,800	2,880	4,310	5,600	12,800	12,800	a4,400	3,420	2,020	a2,400	2,020	4,310
6	a3,400	4,080	4,540	5,480	11,600	14,200	4,540	3,310	1,910	2,450	2,180	3,860
7	3,100	4,770	a4,200	5,720	10,500	15,900	5,000	3,200	a1,900	2,290	2,290	3,750
8	3,100	5,480	3,860	5,980	a9,700	a16,500	5,360	2,990	1,910	2,070	2,340	3,530
9	3,200	a5,300	3,420	5,800	9,200	a17,500	5,480	2,880	1,910	2,020	a2,300	3,420
10	3,100	5,120	3,200	5,800	8,320	a18,000	5,360	a2,700	1,960	1,910	2,230	3,640
11	2,990	4,770	3,200	a5,600	7,370	a18,000	5,120	2,660	2,120	1,700	2,070	3,860
12	a3,300	4,540	2,990	5,400	7,110	a17,000	a6,500	2,550	2,020	a1,600	1,910	3,860
13	3,750	4,310	2,990	5,400	6,980	a16,000	8,040	2,450	1,750	1,420	1,810	3,640
14	3,860	4,080	a2,900	5,200	6,980	a15,000	10,500	2,500	a1,800	1,540	1,750	3,420
15	3,970	4,310	2,880	5,000	a7,000	a14,000	13,000	2,340	1,750	1,370	1,590	3,200
16	3,860	a4,300	3,100	4,900	8,040	a13,000	16,100	2,230	1,590	1,100	a1,500	3,100
17	3,530	4,310	3,200	4,800	8,600	a12,000	20,000	a2,200	1,590	1,200	1,370	3,310
18	3,200	4,310	3,310	a4,700	12,400	a11,000	20,600	2,120	1,860	1,700	1,420	3,750
19	a3,100	4,200	3,310	4,600	12,000	a10,000	a19,000	2,120	1,540	a1,900	1,320	3,860
20	2,990	4,080	3,640	4,500	11,200	a9,300	16,600	2,020	1,810	2,070	1,420	3,860
21	2,880	4,080	a4,500	4,400	10,900	a8,700	13,900	2,020	a1,900	2,070	1,260	4,080
22	2,770	3,970	5,720	4,200	a9,500	a8,000	11,600	2,290	2,070	2,180	1,260	4,540
23	2,880	a3,800	6,080	4,100	8,600	7,500	9,680	2,290	2,660	2,230	a1,500	5,720
24	2,770	3,750	5,720	4,000	8,040	6,720	8,040	a2,300	3,100	2,230	1,700	5,840
25	2,770	3,640	a5,500	a4,000	7,110	6,200	8,180	2,390	3,310	2,120	2,070	5,720
26	a2,800	3,310	5,480	3,860	6,460	6,080	a7,000	2,550	3,640	a2,100	2,180	5,480
27	2,880	a3,100	4,880	3,970	6,200	5,960	6,200	3,420	3,420	2,020	2,450	4,770
28	2,880	2,990	a4,600	3,860	7,760	5,720	5,720	3,640	a3,100	1,810	3,860	4,660
29	2,880	2,880	4,420	5,240	-	a5,300	5,240	3,530	2,990	2,020	4,080	4,660
30	2,880	a2,900	4,540	8,600	-------	5,000	4,770	a3,200	2,660	1,860	5,240	5,600
31	2,770	-- ---	4,540	10,000	-------	4,540	-------	a3,000	-------	1,960	5,240	-------
Total	102,310	115,830	123,960	162,250	261,570	342,420	263,280	88,380	68,020	61,020	67,300	130,170
Mean	3,300	3,861	3,999	5,234	9,342	11,050	8,776	2,851	2,267	1,968	2,171	4,339
Cfsm	0.673	0.788	0.816	1.07	1.91	2.26	1.79	0.582	0.463	0.402	0.443	0.886
In.	0.78	0.88	0.94	1.23	1.99	2.60	2.00	0.67	0.52	0.46	0.51	0.99

Calendar year 1902: Max 11,200 Min 840 Mean 3,565 Cfsm 0.728 In. 9.87
Water year 1902-3 : Max 20,600 Min 1,100 Mean 4,895 Cfsm 0.999 In. 13.57

a No gage-height record; discharge estimated.
Note.--Stage-discharge relation affected by ice Jan. 9-24.

Discharge, in cubic feet per second, water year October 1903 to September 1904

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,960	2,500	2,290			3,200	31,900	a5,000	3,530	1,810	1,700	1,150
2	5,720	2,340	2,070			3,500	29,200	4,420	3,420	1,480	1,590	1,590
3	6,330	2,290	2,070			4,000	a27,000	4,200	3,200	a1,900	1,260	1,590
4	6,980	2,290	2,120			4,500	25,800	3,860	3,100	a1,800	1,150	a1,500
5	5,840	2,180	2,070			5,000	23,400	3,750	a3,100	1,640	1,150	a1,400
6	6,460	2,180	a2,100			6,500	20,600	3,530	3,200	1,750	1,370	1,370
7	7,500	2,180	2,180			8,000	18,500	3,420	2,990	1,590	a1,300	1,320
8	6,980	a2,100	2,020			9,500	16,100	a3,300	2,770	1,480	1,260	1,420
9	6,460	2,120	2,020			12,800	15,600	3,200	2,550	1,590	990	1,370
10	6,330	2,120	2,120			15,400	a15,000	3,420	2,390	a1,600	1,100	1,260
11	6,200	2,070	2,120			20,000	13,900	3,200	2,120	1,590	1,150	a1,300
12	5,840	2,180	1,960			23,100	13,700	3,100	a2,100	1,700	990	*1,260
13	5,480	2,180	a2,400			a24,000	13,000	2,990	1,910	2,070	990	1,370
14	5,000	2,290	3,100			24,400	12,000	2,990	2,020	1,960	a1,000	1,150
15	4,770	a2,400	2,770			23,800	11,000	a2,900	1,860	2,020	1,100	1,200
16	4,770	2,550	2,770	2,600	3,300	22,100	10,200	2,770	1,860	1,910	1,150	1,150
17	4,540	2,770	2,880			20,900	a10,000	2,770	1,640	a1,600	1,150	1,200
18	4,080	2,770	2,660			19,400	9,200	2,770	1,540	1,480	1,100	a1,200
19	4,080	2,770	2,880			17,400	9,200	2,990	a1,500	1,480	1,370	1,150
20	3,860	2,660	a2,800			a16,000	9,200	3,420	1,480	1,370	1,480	1,420
21	3,640	2,390	2,770			15,100	8,900	3,860	1,320	1,420	a1,500	1,370
22	3,420	a2,400	2,550			15,400	8,460	a5,500	1,370	1,370	1,480	1,260
23	3,200	2,390	2,500			19,100	7,760	7,500	1,260	1,260	1,420	1,420
24	2,990	2,500	2,550			21,200	a7,300	7,900	1,200	a1,300	1,810	1,540
25	2,770	2,450	a2,800			34,800	6,980	6,980	1,700	1,260	1,750	a2,000
26	2,770	1,810	3,200			47,900	6,720	5,960	a2,100	1,100	1,590	2,390
27	2,770	2,070	a3,400			53,300	6,200	5,480	1,750	1,150	1,540	2,660
28	2,770	1,860	3,640			52,600	5,960	5,000	1,750	1,260	a1,500	2,500
29	2,770	a2,000	3,640		-	47,900	5,600	a4,600	1,700	1,150	1,480	2,770
30	2,550	2,290	3,530		-------	42,100	5,240	a4,300	1,810	1,040	1,200	2,390
31	2,550	-- -	3,420		-------	36,000	-------	*3,970	- -- -	a1,400	1,100	--- -
Total	145,380	69,100	81,400	80,600	95,700	669,100	403,620	129,050	64,240	47,530	40,720	46,670
Mean	4,690	2,303	2,626	2,600	3,300	21,580	13,450	4,163	2,141	1,533	1,314	1,556
Cfsm	0.957	0.470	0.536	0.531	0.673	4.40	2.74	0.850	0.437	0.313	0.268	0.318
In.	1.10	0.52	0.62	0.61	0.73	5.08	3.06	0.98	0.49	0.36	0.31	0.35

Calendar year 1903: Max 20,600 Min 1,100 Mean 4,768 Cfsm 0.973 In. 13.21
Water year 1903-4 : Max 53,300 Min 990 Mean 5,118 Cfsm 1.04 In. 14.21

* Discharge measurement made on this day.
a No gage-height record; discharge estimated.
Note.--Stage-discharge relation affected by ice Jan. 1 to Mar. 8.

Grand River at Grand Rapids, Mich.--Continued

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 22 to Sept. 1)

2.6	740	4.0	3,700
2.7	900	8.0	7,970
3.0	1,590	9.8	10,100
3.5	2,950		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,360	2,700	4,240	5,210	b2,000	10,100	6,290	4,420	3,160	1,480	923	2,190
2	1,310	2,900	4,240	5,010	b2,000	9,530	6,050	4,240	2,780	1,520	946	2,220
3	2,400	2,800	4,150	5,010	b2,000	9,290	5,720	3,880	2,500	1,220	900	2,050
4	6,290	2,750	4,060	5,410	b2,000	9,530	5,410	3,590	2,380	1,310	852	1,610
5	7,730	2,670	3,880	6,410	2,020	9,770	4,910	3,460	2,100	1,480	820	1,610
6	6,890	2,750	3,590	*8,810	2,100	10,100	4,510	2,820	2,050	1,360	884	1,520
7	6,290	2,640	3,160	9,650	2,100	10,000	4,330	2,580	2,220	1,450	1,240	1,340
8	5,210	2,640	2,750	*10,100	2,020	9,410	4,060	2,500	2,610	1,570	1,270	1,200
9	4,420	2,440	*2,800	10,000	1,880	8,330	3,700	2,380	*3,240	1,570	1,060	1,240
10	4,330	2,410	2,670	9,650	1,860	7,610	3,590	2,320	3,460	1,450	1,130	1,660
11	4,510	*2,320	2,560	8,690	1,990	7,490	3,460	*2,260	3,620	1,480	1,020	1,020
12	4,510	2,320	2,500	7,490	2,100	7,730	*3,240	2,160	4,330	1,480	1,060	969
13	*5,310	2,320	2,500	6,650	1,860	7,970	3,160	2,290	4,420	1,340	1,110	1,130
14	5,410	2,160	2,380	5,720	2,190	8,210	3,160	1,910	4,510	*1,220	1,060	992
15	6,650	2,190	2,290	5,210	1,960	7,970	3,060	2,050	4,240	1,290	1,040	*1,080
16	7,250	1,960	2,220	4,610	1,860	7,610	3,060	1,960	3,970	1,240	1,020	1,110
17	7,130	2,070	2,320	4,240	2,100	*7,490	2,900	1,960	3,590	1,430	992	1,060
18	6,770	2,260	2,190	3,700	2,260	7,250	2,900	1,860	3,240	1,540	*1,040	1,150
19	6,170	1,990	2,290	b3,500	2,100	6,650	3,460	1,830	2,920	1,340	969	1,080
20	5,410	2,220	2,100	b3,000	2,070	6,290	4,060	1,860	2,410	1,410	969	1,040
21	5,210	2,750	1,780	b3,000	4,330	5,830	4,610	1,780	2,350	1,290	900	1,130
22	4,420	3,160	1,940	b2,500	6,650	6,290	4,510	1,640	2,130	1,310	884	946
23	4,060	3,320	1,880	2,160	7,730	7,370	4,240	1,910	1,910	1,220	1,060	992
24	3,880	3,460	2,050	2,130	*8,450	8,570	4,610	2,350	1,810	1,180	969	946
25	3,320	3,460	2,190	2,610	8,930	9,170	5,110	3,160	1,570	969	946	900
26	3,320	3,590	2,290	2,470	9,050	9,410	5,940	3,880	1,610	1,060	992	992
27	3,160	3,460	3,060	b2,000	9,050	9,050	6,290	3,790	1,500	1,040	969	1,150
28	3,160	3,700	4,240	b2,000	9,050	8,570	5,940	3,590	1,520	1,080	923	1,200
29	2,950	3,880	5,610	b2,000	-	7,730	5,410	3,880	1,480	1,080	1,020	1,220
30	2,900	4,150	5,940	b2,000	-------	7,010	5,010	3,880	1,430	1,060	2,800	1,200
31	2,800	-------	5,610	b2,000	-------	6,530	-------	3,460	-------	1,060	2,880	-------
Total	144,530	83,440	95,480	152,940	103,710	253,860	132,700	85,650	81,060	40,529	34,648	37,947
Mean	4,662	2,781	3,080	4,934	3,704	8,189	4,423	2,763	2,702	1,307	1,118	1,265
Cfsm	0.951	0.568	0.629	1.01	0.756	1.67	0.903	0.564	0.551	0.267	0.228	0.258
In.	1.10	0.63	0.72	1.16	0.79	1.93	1.01	0.65	0.62	0.31	0.26	0.29

Calendar year 1954: Max 11,400 Min 738 Mean 3,299 Cfsm 0.673 In. 9.15
Water year 1954-55: Max 10,100 Min 820 Mean 3,415 Cfsm 0.697 In. 9.47

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

Muskegon River near Merritt, Mich.

Location.--Lat 44°20'10", long 84°53'30", in NW¼ sec. 2, T. 22 N., R. 5 W., on right bank 35 ft upstream from bridge on State Highway 55, half a mile upstream from West Branch, 2⅔ miles east of Merritt, 5 miles west of Houghton Lake, and at mile 210.8.

Drainage area.--309 sq mi.

Records available.--October 1946 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,117.82 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 13, 1949, wire-weight gage on downstream side of bridge at same datum.

Average discharge.--9 years, 228 cfs.

Extremes.--Maximum discharge during year, 664 cfs Apr. 5 (gage height, 6.98 ft); minimum, 40 cfs Sept. 29.
1946-55: Maximum discharge, 1,050 cfs Mar. 31, 1953 (gage height, 7.77 ft); minimum, 36 cfs Sept. 26, 1949.

Remarks.--Records good except those for periods of ice effect, which are poor. Occasional regulation by operation of gates at Reedsburg Dam.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 4, Dec. 8-12, 16-18, May 3 to June 19, Sept. 9-30)

Oct. 1 to Mar. 31		Apr. 1 to Sept. 30			
4.3	174	2.4	42	6.0	378
6.0	378	3.5	111	6.5	482
6.8	584	5.0	247	6.9	624

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	174	340	354	290	270	230	512	395	277	123	74	62
2	179	354	347	290	*270	220	565	386	259	127	72	59
3	319	347	340	290	250	210	604	386	230	131	*72	56
4	386	*340	326	295	260	225	*624	386	215	127	74	54
5	444	340	300	301	265	225	624	362	215	123	74	54
6	546	340	280	301	270	230	624	333	215	123	77	51
7	*565	333	270	301	260	230	624	326	236	*119	92	50
8	497	320	265	300	250	250	584	326	*271	119	81	*50
9	444	326	265	301	250	*240	546	314	265	119	76	48
10	423	320	271	301	270	220	546	314	247	119	74	49
11	404	307	271	290	270	280	546	*314	242	111	71	50
12	378	307	277	290	250	340	529	301	242	107	68	50
13	347	295	265	*285	260	380	512	271	230	103	67	48
14	354	295	240	280	270	420	512	277	220	100	65	48
15	354	301	250	270	275	500	512	271	210	103	64	50
16	378	289	265	270	275	480	497	277	200	135	62	47
17	413	265	265	270	275	460	497	283	174	151	61	46
18	423	277	271	260	275	450	482	259	156	151	61	44
19	423	289	275	260	275	420	482	242	160	135	58	44
20	423	301	260	250	275	400	482	225	151	119	56	46
21	423	307	*240	230	265	400	512	225	127	111	55	46
22	404	307	220	240	250	450	529	225	127	96	55	45
23	386	307	240	260	250	550	512	220	123	83	53	44
24	386	320	270	265	250	500	512	215	139	83	52	44
25	378	347	280	265	250	500	529	283	151	81	50	44
26	370	340	289	265	240	490	512	301	143	79	52	42
27	370	333	295	250	230	480	482	295	139	81	56	42
28	354	340	301	235	230	450	469	301	135	81	59	44
29	347	354	301	255	-	430	433	301	131	78	58	42
30	354	354	290	270	-------	430	404	314	131	76	64	44
31	347	-- ---	290	270	-------	450	-------	295	-------	75	62	-------
Total	11,993	9,595	8,673	8,500	7,280	11,540	15,798	9,223	5,761	3,369	2,015	1,443
Mean	387	320	280	274	260	372	527	298	192	109	65.0	48.1
Cfsm	1.25	1.04	0.906	0.887	0.841	1.20	1.71	0.964	0.621	0.353	0.210	0.156
In.	1.44	1.16	1.04	1.02	0.88	1.38	1.91	1.11	0.69	0.41	0.24	0.17

Calendar year 1954: Max 750 Min 106 Mean 306 Cfsm 0.990 In. 13.40
Water year 1954-55: Max 624 Min 42 Mean 261 Cfsm 0.845 In. 11.45

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-7, 13-15, 19-25, Dec. 30 to Jan. 3, Jan. 8, Jan. 11 to Mar. 31.

Muskegon River at Evart, Mich.

Location.--Lat 43°54'10", long 85°15'45", in SE¼ sec. 34, T. 18 N., R. 8 W., near center of span on downstream side of bridge on U. S. Highway 10 at Evart, half a mile upstream from Twin Creek and at mile 124.

Drainage area.--1,450 sq mi, approximately.

Records available.--November 1930 to June 1931, January 1934 to September 1955.

Gage.--Wire-weight gage read twice daily. Datum of gage is 977.72 ft above mean sea level, datum of 1929. Prior to May 22, 1935, chain gage on the upstream side of Pere Marquette Railroad bridge 100 ft downstream at same datum.

Average discharge.--21 years (1934-55), 988 cfs.

Extremes.--Maximum discharge during year, 3,200 cfs Mar. 24 (gage height, 10.35 ft); minimum, 305 cfs Aug. 26.
1930-31, 1934-55: Maximum discharge, 7,000 cfs June 3, 4, 1945 (gage height, 13.68 ft, from high-water mark); minimum observed, 164 cfs Dec. 20, 1947.

Remarks.--Records good except those for periods of ice effect, which are poor.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 9-28)

6.7	305
8.0	1,040
10.3	3,100

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	709	1,180	1,340	1,040	1,000	870	2,300	1,720	1,110	607	499	499
2	787	1,180	1,300	1,040	1,000	870	2,400	1,620	1,080	625	444	460
3	1,300	1,140	1,260	1,040	1,000	880	2,400	1,620	1,020	649	*444	422
4	1,980	*1,140	1,180	1,080	970	920	*2,400	1,500	955	613	472	400
5	2,030	1,140	1,140	1,080	920	920	2,450	1,380	895	589	422	395
6	1,900	1,110	1,040	1,080	920	900	2,500	1,300	835	565	416	380
7	*1,720	1,110	1,020	1,040	920	850	2,500	1,220	895	*554	411	370
8	1,580	1,080	985	1,080	880	*805	2,400	1,180	*1,110	565	390	*370
9	1,180	1,040	985	1,080	*870	781	2,300	1,140	1,260	538	406	365
10	1,460	1,040	985	1,020	870	985	2,300	1,110	1,260	510	416	360
11	1,800	1,040	1,040	1,020	870	1,400	2,160	*1,110	1,260	510	395	370
12	1,850	1,020	1,020	*1,020	830	1,800	2,030	1,080	1,420	499	375	355
13	1,800	1,020	955	1,020	830	2,200	1,900	1,040	1,380	472	365	365
14	1,760	985	895	985	830	2,600	1,850	1,020	1,260	466	355	380
15	1,720	985	925	1,020	830	2,900	1,850	1,020	1,110	460	395	406
16	1,760	985	955	985	830	2,800	1,760	985	1,020	510	406	400
17	1,900	1,040	925	955	830	2,700	1,670	955	955	613	422	380
18	1,980	1,040	1,020	895	830	2,600	1,620	955	895	685	422	355
19	1,940	1,040	1,020	895	820	2,500	1,620	955	835	685	336	341
20	1,800	1,110	925	733	780	2,400	1,850	925	787	619	365	341
21	1,670	1,140	835	667	780	2,450	2,160	925	727	560	355	328
22	1,580	1,140	793	715	820	2,700	2,080	895	715	516	350	336
23	1,580	1,110	805	865	850	3,000	1,980	865	679	504	355	341
24	1,500	1,140	985	925	850	3,100	1,940	925	655	477	350	350
25	1,460	1,180	1,020	895	850	3,100	2,300	1,040	655	450	328	341
26	1,420	1,220	1,020	865	800	2,800	2,450	1,110	661	433	310	336
27	1,380	1,180	1,040	835	800	2,700	2,450	1,140	643	411	370	355
28	1,340	1,220	*1,080	925	850	2,500	2,210	1,180	631	422	400	400
29	1,300	1,300	1,080	950	-	2,350	2,030	1,180	613	395	422	385
30	1,220	1,340	1,040	1,000	-------	2,260	1,850	1,220	607	411	532	385
31	1,220	-------	1,040	1,000	-------	2,210	-------	1,180	-------	438	532	-------
Total	48,626	33,395	31,653	29,750	24,230	61,851	63,710	35,495	27,928	16,351	12,460	11,271
Mean	1,569	1,113	1,021	960	865	1,995	2,124	1,145	931	527	402	376
Cfsm	1.08	0.768	0.704	0.662	0.597	1.38	1.46	0.790	0.642	0.363	0.277	0.259
In.	1.24	0.86	0.81	0.76	0.62	1.59	1.63	0.91	0.72	0.42	0.32	0.29

Calendar year 1954 : Max 3,640 Min 416 Mean 1,219 Cfsm 0.841 In. 11.42
Water year 1954-55 : Max 3,100 Min 310 Mean 1,087 Cfsm 0.750 In. 10.17

* Discharge measurement made on this day.
Note.---Stage-discharge relation affected by ice Jan. 29 to Mar. 7, Mar. 11-20.

Muskegon River at Newaygo, Mich.

Location.--Lat 43°25', long 85°48', in sec. 24, T. 12 N., R. 13 W., on left bank in tailrace of powerplant operated by Consumers Power Co. at Newaygo, 600 ft downstream from Penoyer Creek and at mile 39.

Drainage area.--2,350 sq mi, approximately.

Records available.--June 1901 to December 1906 and October 1930 to September 1955 in reports of Geological Survey. July 1908 to December 1919 in House Document 143, 72d Congress, 1st session (published as "at Croton power plant near Newaygo").

Gage.--Water-stage recorder. Datum of gage is 585.83 ft above mean sea level, datum of 1929. June 1901 to December 1906 staff gage half a mile upstream at dam of Newaygo Portland Cement Co. at different datum. October 1930 to January 1939 staff gage at present site and datum.

Average discharge.--25 years (1930-55), 1,835 cfs.

Extremes.--Maximum discharge during year, 5,030 cfs Mar. 26 (gage height, 49.70 ft); minimum, 375 cfs Sept. 28; minimum gage height, 46.05 ft Jan. 14; minimum daily discharge, 622 cfs Sept. 18.
1901-6, 1909-19, 1930-55: Maximum daily discharge observed, 14,950 cfs Mar. 25, 1913 (published in H. Doc. 143, 72d Cong., 1st sess.); minimum, about 150 cfs June 4, 1941, July 7, 1950; minimum daily observed, 330 cfs Feb. 15, 1914 (published in H. Doc. 143, 72nd Cong., 1st sess.).

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by powerplants above station, the largest of which are at Croton Dam, Hardy Dam (since 1931), and Rogers Dam.

Revisions (water years).--WSP 974: 1933, 1935, 1937-38.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 13-15, Feb. 2 to Mar. 11, Mar. 21, July 3 to Sept. 4, Sept. 27-30)

Oct. 1 to Mar. 25				Mar. 26 to Sept. 30			
46.5	620	48.0	2,400	46.5	615	48.0	2,310
47.0	1,100	49.0	3,910	47.0	1,020	49.0	3,910
47.5	1,660	49.5	4,710	47.5	1,570	49.4	4,550

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,580	2,000	2,250	2,180	*1,800	2,250	3,750	2,710	2,310	1,310	1,020	1,120
2	1,620	2,100	2,250	1,770	1,800	2,250	3,590	2,080	2,150	1,120	1,140	784
3	1,730	2,100	2,250	2,320	1,840	2,250	3,590	2,550	1,530	1,070	1,050	792
4	3,380	2,100	2,250	3,150	1,490	2,250	3,350	2,870	1,340	1,060	975	784
5	4,710	1,600	1,820	3,380	1,080	1,920	3,590	2,630	1,340	1,020	975	792
6	4,710	1,700	1,720	3,600	1,080	1,830	3,750	2,000	1,750	1,080	948	808
7	4,710	1,800	1,860	3,600	1,070	1,950	3,750	1,790	2,080	1,090	984	808
8	*3,990	2,000	1,890	3,520	1,390	2,250	3,590	1,790	1,910	1,110	966	800
9	3,380	2,100	*1,690	2,550	1,800	2,250	3,670	1,980	*2,000	1,050	966	840
10	3,450	2,100	1,570	2,320	1,830	2,320	3,350	2,150	3,030	1,060	1,000	824
11	2,700	*1,900	1,670	2,480	1,800	2,480	3,350	2,150	3,270	1,110	1,020	816
12	1,860	1,670	1,840	1,320	1,790	3,220	*3,270	*1,860	2,550	1,160	966	824
13	2,100	1,700	2,100	850	1,650	3,300	2,950	1,680	2,700	1,120	903	894
14	2,320	1,700	2,100	656	1,320	3,450	2,230	1,090	2,800	1,110	966	1,200
15	2,620	1,700	2,100	782	1,770	3,990	1,850	1,080	2,710	* 957	984	*824
16	3,000	1,700	1,630	1,700	1,790	4,710	1,820	1,520	2,390	1,110	993	832
17	3,200	1,700	1,630	2,500	1,790	4,710	1,810	1,790	2,150	1,030	984	678
18	3,300	1,720	1,030	3,000	*1,790	*4,710	2,080	1,820	1,840	1,110	984	622
19	3,300	1,600	1,000	3,300	1,800	4,230	2,150	1,790	1,610	1,160	*885	876
20	3,300	1,100	1,270	3,300	1,650	1,350	2,550	1,790	1,610	1,180	921	1,070
21	3,300	1,030	1,690	3,300	1,820	2,320	3,110	1,130	1,810	1,170	760	1,130
22	3,300	1,630	1,690	3,300	1,820	3,520	3,270	1,150	1,850	1,180	832	1,050
23	3,200	1,720	1,700	3,200	1,820	3,830	3,190	1,400	1,840	1,000	824	1,240
24	2,200	1,880	1,450	3,100	1,820	4,070	3,270	1,960	1,340	1,010	849	657
25	2,700	2,250	1,050	2,900	1,820	4,390	3,510	2,390	1,110	966	760	650
26	3,200	2,250	1,240	2,300	1,820	4,550	4,070	2,310	1,150	1,030	849	816
27	2,800	2,250	2,020	2,100	1,830	4,390	4,230	2,310	1,220	1,020	840	1,010
28	2,300	2,250	2,620	2,100	2,020	4,550	3,830	2,310	1,290	993	784	1,060
29	2,200	2,400	3,380	2,100	-	4,390	3,670	2,310	1,300	984	792	1,010
30	2,100	3,080	3,150	2,000	-------	4,070	3,590	1,840	1,300	984	1,200	1,000
31	1,800	------	2,250	1,800	-------	3,910	--------	2,150	------	984	1,010	-------
Total	90,060	56,830	58,160	76,478	47,100	101,660	95,780	60,380	57,280	33,338	29,130	26,611
Mean	2,905	1,894	1,876	2,467	1,682	3,279	3,193	1,948	1,909	1,075	940	887
Cfsm	1.24	0.806	0.798	1.05	0.716	1.40	1.36	0.829	0.812	0.457	0.400	0.377
In.	1.43	0.90	0.92	1.21	0.75	1.61	1.52	0.96	0.91	0.53	0.46	0.42

Calendar year 1954: Max 5,830 Min 596 Mean 2,167 Cfsm 0.922 In. 12.53
Water year 1954-55: Max 4,710 Min 622 Mean 2,008 Cfsm 0.854 In. 11.62

* Discharge measurement made on this day.
Note.--No gage-height record Oct. 16 to Nov. 11, Nov. 13-16, 19, 20, Jan. 16 to Feb. 1, June 13, 14; discharge estimated on basis of powerplant records.

Pere Marquette River at Scottville, Mich.

Location.--Lat 43°46'40", long 86°16'45", in NW¼ sec. 19, T. 18 N., R. 16 W., on right bank 20 ft upstream from bridge at south edge of Scottville and 5¾ miles downstream from South Branch.

Drainage area.--709 sq mi.

Records available.--August 1939 to September 1955. Published as "at Custer" prior to October 1942.

Gage.--Water-stage recorder. Datum of gage is 606.30 ft above mean sea level, datum of 1929. Prior to June 12, 1943, wire-weight gage at bridge 4¾ miles upstream at different datum.

Average discharge.--16 years, 625 cfs.

Extremes.--Maximum discharge during year, 1,410 cfs Oct. 6 (gage height, 4.60 ft); maximum gage height, 5.04 ft Jan. 26 (ice jam); minimum discharge, 375 cfs Aug. 21, 22. 1939-55: Maximum discharge, 2,400 cfs June 4, 5, 1945 (gage height, 5.84 ft); minimum observed, 310 cfs Aug. 9, 10, 1941 (site and datum then in use).

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

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 25-30)

Oct. 1-6		Oct. 7 to Sept. 30	
2.2	450	1.8	375
3.5	865	3.0	630
4.6	1,410	4.0	1,040
		4.6	1,400

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	462	818	775	690	600	720	990	660	675	500	415	435
2	488	795	775	690	600	705	990	660	630	540	*415	415
3	876	*795	755	690	570	705	990	660	605	540	415	405
4	1,090	775	720	690	540	720	*965	675	580	510	405	405
5	1,300	755	690	690	540	720	940	675	568	480	405	405
6	*1,410	720	660	705	560	720	890	645	568	*475	405	*398
7	1,360	705	640	720	600	720	840	630	*580	485	405	398
8	1,120	690	640	720	*630	*720	795	618	675	518	405	398
9	965	675	630	720	700	675	755	605	720	518	405	398
10	865	660	*630	690	740	738	720	*605	670	518	398	398
11	795	645	630	675	740	940	705	605	640	495	398	398
12	795	630	618	*630	700	1,040	690	605	640	475	398	398
13	818	630	605	618	670	1,100	675	592	640	465	390	398
14	840	630	568	618	700	1,180	720	580	620	455	390	405
15	840	618	592	618	740	1,180	755	568	600	455	390	415
16	915	618	605	600	760	1,150	795	555	600	455	390	415
17	1,120	605	605	592	760	1,120	840	555	580	485	382	405
18	1,240	605	605	580	710	1,070	795	542	550	555	382	390
19	1,240	618	605	550	710	965	755	542	550	530	382	382
20	1,180	660	592	560	760	890	738	542	550	495	382	382
21	1,070	705	580	580	800	818	738	542	580	465	375	382
22	990	738	590	620	860	890	775	530	560	455	382	390
23	915	738	605	620	800	1,040	818	555	540	455	382	382
24	865	720	605	600	770	1,100	775	630	540	445	390	382
25	795	720	605	600	740	1,150	738	795	540	445	390	382
26	755	720	618	570	720	1,120	738	1,180	520	435	390	382
27	738	738	645	560	705	1,080	795	1,150	520	435	405	390
28	720	738	705	520	705	1,000	795	990	520	435	415	390
29	738	755	660	550	-	970	738	865	500	435	425	398
30	775	775	660	570	------	965	705	755	500	425	435	398
31	795	----	670	590	-------	965	--------	720	--------	425	445	---- ----
Total	28,875	20,994	19,883	19,426	19,430	28,876	23,958	20,831	17,561	14,804	12,391	11,919
Mean	931	700	641	627	694	931	799	672	585	478	400	397
Cfsm	1.31	0.987	0.904	0.884	0.979	1.31	1.13	0.948	0.825	0.674	0.564	0.560
In.	1.51	1.10	1.04	1.02	1.02	1.51	1.26	1.09	0.92	0.78	0.65	0.62

Calendar year 1954: Max 1,410 Min 375 Mean 643 Cfsm 0.907 In. 12.31
Water year 1954-55: Max 1,410 Min 375 Mean 655 Cfsm 0.924 In. 12.52

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7-10, 22, 29-31, Jan. 16, Jan. 19 to Feb. 26, Mar. 4-7, 24-29. No gage-height record June 9 to July 6; discharge estimated on basis of weather records, recorded range in stage, and records for stations on nearby streams.

Big Sable River near Free Soil, Mich.

Location.--Lat 44°07'15", long 86°16'50", in NE¼ sec. 24, T. 20 N., R. 17 W., on left bank 30 ft downstream from bridge on U. S. Highway 31, 2¼ miles northwest of Free Soil, and 6 miles upstream from Hamlin Lake.

Drainage area.--127 sq mi.

Records available.--May 1942 to September 1955.

Gage.--Staff gage read once daily. Datum of gage is 615.32 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--13 years, 139 cfs.

Extremes.--Maximum daily discharge during year, 300 cfs Mar. 24; maximum gage height, 3.22 ft Mar. 22 (backwater from ice); minimum discharge, 86 cfs Aug. 18-23.
1942-55: Maximum discharge observed, 487 cfs Apr. 7, 1947 (gage height, 3.16 ft); maximum gage height observed, 3.26 ft Jan. 20, 1943 (ice jam); minimum discharge observed, 81 cfs Aug. 14, 1944.

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

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 26 to Apr. 23, June 6-12)

0.9	84
1.5	144
2.0	212
2.5	304

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	98	144	160	134	120	140	212	152	155	111	99	105
2	99	145	160	140	120	140	220	152	150	120	*97	100
3	158	*145	155	140	120	140	220	152	145	126	97	95
4	199	145	150	140	115	142	*212	156	140	120	95	92
5	188	144	140	140	115	142	209	155	145	114	96	91
6	*180	143	135	145	115	142	202	154	152	*110	95	*90
7	174	142	130	145	120	142	198	151	*160	110	95	90
8	161	141	130	145	*126	*142	194	145	166	114	95	90
9	143	137	130	145	135	144	182	144	167	117	95	90
10	138	135	*131	140	140	152	173	*145	172	118	92	90
11	134	133	125	140	140	193	167	144	181	115	92	90
12	134	133	125	*138	140	b210	164	143	184	110	90	90
13	135	134	125	130	130	b220	163	142	177	109	90	90
14	144	130	120	125	135	229	180	141	172	110	90	93
15	156	125	120	125	145	220	229	140	164	109	89	97
16	169	125	120	120	145	212	229	138	156	109	88	98
17	198	120	120	120	145	190	220	134	152	115	88	95
18	196	120	120	120	140	178	199	130	150	120	86	93
19	184	120	120	115	140	173	202	126	144	115	86	90
20	176	130	120	115	150	173	193	125	140	115	86	90
21	167	135	115	115	160	220	193	125	133	104	86	90
22	156	145	115	125	160	b250	192	128	128	104	86	90
23	142	145	115	125	160	b280	186	132	123	107	86	90
24	140	145	115	125	155	b300	188	149	118	109	88	90
25	140	145	120	120	150	b290	190	188	115	109	90	90
26	138	145	120	115	145	276	182	200	113	106	90	91
27	138	145	125	115	140	247	176	195	111	104	95	96
28	140	145	125	115	140	247	166	190	110	104	100	97
29	142	150	131	115	-	229	158	180	110	104	100	105
30	142	155	131	115	-------	199	152	170	110	100	105	100
31	142	---	133	120	-------	206	-------	165	-------	100	110	---
Total	4,751	4,146	3,981	3,967	3,846	6,168	5,751	4,691	4,343	3,438	2,877	2,798
Mean	153	138	128	128	137	199	192	151	145	111	92.8	93.3
Cfsm	1.20	1.09	1.01	1.01	1.08	1.57	1.51	1.19	1.14	0.874	0.731	0.735
In.	1.38	1.22	1.16	1.16	1.12	1.81	1.68	1.37	1.27	1.01	0.84	0.82

Calendar year 1954: Max 276 Min 87 Mean 131 Cfsm 1.03 In. 13.96
Water year 1954-55: Max 300 Min 86 Mean 139 Cfsm 1.09 In. 14.84

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Nov. 14 to Dec. 9, Dec. 11-28, Jan. 3-11, Jan. 13 to Feb. 7, Feb. 9 to Mar. 3, May 21, May 26 to June 5, July 17-20, Aug. 6-27, Aug. 30 to Sept. 4, Sept. 8-26, 28-30; discharge estimated on basis of weather records, engineers' notes, and records for Pere Marquette River at Scottville.

Manistee River near Grayling, Mich.

Location.--Lat 44°41'35", long 84°50'50", in NW¼ sec. 31, T. 27 N., R. 4 W., on right bank 25 ft upstream from bridge on State Highway 72, 2½ miles downstream from Goose Creek, and 6½ miles northwest of Grayling.

Drainage area.--159 sq mi.

Records available.--November 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,120.64 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--13 years, 185 cfs.

Extremes.--Maximum discharge during year, 284 cfs Apr. 16 (gage height, 1.29 ft); minimum daily, 150 cfs Jan. 20, 30.
1942-55: Maximum discharge, 354 cfs Apr. 12, 1947 (gage height, 1.73 ft); maximum gage height, 2.00 ft Feb. 9, 1951 (ice jam); minimum discharge, 122 cfs Feb. 14, 1943.

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

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 4-21, Mar. 25 to June 23)

0.5	149
1.0	202
1.4	272

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	198	188	180	172	a170	171	215	201	186	167	161	171
2	192	186	178	172	a170	172	232	202	184	170	160	*164
3	226	*184	177	172	a155	171	240	204	*183	167	*161	162
4	*240	183	177	172	a155	173	246	201	186	166	162	161
5	215	182	175	172	175	173	248	198	188	*164	161	159
6	198	182	176	172	175	173	253	*196	192	163	162	156
7	191	181	b175	171	175	173	251	201	199	162	168	156
8	188	180	b170	171	*176	183	242	198	202	162	165	155
9	188	180	b170	172	173	*183	242	195	192	163	162	157
10	188	181	b170	171	170	182	246	195	188	162	161	157
11	192	181	b170	*167	167	194	242	195	187	162	159	157
12	192	177	176	173	165	194	233	194	188	162	158	156
13	192	177	174	170	b160	189	232	191	187	162	157	155
14	195	180	b165	168	b160	187	233	189	186	162	157	156
15	223	177	b170	169	170	191	262	188	183	163	158	155
16	249	177	b170	169	168	195	268	188	181	167	157	155
17	249	176	176	168	166	191	239	187	180	172	155	155
18	235	177	177	168	168	191	221	187	178	173	155	154
19	215	186	174	166	169	188	223	188	177	168	155	154
20	*205	189	b170	b150	171	188	244	186	178	165	156	154
21	202	184	b160	b155	178	188	*240	184	176	163	158	154
22	198	181	b170	b160	175	b190	226	186	176	164	156	155
23	196	180	180	b160	172	b195	218	187	177	175	156	154
24	194	181	176	b160	171	b205	215	192	177	168	155	154
25	a190	182	173	168	172	198	215	199	175	165	155	153
26	a190	180	175	168	172	195	215	194	174	164	154	153
27	194	180	*175	164	171	192	210	189	172	163	155	155
28	188	181	175	a160	171	192	208	189	171	163	159	156
29	191	181	173	a160	-	192	205	194	168	162	162	155
30	191	181	174	a150	-------	194	202	195	166	161	169	155
31	191	-------	173	a160	-------	199	-------	189	-------	161	178	-------
Total	6,296	5,435	5,374	5,150	4,740	5,802	6,966	5,982	5,457	5,111	4,947	4,693
Mean	203	181	173	166	169	187	232	193	182	165	160	156
Cfsm	1.28	1.14	1.09	1.04	1.06	1.18	1.46	1.21	1.14	1.04	1.01	0.981
In.	1.48	1.27	1.26	1.20	1.10	1.36	1.63	1.40	1.27	1.20	1.16	1.09

Calendar year 1954: Max 327 Min 154 Mean 190 Cfsm 1.19 In. 16.20
Water year 1954-55: Max 268 Min 150 Mean 181 Cfsm 1.14 In. 15.42

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for station near Sherman.
b Stage-discharge relation affected by ice.

Manistee River near Sherman, Mich.

Location.--Lat 44°26'30", long 85°41'45", on line between sec. 36, T. 24 N., R. 12 W., and sec. 31, T. 24 N., R. 11 W., near center of span on downstream side of bridge on State Highway 37, 150 ft upstream from Wheeler Creek, three-quarters of a mile north of Sherman, and at mile 60.8.

Drainage area.--900 sq mi.

Records available.--July 1903 to May 1916, November 1930 to June 1931, January 1934 to September 1955.

Gage.--Wire-weight gage read twice daily. Altitude of gage is 804 ft (from river-profile map). Prior to Apr. 13, 1934, chain gages at various datums. Apr. 13, 1934, to May 22, 1935, staff gage at same datum.

Average discharge.--38 years (1903-15, 1934-55), 1,083 cfs.

Extremes.--Maximum discharge during year, 2,870 cfs Oct. 4 (gage height, 14.33 ft); minimum daily, 720 cfs Jan. 29, 30.
1903-16, 1930-31, 1934-55: Maximum discharge observed, 3,500 cfs Mar. 25, 1913 (gage height, 7.0 ft, datum then in use); minimum observed, 540 cfs Feb. 21-23, 1936 (backwater from ice).

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

9.8	710
13.0	1,950
14.2	2,770

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,010	1,150	1,120	1,040	800	1,010	1,510	1,120	1,040	852	785	870
2	1,040	1,140	1,120	1,010	800	1,010	1,630	1,120	1,010	888	785	835
3	1,800	1,130	1,120	1,010	750	1,010	1,720	1,150	975	888	785	818
4	*2,770	1,120	1,040	1,010	750	1,010	1,760	1,150	975	870	785	800
5	1,990	1,110	1,040	1,010	750	1,010	1,800	1,120	940	870	785	785
6	1,590	1,110	1,010	1,040	800	975	1,760	1,080	940	852	800	770
7	1,430	1,090	1,000	1,010	800	975	1,800	1,080	1,040	835	852	755
8	*1,270	1,090	1,000	1,010	900	905	1,670	1,080	1,190	852	835	755
9	1,190	1,080	1,000	1,010	1,000	975	1,590	1,040	1,150	852	818	770
10	1,150	1,060	1,000	1,010	1,120	1,040	1,550	1,040	1,080	835	785	770
11	1,120	1,060	1,000	975	1,040	1,350	1,510	1,040	1,040	818	770	785
12	1,120	1,050	1,040	975	975	1,430	1,510	1,040	1,040	800	770	770
13	1,120	1,040	1,010	940	905	1,350	1,470	1,010	1,040	800	755	770
14	1,120	1,060	940	975	940	1,310	1,550	1,010	1,010	800	755	770
15	1,510	1,040	975	975	1,010	1,390	1,630	1,010	975	800	755	770
16	1,670	1,030	1,010	975	1,040	1,390	1,630	975	975	888	755	770
17	1,800	1,030	1,040	975	1,040	1,310	1,590	975	940	852	755	770
18	1,850	1,030	1,010	975	1,010	1,270	1,510	975	905	888	755	770
19	1,760	1,080	1,010	940	1,040	1,230	1,470	975	905	870	740	770
20	1,630	1,130	975	850	1,040	1,190	1,430	940	905	835	740	770
21	1,430	1,160	870	920	1,040	1,230	1,430	940	940	818	740	755
22	1,350	1,150	980	950	1,120	1,300	1,390	940	905	835	740	755
23	1,270	1,130	1,150	950	1,080	1,450	1,350	975	*905	835	740	755
24	1,230	1,120	1,080	900	1,040	1,400	1,350	1,010	905	852	740	755
25	1,190	1,120	1,040	850	*1,010	1,380	1,350	1,120	888	852	740	755
26	1,150	1,120	1,010	850	1,010	1,370	1,350	*1,120	870	818	740	755
27	1,150	1,100	1,040	800	1,010	1,350	1,270	1,120	870	800	785	770
28	1,150	1,120	1,040	*750	1,010	1,270	*1,230	1,080	870	*800	800	770
29	*1,150	*1,120	1,040	720	-	1,230	1,190	1,120	852	785	*800	*785
30	1,150	1,150	*1,040	720	-------	1,270	1,150	1,080	852	785	905	785
31	1,150	-------	1,040	730	-------	*1,350	-------	1,040	-------	785	905	-------
Total	43,310	32,920	31,790	28,855	26,830	37,740	45,150	32,475	28,932	25,910	24,200	23,283
Mean	1,397	1,097	1,025	931	959	1,217	1,506	1,048	964	836	781	776
Cfsm	1.55	1.22	1.14	1.03	1.07	1.35	1.67	1.16	1.07	0.929	0.868	0.862
In.	1.79	1.36	1.31	1.19	1.11	1.56	1.86	1.34	1.19	1.07	1.00	0.96

Calendar year 1954: Max 3,270 Min 818 Mean 1,160 Cfsm 1.29 In. 17.50
Water year 1954-55: Max 2,770 Min 720 Mean 1,045 Cfsm 1.16 In. 15.74

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 7-11, 22, 23, Jan. 20 to Feb. 9, Mar. 22-26.

East Branch Pine River near Tustin, Mich.

Location.--Lat 44°06'15", long 85°31'30", in NW¼ sec. 28, T. 20 N., R. 10 W., on left bank 75 ft downstream from highway bridge, half a mile upstream from North Branch, 2¾ miles west of Tustin, and 5½ miles northwest of Le Roy.

Drainage area.--63 sq mi, approximately.

Records available.--July 1952 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,140 ft (by barometer).

Extremes.--Maximum discharge during year, 180 cfs Mar. 15 (gage height, 3.67 ft); minimum, 5.4 cfs Aug. 23.
1952-55: Maximum discharge, 251 cfs Mar. 23, 1953 (gage height, 4.16 ft); minimum, that of Aug. 23, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 1-30)

Oct. 1-4		Oct. 5 to Sept. 30			
1.9	16	1.5	5.0	2.5	51
2.3	34	1.6	7.0	3.0	93
2.8	72	1.8	13	3.7	184
3.2	116	2.0	21		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	26	38	b23	16	25	92	30	17	9.2	*7.0	7.0
2	15	*26	34	24	16	24	100	35	14	26	7.0	6.6
3	75	26	28	24	15	24	90	38	13	29	7.3	6.4
4	105	25	b25	25	15	26	78	30	13	16	7.3	6.4
5	*65	24	b21	26	15	24	*70	26	12	*12	7.0	6.4
6	45	23	19	27	15	b23	68	22	*12	9.7	7.0	6.4
7	30	22	16	b24	*15	*b21	60	22	17	9.2	7.8	*6.2
8	24	21	15	b23	16	b21	53	21	24	9.4	7.0	6.4
9	21	20	*16	24	16	23	50	*19	18	9.4	6.8	6.4
10	21	20	17	22	16	35	47	26	15	8.9	6.6	6.6
11	31	20	18	*21	17	b60	44	26	17	8.1	6.6	6.6
12	38	19	18	21	17	b80	43	22	32	8.1	6.6	6.4
13	36	19	17	20	16	b100	43	18	26	7.8	6.6	6.4
14	81	20	16	19	16	148	61	16	19	7.8	6.6	7.3
15	134	19	17	19	16	174	82	15	15	7.8	6.8	7.3
16	117	19	17	19	16	126	67	14	13	9.7	6.6	6.8
17	122	18	18	18	16	91	53	15	11	26	6.6	6.6
18	88	20	19	18	16	69	45	13	11	25	6.6	6.4
19	65	38	18	17	16	52	45	13	9.7	14	6.2	6.4
20	51	50	b17	16	22	62	88	12	9.4	11	6.4	6.8
21	43	42	17	16	29	72	96	11	9.2	9.2	6.4	6.8
22	37	33	17	16	b29	130	72	12	9.2	8.4	6.2	6.8
23	32	30	17	16	b28	112	56	28	9.4	9.2	6.0	6.8
24	29	30	18	17	b27	117	50	46	9.2	8.4	6.0	6.8
25	28	38	18	17	b26	90	60	79	9.2	7.8	6.0	6.8
26	26	37	20	17	26	70	59	48	8.6	7.5	6.2	7.0
27	31	35	24	17	25	57	50	32	8.6	7.3	7.3	7.8
28	31	44	25	17	25	51	43	24	8.4	7.8	7.3	8.4
29	31	48	b22	17	-	49	38	26	8.4	7.5	7.0	7.8
30	31	44	b23	16	------	55	31	26	8.1	7.0	9.2	7.8
31	29	---	b23	16	-------	72	-------	19	-------	6.8	8.4	---
Total	1,529	856	628	612	538	• 2,083	1,834	784	406.4	351.0	212.4	204.6
Mean	49.3	28.5	20.3	19.7	19.2	67.2	61.1	25.3	13.5	11.3	6.85	6.82
Cfsm	0.783	0.452	0.322	0.313	0.305	1.07	0.970	0.402	0.214	0.179	0.109	0.108
In.	0.90	0.50	0.37	0.36	0.32	1.23	1.08	0.46	0.24	0.21	0.13	0.12

Calendar year 1954: Max 210 Min 6.2 Mean 30.0 Cfsm 0.476 In. 6.47
Water year 1954-55: Max 174 Min 6.0 Mean 27.5 Cfsm 0.437 In. 5.92

Peak discharge (base, 130 cfs).--Oct. 3 (11:30 p.m.) 137 cfs (3.37 ft); Oct. 15 (1 to 2 a.m.) 166 cfs (3.58 ft); Mar. 15 (10 a.m. to 2 p.m.) 180 cfs (3.67 ft); Mar. 22 (1:30 p.m.) 176 cfs (3.65 ft).

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

Pine River near Le Roy, Mich.

Location.--Lat 44°03'50", long 85°33'50", in SE¼ sec. 6, T. 19 N., R. 10 W., on right bank 15 ft downstream from highway bridge, 3½ miles downstream from East Branch, 5 miles northwest of Le Roy, and 5½ miles southwest of Tustin.

Drainage area.--118 sq mi.

Records available.--July 1952 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 1,040 ft (by barometer).

Extremes.--Maximum discharge during year, 398 cfs Mar. 22 (gage height, 5.08 ft); minimum, 44 cfs Aug. 22, 23.
1952-55: Maximum discharge, 630 cfs July 23, 1952 (gage height, 6.06 ft); minimum, 42 cfs Jan. 4, 1954, result of freezeup.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-13)

Oct. 1-15		Oct. 16 to Sept. 30	
2.1	59	1.8	43
2.7	109	2.4	73
4.7	358	4.7	334

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	99	122	78	62	92	214	93	82	52	*50	52
2	56	*98	114	78	66	90	232	102	74	98	49	48
3	200	96	100	78	74	90	226	118	70	135	49	48
4	342	94	102	78	74	93	196	101	69	84	50	48
5	*218	93	87	78	67	89	*178	93	65	*64	48	47
6	126	92	80	82	66	87	178	86	*64	56	48	47
7	86	91	70	77	*66	*79	162	86	86	53	55	*47
8	71	90	65	75	66	82	140	83	105	56	50	47
9	66	92	*70	71	67	86	140	*79	94	56	48	48
10	64	90	75	70	70	100	135	94	80	52	48	48
11	93	90	75	*70	66	130	130	100	77	50	48	48
12	111	90	75	70	72	180	125	88	123	49	47	48
13	117	89	73	70	70	230	125	82	103	48	47	48
14	212	90	70	67	66	284	153	75	88	48	47	52
15	330	90	72	67	66	334	208	71	74	48	48	52
16	297	89	72	67	66	264	167	67	66	57	47	49
17	312	89	77	64	66	202	140	67	61	108	46	48
18	*238	92	80	64	66	184	125	64	58	123	46	48
19	178	130	76	60	68	145	130	64	56	77	45	48
20	145	156	70	68	85	156	190	61	55	62	46	48
21	125	130	72	64	117	167	214	59	53	56	46	48
22	117	116	72	64	111	289	162	63	55	53	45	49
23	108	109	72	64	102	258	135	145	56	64	45	49
24	102	111	76	66	99	270	125	167	56	58	45	50
25	100	125	76	70	111	196	150	290	53	54	46	49
26	98	121	76	70	97	167	145	190	51	52	47	49
27	111	116	80	70	93	150	125	125	50	52	54	52
28	112	135	85	68	92	140	114	103	50	55	52	57
29	110	140	80	68	-	140	107	108	49	53	50	54
30	112	130	78	71	------	140	97	112	49	52	61	54
31	105	--------	78	67	------	178	------	91	-------	51	59	-
Total	4,523	3,173	2,470	2,174	2,191	5,092	4,668	3,127	2,072	1,976	1,512	1,480
Mean	146	106	79.7	70.1	78.2	164	156	101	69.1	63.7	48.8	49.3
Cfsm	1.24	0.898	0.675	0.594	0.663	1.39	1.32	0.856	0.586	0.540	0.414	0.418
In.	1.43	1.00	0.78	0.68	0.69	1.60	1.47	0.99	0.65	0.62	0.48	0.47

Calendar year 1954: Max 483 Min 46 Mean 101 Cfsm 0.856 In. 11.60
Water year 1954-55: Max 342 Min 45 Mean 94.4 Cfsm 0.800 In. 10.86

Peak discharge (base, 300 cfs).--Oct. 4 (5 a.m.) 386 cfs (5.13 ft); Oct. 17 (1 a.m.) 394 cfs (4.81 ft); Mar. 15 (1 to 4 p.m.) 349 cfs (4.78 ft); Mar. 22 (6 to 8 p.m.) 398 cfs (5.08 ft); May 25 (10 a.m.) 334 cfs (4.70 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 6 to Feb. 20, Mar. 8-13.

Pine River near Hoxeyville, Mich.

Location.--Lat 44°12'10", long 85°47'50", in NW¼ sec. 20, T. 21 N., R. 12 W., on right bank 500 ft upstream from bridge on State Highway 37, 4½ miles northwest of Hoxeyville, 7 miles east of Wellston, and 9 miles upstream from mouth.

Drainage area.--251 sq mi.

Records available.--July 1952 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 775 ft (by barometer).

Extremes.--Maximum discharge during year, 760 cfs Mar. 12, 23 (gage height, 4.20 ft); minimum, 184 cfs Jan. 20, result of freezeup.
1952-55: Maximum discharge, 1,600 cfs July 23, 1952 (gage height, 5.59 ft); minimum, 184 cfs Jan. 7, 1953, Jan. 20, 1955, result of freezeup.

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

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 14, July 3 to Sept. 30)

2.5	182
3.0	294
3.5	450
4.2	760

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	258	294	323	273	258	268	429	278	276	227	*208	210
2	263	*289	310	271	249	268	474	286	268	271	206	206
3	412	284	297	271	237	266	474	312	261	323	208	204
4	615	284	289	273	232	271	436	299	256	299	206	202
5	*550	281	281	278	b235	268	*408	281	251	*249	206	200
6	408	278	b245	281	b240	263	398	273	261	234	208	200
7	329	273	b230	278	*246	*256	380	271	*297	230	a205	*198
8	297	273	273	268	246	237	359	268	312	227	a205	200
9	284	273	*263	268	249	266	341	*266	312	227	a205	200
10	278	268	263	263	251	289	332	276	278	222	a200	200
11	291	268	263	*251	249	550	326	294	273	218	a200	202
12	332	266	266	249	b230	735	320	281	312	214	a200	200
13	323	266	b250	254	b235	638	317	271	341	214	a195	200
14	329	266	b240	249	249	570	371	263	294	212	a195	206
15	615	268	b250	251	244	615	440	256	271	214	a195	208
16	592	268	263	249	249	615	422	251	258	218	a195	204
17	660	266	266	b240	b240	454	359	249	251	242	a190	200
18	550	271	268	b235	b230	412	329	249	246	317	a190	200
19	446	291	266	b230	b240	356	320	249	242	297	a190	200
20	377	362	258	220	263	359	353	246	239	234	a190	200
21	341	350	b240	251	299	374	510	242	234	225	a190	200
22	320	320	b245	256	307	542	422	246	234	227	196	200
23	307	304	b250	249	294	660	359	291	234	225	195	202
24	299	302	263	251	284	570	335	401	234	222	196	202
25	291	307	263	b240	268	490	356	550	232	214	198	202
26	286	317	266	b240	b260	412	371	510	230	210	202	204
27	297	315	281	b230	b250	368	341	365	225	218	214	208
28	307	326	289	b225	268	338	315	312	222	218	214	210
29	304	350	281	b230	-	341	299	304	222	214	212	210
30	307	344	278	242	-----	350	289	310	220	220	218	208
31	304	--	273	254	------	380	------	291	- -- -	216	220	-
Total	11,572	8,824	8,293	7,820	7,102	12,781	11,185	9,241	7,786	7,298	6,252	6,086
Mean	373	294	268	252	254	412	373	298	260	235	202	203
Cfsm	1.49	1.17	1.07	1.00	1.01	1.64	1.49	1.19	1.04	0.936	0.805	0.809
In.	1.72	1.30	1.23	1.15	1.05	1.89	1.66	1.37	1.16	1.08	0.93	0.90

Calendar year 1954: Max 785 Min 195 Mean 289 Cfsm 1.15 In. 15.64
Water year 1954-55: Max 735 Min 190 Mean 286 Cfsm 1.14 In. 15.44

Peak discharge (base, 650 cfs).--Oct. 4 (10 p.m.) 710 cfs (4.12 ft); Oct. 17 (1 to 3 p.m.) 735 cfs (4.14 ft); Mar. 12 (2 to 4 p.m.) 760 cfs (4.20 ft); Mar. 23 (9 to 11 a.m.) 760 cfs (4.20 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
b Stage-discharge relation affected by ice.

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Manistee River near Manistee, Mich.

Location.--Lat 44°16'30", long 86°11'55", in NW¼ sec. 36, T. 22 N., R. 16 W., on right bank 6 miles northeast of Manistee, 6½ miles south of Onekama, 9 miles upstream from Manistee Lake, and at mile 10.8.

Drainage area.--1,780 sq mi, approximately.

Records available.--November 1951 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 585 ft (from river-profile map).

Extremes.--Maximum discharge during year, 5,000 cfs Oct. 5 (gage height, 7.82 ft); maximum gage height, 9.15 ft Feb. 12 (ice jam); minimum daily discharge, 1,100 cfs Jan. 30. 1951-55: Maximum discharge, 6,800 cfs Apr. 9, 1954 (gage height, 8.16 ft); maximum gage height, that of Feb. 12, 1955 (ice jam); minimum daily discharge, that of Jan. 30, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 26		Mar. 27 to Sept. 30	
3.8	1,080	4.0	1,220
5.5	1,860	6.0	2,240
7.0	2,950	7.0	3,040
7.7	4,570	7.5	3,850

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,480	1,910	2,190	1,930	1,900	2,120	2,940	1,940	2,070	1,670	1,410	1,650
2	2,130	2,250	2,210	1,930	1,700	2,030	3,140	1,730	2,010	1,970	*1,560	1,600
3	2,750	*2,100	2,230	1,670	1,800	1,880	2,780	2,000	1,990	1,670	1,750	1,440
4	3,380	2,260	2,180	1,980	1,500	1,910	2,510	2,300	1,790	1,480	1,540	1,340
5	3,210	2,060	1,810	2,010	1,500	1,780	*2,940	2,190	1,810	1,630	1,500	1,220
6	*4,570	2,130	1,750	2,190	1,300	1,600	3,410	2,130	1,990	*1,790	1,290	*1,500
7	4,180	1,900	1,880	2,170	1,900	1,500	3,850	2,230	*2,200	1,790	1,350	1,560
8	3,380	1,830	1,660	1,980	*2,200	*1,600	3,600	1,600	1,910	1,790	1,600	1,650
9	2,550	2,100	1,700	1,810	2,400	1,500	3,410	1,650	2,250	1,760	1,500	1,760
10	2,040	2,110	2,100	1,700	2,000	1,800	2,940	*2,000	2,200	1,620	1,560	1,430
11	1,750	1,880	2,130	1,870	1,900	2,200	2,070	2,050	2,390	1,410	1,630	1,220
12	2,190	2,170	1,740	*1,950	1,500	2,400	2,000	2,220	2,020	1,480	1,570	1,260
13	2,130	1,960	1,780	1,950	1,350	2,900	2,660	2,170	1,910	1,500	1,420	1,410
14	2,410	1,750	1,970	2,070	1,900	2,600	3,040	1,830	2,070	1,560	1,260	1,590
15	2,560	1,710	1,880	1,790	1,800	2,900	3,040	1,620	1,950	1,620	1,280	1,560
16	2,650	1,970	*1,790	1,600	1,900	2,700	3,410	1,740	2,010	1,480	1,580	1,570
17	3,070	1,970	2,010	1,660	1,900	3,200	3,040	1,930	1,880	1,890	1,700	1,490
18	3,580	2,080	1,920	1,900	1,800	2,800	2,270	1,910	1,880	1,460	1,650	1,260
19	3,580	2,270	1,720	1,860	1,850	2,300	2,660	2,030	1,660	1,570	1,400	1,260
20	3,580	2,230	1,700	1,810	1,550	1,740	2,940	1,950	1,510	1,770	1,300	1,740
21	3,580	2,010	1,960	1,740	1,800	1,750	3,140	1,830	1,730	1,580	1,260	1,390
22	3,070	1,820	1,710	1,460	1,900	2,740	3,040	1,900	1,770	1,690	1,320	1,550
23	2,150	2,260	1,650	1,640	2,000	3,000	2,940	1,670	1,740	1,600	1,570	1,550
24	1,400	2,340	1,990	1,780	2,160	3,500	2,250	2,010	1,730	1,360	1,300	1,290
25	1,530	2,300	2,080	1,900	2,040	3,700	1,980	2,440	1,670	1,340	1,350	1,320
26	2,050	2,090	1,840	1,910	1,900	3,000	2,790	2,160	1,430	1,650	1,430	1,250
27	2,300	2,280	1,890	1,700	1,620	2,450	2,910	2,290	1,520	1,750	1,470	1,520
28	2,340	2,110	1,960	1,500	1,750	1,930	2,660	2,210	1,700	1,720	1,510	1,670
29	2,260	1,950	2,060	1,250	-	2,750	2,390	2,020	1,650	1,370	1,260	1,640
30	2,380	2,350	2,110	1,100	------	2,840	2,370	1,930	1,740	1,360	1,940	1,590
31	2,040	------	2,060	1,700	------	2,940	------	2,040	------	1,210	1,580	------
Total	83,270	62,150	59,660	55,410	50,620	74,060	85,120	61,720	56,180	49,540	45,840	44,280
Mean	2,686	2,072	1,925	1,787	1,808	2,389	2,837	1,991	1,873	1,598	1,479	1,476
Cfsm	1.51	1.16	1.08	1.00	1.02	1.34	1.59	1.12	1.05	0.898	0.831	0.829
In.	1.74	1.29	1.24	1.15	1.06	1.54	1.77	1.29	1.17	1.04	0.96	0.92

Calendar year 1954: Max 5,900 Min 1,190 Mean 2,153 Cfsm 1.21 In. 16.39
Water year 1954-55: Max 4,570 Min 1,100 Mean 1,994 Cfsm 1.12 In. 15.17

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 27 to Feb. 23, Mar. 6-19, 23-26.

Boardman River near Mayfield, Mich.

Location.--Lat 44°38'35", long 85°31'00", in NE¼ sec. 21, T. 26 N., R. 10 W., on right bank 25 ft downstream from Brown's Bridge, 300 ft downstream from Parker Creek, three-quarters of a mile downstream from Brown's Bridge dam, 1 mile northeast of Mayfield, 10 miles southeast of Traverse City, and 16 miles upstream from Boardman Lake.

Drainage area.--223 sq mi.

Records available.--June 1952 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 760 ft (by barometer).

Extremes.--Maximum discharge during year, 525 cfs Apr. 14 (gage height, 4.96 ft); minimum daily, 126 cfs Dec. 5, Sept. 25.
1952-55: Maximum discharge, 915 cfs Apr. 8, 1954 (gage height, 5.93 ft); minimum daily, 122 cfs Dec. 13, 1953.

Remarks.--Records good. Diurnal fluctuation caused by powerplant three-quarters of a mile upstream.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-3		Oct. 4 to Sept. 30	
3.4	159	3.1	122
4.4	380	4.0	296
		4.5	407

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	166	240	219	210	185	199	308	211	214	164	*160	157
2	183	*202	222	166	159	194	326	234	197	205	151	159
3	364	228	221	213	195	194	326	235	191	202	156	159
4	302	233	217	218	185	159	363	223	187	131	156	148
5	*241	226	126	199	172	173	373	205	145	*147	158	133
6	233	230	216	184	159	179	*367	206	*181	143	167	*149
7	237	228	181	193	*187	187	318	211	244	151	284	143
8	232	237	197	202	178	161	305	199	246	156	170	146
9	219	220	234	183	186	*193	307	238	202	178	154	144
10	177	191	219	175	189	192	300	212	204	158	155	137
11	196	230	182	176	192	232	292	*215	223	154	155	147
12	223	211	184	220	187	228	254	188	238	151	163	152
13	203	221	215	183	159	233	316	196	229	153	154	142
14	231	186	194	202	180	224	350	199	195	156	147	145
15	266	206	197	203	189	246	344	161	200	253	165	140
16	361	212	*216	127	189	238	361	191	155	217	161	146
17	406	206	220	210	174	216	291	180	168	166	151	130
18	366	239	202	184	176	224	332	185	179	160	145	130
19	314	247	133	183	183	221	296	195	185	165	157	153
20	272	227	222	*197	187	217	281	182	167	181	154	147
21	292	229	189	177	209	225	263	192	178	162	129	156
22	251	228	201	201	207	285	274	174	177	165	146	150
23	249	224	218	155	204	263	263	190	168	206	144	165
24	174	223	210	202	194	258	245	235	190	196	143	128
25	256	242	181	185	194	274	267	255	167	188	137	126
26	246	224	187	185	177	255	257	188	150	202	142	140
27	224	190	226	178	193	235	233	233	161	158	150	151
28	235	228	189	178	195	227	238	216	190	162	163	157
29	231	247	196	187	-	209	241	234	154	187	162	157
30	248	221	195	152	------	212	203	221	173	136	216	142
31	241	----	222	183	------	249	------	189	----	157	180	----
Total	7,839	6,676	6,231	5,811	5,184	6,802	8,894	6,393	5,658	5,310	4,975	4,379
Mean	253	223	201	187	185	219	296	206	189	171	160	146
Cfsm	1.13	1.00	0.901	0.839	0.830	0.982	1.33	0.924	0.848	0.767	0.717	0.655
In.	1.30	1.12	1.04	0.97	0.86	1.13	1.48	1.07	0.95	0.88	0.83	0.73

Calendar year 1954: Max 775 Min 126 Mean 220 Cfsm 0.987 In. 13.40
Water year 1954-55: Max 406 Min 126 Mean 203 Cfsm 0.910 In. 12.36

* Discharge measurement made on this day.

Sturgeon River near Wolverine, Mich.

Location.--Lat 45°17'25", long 84°36'15", in SW¼ sec. 31, T. 34 N., R. 2 W., on left bank 1½ miles north of Wolverine, 2 miles downstream from West Branch, and 11 miles upstream from mouth.

Drainage area.--164 sq mi.

Records available.--April 1942 to September 1955.

Gage.--Staff gage read once daily. Altitude of gage is 750 ft (by barometer).

Average discharge.--13 years, 199 cfs.

Extremes.--Maximum discharge during year, 638 cfs Oct. 16 (gage height, 3.95 ft); minimum daily, 130 cfs July 5, Aug. 22-25, Sept. 7.
1942-55: Maximum discharge, 919 cfs Apr. 1, 1943 (gage height, 5.45 ft); minimum, 118 cfs Aug. 22, 24, 1944.

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

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	126
2.7	230
3.6	515

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	165	194	212	185	150	160	346	194	163	141	141	146
2	498	194	185	180	140	170	409	222	161	141	141	143
3	400	190	178	176	140	170	426	238	161	140	143	141
4	251	187	182	176	145	170	426	217	163	135	141	141
5	227	185	174	178	160	170	402	209	175	130	141	141
6	204	182	167	180	160	165	343	209	175	148	141	138
7	187	182	176	172	150	160	308	209	190	148	141	130
8	185	*180	180	172	160	160	281	212	205	145	140	140
9	180	180	182	172	150	180	284	207	185	145	138	140
10	190	176	178	170	145	212	302	*199	180	141	138	140
11	192	174	178	167	140	233	305	190	180	141	140	150
12	*185	176	178	167	140	240	296	187	178	141	141	145
13	185	178	*190	165	150	220	*278	182	*178	140	141	*148
14	235	180	185	165	165	*199	317	176	174	148	143	143
15	200	180	176	165	*170	200	446	174	165	251	141	141
16	400	180	165	165	165	204	333	174	165	256	140	138
17	498	182	160	*165	150	207	267	174	157	210	*134	140
18	346	170	160	160	160	209	246	172	154	170	134	140
19	264	180	160	155	160	207	248	170	154	*159	134	140
20	230	210	145	150	175	190	273	163	154	150	136	140
21	214	210	155	155	190	210	276	159	157	154	135	145
22	204	200	170	160	175	250	267	150	161	238	130	145
23	199	200	180	160	160	320	267	160	160	264	130	145
24	192	204	170	150	150	290	259	167	160	185	130	145
25	187	187	170	140	150	260	248	167	155	161	130	145
26	185	185	170	150	150	230	235	172	154	155	135	146
27	192	197	170	140	155	209	222	175	152	152	136	150
28	190	204	170	140	160	207	207	174	150	148	140	150
29	190	199	170	140	-	204	197	178	145	143	138	155
30	192	209	175	150	------	220	192	180	141	141	138	155
31	194	------	190	170	------	296	-------	174	--------	141	141	-------
Total	7,361	5,655	5,401	5,040	4,365	6,522	8,906	5,734	4,952	5,062	4,272	4,306
Mean	237	188	174	163	156	210	297	185	165	163	138	144
Cfsm	1.45	1.15	1.06	0.994	0.951	1.28	1.81	1.13	1.01	0.994	0.841	0.878
In.	1.67	1.28	1.22	1.15	0.99	1.48	2.02	1.30	1.13	1.15	0.97	0.98

Calendar year 1954: Max 690 Min 140 Mean 197 Cfsm 1.20 In. 16.31
Water year 1954-55: Max 498 Min 130 Mean 185 Cfsm 1.13 In. 15.34

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 16-31, Jan. 13 to Mar. 9 (no gage-height record Dec. 26-31, Jan. 19-22, 25-27, Feb. 5, 7-13, 16, 17, Mar. 6-9). No gage-height record Oct. 3, 15, 16, Nov. 18-23, Dec. 8, Jan. 1, 2, Mar. 15, 20-26, May 22, 23, 27, June 5-8, 23, 24, July 4, 5, 17, 18, Aug. 16, 21-25, Sept. 7-12, 17-24, 30; discharge estimated on basis of weather records and records for stations on nearby streams.

Indian River at Indian River, Mich.

Location.--Lat 45°24'35", long 84°37'10", in SW¼ sec. 24, T. 35 N., R. 3 W., on left bank at Indian River, an eighth of a mile downstream from Burt Lake and 3½ miles upstream from Mullett Lake.

Drainage area.--583 sq mi.

Records available.--April 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 590.21 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 12, 1943, staff gage at site 100 ft downstream at same datum.

Average discharge.--13 years, 560 cfs.

Extremes.--Maximum discharge during year, 768 cfs Apr. 25 (gage height, 4.53 ft); maximum daily gage height, 4.52 ft Apr. 22, 25; minimum daily discharge, 249 cfs Sept. 9; minimum daily gage height, 3.41 ft Sept. 26.
1942-55: Maximum discharge, 1,080 cfs Apr. 25, 1943 (gage height, 5.65 ft); maximum daily gage height, 5.53 ft Apr. 25, 1943; minimum daily discharge, that of Sept. 9, 1955; minimum daily gage height, that of Sept. 26, 1955.

Remarks.--Records fair except those for periods of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	470	556	531	498	531	544	585	717	543	381	303	257
2	478	556	531	494	539	544	599	712	538	377	303	257
3	478	556	531	494	b520	544	613	712	538	377	303	257
4	498	556	531	494	b520	544	613	712	534	373	299	255
5	503	548	531	494	551	529	627	706	522	363	299	255
6	503	548	518	494	551	529	641	686	550	359	299	255
7	496	548	518	481	554	526	641	686	559	359	299	254
8	489	536	518	481	540	526	641	681	559	359	291	254
9	493	*536	518	494	558	526	658	665	555	356	288	249
10	497	536	518	494	558	526	658	660	555	356	288	254
11	513	536	518	494	558	526	658	644	550	343	279	258
12	*506	536	514	494	554	540	670	644	536	334	279	258
13	506	523	*502	494	554	540	670	639	*531	330	279	*258
14	522	536	502	481	*554	*540	706	622	512	330	276	258
15	534	523	502	494	554	540	723	617	507	326	276	267
16	569	527	502	494	554	554	723	*617	503	326	*270	261
17	583	527	502	*481	554	551	740	602	487	335	270	267
18	588	527	514	481	554	551	*740	582	483	331	270	264
19	588	540	514	481	554	551	738	582	478	*331	267	271
20	573	540	514	481	554	551	759	582	459	331	267	271
21	578	540	b480	481	554	551	754	561	450	322	267	264
22	578	540	502	485	554	565	754	561	446	319	267	267
23	578	527	502	502	554	593	754	556	438	319	261	267
24	578	540	502	506	554	589	748	572	434	310	261	267
25	583	540	498	506	554	589	748	572	415	310	261	270
26	583	527	498	514	554	604	742	552	411	307	257	265
27	583	527	498	517	554	589	742	552	397	315	257	270
28	568	527	498	b500	554	589	742	563	393	307	257	274
29	568	544	498	b490	-	589	737	563	389	307	257	274
30	572	544	498	b480	-------	589	717	563	385	307	264	274
31	572	----	498	b500	-------	589	-------	543	----	303	264	-
Total	16,728	16,147	15,801	15,274	15,398	17,218	20,841	19,226	14,657	10,403	8,578	7,872
Mean	540	538	510	493	550	555	695	620	489	336	277	262
Cfsm	0.926	0.923	0.875	0.846	0.943	0.952	1.19	1.06	0.839	0.576	0.475	0.449
In.	1.07	1.03	1.01	0.98	0.98	1.10	1.33	1.22	0.94	0.66	0.55	0.50

Calendar year 1954: Max 777 Min 339 Mean 544 Cfsm 0.933 In. 12.67
Water year 1954-55: Max 759 Min 249 Mean 488 Cfsm 0.837 In. 11.37

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

Pigeon River near Vanderbilt, Mich.

Location.--Lat 45°10', long 84°26', in SE¼ sec. 9, T. 32 N., R. 1 W., on right bank at Pigeon River Fisheries Experiment Station, 10 miles east of Vanderbilt and 10½ miles southeast of Wolverine.

Drainage area.--63 sq mi, approximately.

Records available.--September 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 886.24 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 76.4 cfs.

Extremes.--Maximum discharge during year, 270 cfs Oct. 18 (gage height, 4.10 ft); minimum, 23 cfs May 17.
1950-55: Maximum discharge, 345 cfs July 4, Nov. 14, 1951, Apr. 8, 1954 (gage height, 4.42 ft); minimum, that of May 17, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Occasional regulation by Lansing Club Dam 4 miles upstream.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	25
3.0	144
3.8	225

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	79	80	69	65	56	114	67	57	51	41	73
2	91	77	80	69	60	56	144	73	55	55	44	63
3	170	79	80	69	*55	56	162	79	52	55	46	57
4	168	79	72	69	55	56	148	73	55	52	50	51
5	122	78	60	70	63	60	135	67	58	51	51	47
6	*76	75	55	71	63	53	135	65	103	55	51	48
7	75	75	62	70	58	50	130	69	120	55	67	51
8	71	*75	70	69	63	55	112	70	76	51	60	51
9	70	73	71	69	61	60	122	67	83	51	54	51
10	69	73	71	69	58	70	140	*65	92	49	51	53
11	70	72	70	60	54	92	140	65	52	48	49	59
12	71	72	70	65	50	92	126	64	63	47	48	58
13	71	72	*60	60	50	83	*114	66	*68	47	47	*55
14	74	75	63	65	55	*79	122	62	67	47	47	60
15	101	77	73	58	55	87	195	59	60	47	43	57
16	160	75	69	58	55	92	162	58	57	101	45	56
17	153	75	69	*58	50	77	115	47	57	92	47	55
18	153	76	71	58	55	80	98	31	55	75	46	53
19	96	91	64	63	55	84	173	51	55	*69	46	52
20	92	102	57	68	55	75	218	54	55	57	46	53
21	86	94	66	72	55	75	153	54	55	53	42	53
22	82	87	75	78	63	83	112	59	56	52	44	53
23	79	86	80	70	60	100	95	63	58	55	47	52
24	77	84	72	65	56	101	89	56	61	55	*47	77
25	75	86	66	62	55	83	90	60	58	53	45	73
26	75	87	70	67	55	78	91	63	55	51	47	68
27	76	85	73	56	55	73	84	63	52	51	47	66
28	76	89	71	56	56	72	78	61	49	51	49	71
29	79	87	67	58		75	73	63	51	51	51	59
30	84	82	65	63	-------	77	71	65	51	49	74	59
31	81	-------	70	65	-------	86	-------	61	-------	45	93	-------
Total	2,977	2,417	2,142	2,019	1,590	2,316	3,741	1,920	1,888	1,721	1,565	1,734
Mean	96.0	80.6	69.1	65.1	56.8	74.7	125	61.9	62.9	55.5	50.5	57.8
Cfsm	1.52	1.28	1.10	1.03	0.902	1.19	1.98	0.983	0.998	0.881	0.802	0.917
In.	1.75	1.43	1.27	1.19	0.94	1.37	2.21	1.13	1.11	1.02	0.92	1.02

Calendar year 1954: Max 280 Min 47 Mean 79.1 Cfsm 1.26 In. 17.06
Water year 1954-55: Max 218 Min 31 Mean 71.3 Cfsm 1.13 In. 15.36

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4-8, 13-15, 19-25, 29, 30, Jan. 11 to Mar. 10, Mar. 18, 22, 23, 26-28 (no gage-height record Dec. 4-6, Jan. 28-31, Feb. 4-10). No gage-height record Nov. 29 to Dec. 3; discharge estimated on basis of weather records, recorded range in stage, and records for station at Afton.

Pigeon River at Afton, Mich.

Location.--Lat 45°22'25", long 84°30'50", in NE¼ sec. 2, T. 34 N., R. 2 W., on right upstream abutment of bridge on State Highway 68, three-quarters of a mile west of Afton, 2 miles downstream from Wilkes Creek, and 5½ miles upstream from Mullett Lake.

Drainage area.--159 sq mi.

Records available.--April 1942 to September 1955.

Gage.--Staff gage read twice daily. Altitude of gage is 675 ft (by barometer).

Average discharge.--13 years, 135 cfs.

Extremes.--Maximum discharge during year, 463 cfs Oct. 17 (gage height, 5.45 ft); minimum observed, 55 cfs Aug. 20, 21.
1942-55: Maximum daily discharge, 1,100 cfs Mar. 31, 1943; maximum gage height, about 10.5 ft Mar. 31, 1943, from floodmarks (ice jam); minimum discharge observed, that of Aug. 20, 21, 1955.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 18		July 19 to Sept. 30	
4.1	61	4.1	54
4.5	130	4.5	120
5.0	271		
5.5	488		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	198	144	144	120	130	100	247	135	96	81	64	114
2	195	139	146	120	120	100	336	137	91	81	64	102
3	212	139	146	120	110	100	391	170	91	81	64	95
4	261	126	128	110	100	100	382	163	91	81	64	76
5	244	126	100	105	110	95	344	146	98	81	64	66
6	192	126	95	115	110	85	324	135	132	83	64	64
7	198	126	100	115	100	85	297	139	170	86	70	64
8	173	*126	110	105	110	90	282	144	158	86	74	64
9	137	124	130	115	100	105	275	130	148	86	73	67
10	130	122	120	105	95	130	271	130	130	85	67	66
11	128	117	110	90	90	200	286	128	113	85	64	64
12	*126	117	110	95	85	300	271	126	109	81	64	78
13	126	122	*120	100	80	350	*247	122	*109	77	63	*78
14	135	130	105	100	95	330	293	117	109	74	63	79
15	209	130	105	105	*95	270	320	113	105	78	62	76
16	332	132	115	95	95	*198	391	*109	104	88	*59	74
17	443	128	115	*95	90	163	382	107	95	109	58	74
18	361	126	100	95	95	158	244	95	89	126	58	72
19	278	148	90	95	95	120	228	91	91	*93	58	68
20	186	153	95	100	95	139	290	98	89	82	57	70
21	166	153	105	115	95	146	336	102	88	74	57	72
22	166	156	130	140	105	158	261	105	95	70	57	70
23	139	151	140	125	100	198	198	113	96	78	58	70
24	128	151	130	115	95	251	173	113	95	78	58	72
25	132	151	120	110	90	200	176	111	95	72	60	96
26	132	148	110	120	90	178	173	111	93	68	63	84
27	137	153	110	120	90	163	170	111	93	68	63	78
28	142	153	110	110	95	173	160	113	86	70	63	87
29	142	153	110	110	-	163	158	113	83	70	64	86
30	148	148	100	135	-------	158	137	115	81	70	78	84
31	148	-------	110	135	-------	181	-------	107	-------	66	106	-------
Total	5,844	4,118	3,559	3,435	2,760	5,187	8,043	3,749	3,123	2,508	2,001	2,310
Mean	189	137	115	111	98.6	167	268	121	104	80.9	64.5	77.0
Cfsm	1.19	0.862	0.723	0.698	0.620	1.05	1.69	0.761	0.654	0.509	0.406	0.484
In.	1.37	0.96	0.83	0.80	0.65	1.21	1.89	0.88	0.73	0.59	0.47	0.54

Calendar year 1954: Max 639 Min 75 Mean 142 Cfsm 0.893 In. 12.14
Water year 1954-55: Max 443 Min 57 Mean 128 Cfsm 0.805 In. 10.92

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 15.

Cheboygan River near Cheboygan, Mich.

Location.--Lat 45°34'40", long 84°29'15", in SW¼ sec. 19, T. 37 N., R. 1 W., 300 ft downstream from Mullett Lake, 2½ miles upstream from Black River, and 5 miles south of Cheboygan.

Drainage area.--865 sq mi.

Records available.--November 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 591.21 ft above mean sea level, datum of 1929. Auxiliary staff gage at Cheboygan 5 miles downstream read hourly. Datum of auxiliary gage is 590.00 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 782 cfs.

Extremes.--Maximum daily discharge during year, 1,200 cfs June 8, 10; maximum daily gage height, 2.39 ft July 21; minimum daily discharge, 200 cfs May 26; minimum daily gage height, 1.45 ft Mar. 30.
1942-55: Maximum daily discharge, 1,590 cfs Apr. 16, 1943; maximum daily gage height, 3.13 ft Apr. 17, 1945, Apr. 11, 1948; minimum daily discharge, 100 cfs Nov. 3, 1949; minimum daily gage height, 1.12 ft Dec. 29, 1952.

Remarks.--Records fair except those for periods of no gage-height record or indefinite stage-discharge relation, which are poor. Flow affected by backwater from powerplant at Cheboygan.

Cooperation.--Auxiliary gage readings furnished by Consumers Power Co.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	786	750	758	650	785	773	1,050	1,050	550	650	600	374
2	841	750	862	700	752	806	1,080	1,020	800	600	550	384
3	853	850	827	750	750	795	1,100	1,090	800	400	549	366
4	855	650	873	850	750	785	1,110	1,100	900	450	568	363
5	750	650	750	950	750	778	1,110	1,070	1,000	500	563	373
6	650	800	841	750	700	808	1,090	966	900	460	455	408
7	650	550	750	750	786	783	1,100	915	1,000	650	318	398
8	789	550	664	950	763	780	1,080	794	1,200	550	394	409
9	784	600	653	750	785	756	1,060	835	1,100	350	440	500
10	700	*600	590	750	808	669	1,060	754	1,200	250	423	439
11	776	740	516	750	795	670	1,030	833	1,100	400	406	302
12	773	529	586	750	768	675	1,010	711	1,000	400	405	347
13	*861	473	638	750	708	707	1,020	765	1,000	444	346	335
14	770	430	*580	750	755	878	1,050	797	*950	430	376	*350
15	925	500	625	800	*560	*840	1,040	818	900	431	424	347
16	890	580	618	600	504	812	1,080	664	700	325	393	350
17	1,050	566	629	750	520	836	1,080	*716	600	405	*423	371
18	1,050	599	700	*750	600	910	1,080	716	450	437	528	320
19	1,110	762	550	689	600	929	*943	708	450	468	720	418
20	1,070	724	685	671	650	903	1,020	552	450	*408	628	439
21	1,010	699	729	647	600	937	1,040	312	450	409	403	448
22	1,040	835	642	625	600	1,010	1,110	250	400	526	427	397
23	1,090	854	718	600	600	1,060	1,120	376	480	437	380	458
24	1,010	849	750	639	650	1,060	1,110	484	500	510	381	443
25	971	866	700	649	733	1,050	1,130	350	500	432	378	354
26	1,010	846	550	650	826	1,050	1,100	200	250	480	420	402
27	1,000	933	750	776	822	1,070	1,090	550	450	520	430	380
28	950	900	750	829	821	1,030	1,080	750	550	435	843	345
29	950	898	650	858	-	1,010	1,060	600	500	530	380	348
30	800	717	800	850	-------	1,030	1,070	450	600	450	385	344
31	600	-------	700	850	-------	1,050	-------	550	-------	450	408	-------
Total	27,364	21,050	21,436	23,083	19,741	27,230	32,103	21,746	21,730	14,187	14,344	11,512
Mean	883	702	691	745	705	878	1,070	701	724	458	463	384
Cfsm	1.02	0.812	0.799	0.861	0.815	1.02	1.24	0.810	0.837	0.529	0.535	0.444
In.	1.18	0.91	0.92	0.99	0.85	1.18	1.38	0.93	0.93	0.61	0.62	0.50

Calendar year 1954: Max 1,200 Min 120 Mean 762 Cfsm 0.881 In. 11.98
Water year 1954-55: Max 1,200 Min 200 Mean 700 Cfsm 0.809 In. 11.00

* Discharge measurement made on this day.

Note.--Stage-discharge relation indefinite Oct. 5-7, 10, Nov. 14, 15, 28, Dec. 5, 18, 19, Jan. 23, 26, Feb. 6, 17-24, Mar. 11, May 22, July 29 to Aug. 2, Sept. 9, 18; no gage-height record Oct. 27 to Nov. 10, Dec. 24 to Jan. 18, Jan. 30, 31, Feb. 3-5, May 25 to July 12; discharge estimated on basis of weather records and records of powerplant operation at Cheboygan.

Black River near Tower, Mich.

Location.--Lat 45°24', long 84°20', in NW¼ sec. 29, T. 35 N., R. 1 E., on right bank 400 ft downstream from Kleber Dam, 800 ft upstream from Milligan Creek, 3 miles northwest of Tower, and 8 miles upstream from Black Lake.

Drainage area.--313 sq mi.

Records available.--November 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 658.00 ft above mean sea level (Stanley Engineering Co. benchmark). Prior to Aug. 1, 1949, at site 1 mile upstream at different datum.

Average discharge.--13 years, 251 cfs.

Extremes.--Maximum discharge during year, 1,000 cfs Oct. 4, 17; maximum gage height, 4.96 ft Oct. 17; minimum discharge, 9.8 cfs Oct. 17; minimum daily, 58 cfs Aug. 18.
1942-55: Maximum discharge, 1,660 cfs Apr. 1, 1943 (gage height, 5.30 ft, site and datum then in use); minimum, 0.6 cfs Mar. 11, 1950; minimum daily, 4.0 cfs Nov. 27, 1949.

Remarks.--Records good. Flow regulated by powerplants at Tower and Kleber Dam.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.8	55
2.3	128
3.0	268
4.0	590
4.5	800

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	312	297	308	224	196	206	445	344	199	169	130	189
2	342	252	286	247	196	204	508	358	159	150	120	133
3	387	270	262	196	202	246	581	389	207	151	115	115
4	512	262	165	201	121	198	741	358	193	124	104	134
5	513	308	223	259	214	216	775	254	230	150	102	138
6	510	265	178	215	193	172	676	318	236	131	92	133
7	515	175	148	211	211	202	587	327	277	111	105	112
8	342	277	177	234	196	181	591	285	432	123	118	90
9	328	281	214	237	159	196	573	226	403	108	108	99
10	244	227	258	247	193	252	534	247	371	126	85	154
11	258	*229	254	172	206	272	515	278	268	140	97	87
12	*253	214	241	168	167	285	516	227	230	121	130	120
13	259	200	185	215	181	365	514	248	237	124	106	132
14	271	233	*162	194	161	345	492	245	201	106	104	81
15	365	249	184	194	*176	349	581	238	*185	125	120	*181
16	418	264	264	220	163	*345	602	*231	187	124	*119	115
17	513	251	232	216	207	400	700	231	202	120	66	128
18	618	266	206	*133	188	349	*703	217	189	163	58	89
19	583	234	157	211	193	332	605	101	89	*152	111	125
20	595	281	167	200	231	312	588	177	185	127	107	112
21	500	352	151	203	246	311	589	236	200	81	133	120
22	447	354	142	208	215	286	676	221	194	111	85	117
23	323	298	176	229	200	402	735	216	152	81	118	114
24	332	243	222	206	236	473	660	204	183	134	83	125
25	301	267	212	206	200	477	512	213	150	126	115	78
26	283	280	236	210	208	495	505	210	183	119	130	115
27	247	330	227	210	179	367	375	246	147	103	80	132
28	257	320	253	160	210	343	280	227	155	121	105	129
29	279	294	223	179	-	333	356	218	137	94	91	117
30	292	304	213	202	------	359	347	195	183	91	139	104
31	296	-- ---	254	183	-------	412	-------	216	-------	97	184	---- --
Total	11,695	8,077	6,582	6,390	5,448	9,685	16,862	7,701	6,364	3,803	3,360	3,618
Mean	377	269	212	206	195	312	562	248	212	123	108	121
Cfsm	1.20	0.859	0.677	0.658	0.623	0.997	1.80	0.792	0.677	0.393	0.345	0.387
In.	1.38	0.96	0.78	0.76	0.65	1.15	2.01	0.91	0.76	0.45	0.40	0.43

Calendar year 1954: Max 792 Min 65 Mean 260 Cfsm 0.831 In. 11.27
Water year 1954-55: Max 775 Min 58 Mean 245 Cfsm 0.783 In. 10.64

* Discharge measurement made on this day.

Rainy River near Ocqueoc, Mich.

Location.--Lat 45°24'30", long 84°10'35", on line between secs. 15 and 22, T. 35 N., R. 2 E., on upstream side of highway bridge, 3¾ miles upstream from Black Lake and 4½ miles west of Ocqueoc.

Drainage area.--85 sq mi, approximately.

Records available.--October 1952 to September 1955.

Gage.--Wire-weight gage read once daily. Datum of gage is 674.85 ft above mean sea level, unadjusted.

Extremes.--Maximum discharge during year, 305 cfs Apr. 4 (gage height, 3.92 ft); minimum, 0.4 cfs Sept. 7.
1952-55: Maximum discharge, 400 cfs Mar. 24, 1953 (gage height, 4.31 ft); minimum, that of Sept. 7, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 12				Mar. 13 to Sept. 30			
1.6	6.2	2.5	74	1.25	0.3	2.0	29
1.7	9.4	3.0	140	1.3	.6	2.5	77
1.8	14	3.6	242	1.5	4.6	3.0	140
2.0	29			1.7	11	3.9	300

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	38	58	44	15	8.5	14	136	73	9.6	3.5	0.6	1.2
2	49	53	41	16	8.5	13	201	73	8.5	3.5	.5	1.2
3	91	52	38	16	8.0	13	262	77	8.5	4.3	.5	1.0
4	104	50	33	16	8.0	14	292	73	8.5	3.9	.6	.8
5	93	49	28	17	8.0	13	280	67	8.5	3.5	.6	.6
6	85	45	25	18	8.0	12	260	64	25	3.1	.6	.6
7	74	42	22	17	8.0	12	224	62	60	2.5	.6	.5
8	67	39	20	16	8.5	12	199	58	76	2.3	.6	.5
9	61	37	22	15	8.5	15	182	52	72	1.9	1.0	.6
10	57	35	23	14	8.5	20	175	49	56	1.9	1.0	1.0
11	54	*34	24	13	9.0	34	169	44	39	1.9	.6	1.2
12	53	31	25	13	9.0	43	154	42	27	1.6	.8	1.2
13	53	30	23	12	8.5	50	142	40	*22	1.5	.6	1.2
14	*53	31	22	12	8.5	*51	140	35	17	1.2	.6	*1.2
15	73	31	*23	12	8.5	65	158	33	12	1.0	.6	1.0
16	140	31	23	12	*8.5	82	156	28	12	1.0	*.8	1.2
17	226	30	25	11	8.5	78	150	*26	9.2	1.0	.6	1.4
18	217	31	21	11	8.5	63	*143	23	6.4	1.2	.8	1.4
19	182	47	17	*10	9.5	50	140	21	6.4	*1.2	.6	1.2
20	156	57	14	10	12	55	137	18	6.4	1.2	.6	1.2
21	133	56	15	9.0	16	56	140	17	5.6	1.0	.6	1.2
22	118	54	18	9.0	16	59	126	17	5.9	.8	.5	1.2
23	104	51	23	9.0	15	78	122	15	6.2	.8	.5	1.2
24	92	48	21	10	14	87	118	14	5.9	.6	.6	1.2
25	86	50	19	10	14	113	113	14	5.3	.6	.6	1.2
26	73	50	18	10	14	104	115	12	4.8	.6	.6	1.0
27	71	50	17	10	14	93	106	12	4.3	1.0	.5	1.5
28	66	50	17	10	14	95	96	11	3.7	1.0	.6	1.9
29	65	50	16	9.0	-	82	88	12	3.5	1.0	1.0	1.4
30	63	48	14	8.5	-------	74	77	12	3.3	.8	1.6	1.0
31	62	--	15	8.5	-------	81	-------	11	-------	.6	1.4	------
Total	2,859	1,320	706	379.0	290.0	1,631	4,801	1,105	538.5	52.0	21.7	33.0
Mean	92.2	44.0	22.8	12.2	10.4	52.6	160	35.6	18.0	1.68	0.70	1.10
Cfsm	1.08	0.518	0.268	0.144	0.122	0.619	1.88	0.419	0.212	0.020	0.0082	0.013
In.	1.24	0.58	0.31	0.17	0.13	0.71	2.10	0.48	0.24	0.02	0.009	0.01

Calendar year 1954: Max 325 Min 1.7 Mean 40.1 Cfsm 0.472 In. 6.40
Water year 1954-55: Max 292 Min 0.5 Mean 37.6 Cfsm 0.442 In. 6.00

Peak discharge (base, 110 cfs).--Oct. 17 (2 to 4 p.m.) 240 cfs (3.62 ft); Mar. 25 (1 p.m.) 126 cfs (2.90 ft); Apr. 4 (4 a.m.) 305 cfs (3.92 ft); Apr. 15 (8 p.m.) 172 cfs (3.20 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4-9, Dec. 12 to Jan. 3, Jan. 7 to Mar. 12, Mar. 19.

Black River near Cheboygan, Mich.

Location.--Lat 45°30'00", long 84°19'24", in sec. 21, T. 36 N., R. 1 E., on left bank half a mile downstream from Black Lake, 5½ miles upstream from Alverno Dam, and 12 miles southeast of Cheboygan.

Drainage area.--597 sq mi.

Records available.--November 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 609.26 ft above mean sea level, datum of 1929. Auxiliary water-stage recorder 3 miles downstream at same datum.

Average discharge.--13 years, 419 cfs.

Extremes.--Maximum daily discharge during year, 1,210 cfs Apr. 19; maximum daily gage height, 3.43 ft June 8; minimum daily discharge, 47 cfs July 12; minimum daily gage height, 1.83 ft Mar. 10, 11.
1942-55: Maximum daily discharge, 2,260 cfs Apr. 19, 1952; maximum daily gage height, 5.28 ft Apr. 7, 1943; minimum daily discharge, 11 cfs Aug. 14, 1949; minimum daily gage height, 1.60 ft Sept. 2, 1947.

Remarks.--Records fair except those for periods of indefinite stage-discharge relation or no gage-height record, which are poor. Flow affected during most of time by backwater from powerplant at Alverno Dam.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	862	e350	e350	420	518	392	746	682	210	217	e130	217
2	788	483	690	430	296	409	790	651	434	e140	127	195
3	758	e700	668	450	438	336	879	656	474	66	e90	208
4	746	e310	680	720	e430	426	914	425	578	137	120	e145
5	460	460	e140	720	440	421	1,010	506	506	213	e100	218
6	263	660	e250	320	e380	401	1,100	379	401	143	111	242
7	e250	e150	366	470	e340	e400	1,130	454	376	e160	e90	210
8	605	e250	e320	640	414	406	1,160	442	710	186	125	186
9	763	403	e250	440	e330	446	1,160	364	713	235	e170	167
10	424	*246	262	430	435	474	1,150	372	845	63	236	212
11	595	697	253	330	424	457	1,140	230	800	64	293	120
12	758	403	e150	e400	453	491	1,160	387	769	47	286	190
13	570	399	150	e220	222	491	1,150	137	784	74	270	180
14	*444	137	260	277	436	468	1,140	165	762	103	e180	110
15	732	239	*330	395	278	*503	1,190	67	*508	87	244	*165
16	753	234	e180	e160	*346	525	1,170	161	302	106	249	182
17	894	297	271	e250	369	533	1,180	217	275	65	*270	208
18	1,030	281	431	*403	360	566	1,200	*268	206	75	273	e130
19	1,090	307	e150	305	338	502	*1,210	210	e90	96	236	218
20	1,100	294	e250	e280	338	562	1,190	87	235	94	223	266
21	1,110	e85	417	437	e360	562	1,180	91	210	*108	e170	159
22	1,100	e300	370	433	379	600	1,160	e50	110	193	211	236
23	1,080	699	240	e180	359	666	1,140	122	227	245	184	343
24	1,020	678	380	449	353	633	1,160	128	277	139	175	364
25	990	693	390	490	344	647	1,150	171	276	e160	207	175
26	966	702	150	332	366	714	1,130	70	99	e190	184	242
27	924	653	250	490	336	744	1,060	146	232	e150	172	239
28	858	381	370	503	399	740	1,000	437	226	177	343	221
29	813	682	360	597	-	739	891	197	150	168	188	229
30	721	486	250	574	------	757	626	137	247	199	214	270
31	e200	-- ---	310	550	-------	726	--------	149	----- -	155	e140	- ---
Total	23,667	12,659	9,888	13,095	10,481	16,737	32,266	8,558	12,032	4,255	6,011	6,247
Mean	763	422	319	422	374	540	1,076	276	401	137	194	208
Cfsm	1.28	0.707	0.534	0.707	0.626	0.905	1.80	0.462	0.672	0.229	0.325	0.348
In.	1.48	0.79	0.62	0.82	0.65	1.04	2.01	0.53	0.75	0.26	0.37	0.39

Calendar year 1954: Max 1,410 Min 35 Mean 463 Cfsm 0.776 In. 10.55
Water year 1954-55: Max 1,210 Min 47 Mean 427 Cfsm 0.715 In. 9.71

* Discharge measurement made on this day.
e Stage-discharge relation indefinite; discharge estimated on basis of weather records and records of powerplant operation at Alverno Dam and at Cheboygan.
Note.--No gage-height record Dec. 13-15, Dec. 22 to Jan. 11, Sept. 11-14; discharge estimated on basis of weather records and records of powerplant operation at Alverno Dam and at Cheboygan.

Thunder Bay River near Hillman, Mich.

Location.--Lat 45°00'30", long 83°58'15", on line between secs. 8 and 9, T. 30 N., R. 4 E., on left bank 25 ft upstream from bridge on State Highway 32, a quarter of a mile downstream from Miller Creek, and 5 miles southwest of Hillman.

Drainage area.--232 sq mi.

Records available.--June 1945 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 760 ft (by barometer).

Average discharge.--10 years, 211 cfs.

Extremes.--Maximum discharge during year, 592 cfs Apr. 21 (gage height, 7.30 ft); maximum gage height, 7.37 ft Mar. 11 (ice jam); minimum discharge, 106 cfs Aug. 25.
1945-55: Maximum discharge, 1,380 cfs Apr. 12, 1947 (gage height, 8.86 ft); minimum daily, 98 cfs Aug. 7, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional regulation by dam at Atlanta. Prior to May 12, 1950, diurnal fluctuation caused by powerplant at Atlanta.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 28		Mar. 29 to Sept. 30	
4.6	147	4.2	112
5.5	248	5.0	181
7.0	508	6.0	315
		7.3	592

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	323	218	248	215	180	190	424	237	181	138	119	146
2	286	*212	236	210	170	200	496	230	176	134	*119	138
3	425	224	224	212	*170	*200	520	237	165	134	119	134
4	474	218	218	*206	170	200	474	224	176	130	122	126
5	*404	212	206	212	190	200	444	210	186	*138	122	122
6	331	212	180	212	190	200	*434	204	181	156	138	122
7	280	206	160	212	180	190	404	217	*198	142	146	*119
8	254	206	180	212	190	180	366	217	224	134	138	122
9	230	200	170	206	180	200	348	210	204	130	134	122
10	218	200	160	206	170	300	348	*204	186	130	126	126
11	224	200	160	200	170	480	340	204	176	126	126	130
12	224	200	150	200	160	430	323	198	186	126	122	126
13	230	194	150	200	175	385	308	192	186	126	122	126
14	230	200	160	200	190	293	308	186	181	122	122	126
15	242	200	180	200	190	290	394	181	170	122	134	130
16	319	200	170	200	190	290	385	181	165	130	126	130
17	496	194	160	200	180	285	348	181	156	134	122	126
18	444	194	160	200	190	273	315	176	151	138	122	126
19	385	206	160	190	190	254	474	170	151	134	119	122
20	323	242	150	180	190	248	533	170	170	134	119	122
21	286	242	170	190	220	260	576	170	160	130	119	126
22	254	230	200	200	220	310	485	165	156	126	116	126
23	236	230	220	210	200	400	414	181	156	126	116	126
24	230	230	210	200	180	370	366	176	156	122	116	126
25	224	266	200	170	180	340	357	217	151	122	112	126
26	218	280	200	180	200	310	376	217	146	119	119	126
27	218	260	200	170	190	285	348	230	146	119	122	130
28	218	260	200	170	190	270	308	258	142	122	122	134
29	218	260	200	170	-	265	279	244	138	119	126	134
30	224	260	*210	180	-------	272	258	224	138	119	160	134
31	224	--	--	215	200	-------	315	-------	198	-------	116	160	-------
Total	8,892	6,656	5,807	6,113	5,195	8,685	11,753	6,309	5,058	3,998	3,905	3,829
Mean	287	222	187	197	186	280	392	204	169	129	126	128
Cfsm	1.24	0.957	0.806	0.849	0.802	1.21	1.69	0.879	0.728	0.556	0.543	0.552
In.	1.43	1.07	0.93	0.98	0.84	1.40	1.89	1.01	0.81	0.64	0.63	0.62

Calendar year 1954: Max 972 Min 129 Mean 215 Cfsm 0.927 In. 12.61
Water year 1954-55: Max 576 Min 112 Mean 209 Cfsm 0.901 In. 12.25

Peak discharge (base, 600 cfs).--No peak above base.
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 6 to Jan. 2, Jan. 11 to Mar. 12, Mar. 15-17, 22-28.

Thunder Bay River near Bolton, Mich.

Location.--Lat 45°07'40", long 83°38'30", in NE¼ sec. 36, T. 32 N., R. 6 E., on left bank half a mile upstream from Orchard Hill Bridge, 4 miles upstream from North Branch Thunder Bay River, 5 miles southwest of Bolton, and 11 miles northwest of Alpena.

Drainage area.--588 sq mi.

Records available.--March 1945 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 670 ft (by barometer). Prior to Aug. 12, 1945, staff gage at site 500 ft downstream at different datum.

Average discharge.--10 years, 446 cfs.

Extremes.--Maximum discharge during year, 1,860 cfs Apr. 20, 21 (gage height, 7.02 ft); minimum, 92 cfs Sept. 28, 29.
1945-55: Maximum discharge, 3,690 cfs Mar. 15, 1946 (gage height, 8.78 ft); maximum gage height, 9.08 ft Mar. 21, 1948 (backwater from ice); minimum discharge, that of Sept. 28, 29, 1955.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by powerplant at Hillman and regulation by Fletcher Pond on Upper South Branch Thunder Bay River (usable capacity, 40,170 acre-ft).

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.8	150
3.8	357
5.0	805
6.9	1,800

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	620	*485	485	460	550	420	940	502	344	350	*299	318
2	580	485	520	460	*510	*430	1,220	468	344	352	245	185
3	720	485	432	460	480	440	1,460	520	310	382	254	224
4	*895	429	450	450	400	450	1,370	485	318	374	310	174
5	940	422	350	450	450	450	*1,190	468	436	*382	270	226
6	805	429	320	470	450	450	1,040	406	*418	385	280	*291
7	640	397	*320	480	420	420	965	415	440	382	308	181
8	540	382	360	480	450	400	805	403	360	379	211	167
9	468	397	380	470	430	450	720	*400	368	374	276	166
10	429	418	360	460	410	550	640	450	352	365	236	243
11	377	436	360	450	390	750	600	432	391	350	191	234
12	391	520	360	450	360	950	600	368	337	337	190	203
13	415	520	340	450	380	860	560	332	365	308	222	199
14	406	560	340	460	410	730	580	313	365	325	217	170
15	440	443	360	460	420	660	940	303	379	315	196	289
16	620	415	380	460	420	660	1,020	261	394	292	287	196
17	1,020	422	380	460	400	660	918	325	363	350	206	177
18	1,220	406	350	450	420	640	828	322	391	292	186	210
19	1,190	397	350	440	420	630	1,400	318	400	308	208	251
20	990	485	330	430	420	600	1,740	313	426	301	218	270
21	805	502	400	480	420	600	1,800	388	409	303	219	174
22	660	520	460	530	450	650	1,510	394	429	267	265	169
23	560	540	520	570	430	800	1,240	400	426	303	204	168
24	520	446	500	470	420	930	965	418	446	327	152	220
25	429	520	470	450	400	870	805	440	468	290	194	166
26	443	540	430	480	400	800	782	406	468	274	188	220
27	432	640	440	450	400	740	740	377	502	337	168	280
28	394	485	470	440	410	680	680	377	450	247	246	191
29	394	560	450	440	-	580	560	429	412	285	212	165
30	394	520	450	550	------	580	540	400	385	301	234	175
31	485	-- --	450	550	-------	700	--------	350	--------	274	303	- -
Total	19,222	14,206	12,567	14,560	11,920	19,530	29,158	12,183	11,896	10,111	7,195	6,302
Mean	620	474	405	470	426	630	972	393	397	326	232	210
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 2,300 Min 230 Mean 458 Cfsm - In. -
Water year 1954-55: Max 1,800 Min 152 Mean 463 Cfsm - In. -

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 31.

North Branch Thunder Bay River near Bolton, Mich.

Location.--Lat 45°08'55", long 83°36'35", in sec. 29, T. 32 N., R. 7 E., on left bank 1½ miles upstream from mouth, 2½ miles south of Bolton, and 9 miles northwest of Alpena.

Drainage area.--184 sq mi.

Records available.--March 1945 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 675 ft (by barometer). Prior to Aug. 16, 1945, staff gage at site half a mile upstream at different datum.

Average discharge.--10 years, 106 cfs.

Extremes.--Maximum discharge during year, 992 cfs Apr. 3 (gage height, 5.43 ft); minimum, 0.5 cfs Sept. 8, 21.
1945-55: Maximum discharge, 2,330 cfs Apr. 13, 1947 (gage height, 7.00 ft), from rating curve extended above 1,370 cfs; maximum gage height, 7.98 ft Mar. 31, 1950 (ice jam); minimum discharge, that of Sept. 8, 21, 1955.

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

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 20-30)

Oct. 1-18		Oct. 19 to Sept. 30			
3.7	145	2.3	0.4	3.0	24
4.5	405	2.4	.8	3.3	60
4.8	555	2.5	1.6	3.8	160
		2.6	3.0	4.4	375
		2.7	5.4	5.4	955
		2.8	9.0		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	172	*116	190	100	55	90	435	208	65	21	*2.8	3.4
2	220	123	181	100	*55	*90	624	202	60	22	2.6	2.8
3	340	118	155	*102	53	90	918	196	59	20	2.2	2.1
4	*369	112	127	104	53	88	955	187	59	19	2.4	1.8
5	410	106	95	104	53	86	*852	202	56	*18	3.0	2.4
6	450	104	80	104	53	85	709	202	*50	21	4.5	*1.4
7	354	102	*90	104	53	85	641	193	50	19	5.1	.9
8	279	94	94	105	53	86	570	169	52	14	3.8	.6
9	229	90	87	110	55	90	495	*146	47	9.0	2.4	1.2
10	192	85	85	104	57	100	406	134	49	7.0	2.0	1.4
11	164	76	80	100	60	130	344	121	46	5.4	2.2	1.2
12	a175	81	80	97	60	160	322	106	42	4.5	2.6	1.2
13	a190	85	75	96	60	180	290	87	40	4.3	2.4	2.6
14	a180	85	75	94	65	210	286	83	40	3.6	3.0	1.3
15	a200	80	85	86	70	250	362	81	40	3.4	4.0	1.2
16	a350	80	81	92	70	300	416	78	38	3.2	3.6	3.4
17	a470	78	80	92	70	350	500	78	33	6.3	2.6	2.2
18	a520	76	80	92	68	330	470	70	31	5.7	5.4	1.8
19	a490	92	80	90	65	300	515	65	25	5.4	5.4	1.5
20	a400	110	95	85	70	280	465	60	18	5.4	6.7	1.0
21	a310	116	120	90	70	250	558	60	21	5.4	6.0	.6
22	a230	127	110	95	70	250	624	56	24	6.3	4.8	.8
23	a190	141	100	85	70	250	564	49	28	9.0	3.2	1.1
24	a160	138	95	75	70	270	440	45	25	8.2	2.2	.8
25	a150	166	90	65	70	290	393	52	29	7.0	1.7	.9
26	153	163	87	60	75	330	366	52	31	6.0	1.4	.9
27	162	175	87	54	80	370	330	57	23	5.4	1.4	1.1
28	125	196	92	50	85	290	298	62	19	5.7	1.3	1.2
29	121	205	98	50	-	270	276	68	18	4.5	2.2	1.8
30	118	199	100	53	------	260	244	71	19	4.0	5.1	2.0
31	121	-- ---	100	55	------	300	--------	70	--- ----	3.2	5.1	--
Total	7,964	3,519	3,074	2,693	1,788	6,510	14,668	3,310	1,137	281.9	103.1	46.6
Mean	257	117	99.2	86.9	63.9	210	489	107	37.9	9.09	3.33	1.55
Cfsm	1.40	0.636	0.539	0.472	0.347	1.14	2.66	0.582	0.206	0.049	0.018	0.0084
In.	1.61	0.71	0.62	0.54	0.36	1.31	2.97	0.67	0.23	0.06	0.02	0.01

Calendar year 1954: Max 1,310 Min 8.6 Mean 131 Cfsm 0.712 In. 9.65
Water year 1954-55: Max 955 Min 0.6 Mean 124 Cfsm 0.674 In. 9.11

Peak discharge (base, 500 cfs).--Oct. 18 (8 to 11 p.m.) 801 cfs (5.18 ft); Apr. 3 (10 to 12 p.m.) 992 cfs (5.43 ft); Apr. 22 (12:30 to 9 a.m.) 641 cfs (4.92 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Thunder Bay River near Hillman and near Bolton.

Note.--Stage-discharge relation affected by ice Dec. 5-7, 13-15, 17, 19-25, Jan. 8, Jan. 12 to Mar. 31.

Au Sable River at Grayling, Mich.
(Formerly published as Middle Branch Au Sable River at Grayling)

Location.--Lat 44°39'35", long 84°42'45", in SE¼ sec. 7, T. 26 N., R. 3 W., on right bank 65 ft upstream from bridge on U. S. Highway 27 at Grayling and three-quarters of a mile upstream from East Branch.

Drainage area.--110 sq mi.

Records available.--November 1942 to September 1955. Prior to October 1954, published as Middle Branch Au Sable River at Grayling.

Gage.--Water-stage recorder. Datum of gage is 1,123.49 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 78.2 cfs.

Extremes.--Maximum discharge during year, 128 cfs Apr. 6 (gage height, 1.92 ft); minimum, 44 cfs Sept. 19.
1942-55: Maximum discharge, 274 cfs June 2, 1943 (gage height, 3.00 ft); minimum, 28 cfs Apr. 21, 1946.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to Dec. 31, 1952, diurnal fluctuation caused by powerplant 2.5 miles upstream.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	44
2.0	138

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	78	79	70	b61	68	96	86	73	59	48	61
2	80	77	78	69	64	68	107	88	71	59	48	*57
3	96	*77	75	69	60	b67	117	88	*69	58	*48	53
4	*106	76	74	68	60	b65	122	87	69	58	*51	51
5	103	76	70	69	63	b60	124	85	69	*57	55	50
6	93	75	60	69	65	b63	127	*82	71	55	56	48
7	88	75	63	69	65	64	126	81	78	54	57	48
8	87	75	b65	68	*65	64	123	78	84	54	60	47
9	84	74	b67	70	65	*73	122	78	85	53	57	48
10	81	74	72	70	66	76	120	77	83	53	56	49
11	81	74	74	*63	64	*83	117	76	82	52	55	49
12	82	74	75	60	59	83	115	75	81	51	53	49
13	80	74	66	b63	61	80	113	73	81	50	50	48
14	82	75	63	b64	65	78	113	72	79	50	50	48
15	86	75	b67	b64	b62	80	114	71	77	50	51	48
16	97	75	b68	65	b60	83	115	71	76	53	51	48
17	108	74	b66	65	b60	78	112	70	71	55	48	47
18	110	74	b66	66	61	80	106	68	66	57	48	46
19	103	76	69	63	63	77	102	68	65	57	47	45
20	95	80	56	56	69	78	102	68	64	55	47	45
21	88	81	63	a60	75	80	*103	68	64	53	47	45
22	85	80	70	a60	76	86	101	68	64	52	47	45
23	83	78	70	a60	71	83	96	70	64	53	46	46
24	82	78	70	a60	65	96	92	74	64	54	46	46
25	81	79	70	a63	62	94	92	80	63	54	46	46
26	78	78	72	a60	69	90	92	79	62	51	46	46
27	79	79	*74	a61	70	85	92	81	61	50	47	47
28	79	80	74	61	68	82	87	79	60	49	53	48
29	79	81	72	b63	-	83	86	78	59	49	60	49
30	79	81	70	b62	------	84	86	77	59	48	63	50
31	79	----	70	b61	------	86	------	76	------	48	61	----
Total	2,712	2,303	2,148	1,991	1,814	2,417	3,220	2,372	2,114	1,651	1,598	1,453
Mean	87.5	76.8	69.3	64.2	64.8	78.0	107	76.5	70.5	53.3	51.5	48.4
Cfsm	0.795	0.698	0.630	0.584	0.589	0.709	0.973	0.695	0.641	0.485	0.468	0.440
In.	0.92	0.78	0.73	0.67	0.61	0.82	1.09	0.80	0.72	0.56	0.54	0.49

Calendar year 1954: Max 182 Min 56 Mean 81.5 Cfsm 0.741 In. 10.08
Water year 1954-55: Max 127 Min 45 Mean 70.7 Cfsm 0.643 In. 8.73

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
b Stage-discharge relation affected by ice.

Au Sable River at Mio, Mich.

Location.--Lat 44°39'35", long 84°07'30", on line between sec. 7, T. 26 N., R. 3 E., and sec. 12, T. 26 N., R. 2 E., on right bank 150 ft upstream from bridge on State Highway 33 at Mio, 10 miles downstream from Big Creek, and 80 miles upstream from mouth.

Drainage area.--1,100 sq mi, approximately.

Records available.--July 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 929.60 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 2,800 cfs Nov. 16 (gage height, 4.98 ft); minimum daily, 526 cfs Sept. 5.
1952-55: Maximum discharge, 2,980 cfs Aug. 5, 1952 (gage height, 5.16 ft); minimum daily, that of Sept. 5, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated at all stages by powerplant 500 ft upstream.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-20		Oct. 21 to Sept. 30	
2.9	825	2.2	485
4.0	1,700	3.0	920
		4.1	1,800

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	938	1,030	1,080	1,020	814	913	1,450	a1,000	910	736	728	617
2	874	978	1,060	876	799	742	1,680	a1,100	940	730	735	804
3	1,250	1,020	978	1,020	b630	856	1,650	a1,200	747	738	642	714
4	1,660	1,120	830	814	b670	824	1,730	a950	832	754	642	894
5	a1,100	1,030	1,020	879	796	756	1,660	a1,100	909	728	654	526
6	a1,150	959	806	858	854	908	1,740	a950	889	774	642	692
7	a1,300	872	b750	932	862	814	1,620	a1,100	1,040	749	664	578
8	a1,200	1,230	b700	852	888	704	1,440	a1,000	962	630	754	723
9	a1,100	860	978	757	786	890	1,470	a900	998	828	734	569
10	a1,150	1,050	992	996	854	880	1,420	1,100	906	667	650	696
11	a1,050	860	860	770	792	1,220	1,560	912	920	612	713	689
12	a1,050	1,010	999	820	548	1,150	1,380	956	850	682	652	669
13	a1,150	1,010	860	880	836	1,060	1,420	992	939	734	615	664
14	1,060	878	710	838	800	1,100	1,320	832	846	660	653	708
15	*1,130	1,050	*978	814	806	1,190	1,630	840	836	819	694	690
16	1,290	866	902	774	842	1,280	1,780	1,020	824	757	700	700
17	1,560	1,010	848	896	866	979	1,450	836	874	827	660	646
18	1,570	*985	926	814	765	1,080	1,320	790	730	756	718	694
19	1,280	1,060	818	*894	755	1,040	1,370	884	886	778	625	*629
20	1,150	926	b550	530	858	1,010	1,350	886	762	736	625	648
21	1,240	1,010	b600	886	961	1,230	1,690	728	964	759	678	644
22	1,140	992	b625	968	823	1,220	1,350	828	*665	716	652	647
23	1,270	1,030	999	764	b800	*1,340	1,370	874	732	677	647	684
24	1,000	1,030	972	864	*785	1,120	1,220	914	804	782	650	676
25	1,120	1,060	992	882	748	1,180	1,490	*996	793	638	639	658
26	1,030	959	1,010	b760	936	1,220	1,190	1,030	769	*644	640	701
27	1,060	1,030	854	b710	856	1,140	*1,230	930	842	674	630	673
28	1,060	1,080	1,030	b640	860	1,070	a1,220	1,190	721	682	762	722
29	1,080	1,100	878	b570	-	1,020	a1,050	896	774	711	*563	654
30	972	1,120	1,030	806	------	1,120	a1,050	1,070	741	647	966	656
31	1,200	--	575	852	------	1,220	--------	886	-- ----	647	814	--
Total	36,184	30,215	27,210	25,736	22,590	32,276	43,300	29,690	25,405	22,272	21,141	20,265
Mean	1,167	1,007	878	830	807	1,041	1,443	958	847	718	682	676
Cfsm	1.06	0.915	0.798	0.755	0.734	0.946	1.31	0.871	0.770	0.653	0.620	0.615
In.	1.22	1.02	0.92	0.87	0.76	1.09	1.46	1.00	0.86	0.75	0.71	0.69

Calendar year 1954: Max 2,720 Min 550 Mean 1,019 Cfsm 0.926 In. 12.56
Water year 1954-55: Max 1,780 Min 526 Mean 921 Cfsm 0.837 In. 11.35

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records of powerplant operation at Mio Dam.
b Stage-discharge relation affected by ice.

East Branch Au Gres River at McIvor, Mich.

Location.--Lat 44°14'20", long 83°41'50", on line between secs. 3 and 10, T. 21 N., R. 6 E., on right bank 25 ft downstream from highway bridge at McIvor, 1.1 miles east of National City, and 9 miles southwest of Tawas City.

Drainage area.--84 sq mi, approximately.

Records available.--November 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 646.58 ft above mean sea level, datum of 1929. Prior to Aug. 30, 1951, wire-weight gage at site 25 ft upstream at same datum.

Extremes.--Maximum discharge during year, 617 cfs Mar. 22 (gage height, 6.45 ft); minimum, 31 cfs Aug. 22.
1950-55: Maximum discharge, 865 cfs Apr. 14, 1952 (gage height, 7.67 ft); minimum, 16 cfs Dec. 4, 1952.

Remarks.--Records good except those for period of ice effect, which are fair. Since 1953, periodic regulation by dam 2½ miles upstream.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-15)

Oct. 1 to Mar. 16		Mar. 17 to Sept. 30	
1.6	34	1.5	31
2.5	89	2.5	95
3.0	133	4.0	249
4.8	352	5.3	425

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	59	91	53	42	38	163	86	73	41	44	46
2	56	65	79	52	45	40	168	84	70	48	37	41
3	269	64	71	53	42	43	158	81	66	43	41	39
4	134	62	66	54	38	45	138	79	66	41	41	38
5	76	61	60	54	42	40	129	74	63	43	39	36
6	63	60	50	58	45	40	128	72	61	43	50	36
7	57	59	45	54	48	39	120	72	68	40	43	35
8	53	*57	48	58	43	37	113	71	75	39	39	35
9	50	56	52	54	40	50	109	69	65	39	38	37
10	48	55	52	54	46	70	109	73	61	38	38	36
11	54	55	52	52	43	90	105	72	59	36	37	38
12	52	54	52	52	40	150	101	69	63	36	36	36
13	48	54	*52	50	45	220	100	67	62	36	35	36
14	122	54	47	48	48	290	124	65	59	35	44	38
15	224	53	50	45	43	350	120	63	54	39	48	38
16	200	54	52	48	40	270	106	61	51	69	41	37
17	235	54	52	52	38	201	98	60	49	77	38	35
18	*138	57	52	*56	38	158	93	59	47	63	36	34
19	100	78	53	48	39	124	*129	58	48	*48	36	34
20	83	89	58	51	44	124	129	57	*53	42	41	*34
21	74	75	65	54	48	153	148	56	49	41	38	34
22	68	69	75	56	50	415	120	60	47	38	*36	35
23	64	67	67	50	50	*392	106	*77	47	38	36	36
24	61	73	57	45	*47	279	113	72	47	37	36	36
25	60	83	50	45	40	190	178	277	45	36	53	36
26	59	88	55	45	38	158	179	213	45	36	36	36
27	61	83	60	40	38	138	138	143	44	36	38	39
28	60	94	58	45	42	124	114	120	42	37	39	41
29	61	119	55	45	-	129	101	108	41	36	39	38
30	61	112	55	37	------	134	91	91	41	35	111	38
31	59	-- ---	55	38	-------	143	-------	80	-- ----	40	60	- - -
Total	2,810	2,063	1,786	1,546	1,202	4,674	3,730	2,689	1,661	1,306	1,306	1,108
Mean	90.6	68.8	57.6	49.9	42.9	151	124	86.7	55.4	42.1	42.1	36.9
Cfsm	1.08	0.819	0.686	0.594	0.511	1.80	1.48	1.03	0.660	0.501	0.501	0.439
In.	1.24	0.91	0.79	0.68	0.53	2.08	1.65	1.19	0.74	0.58	0.58	0.49

Calendar year 1954: Max 617 Min 31 Mean 75.6 Cfsm 0.900 In. 12.19
Water year 1954-55: Max 415 Min 34 Mean 70.9 Cfsm 0.844 In. 11.46

Peak discharge (base, 300 cfs).--Oct. 3 (6 a.m.) 425 cfs (5.47 ft); Mar. 15 (6 to 8 a.m.) 372 cfs (4.94 ft); Mar. 22 (9 to 10 p.m.) 617 cfs (6.45 ft); May 25 (4 p.m.) 355 cfs (4.85 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 16.

Au Gres River near National City, Mich.

Location.--Lat 44°10'45", long 83°44'15", in NW¼ sec. 32, T. 21 N., R. 6 E., on left bank 20 ft downstream from highway bridge, 1½ miles upstream from Elm Creek, 4 miles southwest of National City, 12½ miles southwest of Tawas City, and 15½ miles upstream from mouth.

Drainage area.--169 sq mi.

Records available.--November 1950 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 710 ft (by barometer). Prior to Oct. 1, 1951, wire-weight gage at site 1.7 miles upstream at different datum.

Extremes.--Maximum discharge during year, 1,490 cfs Mar. 22 (gage height, 7.55 ft); maximum gage height, 8.63 ft Mar. 14 (ice jam); minimum discharge, 14 cfs Aug. 13, 14, Sept. 7, 20, 21.
1950-55: Maximum daily discharge, 1,600 cfs Apr. 14, 1952; maximum gage height, 10.5 ft Feb. 21, 1953 (ice jam); minimum discharge, 9.4 cfs July 7, 8, 1952.

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 26 to May 24)

Oct. 1 to Mar. 18				Mar. 19 to Sept. 30			
1.0	24	3.0	285	0.8	9	5.0	720
1.5	75	5.0	650	2.0	165	6.3	1,100
2.0	139	6.1	920	3.0	314		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	41	85	202	80	75	85	289	125	91	25	17	27
2	32	92	163	80	80	80	281	116	78	39	17	21
3	660	93	125	75	80	83	258	110	69	30	17	19
4	460	89	110	77	75	87	235	101	66	26	18	18
5	209	85	100	77	75	84	220	94	62	27	21	18
6	143	79	90	84	80	84	220	87	56	34	38	17
7	108	73	80	77	85	84	206	82	70	25	25	16
8	93	*69	95	67	80	80	192	75	86	22	19	16
9	87	65	85	73	75	100	178	71	65	21	18	17
10	85	63	77	73	85	150	172	75	56	21	17	18
11	102	62	70	65	80	250	164	79	58	19	17	18
12	98	62	70	71	75	500	155	71	80	18	16	18
13	92	62	*70	71	85	700	152	65	69	17	14	18
14	282	61	80	65	95	900	192	58	61	17	18	19
15	700	60	73	72	90	800	199	51	49	18	31	25
16	610	59	65	65	80	650	178	48	43	40	23	21
17	650	59	65	65	75	460	160	47	39	67	18	18
18	*393	69	60	*65	70	360	149	43	36	56	17	17
19	261	113	70	65	70	320	*199	39	35	*35	17	16
20	202	174	80	60	75	314	206	34	*39	23	18	*14
21	164	132	115	67	85	387	265	31	35	21	17	14
22	142	115	105	74	95	908	206	32	31	18	*19	16
23	124	102	100	67	90	*1,100	172	*53	31	17	17	16
24	113	115	90	60	*85	712	172	60	31	17	17	18
25	104	131	85	65	80	436	297	458	28	17	16	17
26	100	145	80	65	80	349	322	468	27	17	16	16
27	103	133	90	60	80	281	242	273	28	17	18	17
28	99	173	95	66	90	258	165	206	26	17	19	21
29	95	294	90	75	-	242	139	172	23	17	23	*21
30	93	261	85	67	------	242	138	136	23	16	107	22
31	88	--	85	72	------	265	------	112	------	17	53	- - -
Total	6,533	3,175	2,850	2,165	2,270	11,351	6,123	3,472	1,491	771	718	549
Mean	211	106	91.9	69.8	81.1	366	204	112	49.7	24.9	23.2	18.3
Cfsm	1.25	0.627	0.544	0.413	0.480	2.17	1.21	0.663	0.294	0.147	0.137	0.108
In.	1.44	0.70	0.63	0.48	0.50	2.50	1.35	0.76	0.33	0.17	0.16	0.12

Calendar year 1954: Max 700 Min 13 Mean 113 Cfsm 0.669 In. 9.11
Water year 1954-55: Max 1,100 Min 14 Mean 114 Cfsm 0.675 In. 9.14

Peak discharge (base, 600 cfs).--Oct. 3 (7 p.m.) 1,010 cfs (6.39 ft); Oct. 15 (10 to 11 a.m.) 890 cfs (5.96 ft); Mar. 14 (1 to 3 p.m.) 950 cfs (6.16 ft); Mar. 22 (10:30 p.m.) 1,490 cfs (7.55 ft); May 25 (1 to 6 p.m.) 625 cfs (4.63 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4 to Mar. 18.

Houghton Creek near Lupton, Mich.

Location.--Lat 44°23'50", long 84°02'55", in SE¼ sec. 10, T. 23 N., R. 3 E., on right bank half a mile upstream from mouth, 3 miles downstream from Wilkins Creek, and 3 miles southwest of Lupton.

Drainage area.--27 sq mi, approximately.

Records available.--July 1950 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 860 ft (by barometer).

Average discharge.--5 years, 53.6 cfs.

Extremes.--Maximum discharge during year, 281 cfs Mar. 22 (gage height, 5.02 ft); minimum, 34 cfs Feb. 25.
1950-55: Maximum discharge, 460 cfs Apr. 14, 1952 (gage height, 5.82 ft); minimum, 28 cfs Feb. 1, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to June 25, 1955, some regulation at low flow from sawmill on Sandback Creek at Rose City.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 7, Apr. 25 to Sept. 30		Dec. 8 to Apr. 24	
2.3	37	2.3	43
3.0	88	3.0	98
4.1	191	4.4	222

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	46	56	48	53	48	123	44	41	41	38	41
2	44	53	a52	50	48	48	123	46	41	42	38	40
3	182	50	a49	52	45	52	104	46	40	41	39	40
4	120	49	a47	51	45	49	83	44	41	41	40	39
5	56	48	a45	53	46	44	77	42	42	41	41	39
6	49	44	a45	53	47	46	83	42	45	41	44	39
7	47	46	a43	52	49	50	72	41	45	41	40	39
8	48	50	a46	55	48	48	64	42	46	41	39	39
9	45	*48	49	48	47	48	60	45	43	41	39	41
10	48	46	52	52	52	53	62	47	38	40	39	41
11	49	46	46	52	49	127	64	45	42	40	39	41
12	50	43	50	51	46	154	58	43	43	40	39	40
13	48	50	51	48	50	128	59	42	45	40	38	40
14	53	42	*52	49	51	132	68	41	43	40	40	41
15	*82	46	51	47	46	168	72	40	41	41	43	41
16	104	48	52	48	45	132	57	43	41	50	39	40
17	120	46	49	*50	43	88	56	42	37	46	41	39
18	66	48	50	48	44	76	*57	41	40	42	39	38
19	55	54	49	46	45	68	61	40	40	41	39	*39
20	53	60	54	49	49	75	68	40	*41	*41	42	39
21	47	51	58	44	*60	*93	80	39	41	41	39	39
22	51	51	55	46	54	178	61	42	41	41	*40	40
23	46	51	52	46	52	216	53	*45	41	40	39	39
24	46	54	49	48	52	118	56	46	43	40	39	40
25	50	65	49	48	49	92	74	113	39	40	39	39
26	47	58	50	49	47	76	65	69	42	40	39	39
27	48	54	58	50	49	66	52	50	41	40	40	41
28	50	57	52	52	50	64	48	45	40	40	41	41
29	47	74	52	47	-	70	45	45	40	39	41	40
30	50	89	53	47	------	84	45	43	40	39	64	40
31	44	-- --	51	51	-------	102	-------	42	-------	38	44	----- -
Total	1,890	1,547	1,567	1,530	1,361	2,793	2,050	1,435	1,243	1,269	1,261	1,194
Mean	61.0	51.6	50.5	49.4	48.6	90.1	68.3	46.3	41.4	40.9	40.7	39.8
Cfsm	2.26	1.91	1.87	1.83	1.80	3.34	2.53	1.71	1.53	1.51	1.51	1.47
In.	2.61	2.13	2.16	2.11	1.87	3.85	2.82	1.97	1.71	1.74	1.74	1.64

Calendar year 1954: Max 325 Min 37 Mean 54.6 Cfsm 2.02 In. 27.44
Water year 1954-55: Max 216 Min .37 Mean 52.4 Cfsm 1.94 In. 26.35

Peak discharge (base, 150 cfs).--Oct. 3 (7 to 8 p.m.) 236 cfs (4.56 ft); Oct. 17 (1:30 to 3:30 a.m.) 156 cfs (3.77 ft); Mar. 12 (5 a.m.) 172 cfs (3.86 ft); Mar. 22 (11:30 p.m.) 281 cfs (5.02 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.
Note.--Stage-discharge relation affected by ice Dec. 4-7, 13, 20-23, Jan. 16-21, Jan. 27 to Feb. 6, Feb. 12-18, Mar. 6-8.

Rifle River at "The Ranch" near Lupton, Mich.

Location.--Lat 44°23'35", long 84°02'15", in SW¼ sec. 11, T. 23 N., R. 3 E., on left bank a quarter of a mile downstream from Houghton Creek and 3 miles southwest of Lupton.

Drainage area.--54 sq mi, approximately.

Records available.--July 1950 to September 1955.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 850 ft (by barometer).

Average discharge.--5 years, 93.6 cfs.

Extremes.--Maximum discharge during year, 415 cfs Mar. 22 (gage height, 9.33 ft); minimum, 62 cfs Aug. 2.
1950-55: Maximum discharge, 658 cfs June 26, 1954 (gage height, 9.86 ft); minimum, 48 cfs Oct. 8, 1952.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to June 25, 1955, some regulation at low flow from sawmill on Sandback Creek at Rose City.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 11 to Sept. 30)

Oct. 1-17		Oct. 18 to Sept. 30	
6.8	79	6.3	62
7.5	132	7.0	98
8.8	286	8.5	246
		9.0	320

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	84	91	123	84	88	82	196	90	81	69	64	72
2	83	98	110	87	82	82	212	93	79	72	64	69
3	273	94	99	89	75	84	191	95	76	70	65	68
4	238	93	96	87	75	84	161	86	76	69	66	67
5	136	92	89	89	78	78	140	82	76	70	69	66
6	114	87	86	90	80	80	150	82	73	69	80	66
7	100	89	80	90	80	85	130	76	74	68	69	66
8	94	92	82	89	82	92	120	76	80	68	66	66
9	91	*87	82	84	80	82	105	81	77	68	66	67
10	92	85	84	87	84	88	110	84	69	66	65	68
11	90	85	80	87	83	140	115	83	74	66	64	68
12	90	82	84	87	80	190	105	80	76	65	64	67
13	88	90	86	82	83	170	106	82	78	66	64	66
14	94	80	*84	82	88	190	118	76	76	66	67	68
15	*141	86	84	82	80	220	140	75	72	67	74	68
16	176	86	86	83	78	190	118	78	71	81	67	67
17	208	85	84	*87	78	140	114	76	68	82	66	66
18	141	86	84	82	80	120	*120	74	70	72	66	66
19	123	94	85	81	78	110	125	73	70	70	65	*66
20	114	114	90	80	82	120	140	72	*72	*69	72	67
21	104	108	95	75	*97	*160	160	72	71	67	66	66
22	105	104	88	79	91	258	130	76	70	66	*68	67
23	96	102	83	79	89	311	105	*84	72	66	66	67
24	94	105	82	81	89	234	115	90	74	65	65	68
25	98	118	82	82	87	186	150	186	68	65	65	67
26	93	114	84	82	81	156	130	154	70	65	66	67
27	91	110	92	85	85	132	114	123	70	65	67	69
28	92	110	89	88	85	128	104	105	69	66	68	70
29	90	132	87	80	-	128	98	100	68	64	69	69
30	95	136	89	80	------	136	94	92	68	64	108	70
31	88	--	87	85	------	166	------	87	------	64	82	-
Total	3,616	2,933	2,736	2,605	2,318	4,422	3,916	2,783	2,188	2,110	2,133	2,024
Mean	117	97.8	88.3	84.0	82.8	143	131	89.8	72.9	68.1	68.8	67.5
Cfsm	2.17	1.81	1.64	1.56	1.53	2.65	2.43	1.66	1.35	1.26	1.27	1.25
In.	2.50	2.02	1.89	1.80	1.59	3.06	2.71	1.91	1.51	1.45	1.46	1.40

Calendar year 1954 : Max 500 Min 61 Mean 95.8 Cfsm 1.77 In. 24.11
Water year 1954-55: Max 311 Min 64 Mean 92.6 Cfsm 1.71 In. 23.30

Peak discharge (base, 250 cfs).--Oct. 3 (8 to 11 p.m.) 352 cfs (9.15 ft); Oct. 17 (4 a.m.) 252 cfs (8.53 ft); Mar. 22 (11 to 12 p.m.) 415 cfs (9.33 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 20-23, Jan. 20, 21, Jan. 27 to Feb. 7, Feb. 11-18, Mar. 7, 8, 19. No gage-height record Mar. 11-18, 20, 21, Apr. 5-12, 15, 18-26; discharge estimated on basis of weather records and records for stations on nearby streams.

Prior Creek near Selkirk, Mich.

Location.--Lat 44°20'10", long 84°04'00", in SE¼ sec. 33, T. 23 N., R. 3 E., on right bank a quarter of a mile upstream from mouth, half a mile downstream from Ammond Creek, and 1½ miles north of Selkirk.

Drainage area.--19 sq mi, approximately.

Records available.--September 1950 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 840 ft (by barometer).

Average discharge.--5 years, 17.2 cfs.

Extremes.--Maximum discharge during year, 186 cfs Mar. 22 (gage height, 4.88 ft); maximum gage height, 5.08 ft Mar. 12 (ice jam); minimum discharge, 4.9 cfs July 15.
1950-55: Maximum discharge, that of Mar. 22, 1955; maximum gage height, that of Mar. 12, 1955; minimum discharge, 3.8 cfs Sept. 10, 1950.

Remarks.--Records fair except those above 90 cfs and those for periods of ice effect, which are poor.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 24-30)

Oct. 1-3		Oct. 4 to Sept. 30	
1.3	9.0	1.0	5.0
1.8	24	1.3	9.0
2.5	52	1.8	22
3.4	97	2.5	52
		4.0	132

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.0	12	26	10	13	11	52	14	9.5	6.4	5.4	7.5
2	9.3	15	20	11	12	11	51	14	9.2	7.8	5.2	6.6
3	97	16	15	11	10	12	41	14	8.7	6.8	3.6	6.6
4	109	15	14	11	10	11	30	13	8.7	6.4	5.8	6.2
5	46	14	11	11	10	10	26	12	8.2	6.4	9.3	6.0
6	25	13	11	12	11	10	28	11	8.2	6.4	9.4	5.9
7	19	12	10	12	12	12	24	10	9.8	6.3	6.9	5.8
8	15	12	11	12	11	11	21	9.8	10	6.2	6.3	5.9
9	14	*12	12	13	10	11	20	9.8	9.0	6.0	6.3	6.2
10	14	12	13	11	12	15	19	12	8.6	5.8	6.2	6.3
11	17	12	12	12	11	25	19	12	8.6	5.8	5.9	6.4
12	17	11	12	12	10	65	17	11	9.4	5.8	5.9	6.0
13	16	11	12	11	11	55	17	9.8	9.0	5.7	5.8	6.0
14	*20	12	12	11	12	70	23	9.4	8.7	5.6	6.8	6.4
15	38	11	*12	11	11	100	27	8.8	8.0	5.8	8.6	6.3
16	45	11	11	10	10	70	20	8.7	7.6	8.7	6.6	6.2
17	77	11	11	*10	9.5	50	16	8.6	7.4	7.8	6.3	5.9
18	42	11	11	10	10	35	14	8.2	7.0	6.8	6.2	5.8
19	26	20	10	10	10	31	26	8.4	7.0	6.3	6.3	*5.8
20	21	30	12	10	11	40	*31	8.2	7.0	6.0	6.4	5.9
21	18	21	14	9.5	14	70	44	8.1	*6.8	5.8	6.0	5.9
22	16	18	13	10	13	*129	24	8.6	6.6	*5.5	6.3	6.2
23	14	17	12	10	*12	126	18	10	6.9	5.6	*6.2	6.2
24	14	21	11	10	12	84	18	*13	7.0	5.5	6.2	6.2
25	13	26	11	11	11	50	39	69	6.8	5.4	6.2	6.2
26	13	24	11	11	10	37	44	68	6.6	5.4	6.3	6.3
27	13	21	14	11	11	30	25	26	6.4	5.4	6.8	7.0
28	12	25	13	13	11	27	20	19	6.3	5.7	7.5	7.5
29	14	36	12	11	-	30	17	15	6.3	5.6	7.0	6.8
30	15	41	12	11	------	38	15	12	6.3	5.5	18	6.9
31	13	-	11	11	---- -	46	-- - --	9.5	- -- -	5.4	9.0	-
Total	831.3	523	392	339.5	310.5	1,322	788	470.9	235.6	189.6	216.7	188.9
Mean	26.8	17.4	12.6	11.0	11.1	42.6	26.3	15.2	7.85	6.12	6.99	6.30
Cfsm	1.41	0.916	0.663	0.579	0.584	2.24	1.38	0.800	0.413	0.322	0.368	0.332
In.	1.63	1.02	0.76	0.67	0.61	2.58	1.54	0.92	0.46	0.37	0.42	0.37

Calendar year 1954: Max 150 Min 5.1 Mean 17.8 Cfsm 0.937 In. 12.72
Water year 1954-55: Max 129 Min 5.2 Mean 15.9 Cfsm 0.837 In. 11.35

Peak discharge (base, 100 cfs).--Oct. 3 (5:30 p.m.) 156 cfs (4.48 ft); Mar. 15 (time and discharge unknown); Mar. 22 (7 p.m.) 186 cfs (4.88 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 4-9, Dec. 14 to Mar. 20.

Rifle River at Selkirk, Mich.

Location.--Lat 44°18'50", long 84°04'00", in NE¼ sec. 9, T. 22 N., R. 3 E., on left bank at upstream side of highway bridge at Selkirk, 1½ miles downstream from Prior Creek.

Drainage area.--110 sq mi.

Records available.--September 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 828.47 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 150 cfs.

Extremes.--Maximum discharge during year, 800 cfs Mar. 23 (gage height, 3.66 ft); minimum, 69 cfs Aug. 2.
1950-55: Maximum discharge, 1,400 cfs Apr. 14, 1952 (gage height, 4.54 ft); minimum, 65 cfs Oct. 5, 1952.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 20		Feb. 21 to May 26		May 27 to Sept. 30	
1.7	99	1.6	84	1.5	55
2.5	325	2.0	179	1.9	136
2.9	465	2.8	435	2.3	250
		3.4	675		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	121	204	121	130	128	360	143	112	82	72	97
2	106	133	175	121	135	128	378	146	106	91	70	87
3	398	133	145	123	120	130	343	150	97	83	74	83
4	465	128	140	123	105	130	285	136	95	82	80	80
5	278	126	120	126	110	120	249	128	97	82	87	78
6	189	121	110	133	115	120	249	121	93	82	112	76
7	153	119	100	128	120	125	255	119	93	80	89	76
8	140	121	105	130	110	135	201	114	108	78	82	76
9	135	*117	112	123	105	130	192	121	97	80	78	78
10	138	117	117	123	120	138	187	123	87	78	78	83
11	138	114	114	119	115	267	184	126	89	76	78	85
12	133	110	117	121	110	407	174	119	97	74	76	80
13	131	119	120	117	120	384	169	121	93	76	74	80
14	153	112	*115	115	130	435	195	110	95	76	83	85
15	227	117	117	110	110	555	226	105	102	78	104	85
16	269	117	117	115	110	515	195	107	91	104	85	83
17	360	114	114	120	105	378	179	103	85	129	78	82
18	254	114	119	110	105	310	171	101	87	102	82	78
19	192	143	120	*105	110	255	214	99	87	87	78	80
20	169	186	130	115	130	264	*217	99	87	*85	87	*82
21	*150	164	140	105	153	313	258	99	*87	78	82	80
22	145	153	150	110	146	*511	203	103	85	76	82	82
23	135	148	130	110	*143	655	179	123	89	76	*78	82
24	131	158	120	115	135	535	176	*146	89	74	76	83
25	131	178	110	120	130	364	240	411	82	74	76	82
26	126	178	119	110	123	291	246	388	85	74	78	80
27	126	164	128	110	128	250	201	238	82	72	82	85
28	123	175	128	125	130	210	179	182	82	76	85	89
29	126	218	123	110	-	220	163	159	80	72	87	85
30	128	233	125	110	-----	252	150	141	78	72	156	89
31	126	-- -	123	120	------	291	-------	126	----- -	72	122	--- -
Total	5,578	4,251	3,907	3,643	3,403	8,946	6,618	4,507	2,737	2,521	2,651	2,471
Mean	180	142	126	118	122	289	221	145	91.2	81.3	85.5	82.4
Cfsm	1.64	1.29	1.15	1.07	1.11	2.63	2.01	1.32	0.829	0.739	0.777	0.749
In.	1.89	1.44	1.33	1.23	1.16	3.03	2.24	1.52	0.92	0.85	0.90	0.84

Calendar year 1954: Max 800 Min 74 Mean 151 Cfsm 1.37 In. 18.60
Water year 1954-55: Max 655 Min 70 Mean 140 Cfsm 1.27 In. 17.35

Peak discharge (base, 500 cfs).--Oct. 4 (7 to 9 a.m.) 520 cfs (3.05 ft); Mar. 15 (8 to 9 p.m.) 595 cfs (3.21 ft); Mar. 23 (5 p.m.) 800 cfs (3.66 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-8, 13, 14, 19-25, 30, Jan. 8, Jan. 14 to Feb. 20, Feb. 24, 25, Mar. 5-9.

South Branch Shepards Creek near Selkirk, Mich.

Location.--Lat 44°18'25", long 84°05'10", in SE¼ sec. 8, T. 22 N., R. 3 E., on right bank 200 ft upstream from mouth and 1 mile southwest of Selkirk.

Drainage area.--1.20 sq mi.

Records available.--October 1951 to September 1955.

Gage.--Water-stage recorder and V-notch sharp-crested weir. Altitude of gage is 845 ft (by barometer).

Extremes.--Maximum discharge during year, 73 cfs Oct. 3 (gage height, 3.88 ft), from rating curve extended above 20 cfs; no flow July 13, 14, July 22 to Aug. 4, Aug. 8-13, 18.

1951-55: Maximum discharge, 83 cfs Apr. 13, 1952 (gage height, 4.00 ft), from rating curve extended above 20 cfs; no flow for short periods in each year.

Remarks.--Records fair except those below 1 cfs and those for periods of ice effect or no gage-height record, which are poor.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	0	1.7	1.0
1.1	.01	1.9	2.1
1.2	.05	2.1	4.5
1.3	.13	2.4	9.8
1.4	.26	2.9	23
1.5	.46		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.11	0.16	0.74	0.10	0.11	0.11	1.6	0.23	0.13	0.03	0	0.05
2	.33	.35	.50	.10	.11	.11	1.3	.25	.11	.04	0	.03
3	15	.26	.26	.10	.10	.12	.84	.20	.09	.03	0	.03
4	2.4	.19	.20	.10	.09	.11	.60	.20	.09	.02	0	.02
5	*.68	.16	.16	.13	.09	.10	.55	.18	.09	.01	.01	.01
6	.39	.16	.12	.12	.09	.11	.58	.18	.07	.02	.03	.01
7	.23	.15	.10	.11	.10	.12	.43	.18	.11	.01	.01	.01
8	.19	.15	.11	.10	.09	.14	.37	.18	.13	.01	0	a.01
9	.16	.14	.11	.10	.09	.12	.33	.20	.09	.02	0	a.01
10	.19	.14	.10	.10	.10	.15	.30	.20	.07	.01	0	.02
11	.35	.14	.10	.10	.10	a1.5	.26	.20	.12	.01	0	.03
12	.30	.13	.10	.10	.09	a6.0	*.26	.15	.18	.01	0	.01
13	.20	.14	.10	.10	.09	a4.0	.30	.13	.13	0	0	.01
14	1.0	.14	.11	.10	.10	a8.0	.41	.13	.11	0	.04	.03
15	2.3	.12	.12	.10	.10	13	.46	.13	.07	.01	.08	.03
16	5.0	.13	.12	.10	.09	4.6	.41	a.12	.06	.08	.02	.03
17	2.9	.12	.11	.10	.09	1.9	.30	a.11	.06	.05	.01	.02
18	1.0	.12	.11	.09	.09	1.2	.31	.11	.05	.03	0	.01
19	.60	.98	.10	.09	.10	.98	2.0	.09	.05	.02	.05	*.01
20	.41	.92	.09	.08	.11	3.6	1.8	.09	*.05	.01	.05	.01
21	.31	.50	.09	.09	.19	4.6	1.7	.09	.04	.01	.01	.01
22	.23	.37	.11	.09	.16	20	.77	.17	.04	0	*.01	.01
23	.20	.30	.12	.09	.13	4.5	.50	.22	.05	0	.01	.02
24	.18	.60	.12	.09	.13	2.7	.57	1.2	.05	0	a.02	.02
25	.16	.80	.11	.10	.12	1.4	2.1	*5.6	.04	0	a.01	.02
26	.16	.66	.11	.10	.11	.80	1.6	1.2*	.04	0	a.01	.02
27	.19	.55	.16	.10	.12	.52	*.71	.54	.04	0	a.01	.04
28	.16	.93	.14	.11	.12	.48	.46	.33	.03	0	a.02	.04
29	.19	2.3	.12	.11	-	.96	.37	.26	.02	*0	*a.15	.04
30	.20	1.4	.11	.10	------	1.2	.26	.20	.02	0	.58	.04
31	.16	-- -	.10	.11	-------	1.5	--------	.15	--- ----	0	.09	--- -
Total	35.88	13.21	4.75	3.11	3.01	84.63	22.45	13.22	2.23	0.43	1.22	0.65
Mean	1.16	0.440	0.153	0.100	0.108	2.73	0.748	0.426	0.074	0.014	0.039	0.022
Cfsm	0.967	0.367	0.128	0.083	0.090	2.28	0.623	0.355	0.062	0.012	0.033	0.018
In.	1.11	0.41	0.15	0.10	0.09	2.63	0.70	0.41	0.07	0.01	0.04	0.02

Calendar year 1954: Max 15 Min 0 Mean 0.557 Cfsm 0.464 In. 6.31
Water year 1954-55: Max 20 Min 0 Mean 0.506 Cfsm 0.422 In. 5.74

Peak discharge (base, 10 cfs).--Oct. 3 (3 a.m.) 73 cfs (3.88 ft); Mar. 14 (7 p.m.) 26 cfs (2.98 ft); Mar. 22 (7 a.m.) 54 cfs (3.58 ft).

* Discharge measurement or observation of no flow made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Rifle River at Selkirk.

Note.--Stage-discharge relation affected by ice Dec. 4, 10-13, 17-20, Dec. 23 to Jan. 27, Feb. 3 to Mar. 14.

West Branch Rifle River near Selkirk, Mich.

Location.--Lat 44°15'40", long 84°06'30", in NE¼ sec. 31, T. 22 N., R. 3 E., on left bank half a mile downstream from Campbell Creek, 3½ miles upstream from mouth, 4 miles southwest of Selkirk, and 6½ miles southeast of town of West Branch.

Drainage area.--52 sq mi, approximately.

Records available.--February 1952 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 796 ft (by barometer).

Extremes.--Maximum discharge during year, 905 cfs Oct. 3 (gage height, 7.73 ft); minimum, 24 cfs July 25, Aug. 1, 2.
1952-55: Maximum discharge, that of Oct. 3, 1954; minimum, 19 cfs Aug. 3, 1953.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.4	21	5.0	285
2.7	38	6.0	450
3.4	96	7.0	690

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	51	79	46	50	48	162	53	42	28	25	42
2	50	55	66	47	45	48	168	50	40	32	25	37
3	685	55	57	50	42	52	137	54	37	36	26	32
4	314	54	54	47	40	49	108	49	37	31	26	33
5	144	52	52	48	43	45	91	48	38	30	28	28
6	94	50	52	52	45	47	91	46	37	29	29	29
7	72	49	50	50	47	50	80	45	44	29	31	30
8	64	51	50	53	45	55	71	45	51	28	28	30
9	58	*49	47	46	43	52	69	42	46	28	28	30
10	57	47	45	48	49	58	63	46	42	29	28	30
11	71	46	44	49	47	338	65	50	40	27	27	32
12	67	46	45	46	44	352	60	47	48	26	26	30
13	62	46	*48	43	46	308	59	45	43	26	26	32
14	77	45	50	45	49	352	75	42	44	26	30	32
15	*140	44	48	43	45	430	90	44	39	26	34	33
16	168	46	44	45	42	292	72	39	37	28	34	33
17	204	47	41	47	40	180	63	39	34	30	30	32
18	117	48	45	45	43	134	60	39	32	30	28	33
19	84	65	45	*41	45	122	100	39	33	*32	28	*28
20	70	88	47	43	51	144	*119	39	30	30	28	30
21	65	68	52	41	62	192	156	39	*30	28	29	28
22	59	62	56	42	58	*500	96	42	30	27	26	30
23	57	58	52	42	*58	315	70	43	31	27	*28	30
24	54	65	47	45	58	228	66	*54	32	27	30	30
25	54	70	47	45	53	150	114	390	31	25	28	30
26	52	71	49	45	48	109	122	209	31	26	29	31
27	53	64	54	47	53	89	84	106	28	26	29	33
28	51	72	50	50	53	88	67	72	29	26	33	34
29	54	110	50	45	-	84	61	61	28	26	36	33
30	55	106	53	45	------	108	54	52	28	26	81	33
31	51	----	50	47	------	128	-------	47	----	26	58	----
Total	3,255	1,780	1,569	1,428	1,344	5,147	2,693	2,016	1,092	871	972	948
Mean	105	59.3	50.6	46.1	48.0	166	89.8	65.0	36.4	28.1	31.4	31.6
Cfsm	2.02	1.14	0.973	0.887	0.923	3.19	1.73	1.25	0.700	0.540	0.604	0.608
In.	2.33	1.27	1.12	1.02	0.96	3.68	1.93	1.44	0.78	0.62	0.70	0.68

Calendar year 1954: Max 685 Min 26 Mean 62.9 Cfsm 1.21 In. 16.40
Water year 1954-55: Max 685 Min 25 Mean 63.3 Cfsm 1.22 In. 16.53

Peak discharge (base, 300 cfs).--Oct. 3 (4 to 5 p.m.) 905 cfs (7.73 ft); Mar. 11 (10:30 p.m.) 542 cfs (6.47 ft); Mar. 14 (11 p.m.) 510 cfs (6.28 ft); Mar. 22 (5 p.m.) 750 cfs (7.18 ft); May 25 (1 p.m.) 500 cfs (6.27 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-11, Dec. 14 to Mar. 10.

Rifle River at Michigan Highway 70, near Sterling, Mich.

Location.--Lat 44°04', long 84°02', in SW¼ sec. 5, T. 19 N., R. 4 E., on left bank 30 ft downstream from bridge on State Highway 70, 3 miles north of Sterling, and 18 miles upstream from mouth.

Drainage area.--320 sq mi, approximately.

Records available.--January 1937 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 641 ft (by barometer). Jan. 14, 1937, to June 7, 1938, chain gage, June 8 to Nov. 29, 1938, wire-weight gage, and Nov. 30, 1938, to Jan. 10, 1939, staff gage, all at same site and datum.

Average discharge.--17 years (1937-39, 1940-55), 316 cfs.

Extremes.--Maximum discharge during year, 2,260 cfs Mar. 22 (gage height, 8.03 ft); maximum gage height, 9.50 ft Mar. 15 (ice jam); minimum discharge, 122 cfs Aug. 3.
1937-55: Maximum discharge, 5,340 cfs Mar. 28, 1950 (gage height, 13.74 ft), from rating curve extended above 2,900 cfs; minimum, 87 cfs Dec. 2, 1946.

Remarks.--Records good except those for periods of ice effect or no gage height record, which are fair. Diurnal fluctuation during low flow caused by powerplant above station.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 15, July 19 to Sept. 30		Mar. 16 to July 18	
1.3	121	1.3	132
2.0	229	2.0	250
3.5	586	3.5	620
6.0	1,410	6.9	1,770
7.5	2,010		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	200	250	480	230	250	270	830	330	290	173	129	190
2	230	280	410	230	290	260	890	310	260	206	125	166
3	1,100	280	340	240	260	270	830	320	248	184	128	155
4	1,250	260	290	240	220	280	695	300	236	172	134	151
5	900	250	260	240	240	250	605	280	228	175	134	144
6	500	250	230	260	250	250	575	260	220	172	167	139
7	350	250	200	250	270	240	515	260	226	164	164	140
8	280	250	210	260	250	225	462	240	250	158	142	139
9	240	*240	220	240	225	280	438	236	246	157	135	143
10	245	229	230	240	260	350	425	260	222	154	135	147
11	250	223	230	230	250	650	400	270	216	150	133	151
12	235	221	230	230	230	1,350	388	260	260	145	130	147
13	*270	218	220	225	260	1,750	362	250	240	144	129	144
14	398	223	*210	215	290	2,000	425	250	234	144	146	154
15	628	212	220	210	250	1,700	515	224	212	150	179	157
16	670	221	225	220	250	1,430	450	216	198	164	162	154
17	910	221	225	235	230	1,040	400	214	186	218	146	150
18	670	220	230	*220	230	920	362	210	176	204	139	147
19	478	278	240	200	250	725	450	200	178	161	138	140
20	390	426	250	220	280	740	*515	196	182	*153	139	142
21	354	378	280	230	310	920	665	196	*174	146	146	*142
22	332	330	310	250	310	*1,660	515	206	170	138	142	143
23	299	310	270	230	*310	1,750	425	260	170	137	*139	144
24	278	340	235	220	290	1,600	388	*260	175	134	137	144
25	268	370	210	220	280	1,100	560	1,230	172	131	134	146
26	258	370	230	220	260	890	695	1,270	166	130	137	144
27	288	350	250	210	260	710	545	770	164	131	144	151
28	278	400	250	220	280	605	450	560	160	131	158	161
29	268	470	245	240	-	590	400	450	157	131	166	157
30	265	520	240	215	------	635	350	388	156	128	326	155
31	265	--	235	230	------	710	------	330	------	128	299	------
Total	13,347	8,840	7,905	7,120	7,335	26,150	15,525	11,006	6,172	4,813	4,762	4,487
Mean	431	295	255	230	262	844	518	355	206	155	154	150
Cfsm	1.35	0.922	0.797	0.719	0.819	2.64	1.62	1.11	0.644	0.484	0.481	0.469
In.	1.56	1.03	0.92	0.83	0.85	3.04	1.81	1.28	0.72	0.56	0.55	0.52

Calendar year 1954: Max 1,550 Min 130 Mean 330 Cfsm 1.03 In. 14.01
Water year 1954-55: Max 2,000 Min 125 Mean 322 Cfsm 1.01 In. 13.67

Peak discharge (base, 1,600 cfs).--Mar. 14 (3 p.m.) 2,210 cfs (7.92 ft); Mar. 22 (9 p.m.) 2,260 cfs (8.03 ft); May 25 (6 p.m.) 1,730 cfs (6.75 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-8, 12-25, 29-31, Jan. 5 to Mar. 15 (no gage-height record Dec. 5-8, 12-14, 18-25, 29-31, Jan. 5-18, Jan. 30 to Feb. 23). No gage-height record Oct. 1-13, Oct. 30 to Nov. 9, Nov. 22 to Dec. 4, Dec. 9-11, 26-28, Jan. 1-4; discharge estimated on basis of weather records, 2 discharge measurements, and records for station at Selkirk.

North Branch Kawkawlin River near Kawkawlin, Mich.

Location.--Lat 43°40'05", long 83°58'15", in SE¼ sec. 27, T. 15 N., R. 4 E., on left bank 50 ft upstream from bridge on Beaver Road, 1¾ miles northwest of Kawkawlin, and 2½ miles upstream from mouth.

Drainage area.--101 sq mi.

Records available.--March 1951 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 586.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Sept. 27, 1951, staff gage at same site and datum.

Extremes.--Maximum discharge during year, 1,100 cfs Mar. 13 (gage height, 7.06 ft); no flow for long periods.
1951-55: Maximum discharge, that of Mar. 13, 1955; maximum gage height, 7.67 ft June 22, 1954; no flow for long periods each year.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 10 cfs, which are poor.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 1 to July 13)

Oct. 1-3		Oct. 4 to Sept. 30			
0.9	0	0.5	0	2.0	27
1.0	1.0	.6	.1	2.5	56
1.2	3.8	.7	.4	3.0	95
1.4	6.9	.8	.9	4.0	210
1.6	11	.9	1.5	5.0	385
1.8	16	1.1	3.3	6.0	665
2.0	23	1.3	6.0	7.0	1,080
2.5	52	1.7	15		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	14	120	16	5	60	164	106	217	5.1	0	0.7
2	0	15	143	20	5	70	*148	85	176	4.4	0	.2
3	48	*16	134	25	6	80	135	71	132	3.8	0	.1
4	62	16	112	35	6	80	120	57	96	2.9	0	0
5	12	16	85	50	6	80	106	46	66	2.4	0	0
6	*8.2	16	60	60	6	80	92	39	*46	*1.9	0	0
7	5.2	15	45	70	6	70	79	34	34	1.6	0	*0
8	4.0	14	*36	80	6	70	66	30	28	1.4	0	0
9	15	14	25	85	*6	70	58	24	21	1.3	0	0
10	34	13	20	90	6	150	54	*20	16	1.0	*0	0
11	30	12	18	95	6	350	51	17	30	.8	0	0
12	22	12	15	*80	6	600	42	16	60	.6	0	0
13	16	12	11	65	6	*980	38	14	67	.4	0	0
14	84	10	9	55	6	915	35	13	64	.3	0	0
15	74	10	8	45	6	*735	35	12	55	.3	0	0
16	92	9.8	7	40	6	630	40	11	53	.4	0	0
17	170	9.4	6	30	6	a500	43	11	50	.3	0	0
18	217	9.4	6	25	6	a400	58	11	42	.2	0	0
19	203	21	6	20	7	a300	69	10	37	.2	0	0
20	170	33	6	17	15	254	64	9.4	36	.1	0	0
21	144	46	6	15	25	224	58	8.6	23	.1	0	0
22	111	78	6	12	35	401	51	8.0	17	0	0	0
23	80	101	6	10	40	540	70	7.4	13	0	0	0
24	55	114	6	9	45	775	110	8.0	11	0	0	0
25	39	100	6	8	50	648	131	46	9.2	0	0	0
26	28	84	7	7	50	a500	119	26	8.2	0	0	0
27	24	76	8	6	50	a350	121	29	7.6	0	0	0
28	20	82	8	6	50	a300	106	323	7.2	0	0	0
29	18	133	10	5	-	210	107	405	6.8	0	0	0
30	16	113	11	5	-------	196	135	325	6.0	0	11	0
31	15	------	14	5	-------	176	-------	254	-------	0	2.7	------
Total	1,816.4	1,214.6	960	1,091	473	10,794	2,505	2,076.4	1,435.0	29.5	13.7	1.0
Mean	58.6	40.5	31.0	35.2	16.9	348	83.5	67.0	47.8	0.95	0.44	0.03
Cfsm	0.580	0.401	0.307	0.349	0.167	3.45	0.827	0.663	0.473	0.0094	0.0044	0.00030
In.	0.67	0.45	0.35	0.40	0.17	3.97	0.92	0.76	0.53	0.01	0.005	0.0004

Calendar year 1954: Max 1,030 Min 0 Mean 76.3 Cfsm 0.755 In. 10.25
Water year 1954-55: Max 980 Min 0 Mean 61.4 Cfsm 0.608 In. 8.24

* Discharge measurement or observation of no flow made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Cass River at Vassar and Salt River near North Bradley.
Note.--Stage-discharge relation affected by ice Dec. 5-7, Dec. 9 to Mar. 11 (no gage-height record Feb. 10-18).

Shiawassee River at Byron, Mich.

Location.--Lat 42°49'25", long 83°56'45", on line between secs. 14 and 23, T. 5 N., R. 4 E., on upstream side of highway bridge at Byron, a quarter of a mile downstream from milldam which is just upstream from South Branch Shiawassee River.

Drainage area.--368 sq mi.

Records available.--January 1948 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 811.54 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--7 years, 283 cfs.

Extremes.--Maximum discharge during year, 1,290 cfs Mar. 6 (gage height, 9.3 ft, from graph based upon gage readings); maximum gage height, 9.62 ft Feb. 24 (backwater from ice); minimum discharge observed, 32 cfs Sept. 6 (gage height, 3.94 ft); minimum gage height, 3.90 ft Sept. 26.

1948-55: Maximum discharge, 2,860 cfs May 13, 1948 (gage height, 12.51 ft); minimum observed, 32 cfs Sept. 8, 1953, Sept. 6, 1955; minimum gage height, 3.90 ft Sept. 26, 1955.

Remarks.--Records good except those for period of ice effect, which are fair. Low flow slightly regulated at times by mills above station.

Revisions.--WSP 1144: Drainage area.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 5, July 2 to Sept. 9)

Oct. 1 to Feb. 24				Feb. 25 to Sept. 30			
4.0	49	7.0	620	3.8	30	6.0	367
4.5	117	9.5	1,370	4.0	46	7.0	600
5.0	205			4.5	106	9.0	1,180
				5.0	182	10.0	1,580

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	61	178	310	440	140	1,060	477	270	120	93	54	89
2	58	180	290	420	130	995	409	199	114	96	55	67
3	66	183	270	460	130	875	327	197	112	102	58	67
4	191	194	270	490	130	965	280	184	109	87	63	62
5	400	187	261	608	130	1,150	270	177	103	72	64	41
6	500	185	218	820	130	1,220	270	169	82	92	79	32
7	460	171	171	1,080	130	1,060	261	153	89	95	84	45
8	380	146	160	995	130	815	243	135	114	84	65	52
9	330	142	158	820	140	740	227	114	123	91	57	52
10	310	146	165	720	150	700	209	123	117	80	70	*59
11	261	142	*144	608	150	740	182	124	117	60	72	58
12	390	141	158	500	*150	785	182	114	120	58	74	42
13	470	136	144	450	150	755	199	117	*123	65	*64	50
14	450	132	148	370	150	662	176	114	146	65	65	58
15	380	98	162	370	150	550	208	99	136	83	53	56
16	440	106	176	360	150	538	252	88	129	105	63	53
17	510	109	183	290	150	562	234	92	128	95	65	55
18	570	112	173	*261	150	500	208	91	117	*64	69	52
19	558	162	165	290	150	454	252	95	109	60	66	37
20	545	218	117	223	250	420	280	89	87	65	65	42
21	520	207	194	238	500	388	289	98	120	72	64	44
22	460	242	183	229	700	454	280	95	135	71	70	49
23	370	242	191	201	1,100	550	270	89	136	70	60	47
24	320	270	173	165	1,200	612	252	120	114	75	60	57
25	290	310	165	160	995	638	270	176	106	63	50	53
26	280	300	137	160	725	612	*398	206	106	71	45	38
27	270	*290	167	150	675	550	466	184	82	66	41	43
28	270	290	330	150	935	488	442	*156	88	70	43	50
29	270	290	470	150	-	*488	378	150	88	75	53	51
30	*221	320	532	140	-------	488	346	126	86	72	84	50
31	219	-- --	500	140	-------	488	-------	110	-------	65	88	------ --
Total	10,820	5,829	6,885	12,458	9,770	21,302	8,537	4,254	3,356	2,382	1,963	1,551
Mean	349	194	222	402	349	687	285	137	112	76.8	63.3	51.7
Cfsm	0.948	0.527	0.603	1.09	0.948	1.87	0.774	0.372	0.304	0.209	0.172	0.140
In.	1.09	0.59	0.70	1.26	0.99	2.15	0.86	0.43	0.34	0.24	0.20	0.16

Calendar year 1954: Max 1,580 Min 38 Mean 267 Cfsm 0.726 In. 9.84
Water year 1954-55: Max 1,220 Min 32 Mean 244 Cfsm 0.663 In. 9.01

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 25 to Feb. 24.

Shiawassee River at Owosso, Mich.

Location.--Lat 43°00'54", long 84°10'52", in SW¼ sec. 12, T. 7 N., R. 2 E., on right bank on grounds of sewage-treatment plant, 1½ miles north of Owosso.

Drainage area.--538 sq mi.

Records available.--March 1931 to September 1955. Gage-height records collected in this vicinity 1910-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 707.25 ft above mean sea level, datum of 1929. Prior to Oct. 15, 1933, at site 1½ miles upstream at datum 5.46 ft higher.

Average discharge.--22 years (1931-33, 1935-55), 337 cfs.

Extremes.--Maximum discharge during year, 1,880 cfs Mar. 4 (gage height, 5.83 ft); maximum gage height, 5.86 ft Feb. 23 (ice jam); minimum discharge, 33 cfs Sept. 7, 8; minimum gage height, 1.82 ft Sept. 7, 8, 21, 28.
1931-55: Maximum discharge, 6,240 cfs Apr. 6, 1947 (gage height, 10.35 ft); minimum, 0.2 cfs July 27, 1934 (gage height, 1.12 ft); minimum daily, 2.0 cfs July 28, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated below about 800 cfs by powerplant at Shiawasseetown prior to February 1953.

Revisions (water years).--WSP 1337: 1932, 1934, 1936-38, 1944.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 1 to Sept. 8)

1.7	30	3.0	385
1.8	44	4.0	810
2.0	81	5.0	1,340
2.5	220	6.0	2,000

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56	250	374	580	180	1,440	665	410	148	83	71	75
2	59	232	368	580	170	1,440	620	308	151	83	63	73
3	112	220	343	600	160	1,290	540	262	142	88	67	81
4	145	226	312	688	160	1,720	468	253	130	97	61	61
5	220	226	294	960	160	1,400	410	235	122	90	71	61
6	399	226	271	1,520	160	1,340	392	220	117	77	97	52
7	540	223	217	1,210	160	1,240	385	205	104	77	112	40
8	456	217	208	1,150	160	1,040	364	190	122	90	88	37
9	368	199	211	1,100	160	935	340	175	130	81	77	46
10	256	193	208	935	160	935	315	154	142	81	69	*49
11	360	193	*196	785	160	1,040	284	157	148	75	65	51
12	416	190	196	642	*170	1,040	277	151	151	67	73	54
13	413	*184	190	600	180	988	274	139	*151	58	*79	51
14	484	181	184	520	190	885	290	136	148	59	75	47
15	500	172	190	480	190	835	271	127	172	139	75	51
16	440	95	196	374	190	910	290	117	160	117	69	56
17	472	139	208	318	190	785	329	99	142	107	61	52
18	540	151	202	*244	190	735	346	102	136	104	67	51
19	580	181	184	253	190	642	560	97	122	*79	67	51
20	580	211	148	284	350	580	424	99	117	69	67	49
21	560	284	130	268	600	540	436	95	92	69	63	41
22	540	318	160	294	900	785	413	97	104	75	65	44
23	472	280	211	301	1,300	785	382	117	120	71	67	58
24	392	298	217	232	1,600	1,020	364	112	120	69	59	59
25	360	343	208	211	1,240	885	388	166	112	69	63	58
26	315	346	199	200	1,100	835	*416	223	97	67	59	56
27	287	343	229	196	1,070	735	500	247	90	65	54	52
28	304	340	520	196	1,120	*688	520	*238	77	73	52	47
29	294	357	620	190	-	665	500	241	75	69	51	49
30	*294	357	642	180	------	688	440	214	79	67	79	52
31	268	-- ---	642	180	-------	688	--------	172	--------	67	73	-- - --
Total	11,482	7,175	8,478	16,271	12,560	29,534	12,203	5,558	3,721	2,482	2,159	1,604
Mean	370	239	273	525	449	953	407	179	124	80.1	69.6	53.5
Cfsm	0.688	0.444	0.507	0.976	0.835	1.77	0.757	0.333	0.230	0.149	0.129	0.099
In.	0.79	0.50	0.59	1.12	0.87	2.04	0.84	0.38	0.26	0.17	0.15	0.11

Calendar year 1954: Max 2,490 Min 28 Mean 341 Cfsm 0.634 In. 8.59
Water year 1954-55: Max 1,720 Min 37 Mean 310 Cfsm 0.576 In. 7.82

Peak discharge (base, 1,500 cfs).--Jan. 6 (5 to 6 a.m.) 1,620 cfs (5.45 ft); Feb. 23 (3 p.m.) about 1,700 cfs (5.86 ft); Mar. 4 (11 a.m.) 1,880 cfs (5.83 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 26, Jan. 29 to Feb. 24.

Shiawassee River near Fergus, Mich.

Location.--Lat 43°15'17", long 84°06'20", in sec. 22, T. 10 N., R. 3 E., on downstream handrail of highway bridge, 1.2 miles east of Fergus and 1¾ miles upstream from Bear Creek.

Drainage area.--637 sq mi.

Records available.--January 1940 to September 1955.

Gage.--Wire-weight gage read twice daily. Datum of gage is 587.80 ft above mean sea level, datum of 1929.

Average discharge.--15 years, 457 cfs.

Extremes.--Maximum discharge during year, 2,200 cfs Mar. 5, computed on basis of records for nearby stations; maximum gage height, 11.07 ft Mar. 5 (ice jam); minimum discharge, 49 cfs Sept. 9 (gage height, 3.74 ft).
1940-55: Maximum discharge, 7,500 cfs Apr. 6, 1947 (includes overflow bypassing gage); maximum gage height observed, 13.07 ft Feb. 20, 1951 (ice jam); minimum discharge observed, 29 cfs Aug. 31, 1946 (gage height, 3.10 ft).

Remarks.--Records good except those for periods of ice effect, which are poor. Some regulation at low stages by powerplant above Owosso prior to February 1953.

Revisions (water years).--WSP 1337: 1940(M), 1941-42, 1943(M), 1944, 1945(M), 1946, 1947(M), 1948, 1950.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1, 2, Nov. 3 to Dec. 18, Sept. 29, 30)

Oct. 1 to Mar. 4

4.0	81	7.0	520
4.5	118	8.0	830
5.0	166	9.0	1,310
6.0	310	10.0	2,050

Mar. 5 to Sept. 30

3.7	47	5.0	159
4.0	66	6.0	310
4.5	104		

Note.--Same as preceding table above 6.0 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	81	301	358	735	190	1,700	790	438	200	89	70	75
2	87	292	358	735	180	1,700	720	398	167	86	70	76
3	130	275	348	750	180	1,500	675	320	167	89	69	74
4	160	258	292	830	180	1,700	585	292	158	89	67	74
5	182	266	266	910	180	2,000	495	275	149	89	71	70
6	*288	258	243	1,800	180	1,700	448	258	141	94	72	67
7	284	258	236	1,500	180	1,500	438	243	136	*84	89	65
8	320	250	236	1,400	180	1,300	428	228	*136	79	88	*52
9	292	236	258	1,300	180	1,200	408	221	139	84	85	51
10	284	236	243	1,100	180	1,200	378	207	155	86	*81	52
11	301	221	214	910	*180	1,280	348	193	185	81	71	64
12	358	221	201	790	190	1,280	329	186	172	73	70	65
13	418	*208	182	705	200	1,220	*329	185	159	72	69	66
14	418	208	194	600	210	1,090	329	*175	156	73	77	66
15	448	201	194	*450	220	970	329	172	151	109	81	65
16	470	166	161	400	220	1,040	329	164	164	163	74	64
17	482	151	221	350	220	890	329	151	154	140	72	65
18	470	156	221	300	220	830	358	136	136	156	65	65
19	532	182	180	300	220	*750	585	135	132	106	68	61
20	585	221	150	320	250	675	570	132	127	89	70	60
21	545	266	*140	320	700	675	495	128	132	79	68	60
22	545	310	150	338	1,100	790	459	123	130	81	64	51
23	532	320	180	329	1,500	1,140	428	132	125	81	65	52
24	470	338	250	320	1,550	1,250	388	149	123	79	68	65
25	408	348	250	301	1,500	1,140	408	159	119	74	67	72
26	378	338	250	266	1,300	990	482	207	114	72	64	67
27	368	348	300	228	1,300	890	520	236	97	72	62	65
28	368	368	448	221	1,400	790	532	266	90	72	65	65
29	348	358	720	220	-	810	520	258	87	73	65	55
30	329	358	750	210	------	830	482	243	84	71	73	51
31	320	--	750	200	------	850	-------	221	-- ----	70	82	-- --
Total	11,141	7,917	8,944	19,138	14,290	35,680	13,914	6,631	4,185	2,755	2,222	1,900
Mean	359	264	289	617	510	1,151	464	214	140	88.9	71.7	63.3
Cfsm	0.564	0.414	0.454	0.969	0.801	1.81	0.728	0.336	0.220	0.140	0.113	0.099
In.	0.65	0.46	0.52	1.12	0.83	2.08	0.81	0.39	0.24	0.16	0.13	0.11

Calendar year 1954: Max 3,650 Min 60 Mean 408 Cfsm 0.641 In. 8.69
Water year 1954-55: Max 2,000 Min 51 Mean 353 Cfsm 0.554 In. 7.50

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 19-27, Jan. 6-10, 14-21, Jan. 29 to Mar. 10.

Bad River near Brant, Mich.

Location.--Lat 43°17'50", long 84°13'45", in NW¼ sec. 3, T. 10 N., R. 2 E., on downstream side of highway bridge, 2½ miles north of Brant and 6 miles upstream from South Fork.

Drainage area.--89 sq mi, approximately.

Records available.--December 1948 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 591.21 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--6 years (1949-55), 68.3 cfs.

Extremes.--Maximum discharge during year, 850 cfs Mar. 11 or 12 (gage height, 12.36 ft); maximum gage height observed, 12.60 ft Mar. 4 (ice jam); no flow at times.
1948-55: Maximum discharge observed, 1,930 cfs Jan. 18, 1952 (gage height, 13.81 ft), from rating curve extended above 1,100 cfs by logarithmic plotting; maximum gage height observed, 13.92 ft Feb. 20, 1951 (backwater from ice); no flow at times.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 5 cfs, which are poor.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 4

5.9	0	8.0	48
6.0	.2	9.0	93
6.1	.8	9.5	133
6.3	2.7	10.0	194
6.4	3.9	11.0	370
6.6	7.3	12.0	710
7.0	17		

Mar. 5 to Sept. 30

5.8	0	6.3	4.1
5.9	.4	6.6	8.9
6.0	1.1	7.0	18
6.1	1.9	8.0	48

Note.--Same as preceding table above 8.0 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	16	228	78	5	270	112	32	70	3.0	0.2	7.3
2	0	13	150	78	5	300	86	25	40	3.0	0	14
3	3.4	12	66	78	5	400	68	22	25	5	0	8.0
4	*28	12	74	94	5	500	53	19	15	4	0	4.4
5	56	12	58	149	5	400	43	15	12	4	0	2.3
6	48	12	41	360	5	360	40	12	10	3.1	.2	1.6
7	25	10	36	590	5	200	36	13	8.7	*2.7	0	*1.1
8	14	9.2	28	382	5	117	30	8.7	*280	2.5	0	.7
9	7.3	7.9	25	242	5	119	23	7.8	435	2.2	0	.3
10	6.2	7.1	*25	194	5	337	19	7.5	590	2	0	.2
11	4.9	6.0	20	136	*6	710	17	6.9	630	2	*1.6	.4
12	6.9	5.7	17	107	6	620	17	6.5	590	2	.9	.2
13	7.1	*5.3	14	82	6	443	*17	6.1	420	2	.4	.2
14	8.6	5.0	12	62	6	242	19	*5.5	256	3	.8	1.8
15	87	5.0	12	*50	6	200	18	4.9	133	3	.5	2.9
16	413	4.7	12	39	6	214	16	4.8	74	3	.2	2.5
17	310	4.7	12	30	6	156	14	4.1	52	3	.1	2.1
18	207	4.7	12	25	7	105	11	3.6	37	3	0	1.4
19	135	13	12	20	7	74	28	3.3	27	2	0	.8
20	84	55	11	18	15	63	68	3.3	21	2	0	.2
21	62	148	8.4	16	50	70	63	3.4	16	2	0	0
22	50	115	6.0	13	200	177	56	3.1	12	2	0	0
23	38	80	5.7	11	400	690	41	3.4	9.7	1	0	0
24	31	66	6.4	10	350	670	45	4.9	7.8	1	0	0
25	25	64	5.7	9	300	420	64	9.7	6.5	1	0	0
26	20	61	7.5	8	260	280	200	62	5.8	1	0	0
27	18	57	20	7	250	156	162	123	5.2	.2	0	0
28	18	68	42	7	330	*109	87	77	4.4	.2	0	0
29	19	135	87	6	-	108	60	307	3.6	.7	0	*0
30	19	310	132	6	------	123	43	329	3.4	.5	0	0
31	18	---	112	5	------	134	-------	162	--- ---	.3	1.6	- - -
Total	1,769.4	1,324.3	1,297.7	2,912	2,261	8,767	1,556	1,295.5	3,800.1	66.4	6.5	52.4
Mean	57.1	44.1	41.9	93.9	80.8	283	51.9	41.8	127	2.14	0.21	1.75
Cfsm	0.642	0.496	0.471	1.06	0.908	3.18	0.583	0.470	1.43	0.024	0.0024	0.020
In.	0.74	0.55	0.54	1.22	0.94	3.66	0.65	0.54	1.59	0.03	0.003	0.02

Calendar year 1954: Max 930 Min 0 Mean 55.7 Cfsm 0.626 In. 8.48
Water year 1954-55: Max 710 Min 0 Mean 68.8 Cfsm 0.773 In. 10.48

Peak discharge (base, 700 cfs).--Jan. 7 (time unknown) about 710 cfs; Mar. 11 or 12 (time unknown) 850 cfs (12.36 ft); Mar. 23 (time unknown) about 790 cfs; June 11 (time unknown) 770 cfs (12.17 ft).
* Discharge measurement or observation of no flow made on this day.
Note.--Stage-discharge relation affected by ice Jan. 15, Jan. 17 to Feb. 24, Mar. 3-5. No gage-height record Apr. 24, June 1-6, July 3-5, 10-26; discharge estimated on basis of weather records and records for Cass River at Vassar, Flint River near Flint, and Salt River near North Bradley.

Farmers Creek near Lapeer, Mich.

Location.--Lat 43°02', long 83°20', in sec. 6, T. 7 N., R. 10 E., on left bank at sewage-treatment plant at Michigan Home and Training School, 2 miles west of Lapeer.

Drainage area.--57 sq mi, approximately.

Records available.--March 1933 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 805.79 ft above mean sea level, datum of 1929. Prior to May 25, 1954, staff gage at same site and datum.

Average discharge.--22 years, 30.0 cfs.

Extremes.--Maximum discharge during year, 194 cfs Mar. 5 (gage height, 16.70 ft); maximum gage height, 16.95 ft Mar. 5 (ice jam); minimum discharge, 2.6 cfs Aug. 21, 22 (gage height, 15.04 ft).
1933-55: Maximum discharge, 1,280 cfs Apr. 6, 1947 (gage height, 19.87 ft, from floodmark), from rating curve extended above 660 cfs on basis of contracted-opening determination of peak flow; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to 1941, occasional regulation by dam above station.

Revisions (water years).--WSP 924: 1940. WSP 1084: 1942(M), 1943. WSP 1337: 1934-38, 1940(M), 1944(M), 1945, 1946(M), 1948-52(M).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-18		Oct. 19 to Sept. 30			
15.2	6.5	15.0	1.8	15.6	30
15.4	16	15.1	3.8	16.0	74
15.6	30	15.2	6.8	17.0	260
15.8	50	15.4	16		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.9	*14	26	50	10	126	62	30	12	6.1	3.6	8.0
2	6.5	13	25	48	10	128	61	27	10	5.2	3.4	6.4
3	9.7	14	21	53	10	113	56	25	8.8	7.2	3.2	5.5
4	12	14	22	68	10	130	51	23	8.4	8.8	3.2	4.9
5	14	15	17	82	10	180	46	21	7.6	7.2	3.4	4.3
6	15	a16	*17	103	11	150	41	21	6.8	8.4	4.6	3.8
7	*14	a15	14	140	11	90	36	19	7.6	*7.6	5.8	3.6
8	13	14	14	114	11	76	34	17	*9.6	6.1	5.2	3.6
9	10	a14	14	74	12	69	33	16	10	5.5	4.3	3.4
10	9.3	14	14	60	13	76	30	16	10	5.2	3.8	*3.4
11	9.7	13	14	50	13	86	28	*16	9.6	4.6	3.6	3.4
12	13	13	14	44	13	109	28	16	10	4.0	3.4	3.6
13	15	13	14	36	13	111	27	15	14	3.8	*3.0	3.4
14	19	12	14	*31	*13	92	28	14	14	3.4	3.4	3.4
15	21	12	14	30	13	82	*33	12	14	5.5	4.3	3.4
16	31	12	15	27	14	82	36	11	11	11	4.6	4.6
17	40	12	14	25	14	92	38	10	9.6	14	3.8	5.2
18	46	12	14	22	14	89	37	9.6	8.0	12	3.6	4.6
19	43	14	14	20	14	74	39	9.2	7.2	9.2	3.4	3.6
20	31	18	14	18	21	65	39	8.4	6.8	7.2	3.2	5.2
21	28	20	13	17	34	*59	41	8.4	8.0	5.8	2.8	6.8
22	23	20	13	16	110	58	40	9.6	8.0	5.2	3.4	8.4
23	20	20	13	15	170	59	38	17	6.8	4.9	5.2	6.8
24	17	20	12	14	123	64	34	24	6.4	7.6	4.3	6.8
25	14	20	13	13	86	71	35	24	5.8	8.8	3.6	6.8
26	14	21	14	13	73	66	39	28	5.8	6.8	3.6	5.8
27	14	21	18	12	70	57	44	27	5.5	7.2	4.0	5.5
28	a15	23	28	11	104	48	44	22	5.2	6.8	5.5	5.8
29	a15	24	35	10	-	56	39	18	5.2	4.9	6.8	8.4
30	a15	25	49	10	------	56	34	16	5.2	4.9	7.6	9.6
31	a15	-- -	59	10	-------	58	--------	14	------ -	4.6	8.0	-
Total	569.1	488	592	1,236	1,020	2,672	1,171	544.2	256.9	209.5	131.6	158.0
Mean	18.4	16.3	19.1	39.9	36.4	86.2	39.0	17.6	8.56	6.76	4.25	5.27
Cfsm	0.323	0.286	0.335	0.700	0.639	1.51	0.684	0.309	0.150	0.119	0.075	0.092
In.	0.37	0.32	0.39	0.81	0.67	1.74	0.76	0.36	0.17	0.14	0.09	0.10

Calendar year 1954: Max 500 Min 1.6 Mean 31.6 Cfsm 0.554 In. 7.53
Water year 1954-55: Max 180 Min 2.8 Mean 24.8 Cfsm 0.435 In. 5.92

Peak discharge (base, 160 cfs).--Feb. 23 (time unknown) about 185 cfs (16.90 ft); Mar. 5 (time unknown) 194 cfs (16.70 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of records for Flint River near Flint and Middle River Rouge near Garden City.

Note.--Stage-disoharge relation affected by ice Dec. 21, 22, Jan. 15-29, Feb. 6-19, 22, 23, Mar. 5-7 (no gage-height record Feb. 10-13).

Holloway Reservoir near Otisville, Mich.

Location.--Lat 43°07'15", long 83°29'45", in NW¼ sec. 11, T. 8 N., R. 8 E., in gatehouse on left side of Holloway Dam on Flint River, 3½ miles southeast of Otisville.

Drainage area.--543 sq mi.

Records available.--March 1954 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level, datum of 1929 (levels by city of Flint).

Extremes.--Maximum contents during year, 797,000,000 cu ft May 25-31 (elevation, 755.3 ft); reservoir empty at times during October, November, January, and February.
1954-55: Maximum contents, that of May 25-31, 1955; reservoir empty at times during October, November 1954, January, February 1955.

Remarks.--Records fair. Reservoir is formed by an earth-fill dam with concrete spillway completed in 1953. Capacity of reservoir, 1,256,000,000 cu ft at elevation 760.00 ft. The spillway section includes two 90-foot drum gates with minimum crest elevation of 751 ft, maximum of 755 ft, three 20-foot radial gates with sill elevation of 745 ft, and two sluices (each 4 by 6 ft), one on each side with valve controls. Entrance elevation of sluiceways is 724 ft. Reservoir is used to regulate flow for water supply and sewage dilution for city of Flint.

Cooperation.--Reservoir elevations furnished by city of Flint.

Month-end elevation and contents, water year October 1954 to September 1955

Date	Elevation (feet)†	Contents (millions of cubic feet)	Change in contents	
			Millions of cubic feet	Equivalent, cubic feet per second
Sept.30	745.4	198	-	-
Oct. 31	734.2	0	-198	-73.9
Nov. 30	735.0	10.0	+10.0	+3.9
Dec. 31	737.1	20.9	+10.9	+4.1
Calendar year 1954.	-	-	+20.9	-
Jan. 31	g733.5	0	-20.9	-7.8
Feb. 28	740.7	70.9	+70.9	+29.3
Mar. 31	747.1	266	+195.1	+72.8
Apr. 30	754.1	695	+429	+166
May 31	755.2	788	+93	+34.7
June 30	754.9	761	-27	-10.4
July 31	753.1	615	-146	-54.5
Aug. 31	750.2	425	-190	-70.9
Sept.30	746.9	258	-167	-64.4
Water year 1954-55.	-	-	+60	-

† Elevation at 12 p.m.
g From graph based on gage readings.

Flint River near Otisville, Mich.

Location.--Lat 43°06'40", long 83°31'10", in SE¼ sec. 9, T. 8 N., R. 8 E., on left bank 20 ft downstream from bridge on State Highway 15, 1½ miles downstream from Holloway Reservoir, 3½ miles upstream from Powers-Cullen drain, and 3¾ miles south of Otisville.

Drainage area.--547 sq mi.

Records available.--October 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 721.39 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 1,220 cfs Mar. 7 (gage height, 8.28 ft); minimum, 7.6 cfs Apr. 14 (gage height, 2.03 ft).
1952-55: Maximum discharge, 3,030 cfs Feb. 20, 1954 (gage height, 12.45 ft); minimum, that of Apr. 14, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Holloway Reservoir 1½ miles above station (see preceding page).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 5-8)

Oct. 1 to Mar. 9		Mar. 10 to Sept. 30	
2.9	93	2.6	50
3.0	110	3.0	116
6.0	694	8.0	1,170
8.0	1,150		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	102	*185	340	545	130	986	712	93	126	112	116	90
2	140	167	340	545	130	1,010	756	100	116	75	131	98
3	145	163	320	586	130	1,060	800	75	100	73	133	105
4	170	167	292	628	120	1,130	778	76	93	73	133	105
5	273	185	264	694	*120	1,150	734	76	88	76	154	105
6	244	177	*217	871	120	1,100	646	76	105	103	194	109
7	273	170	190	940	130	986	583	78	105	*116	165	111
8	*302	163	176	1,010	130	672	520	76	*109	116	122	*111
9	302	156	188	1,060	130	467	457	65	96	98	75	122
10	302	150	174	1,060	140	270	415	62	78	79	98	118
11	292	147	168	1,010	140	541	246	*71	93	102	*120	120
12	292	143	165	917	140	734	162	96	102	135	129	120
13	292	140	167	716	140	888	165	114	112	139	129	120
14	292	138	147	*607	140	998	*118	116	126	144	127	120
15	292	134	163	505	140	998	133	95	124	107	127	120
16	302	132	167	455	140	976	93	103	124	76	126	124
17	302	131	158	368	140	954	93	91	120	81	127	127
18	320	131	159	292	140	910	83	76	107	107	129	133
19	425	149	149	270	140	866	59	90	118	109	126	152
20	586	183	130	250	180	800	60	103	131	139	114	120
21	607	224	130	230	282	*734	102	93	111	152	114	120
22	607	252	130	210	694	668	103	93	84	127	114	120
23	586	252	140	200	894	668	107	88	76	122	114	120
24	565	254	140	180	940	646	109	93	75	116	112	120
25	525	254	140	170	1,010	712	111	141	93	112	114	120
26	406	264	140	170	986	734	111	156	91	102	124	120
27	425	273	158	160	986	734	114	150	81	107	124	118
28	435	273	264	160	986	712	114	160	93	135	122	118
29	416	282	396	150	-	690	112	154	105	112	114	114
30	368	311	485	150	-------	690	102	154	120	112	100	105
31	250	-------	525	140	-------	690	-------	139	-------	112	98	-------
Total	10,838	5,750	6,722	15,249	9,498	25,174	8,698	3,153	3,102	3,369	3,825	3,505
Mean	350	192	217	492	339	812	290	102	103	109	123	117
(†)	-73.9	+3.9	+4.1	-7.8	+29.3	+72.8	+166	+34.7	-10.4	-54.5	-70.9	-64.4
Adjusted for change in contents in Halloway Reservoir												
Mean	276	196	221	484	368	885	456	137	92.6	54.5	52.1	52.6
Cfsm	0.505	0.358	0.404	0.885	0.673	1.62	0.834	0.250	0.169	0.100	0.095	0.096
In.	0.58	0.40	0.47	1.02	0.70	1.87	0.93	0.29	0.19	0.11	0.11	0.11

	Observed			Adjusted			
Calendar year 1954:	Max 3,030	Min 25	Mean 302	Mean 303	Cfsm 0.554	In. 7.52
Water year 1954-55:	Max 1,150	Min 59	Mean 271	Mean 273	Cfsm 0.499	In. 6.78

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Holloway Reservoir; furnished by city of Flint.
Note.--Stage-discharge relation affected by ice Dec. 20-24, Jan. 19 to Feb. 20.

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Flint River near Flint, Mich.

Location.--Lat 43°02'20", long 83°46'10", in SW¼ sec. 4, T. 7 N., R. 6 E., on left bank on grounds of sewage-treatment plant, 1 mile upstream from Pirnie Creek, 2 miles downstream from Flint, and 5 miles downstream from Swartz Creek.

Drainage area.--927 sq mi.

Records available.--September 1903 to March 1904 (gage heights only), August 1932 to September 1955. Gage-height records for flood seasons collected in this vicinity 1911-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 678.80 ft above mean sea level (levels by U. S. Weather Bureau and city of Flint).

Average discharge.--23 years, 562 cfs (adjusted for storage since 1954).

Extremes.--Maximum discharge during year, 3,760 cfs Mar. 4 (gage height, 8.16 ft); minimum, 64 cfs July 11 (gage height, 2.50 ft).
1932-55: Maximum discharge, 14,900 cfs Apr. 6, 1947 (gage height, 16.35 ft); minimum, 9.0 cfs Aug. 7, 1934.

Remarks.--Records good. Some regulation by reservoirs above station. City of Flint diverts water above station for municipal and industrial use, but sewage from city is included in flow at station.

Revisions (water years).--WSP 954: 1941. WSP 1337: 1933-34(M), 1935-37.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 4, June 8 to Sept. 30)

2.4	70	4.0	540
2.7	118	5.0	1,150
3.0	190	8.0	3,580

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	94	*308	463	910	217	2,350	1,320	263	202	100	126	137
2	171	279	479	1,120	211	2,030	1,269	241	176	109	114	126
3	435	301	463	1,180	208	2,110	1,260	266	158	83	139	133
4	460	276	440	1,320	202	3,310	1,260	217	137	136	151	144
5	324	244	403	2,350	*202	2,770	1,220	214	114	118	233	158
6	327	256	*321	2,590	205	2,190	1,120	208	128	105	318	151
7	304	247	266	1,790	205	1,950	1,010	199	193	114	298	146
8	*361	241	272	1,710	202	1,500	820	202	214	122	190	141
9	361	229	317	1,750	226	1,460	760	196	174	124	133	151
10	371	220	301	1,710	235	1,010	658	185	135	95	95	*158
11	399	214	279	1,570	226	1,360	600	182	131	87	105	168
12	463	208	272	1,460	220	1,500	381	168	182	97	124	163
13	371	202	223	1,290	226	1,570	361	166	*163	128	*133	153
14	417	196	235	850	235	1,600	340	182	161	135	182	153
15	440	193	272	880	232	1,600	*304	166	166	266	185	161
16	487	185	269	688	241	1,910	282	151	161	171	158	137
17	487	185	269	570	238	1,710	241	153	153	109	156	141
18	459	182	272	*504	241	1,600	232	135	139	113	153	146
19	479	395	208	467	250	1,540	632	122	122	*118	149	196
20	630	357	179	413	656	1,430	467	124	234	122	137	131
21	730	330	208	385	2,350	*1,400	381	122	163	163	120	131
22	730	361	220	388	2,030	1,430	371	137	128	163	193	141
23	700	354	226	347	1,600	1,320	357	163	104	156	151	200
24	670	392	223	321	1,680	1,540	364	182	94	161	133	163
25	640	395	232	317	1,680	1,430	440	214	81	149	133	146
26	536	395	279	292	1,830	1,400	451	235	87	133	139	144
27	500	392	550	269	2,110	1,320	399	244	102	113	163	156
28	504	388	975	269	2,270	1,260	374	*288	160	122	217	163
29	491	444	850	253	-	1,290	279	276	81	141	190	247
30	467	436	880	241	-------	1,320	263	247	92	116	317	337
31	392	-------	850	235	-------	1,320	-------	238	-------	111	156	-------
Total	14,200	8,805	11,696	28,439	20,428	51,530	18,207	6,086	4,335	3,980	5,191	4,822
Mean	458	294	377	917	730	1,662	607	196	144	128	167	161
(†)	-73.9	+3.9	+4.1	-7.8	29.3	72.8	+166	+34.7	-10.4	-54.5	-70.9	-64.4
Adjusted for change in contents in Holloway Reservoir												
Mean	384	298	381	909	759	1,735	773	231	134	73.5	96.1	96.6
Cfsm	0.414	0.321	0.411	0.981	0.819	1.87	0.834	0.249	0.145	0.079	0.104	0.104
In.	0.48	0.36	0.47	1.13	0.85	2.16	0.93	0.29	0.16	0.09	0.12	0.12

	Observed	Adjusted
Calendar year 1954:	Max 4,640 Min 48 Mean 535	Mean 536 Cfsm 0.578 In. 7.85
Water year 1954-55:	Max 3,310 Min 81 Mean 487	Mean 489 Cfsm 0.528 In. 7.16

Peak discharge (base, 2,500 cfs).--Jan. 6 (6 a.m.) 2,950 cfs (7.26 ft); Feb. 21 (4 p.m.) 2,860 cfs (7.16 ft); Mar. 4 (3:30 p.m.) 3,760 cfs (8.16 ft).

* Discharge measurement made on this day.

† Change in contents, equivalent in cubic feet per second, in Holloway Reservoir; furnished by city of Flint.

Flint River near Fosters, Mich.

Location.--Lat 43°17'56", long 83°55'58", on west line of sec. 6, T. 10 N., R. 5 E., on downstream side of bridge on Sheridan Road, 1 mile west of Fosters, 1½ miles upstream from Birch Run, and 4 miles downstream from Silver Creek.

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

Records available.--January 1940 to September 1955. Gage-height records for flood seasons collected in this vicinity 1910-20, 1922-27 are contained in reports of U. S. Weather Bureau.

Gage.--Wire-weight gage read twice daily. Datum of gage is 582.22 ft above mean sea level, unadjusted (levels by U. S. Weather Bureau). Prior to August 1943, chain gage at same site and datum.

Average discharge.--15 years, 782 cfs.

Extremes.--Maximum discharge during year, 4,270 cfs Mar. 4 (gage height, 15.6 ft, from graph based on gage readings); maximum gage height observed, 15.75 ft Feb. 22 (ice jam); minimum discharge, 108 cfs Oct. 1; minimum gage height, 3.96 ft July 13.
1940-55: Maximum discharge, 19,000 cfs Apr. 7, 1947 (including flow bypassing gage); maximum gage height, 17.97 ft Apr. 6, 1947 (from floodmark); minimum discharge observed, 27 cfs Aug. 6, 1941 (gage height, 3.67 ft).
Maximum stage known, about 18.4 ft (from U. S. Weather Bureau data) in March 1904.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation by reservoirs above Flint.

Revisions (water years).--WSP 954: 1941. WSP 1337: 1940, 1942, 1943-44(M), 1945, 1946-47(M), 1948-50.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 4				Mar. 5 to Sept. 30			
4.0	96	11.0	2,000	4.0	113	11.0	2,120
6.0	467	15.0	3,940	6.0	470	15.0	4,000
8.0	950			8.0	990		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	397	489	815	270	2,740	1,380	322	226	123	125	165
2	144	387	467	815	260	2,340	1,260	294	188	125	123	135
3	195	357	489	1,010	260	2,080	1,230	287	179	130	a130	a120
4	a400	397	467	1,250	250	3,540	1,170	287	154	117	a150	a130
5	a450	*327	447	1,400	250	a3,600	1,140	240	154	124	a160	a140
6	*367	280	367	3,240	250	a2,500	1,110	236	141	142	a250	a150
7	a350	289	337	3,090	250	2,030	1,020	227	146	*130	267	a140
8	a350	271	327	1,920	250	1,980	900	217	*211	a140	249	*123
9	a350	271	367	1,920	250	1,700	780	217	229	a150	182	a130
10	357	262	*447	1,720	*250	1,340	676	217	218	a150	144	a130
11	407	253	417	1,340	260	1,740	628	213	186	126	*126	137
12	407	253	387	1,340	270	1,700	547	193	182	113	120	142
13	407	a250	327	1,280	280	1,660	420	179	217	113	132	138
14	407	a250	308	1,130	290	1,700	*410	*188	197	130	a150	137
15	489	a240	298	*865	290	1,620	380	193	179	135	a200	139
16	489	a240	298	790	300	2,120	332	179	182	a250	a200	149
17	511	a230	298	700	300	1,940	294	155	172	a180	a170	135
18	500	a230	298	620	300	1,620	267	163	179	139	a160	137
19	467	a230	289	580	300	1,380	558	149	186	130	a160	135
20	457	467	280	520	500	1,420	1,050	141	195	135	a160	175
21	447	417	230	480	2,000	1,380	628	138	267	141	132	144
22	555	387	250	450	3,000	1,740	503	130	184	149	128	133
23	665	387	270	430	2,500	1,620	470	168	168	158	168	128
24	643	407	270	400	2,000	1,820	420	182	138	141	152	158
25	599	457	280	380	1,800	1,820	503	287	130	165	135	158
26	577	437	300	350	1,800	1,620	558	240	126	141	133	141
27	417	427	387	330	2,340	1,420	525	226	118	141	135	139
28	298	437	840	330	2,540	*1,300	450	a250	128	134	144	146
29	318	489	1,130	310	-	1,300	304	a300	152	130	182	146
30	407	500	980	300	-------	1,460	351	a270	120	144	236	172
31	447	-------	865	290	-------	1,460	-------	249	-------	133	294	-------
Total	12,987	10,226	13,206	30,395	23,610	57,690	20,284	6,737	5,252	4,359	5,197	4,252
Mean	419	341	426	980	843	1,861	676	217	175	141	168	142
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 5,540 Min 54 Mean 593 Cfsm - In. -
Water year 1954-55: Max 3,600 Min 110 Mean 532 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Flint River near Flint and Shiawassee River near Fergus.
Note.--Stage-discharge relation affected by ice Dec. 21-26, Jan. 17 to Feb. 25.

Flint River near Alicia, Mich.

Location.--Lat 43°18'40", long 84°02'00", in SE¼ sec. 31, T. 11 N., R. 4 E., on left bank 100 ft downstream from The Prairie Farms Association flood-pumping station, 2¾ miles north of Alicia, and 4 miles upstream from mouth.

Records available.--November 1948 to September 1955 (gage heights only).

Gage.--Water-stage recorder. Datum of gage is 577.00 ft above mean sea level, datum of 1929.

Extremes.--Maximum gage height during year, 10.30 ft Feb. 22; minimum, 2.42 ft Sept. 10, 27.

1948-55: Maximum gage height, 13.65 ft Apr. 6, 1950; minimum, 1.48 ft Oct. 4, 1949.

Remarks.--Records represent stages in the Shiawassee Flats area.

Mean gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.30	4.51	5.02	5.48	4.12	8.82	6.50	4.55	4.61	3.95	3.98	3.93
2	4.44	4.84	4.98	5.38	4.28	8.55	6.17	4.22	4.42	4.21	4.07	3.79
3	4.38	4.63	4.68	5.68	4.09	8.20	5.95	4.33	4.22	4.20	4.03	3.66
4	4.66	4.37	4.60	6.48	4.04	9.00	5.78	4.17	4.16	4.11	3.82	3.45
5	5.22	4.60	4.98	7.13	3.76	9.41	5.38	4.10	4.23	4.19	3.97	3.73
6	4.98	4.34	5.11	9.12	3.81	8.90	5.14	4.37	4.12	4.48	3.90	3.37
7	5.23	4.32	4.61	9.15	3.99	8.02	5.23	3.94	4.22	4.27	4.30	4.03
8	4.46	4.55	4.20	8.23	3.91	7.17	4.90	4.42	4.69	4.06	4.58	3.76
9	4.36	4.74	4.46	7.58	3.82	6.65	4.39	4.57	4.94	4.17	4.20	3.39
10	4.75	4.52	4.54	7.22	4.13	6.52	4.25	4.18	5.04	4.58	3.98	2.90
11	4.30	3.98	4.50	6.83	4.07	7.04	4.35	4.09	5.09	4.76	4.29	3.68
12	4.40	4.75	4.51	6.50	4.03	7.82	4.38	4.11	5.28	4.65	4.29	3.56
13	4.42	4.02	4.50	6.02	4.02	7.90	4.11	4.49	5.28	4.34	4.73	3.61
14	4.61	4.26	4.38	5.63	3.84	7.87	4.08	4.65	5.17	4.04	4.90	3.02
15	4.58	4.64	4.42	4.89	3.92	7.63	4.21	4.20	4.83	4.12	3.88	3.60
16	5.20	4.10	4.42	4.95	3.96	7.96	4.15	4.68	4.56	4.30	3.87	3.32
17	5.19	4.27	4.32	4.87	3.98	7.82	4.19	4.48	4.48	4.30	3.82	3.17
18	5.38	4.28	4.27	4.82	3.96	7.17	4.16	4.06	4.36	4.36	3.85	3.24
19	5.40	4.65	4.61	4.63	3.87	6.61	4.98	4.40	4.32	4.28	3.86	3.21
20	5.13	4.80	4.31	4.50	3.96	6.14	6.34	4.31	4.33	4.14	3.58	3.54
21	5.17	4.84	4.22	4.38	8.50	6.16	5.23	4.17	4.33	4.11	3.62	3.74
22	5.00	4.62	4.00	4.12	10.12	6.76	4.87	4.16	4.17	4.00	4.07	3.40
23	4.77	4.64	3.90	4.14	9.75	7.48	4.91	4.03	4.31	4.03	4.34	3.29
24	4.92	4.37	4.47	4.13	9.23	f8.00	5.06	4.17	4.31	4.72	3.88	3.22
25	4.78	4.60	4.10	4.29	8.82	(a)	5.55	4.79	4.48	4.15	3.58	3.65
26	4.74	4.72	4.00	4.14	8.50	(a)	5.79	5.02	4.38	3.91	3.64	3.22
27	4.98	4.33	4.64	4.27	8.58	(a)	5.45	4.90	4.21	4.30	3.80	2.89
28	4.48	4.33	5.42	4.04	8.79	f6.77	5.19	4.69	4.19	4.50	3.63	3.06
29	4.40	4.93	6.42	3.99	-	6.60	4.95	4.56	4.00	4.15	3.35	2.92
30	4.73	4.93	6.30	4.04	-------	6.67	4.85	4.93	3.98	3.97	3.38	3.12
31	4.76	-------	5.73	3.99	-------	6.68	-------	4.85	-------	3.87	3.67	-------

a No gage-height record.
f Fragmentary gage-height record.

East Branch Cass River near Cass City, Mich.

Location.--Lat 43°34'10", long 83°06'30", in NW¼ sec. 7, T. 13 N., R. 12 E., on left bank 1¾ miles downstream from bridge on State Highway 53, 3 miles upstream from confluence with North Branch, and 4 miles southeast of Cass City.

Drainage area.--251 sq mi.

Records available.--December 1948 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 715 ft (from river-profile map). Prior to Nov. 8, 1952, wire-weight gage at site 1¾ miles upstream at different datum.

Average discharge.--6 years (1949-55), 170 cfs.

Extremes.--Maximum discharge during year, 2,130 cfs Mar. 11 (gage height, 8.45 ft, from high-water mark); minimum, 0.2 cfs Sept. 20-23.
1948-55: Maximum discharge, 4,940 cfs Mar. 28, 1950 (gage height, 23.07 ft, from graph based on gage readings, site and datum then in use); minimum, that of Sept. 20-23, 1955.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are poor.

Revisions (water years).--WSP 1337: 1949-50.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 19, June 13-15, July 6-9, 17-19)

Oct. 1 to Mar. 11				Mar. 12 to Sept. 30			
1.4	1.0	2.2	31	1.6	0.2	2.5	61
1.5	1.5	2.5	66	1.7	1.6	3.0	131
1.6	2.5	3.0	141	1.9	7.5	3.5	229
1.8	6.0	4.0	395	2.0	12	4.0	360
1.9	9.0	7.0	1,430	2.1	18	7.0	1,430
2.0	14	8.0	1,900				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	26	262	710	20	800	790	61	16	5.4	3.0	3.0
2	1.3	26	145	545	20	900	*510	53	13	5.1	2.8	2.8
3	3.9	33	104	780	20	1,000	264	*48	12	4.8	2.5	2.2
4	94	*43	83	815	20	1,100	158	42	11	4.5	2.8	1.9
5	*147	43	70	955	20	800	112	38	9.8	4.5	2.8	1.2
6	50	39	60	1,310	21	500	93	34	9.3	14	2.8	.5
7	13	33	50	1,100	22	392	82	29	9.8	67	3.9	.9
8	6.3	28	48	885	23	298	71	27	12	*34	5.4	1.5
9	4.8	25	*41	530	*24	237	62	25	*11	16	4.5	*1.3
10	4.4	22	42	228	25	990	55	25	10	11	3.9	.8
11	4.8	20	44	164	25	1,900	49	26	9.3	7.2	3.3	.9
12	8.7	20	45	*138	25	1,190	47	26	13	5.4	*3.0	.9
13	49	19	50	110	25	702	47	24	22	4.5	2.5	.8
14	58	18	46	90	25	336	47	23	23	3.9	3.0	.6
15	172	17	39	70	25	292	49	22	17	6.6	3.3	.6
16	590	17	39	60	25	562	73	20	14	14	3.3	.8
17	710	17	42	50	25	*420	59	19	11	17	3.3	.6
18	515	17	41	45	25	238	47	18	8.8	23	3.3	.5
19	242	112	50	40	25	142	91	19	7.5	17	3.0	.5
20	116	344	45	36	30	210	450	18	7.5	9.8	2.2	.5
21	79	298	40	33	150	208	528	17	7.2	6.6	1.6	.2
22	61	162	41	31	600	860	302	17	6.9	5.4	1.3	.2
23	49	114	40	30	950	482	140	20	6.6	4.5	1.2	.3
24	40	134	46	28	800	420	96	24	6.6	4.2	.9	.6
25	33	230	48	26	700	545	246	31	6.3	4.5	.8	.8
26	29	225	48	25	600	528	381	41	5.7	3.9	.9	1.0
27	30	210	67	24	650	276	269	30	5.7	3.6	.9	1.3
28	32	255	485	23	700	196	147	26	5.7	3.3	1.2	1.5
29	32	485	1,060	22	-	229	97	25	5.4	3.3	1.5	1.6
30	31	500	1,020	21	------	545	76	22	5.4	3.0	2.5	2.2
31	28	--	955	20	------	860	------	18	-----	3.0	2.5	----
Total	3,235.2	3,532	5,196	8,944	5,620	18,158	5,438	868	308.5	320.0	79.9	32.5
Mean	104	118	168	289	201	586	181	28.0	10.3	10.3	2.58	1.08
Cfsm	0.414	0.470	0.669	1.15	0.801	2.33	0.721	0.112	0.041	0.041	0.010	0.0043
In.	0.48	0.52	0.77	1.33	0.83	2.69	0.81	0.13	0.05	0.05	0.01	0.005

Calendar year 1954: Max 2,610 Min 0.8 Mean 164 Cfsm 0.653 In. 8.86
Water year 1954-55: Max 1,900 Min 0.2 Mean 142 Cfsm 0.566 In. 7.68

Peak discharge (base, 800 cfs).--Dec. 29 (11 a.m.) 1,100 cfs (6.07 ft); Jan. 6 (11 a.m.) 1,390 cfs (6.86 ft); Feb. 23 (time unknown) about 1,000 cfs; Mar. 4 (time unknown) about 1,200 cfs; Mar. 11 (10 a.m.) 2,130 cfs (8.45 ft); Mar. 22 (8 p.m.) 1,110 cfs (6.24 ft); Apr. 1 (1 to 2 a.m.) 895 cfs (5.60 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-7, 12, 13, 19-21, Jan. 13 to Mar. 6.

Cass River at Cass City, Mich.

Location.--Lat 43°35'10", long 83°10'35", in NE¼ sec. 4, T. 13 N., R. 11 E., on left bank 500 ft downstream from highway bridge, half a mile downstream from confluence of North Branch and East Branch and 1 mile south of Cass City.

Drainage area.--370 sq mi, approximately.

Records available.--January 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 697.92 ft above mean sea level, datum of 1929. Prior to Nov. 14, 1952, wire-weight gage at site 500 ft upstream at same datum.

Average discharge.--7 years, 251 cfs.

Extremes.--Maximum discharge during year, 2,990 cfs Mar. 11 (gage height, 10.29 ft); minimum, 3.2 cfs Sept. 22, 23 (gage height, 4.31 ft).
1948-55: Maximum discharge, 9,600 cfs Mar. 20, 1948 (gage height, 15.80 ft, from graph based on gage readings), from rating curve extended above 5,300 cfs by logarithmic plotting; minimum, 0.5 cfs Sept. 26, 1948.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are poor.

Revisions (water years).--WSP 1337: 1949-50.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 4-6, 13-16)

Oct. 1 to Mar. 11

4.5	4.0	5.5	150
4.6	9.0	6.0	290
4.7	16	7.0	700
4.8	25	9.0	1,990
5.0	48	10.0	2,750
5.2	83		

Mar. 12 to Sept. 30

4.3	3.0	4.8	31
4.4	5.5	5.0	57
4.5	9.0	5.5	150
4.6	14		

Note.--Same as preceding table above 5.5 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.0	64	499	1,320	45	1,200	*1,160	126	47	12	5.5	12
2	7.0	64	367	1,100	45	1,400	879	108	38	11	5.2	11
3	18	68	278	1,320	45	1,460	551	*94	32	10	4.8	10
4	90	*79	221	1,260	45	1,570	367	83	28	9.5	4.8	8.6
5	*182	81	170	1,360	45	1,290	266	73	26	9.5	5.5	7.6
6	91	75	140	1,850	45	920	218	63	24	10	20	6.9
7	47	68	120	1,540	45	560	188	56	23	51	15	5.8
8	32	61	100	1,260	45	388	162	51	26	*44	14	5.5
9	26	56	*95	801	*50	325	141	47	*26	28	14	*5.0
10	22	51	90	423	50	1,460	124	46	24	20	11	5.2
11	24	47	90	300	50	2,750	112	47	23	16	9.0	5.5
12	40	45	95	250	50	2,430	104	46	28	13	*7.2	5.5
13	81	44	100	*200	50	1,920	101	43	44	11	6.6	5.2
14	103	43	95	170	55	1,070	99	39	54	10	7.6	5.0
15	199	40	90	150	55	750	97	36	50	13	9.0	5.0
16	633	39	80	130	55	920	122	33	43	29	9.5	5.0
17	832	39	80	110	55	*725	108	32	35	36	9.0	4.8
18	725	39	85	95	55	515	94	30	28	54	8.0	4.2
19	479	163	95	85	55	353	122	29	23	53	7.6	4.0
20	300	475	90	80	55	284	479	28	20	38	7.2	3.8
21	212	533	85	70	200	336	587	27	18	26	6.2	3.5
22	155	487	80	65	1,000	1,040	403	26	17	19	6.6	3.5
23	121	388	80	60	1,400	804	236	28	16	14	6.6	3.5
24	99	364	80	60	1,200	750	175	37	15	12	6.2	4.0
25	81	427	90	55	1,000	832	311	70	14	10	6.6	3.8
26	70	403	110	50	900	805	483	71	13	10	6.9	3.8
27	70	388	160	50	950	556	427	65	12	9.0	6.6	4.0
28	72	423	630	50	1,100	423	297	60	12	8.3	7.2	4.5
29	74	614	1,600	50	-	435	209	67	12	7.6	8.0	4.8
30	72	700	1,680	50	-----	750	158	62	12	6.9	12	4.8
31	70	---	1,600	45	------	1,130	-------	57	-----	6.2	12	-
Total	5,033.0	6,368	9,175	14,409	8,745	30,151	8,780	1,680	783	607.0	265.4	165.8
Mean	162	212	296	465	312	973	293	54.2	26.1	19.6	8.56	5.53
Cfsm	0.438	0.573	0.800	1.26	0.843	2.63	0.792	0.146	0.071	0.053	0.023	0.015
In.	0.51	0.64	0.92	1.45	0.88	3.03	0.88	0.17	0.08	0.06	0.03	0.02

Calendar year 1954: Max 3,880 Min 0.7 Mean 274 Cfsm 0.741 In. 10.03
Water year 1954-55: Max 2,750 Min 3.5 Mean 236 Cfsm 0.638 In. 8.67

Peak discharge (base, 1,000 cfs).--Dec. 29 (1 p.m.) 1,710 cfs (8.59 ft); Jan. 6 (12 m. to 1 p.m.) 1,990 cfs (8.95 ft); Feb. 23 (time unknown) about 1,500 cfs (8.70 ft); Mar. 4 (11 a.m. to 12 m.) 1,600 cfs (8.46 ft); Mar. 11 (2 p.m.) 2,990 cfs (10.29 ft); Mar. 22 (8 to 9 p.m.) 1,430 cfs (8.21 ft); Apr. 1 (3 to 5 a.m.) 1,220 cfs (7.91 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-27, Jan. 11 to Mar. 2.

Cass River at Vassar, Mich.

Location.--Lat 43°22'10", long 83°34'55", in SW¼ sec. 7, T. 11 N., R. 8 E., on downstream side of bridge on State Highway 15 in Vassar, 1¼ miles upstream from Goodings Creek.

Drainage area.--700 sq mi, approximately.

Records available.--December 1948 to September 1955. Gage-height records for flood seasons collected in this vicinity 1910-28 are contained in reports of U. S. Weather Bureau.

Gage.--Wire-weight gage and crest-stage indicator above concrete dam; gage read twice daily. Datum of gage is 612.376 ft above mean sea level, datum of 1929 (levels by U. S. Weather Bureau).

Average discharge.--6 years (1949-55), 513 cfs.

Extremes.--Maximum discharge during year, 4,340 cfs Mar. 12 (gage height, 10.80 ft); minimum observed, 18 cfs Sept. 21 (gage height, 3.18 ft).

1948-55: Maximum discharge, 11,300 cfs Mar. 28, 1950 (gage height, 16.60 ft); minimum observed, 17 cfs July 10, 1952; minimum gage height, 3.18 ft Sept. 21, 1955.

A stage of 20.8 ft occurred on Mar. 20, 1948, from U. S. Weather Bureau records (discharge, 18,000 cfs, from rating curve extended above 12,000 cfs by logarithmic plotting).

Remarks.--Records fair prior to Apr. 1, good thereafter. Some regulation by dam at Michigan Sugar Co. 10 miles upstream.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 6				Jan. 7 to Sept. 30			
3.4	45	5.0	505	3.1	12	5.0	560
3.6	73	6.0	940	3.4	51	7.0	1,680
4.0	165	9.0	2,900	3.7	105	10.5	4,100
				4.0	180		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53	159	890	1,200	158	1,860	*1,800	107	57	54	41	33
2	62	177	710	1,160	158	2,160	1,560	276	61	48	37	32
3	118	209	625	1,160	163	2,700	1,290	308	64	48	37	30
4	565	254	376	1,310	163	2,700	810	155	105	47	34	29
5	*337	*202	505	1,770	163	2,160	710	147	123	45	43	28
6	390	177	400	2,680	172	1,800	600	152	118	43	40	27
7	190	184	275	2,700	186	1,200	448	158	103	43	37	28
8	190	184	264	1,740	172	810	428	150	101	*40	30	*27
9	193	174	*351	1,470	172	660	412	150	*97	43	36	29
10	159	177	281	1,140	*172	1,140	260	*150	93	48	37	27
11	67	174	281	935	177	3,330	237	147	93	48	*37	27
12	137	154	268	685	177	4,100	304	142	100	48	37	27
13	215	120	316	*b500	180	2,840	272	137	109	47	37	27
14	254	123	362	b450	192	2,040	280	134	114	47	47	27
15	585	118	337	b400	192	1,620	384	125	109	48	45	29
16	732	109	177	b350	192	1,620	384	112	112	48	44	27
17	1,020	113	143	296	192	1,800	234	80	112	47	41	24
18	1,040	118	248	b270	192	*1,440	228	74	114	64	37	22
19	645	470	228	b250	189	735	396	78	109	65	34	22
20	452	1,550	309	231	192	710	388	78	71	93	32	20
21	418	915	70	216	610	610	885	74	140	71	30	19
22	348	1,130	184	b210	1,140	1,440	810	83	105	72	30	20
23	330	1,160	258	b200	1,920	1,920	580	81	93	67	30	23
24	248	710	228	201	1,820	1,470	436	87	81	62	30	25
25	165	625	200	b190	1,560	1,620	935	169	57	61	30	20
26	212	625	209	b180	1,320	1,470	516	163	57	59	30	23
27	202	625	337	b170	1,500	1,170	735	147	56	59	34	23
28	235	645	800	174	1,740	635	610	166	56	54	33	25
29	222	915	1,670	b160	-	1,020	484	356	54	54	34	25
30	177	1,070	1,910	b160	------	1,110	432	112	54	47	40	25
31	140	--	1,340	158	------	1,680	------	57	------	43	36	--
Total	10,101	13,366	14,552	22,716	15,264	51,570	17,848	4,355	2,718	1,663	1,120	770
Mean	326	446	469	733	545	1,664	595	140	90.6	53.6	36.1	25.7
Cfsm	0.466	0.637	0.670	1.05	0.779	2.38	0.850	0.200	0.129	0.077	0.052	0.037
In.	0.54	0.71	0.77	1.21	0.81	2.74	0.95	0.23	0.14	0.09	0.06	0.04

Calendar year 1954: Max 6,280 Min 25 Mean 508 Cfsm 0.726 In. 9.83
Water year 1954-55: Max 4,100 Min 19 Mean 428 Cfsm 0.611 In. 8.29

Peak discharge (base, 3,000 cfs).--Mar. 3 or 4 (time unknown) about 3,000 cfs; Mar. 12 (1 to 3 a.m.) 4,340 cfs (10.80 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Cass River at Frankenmuth, Mich.

Location.--Lat 43°19'35", long 83°44'50", in sec. 27, T. 11 N., R. 6 E., on right bank half a mile west of Frankenmuth, 3.4 miles upstream from Dead Creek, and 5.4 miles downstream from Perry Creek.

Drainage area.--848 sq mi.

Records available.--February 1908 to March 1909, July 1935 to September 1936, June 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 583.96 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). February 1908 to March 1909 staff gage at site half a mile upstream at datum 1.81 ft lower. July 18 to Sept. 11, 1935, wire-weight gage and Sept. 12, 1935, to Sept. 30, 1936, and June 20, 1939, to Sept. 30, 1949, water-stage recorder, at site half a mile downstream at datum 0.04 ft higher than present datum.

Average discharge.--17 years (1935-36, 1939-55), 499 cfs.

Extremes.--Maximum discharge during year, 4,800 cfs Mar. 12 (gage height, 15.51 ft); minimum, 21 cfs Sept. 22, 23 (gage height, 3.05 ft).
1908-9, 1935-36, 1939-55: Maximum discharge, 17,700 cfs Mar. 18, 1942 (gage height, 20.88 ft); maximum gage height, 22.44 ft Feb. 17, 1954 (ice jam); minimum daily discharge, 1.5 cfs Aug. 6, 1944.

Remarks.--Records good except those for period of ice effect, which are fair. Occasional diurnal fluctuation at low and medium flows caused by mill above station. Prior to 1950, regulation at low and medium flows by mill above station.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.0	17	5.0	310
3.2	34	7.0	810
3.5	62	11.0	2,200
4.0	127	16.0	5,200

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	52	162	1,140	1,660	190	2,500	2,000	279	75	55	48	47
2	59	196	900	1,520	180	2,700	1,800	221	76	53	48	43
3	121	217	708	1,520	180	3,050	1,380	342	78	59	46	41
4	660	230	322	1,880	180	3,620	810	236	83	54	43	36
5	*545	*331	545	2,200	180	3,320	750	180	116	50	39	34
6	595	230	257	3,100	190	2,350	708	178	133	50	33	32
7	310	210	289	3,260	190	1,560	520	174	109	50	48	33
8	240	208	310	2,200	190	1,110	470	173	120	*48	38	*34
9	189	207	*279	1,800	190	1,020	446	171	*112	46	39	35
10	238	201	310	1,380	*190	1,340	422	171	100	46	41	34
11	141	198	331	840	200	3,270	201	*169	97	43	*40	35
12	140	159	310	870	220	4,560	342	162	109	35	38	33
13	331	143	241	*520	220	3,440	310	156	143	33	36	32
14	218	146	422	500	220	2,600	*310	149	140	49	43	34
15	544	146	221	450	230	1,760	353	141	133	71	53	34
16	840	148	240	400	230	1,800	386	130	138	106	51	33
17	1,420	151	283	360	230	1,730	279	112	122	79	48	29
18	1,240	156	264	350	230	*1,310	216	86	116	72	44	26
19	870	324	320	320	220	870	398	87	112	71	41	25
20	670	840	289	300	220	900	482	86	112	95	36	25
21	532	1,110	226	280	600	670	750	84	120	82	34	24
22	410	870	225	260	1,300	1,200	930	87	153	86	34	23
23	364	720	310	250	2,000	2,550	735	96	110	71	34	24
24	353	750	357	240	2,300	1,840	495	118	94	65	34	25
25	173	658	205	230	2,080	1,800	620	192	70	66	34	25
26	208	780	263	220	1,840	1,730	558	214	62	64	34	24
27	225	720	410	210	2,080	1,420	780	189	60	64	36	25
28	249	735	738	210	2,200	840	720	185	54	62	42	27
29	255	930	1,590	200	-	1,050	446	508	55	60	42	29
30	375	1,200	2,120	200	-----	1,310	545	181	58	55	52	28
31	203	---	1,960	190	--- --	1,700	-------	109	--- -- -	49	57	- -
Total	12,770	13,076	16,385	27,920	18,480	60,920	19,162	5,366	3,060	1,889	1,286	927
Mean	412	436	529	901	660	1,965	639	173	102	60.9	41.5	30.9
Cfsm	0.486	0.514	0.624	1.06	0.778	2.32	0.754	0.204	0.120	0.072	0.049	0.036
In.	0.56	0.57	0.72	1.22	0.81	2.67	0.84	0.24	0.13	0.08	0.06	0.04

Calendar year 1954: Max 7,000 Min 30 Mean 607 Cfsm 0.716 In. 9.71
Water year 1954-55: Max 4,560 Min 23 Mean 497 Cfsm 0.586 In. 7.94

Peak discharge (base, 3,500 cfs).--Jan. 7 (3 to 6 a.m.) 3,500 cfs (13.53 ft); Mar. 4 (11 a.m. to 1 p.m.) 3,680 cfs (13.80 ft); Mar. 12 (8 a.m.) 4,800 cfs (15.51 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 14 to Feb. 23.

Tobacco River at Beaverton, Mich.

Location.--Lat 43°52'45", long 84°28'25", in sec. 7, T. 17 N., R. 1 W., on left bank 15 ft downstream from highway bridge, 1 mile downstream from powerplant at Beaverton, and 2 miles upstream from Venison Creek.

Drainage area.--487 sq mi.

Records available.--July 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 683.27 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--7 years, 374 cfs.

Extremes.--Maximum discharge during year, 2,980 cfs Mar. 22 (gage height, 8.14 ft); minimum recorded, 8.0 cfs Dec. 15 (gage height, 0.80 ft); minimum daily, 57 cfs Sept. 23. 1948-55: Maximum discharge, 6,200 cfs Mar. 28, 1950 (gage height, 11.58 ft); minimum, 6.5 cfs Jan. 13, 1949 (gage height, 0.78 ft); minimum daily, 25 cfs Aug. 12, 1951. High water on Mar. 20, 1948, reached a stage of 12.4 ft, from graph based on gage readings (discharge, 7,100 cfs).

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Regulation at all stages by powerplant 1 mile upstream.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	57	4.0	660
2.0	109	6.0	1,600
2.5	199	8.0	2,900
3.0	318		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	221	260	464	396	260	271	649	442	280	190	100	314
2	224	320	418	374	250	362	754	438	290	210	170	178
3	692	*320	386	364	260	277	758	436	270	220	250	207
4	1,840	318	332	315	250	391	754	452	280	300	90	192
5	1,350	321	294	460	320	343	744	376	290	*400	200	182
6	708	309	167	390	270	334	580	286	*290	100	270	114
7	*346	284	*232	460	*270	284	512	306	500	150	300	*118
8	396	298	262	350	260	294	452	282	682	200	170	132
9	336	288	315	396	240	378	410	*256	670	200	160	130
10	334	282	306	308	250	366	406	195	528	200	*160	142
11	445	265	216	*308	250	727	430	200	360	220	148	217
12	330	283	300	308	240	1,600	*354	204	534	170	146	138
13	439	254	227	263	260	2,270	378	347	501	240	115	164
14	397	265	228	286	260	2,410	466	250	308	160	251	244
15	880	266	250	318	260	*2,410	418	240	310	170	205	151
16	844	255	294	256	320	1,660	446	250	310	250	114	160
17	830	246	262	270	280	921	314	250	250	300	150	120
18	768	294	274	302	270	720	353	250	220	418	140	242
19	526	342	254	386	290	680	419	240	270	300	120	214
20	448	368	192	224	320	680	428	200	300	130	170	130
21	409	365	220	190	327	700	722	170	260	160	190	58
22	350	420	250	210	322	1,840	614	350	270	200	200	258
23	316	249	302	286	270	2,410	514	270	280	310	166	57
24	352	286	309	278	354	2,080	490	300	250	250	156	92
25	293	448	274	274	376	950	654	820	240	200	62	87
26	311	300	306	250	312	890	1,150	901	300	170	208	235
27	330	400	385	250	317	798	739	643	160	160	144	260
28	310	380	404	230	368	654	632	428	200	150	332	118
29	290	462	378	270	-	572	489	343	210	160	70	219
30	320	518	326	280	----	467	446	303	210	100	288	180
31	300		359	280	---	597	-- ---	280	- -- -	80	650	-
Total	15,935	9,666	9,186	9,532	8,026	29,336	16,475	10,708	9,823	6,468	5,895	5,053
Mean	514	322	296	307	287	946	549	345	327	209	190	168
Cfsm	1.06	0.661	0.608	0.630	0.589	1.94	1.13	0.708	0.671	0.429	0.390	0.345
In.	1.22	0.74	0.70	0.73	0.61	2.24	1.26	0.82	0.75	0.49	0.45	0.39

Calendar year 1954: Max 2,140 Min 107 Mean 391 Cfsm 0.803 In. 10.89
Water year 1954-55: Max 2,410 Min 57 Mean 373 Cfsm 0.766 In. 10.40

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 21, Jan. 26 to Feb. 20. No gage-height record Oct. 27 to Nov. 3, May 14-24, May 31 to June 7, June 11, June 15 to July 17, July 19 to Aug. 10, Aug. 17-22; discharge estimated on basis of powerplant records and records for Tittabawassee River at Midland.

Salt River near North Bradley, Mich.

Location.--Lat 43°42'10", long 84°28'15", in SE¼ sec. 7, T. 15 N., R. 1 W., on right bank 200 ft upstream from bridge on U. S. Highway 10, 0.5 mile upstream from Bluff Creek, and 1.1 miles southeast of North Bradley.

Drainage area.--138 sq mi.

Records available.--June 1934 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 618.01 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). June 4, 1934, to Mar. 26, 1942, staff gage at site 100 ft downstream and Mar. 27, 1942, to July 7, 1954, wire-weight gage at bridge 200 ft downstream at same datum.

Average discharge.--21 years, 76.8 cfs.

Extremes.--Maximum discharge during year, 2,680 cfs Mar. 12 (gage height, 11.43 ft); minimum, 8.1 cfs Oct. 1; minimum gage height, 0.35 ft Aug. 23, 25.
1934-55: Maximum discharge, 8,200 cfs Mar. 20, 1948 (gage height, 14.95 ft, from graph based on gage readings), from rating curve extended above 4,400 cfs; minimum observed, 1.1 cfs Aug. 14, 1944 (gage height, 0.21 ft).

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

Revisions (water years).-- WSP 1337: 1936-39, 1940(M), 1949-50.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-3, July 17 to Sept. 30)

0.1	7.0	4.0	435
.4	13	7.0	940
.7	28	9.0	1,490
1.0	49	11.1	2,440
2.0	152		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.3	24	75	70	20	100	118	55	43	18	9.9	38
2	8.6	*25	62	75	20	150	105	53	36	23	9.7	20
3	17	27	54	80	20	150	89	72	32	31	9.9	15
4	a130	26	51	90	20	150	75	66	28	29	*13	13
5	a100	25	40	100	20	150	67	51	26	*22	28	12
6	49	23	35	120	20	150	66	43	*25	20	17	11
7	*34	23	30	200	20	150	62	38	a24	18	12	*11
8	26	23	*25	170	*20	130	55	36	a23	17	11	11
9	24	22	20	140	20	130	51	*34	a23	16	11	11
10	23	21	20	100	20	150	48	33	a23	16	10	11
11	26	21	20	*70	20	1,000	46	34	a45	14	10	11
12	33	20	20	60	20	*2,440	*47	32	a100	14	9.9	11
13	29	20	20	50	20	*1,900	51	30	a250	13	9.5	9.9
14	29	20	20	45	20	*904	62	28	a170	13	10	11
15	102	20	20	40	20	760	60	26	a110	15	13	11
16	90	19	20	35	20	495	51	24	*a70	17	12	11
17	84	19	20	35	20	271	47	24	58	16	11	11
18	71	19	20	30	20	215	43	23	45	17	11	10
19	51	24	20	30	20	164	43	22	38	16	9.9	9.9
20	41	38	20	25	20	152	51	22	34	14	9.7	9.7
21	36	37	22	25	30	182	90	21	36	12	9.2	9.7
22	32	32	22	25	50	1,090	77	25	39	12	9.2	9.7
23	28	29	22	25	100	1,470	59	29	29	12	8.8	9.7
24	26	31	25	20	100	814	59	35	26	11	9.5	9.7
25	24	37	25	20	100	390	278	631	23	11	9.0	9.5
26	23	35	30	20	100	236	271	542	22	11	9.2	9.5
27	25	33	35	20	100	170	164	202	20	11	11	9.5
28	29	41	40	20	100	144	112	129	20	11	12	9.7
29	27	80	45	20	-	144	85	111	18	11	11	9.9
30	29	104	55	20	-------	134	66	81	18	10	89	9.7
31	27	---	60	20	-------	127	-------	57	-------	9.7	118	---
Total	1,281.9	918	993	1,800	1,080	14,612	2,498	2,609	1,454	480.7	533.4	355.1
Mean	41.4	30.6	32.0	58.1	38.6	471	83.3	84.2	48.5	15.5	17.2	11.8
Cfsm	0.300	0.222	0.232	0.421	0.280	3.41	0.604	0.610	0.351	0.112	0.125	0.086
In.	0.35	0.25	0.27	0.49	0.29	3.94	0.67	0.70	0.39	0.13	0.14	0.10

Calendar year 1954: Max 1,650 Min 6.2 Mean 86.0 Cfsm 0.623 In. 8.45
Water year 1954-55: Max 2,440 Min 8.3 Mean 78.4 Cfsm 0.568 In. 7.72

Peak discharge (base, 800 cfs).--Mar. 12 (9 to 10 a.m.) 2,680 cfs (11.43 ft); Mar. 23 (2 to 3 a.m.) 2,070 cfs (10.51 ft); May 25 (7 p.m.) 922 cfs (6.93 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Chippewa River near Mount Pleasant and Tobacco River at Beaverton.

Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 11.

Chippewa River near Mount Pleasant, Mich.

Location.--Lat 43°37'35", long 84°42'30", on line between secs. 7 and 8, T. 14 N., R. 3 W., on right bank 12 ft downstream from highway bridge and 4 miles northeast of Mount Pleasant.

Drainage area.--416 sq mi.

Records available.--October 1930 to July 1931, October 1932 to September 1955. Gage-height records for flood seasons collected in this vicinity 1910-27, are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 710.38 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Oct. 21, 1938, chain and wire-weight gage at site 30 ft upstream at same datum.

Average discharge.--23 years (1932-55), 292 cfs.

Extremes.--Maximum discharge during year, 1,500 cfs Mar. 12 (gage height, 7.29 ft); minimum, 67 cfs July 27; minimum gage height, 3.06 ft Jan. 25; minimum daily discharge, 104 cfs July 27.
1930-31, 1932-55: Maximum discharge, 4,960 cfs Mar. 8, 1946 (gage height, 12.78 ft); minimum, 12 cfs Aug. 18, 1945; minimum daily, 19 cfs Aug. 16, 1936; minimum gage height, 2.82 ft Dec. 21, 1944.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 200 cfs, which are fair. Diurnal fluctuation below 750 cfs caused by powerplant at Mount Pleasant.

Revisions (water years).--WSP 744: Drainage area. WSP 1337: 1931, 1933-40, 1945, 1948-49.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-3, June 4 to Sept. 30)

Oct. 1 to Dec. 22		Dec. 23 to Sept. 30	
3.2	149	2.9	76
4.0	397	4.5	572
5.0	707	6.0	1,050
5.5	870	7.0	1,400

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	164	242	320	b300	a220	271	536	402	212	169	122	302
2	*168	*248	304	305	a210	274	541	377	212	197	160	234
3	323	261	295	296	a210	281	541	383	197	234	166	178
4	835	261	282	302	a220	293	536	380	181	243	188	160
5	676	254	273	330	a230	296	479	352	184	*216	184	150
6	630	254	*242	370	a230	284	464	315	188	178	209	*132
7	444	258	223	358	*a230	259	448	340	*209	163	147	138
8	382	251	223	*336	b230	240	417	293	398	160	135	135
9	344	245	245	327	231	284	395	*281	402	147	*110	135
10	323	239	245	318	228	377	377	293	364	163	119	141
11	320	236	239	290	b220	920	*364	274	346	150	132	141
12	323	233	230	274	b220	*1,400	358	256	494	138	141	141
13	320	233	217	b260	b220	1,360	355	259	448	141	113	135
14	326	233	199	b250	b220	1,260	358	243	370	138	122	150
15	412	236	230	b240	a230	1,190	355	234	305	160	126	129
16	428	233	236	b230	a240	1,120	343	219	271	184	132	141
17	428	233	220	b220	240	887	324	209	253	209	132	150
18	444	230	223	b220	234	775	318	203	234	184	126	141
19	412	236	223	b220	216	680	305	191	222	166	129	141
20	372	251	205	b210	234	618	330	203	197	166	126	129
21	335	270	b230	b200	259	618	414	203	191	154	126	126
22	310	270	b250	b200	274	887	494	178	181	154	110	129
23	288	264	259	b200	284	1,220	464	203	184	154	119	132
24	276	267	253	b200	262	1,020	464	225	169	150	132	129
25	258	267	253	b200	271	920	727	392	169	141	132	129
26	245	267	253	b200	259	775	743	392	160	132	132	119
27	258	267	262	b200	265	680	680	343	166	104	141	110
28	258	273	296	b200	265	618	588	293	166	132	154	116
29	261	298	305	a210	-	556	494	274	157	110	157	126
30	258	316	268	a220	-------	541	432	253	154	119	426	129
31	251	----	290	a220	-------	541	-------	225	-------	138	411	----
Total	11,072	7,626	7,793	7,906	6,652	21,445	13,644	8,688	7,384	4,994	4,859	4,348
Mean	357	254	251	255	238	692	455	280	246	161	157	145
Cfsm	0.858	0.611	0.603	0.613	0.572	1.66	1.09	0.673	0.591	0.387	0.377	0.349
In.	0.99	0.68	0.70	0.71	0.59	1.92	1.22	0.78	0.66	0.45	0.43	0.39

Calendar year 1954: Max 1,360 Min 118 Mean 336 Cfsm 0.808 In. 10.97
Water year 1954-55: Max 1,400 Min 104 Mean 292 Cfsm 0.702 In. 9.52

Peak discharge (base, 850 cfs).--Oct. 4 (9:30 a.m.) 940 cfs (5.74 ft); Mar. 12 (3 p.m.) 1,500 cfs (7.29 ft); Mar. 23 (5 to 7 a.m.) 1,330 cfs (6.85 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, weather records, and records for Chippewa River near Midland, Tobacco River near Beaverton, and Pine River at Alma.

b Stage-discharge relation affected by ice.

Chippewa River near Midland, Mich.

Location.--Lat 43°35'40", long 84°22'10", on line between sec. 24, T. 14 N., R. 1 W., and sec. 28, T. 14 N., R. 1 E., on upstream side of bridge on State Highway 30, 5 miles upstream from Pine River and 6 miles southwest of Midland.

Drainage area.--597 sq mi.

Records available.--January 1948 to September 1955.

Gage.--Wire-weight gage read twice daily. Datum of gage is 612.35 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--7 years, 444 cfs.

Extremes.--Maximum discharge during year, 3,820 cfs Mar. 11 (gage height, 5.9 ft, from graph based on gage readings); minimum, 90 cfs Aug. 23.
1948-55: Maximum discharge, 8,510 cfs Mar. 20, 1948, from graph based on gage readings; maximum gage height observed, 12.43 ft Mar. 19, 1948 (ice jam); minimum daily discharge, 44 cfs Aug. 16, 1948.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation below 750 cfs caused by powerplant at Mount Pleasant.

Revisions (water years).-- WSP 1337: 1950.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-18, June 16 to Sept. 14)

Oct. 1 to Mar. 11		Mar. 12 to Sept. 30	
2.3	116	2.2	85
2.5	218	2.5	250
2.9	530	2.8	500
5.0	2,820	6.0	3,960

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	121	286	458	a350	250	330	790	570	368	140	179	610
2	130	*279	424	a350	250	330	760	540	328	168	168	392
3	232	286	400	360	250	350	a760	530	299	208	190	285
4	928	301	360	370	250	350	720	530	238	a250	232	196
5	1,190	293	330	430	250	350	670	500	238	257	250	226
6	884	286	316	500	250	330	630	440	238	*202	190	*174
7	*580	279	*280	460	250	310	600	368	*271	208	264	179
8	416	279	280	440	*250	300	540	368	970	168	146	179
9	368	272	300	410	250	400	520	328	1,240	179	*168	168
10	316	259	300	*400	250	600	470	*336	1,060	214	135	168
11	293	259	300	370	270	2,000	460	352	1,220	184	146	179
12	308	238	280	370	270	3,500	*440	292	1,500	179	146	168
13	308	236	260	370	270	2,750	440	306	1,270	168	146	174
14	308	238	250	360	270	2,200	480	278	1,090	179	a160	168
15	400	238	270	330	270	*1,920	460	a250	750	208	168	208
16	521	238	280	320	270	1,810	440	244	550	257	157	162
17	512	245	270	320	300	1,500	392	226	a450	306	157	184
18	530	245	270	300	300	1,170	400	220	a350	392	146	a180
19	503	259	270	290	300	1,050	400	214	a300	264	140	179
20	449	286	212	260	300	a900	440	184	257	238	130	157
21	392	316	270	250	300	930	600	214	244	232	a130	146
22	345	330	300	250	320	1,110	690	226	226	208	130	146
23	308	316	300	250	320	2,470	660	320	202	208	90	a150
24	279	308	300	250	320	2,140	660	376	202	208	125	152
25	272	323	300	250	320	1,700	1,250	1,920	184	196	130	146
26	252	316	300	250	320	1,350	1,400	2,030	157	184	135	140
27	272	323	320	a250	320	1,040	1,140	1,350	152	184	162	140
28	279	316	350	250	320	930	950	1,020	152	184	168	130
29	301	392	350	250	-	890	790	1,110	152	162	196	135
30	308	458	350	250	------	800	640	760	130	146	368	146
31	286	--	350	250	------	810	-------	540	------	140	1,070	-
Total	12,591	8,702	9,600	10,110	7,860	36,620	19,592	16,942	14,788	6,421	6,122	5,767
Mean	406	290	310	326	281	1,181	653	547	493	207	197	192
Cfsm	0.680	0.486	0.519	0.546	0.471	1.98	1.09	0.916	0.826	0.347	0.330	0.322
In.	0.78	0.54	0.60	0.63	0.49	2.28	1.22	1.06	0.92	0.40	0.38	0.36

Calendar year 1954: Max 2,540 Min 107 Mean 434 Cfsm 0.727 In. 9.85
Water year 1954-55: Max 3,500 Min 90 Mean 425 Cfsm 0.712 In. 9.66

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Chippewa River near Mount Pleasant and Pine River near Midland.
Note.--Stage-discharge relation affected by ice Dec. 7 to Mar. 11.

Pine River at Alma, Mich.

Location.--Lat 43°23', long 84°39', in SE¼ sec. 34, T. 12 N., R. 3 W., on right bank, 270 ft downstream from Superior Street Bridge on grounds of Municipal Water Works at Alma.

Drainage area.--288 sq mi.

Records available.--October 1930 to September 1955. Gage-height records for flood seasons collected in this vicinity 1910-28 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 718.37 ft above mean sea level, datum of 1929. Prior to Dec. 10, 1930, tape gage at Superior Street Bridge at different datum. Dec. 10, 1930, to June 15, 1938, staff gage at site 70 ft downstream from bridge and June 16 to Oct. 25, 1938, wire-weight gage at Superior Street Bridge, at present datum.

Average discharge.--25 years, 195 cfs.

Extremes.--Maximum discharge during year, 1,150 cfs Mar. 11 (gage height, 6.01 ft); minimum recorded, 51 cfs July 28; minimum daily, 59 cfs Aug. 1, 5.
1930-55: Maximum discharge, 4,400 cfs Mar. 19, 1948 (gage height, 10.81 ft); minimum daily, 2 cfs July 23, 1938.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Occasional regulation by dam half a mile above station.

Revisions (water years).--WSP 744: Drainage area. WSP 1337: 1931, 1932-34(M), 1936, 1939, 1945, 1949.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	101	*161	233	203	140	180	388	300	250	92	59	338
2	*118	164	210	203	130	200	371	263	200	110	67	354
3	168	168	189	210	130	250	346	248	160	157	71	256
4	300	172	175	218	130	400	323	248	*154	196	65	162
5	316	175	150	248	130	*432	300	218	153	*218	59	138
6	362	158	*103	308	130	354	286	196	150	167	85	*119
7	470	154	95	338	*130	308	278	189	168	131	77	96
8	539	153	117	*323	130	308	263	167	293	109	74	92
9	423	144	155	293	130	323	256	162	346	108	*70	92
10	263	142	144	256	130	605	226	164	517	105	70	90
11	210	137	139	226	130	1,070	*218	165	539	107	70	90
12	203	120	139	196	130	*870	226	169	642	104	66	80
13	203	133	122	189	130	902	233	155	655	96	70	80
14	203	121	103	164	130	1,010	248	146	630	94	64	80
15	226	120	121	182	140	920	248	138	572	93	75	90
16	263	120	151	134	150	*810	248	121	*479	101	86	90
17	300	120	148	111	150	668	226	114	338	94	84	90
18	316	122	143	128	150	605	210	119	248	96	73	90
19	286	140	140	148	150	528	263	*121	203	102	70	85
20	256	158	110	142	150	460	323	126	182	78	73	80
21	226	182	79	125	180	432	362	126	165	83	70	70
22	196	167	105	140	200	717	346	130	150	71	71	80
23	189	153	139	158	210	680	338	144	122	73	65	80
24	175	146	150	146	210	825	316	218	125	78	61	70
25	171	162	153	153	200	810	450	479	122	75	61	60
26	158	171	144	157	180	692	528	498	108	75	60	80
27	154	162	175	147	180	605	539	470	107	64	70	84
28	167	162	196	135	180	517	550	498	104	66	71	80
29	175	196	218	144	-	450	479	479	107	72	80	84
30	175	226	189	150	------	423	380	396	104	66	270	*84
31	168	-- --	182	150	-------	396	--------	330	-- ---	65	316	---
Total	7,478	4,609	4,617	5,825	4,260	17,750	9,768	7,297	8,093	3,146	2,623	3,364
Mean	241	154	149	188	152	573	326	235	270	101	84.6	112
Cfsm	0.837	0.535	0.517	0.653	0.528	1.99	1.13	0.816	0.938	0.351	0.294	0.389
In.	0.97	0.60	0.60	0.75	0.55	2.29	1.26	0.94	1.05	0.41	0.34	0.43

Calendar year 1954: Max 1,450 Min 56 Mean 216 Cfsm 0.750 In. 10.18
Water year 1954-55: Max 1,070 Min 59 Mean 216 Cfsm 0.750 In. 10.19

Peak discharge (base, 700 cfs).--Mar. 11 (9 to 10 a.m.) 1,150 cfs (6.01 ft); Mar. 22 (4:30 p.m.) 902 cfs (5.36 ft); Mar. 24 (8 to 9 a.m.) 840 cfs (5.14 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Feb. 7-11, Feb. 20 to Mar. 4. No gage-height record Jan. 30 to Feb. 6, Feb. 12-19, June 1-3, Sept. 10-26; discharge estimated on basis of records for Pine River near Midland and Chippewa River near Mount Pleasant.

Pine River near Midland, Mich.

Location.--Lat 43°33'50", long 84°22'10", on line between sec. 36, T. 14 N., R. 1 W., and sec. 4, T. 13 N., R. 1 E., on left bank at downstream side of bridge on State Highway 30, 7 miles southwest of Midland and 8 miles upstream from mouth.

Drainage area.--390 sq mi, approximately.

Records available.--May 1934 to September 1938, February 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 623.87 ft above mean sea level (Michigan State Highway Department benchmark). May 31, 1934, to Sept. 30, 1938, tape, staff, or wire-weight gage at same site at datum 5.48 ft lower. Feb. 3, 1948, to Dec. 13, 1951, wire-weight gage, water-stage recorder, or staff gage at present site and datum.

Average discharge.--11 years, 283 cfs.

Extremes.--Maximum discharge during year, 2,360 cfs Mar. 11 (gage height, 6.47 ft); minimum, 28 cfs Nov. 14.
1934-38, 1948-55: Maximum discharge, 6,360 cfs Mar. 20, 1948 (gage height, 10.00 ft, from graph based on gage readings); minimum not determined.

Remarks.--Records fair except those for periods of ice effect, and those below 100 cfs, which are poor. Regulation at low and medium stages by dam at Alma, dam and powerplant at St. Louis.

Revisions (water years).--WSP 1337: 1935(M), 1936-38, 1948-49.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	*192	298	250	180	250	427	327	330	133	67	386
2	120	170	339	300	160	300	423	276	225	136	87	382
3	248	192	270	300	160	350	391	280	186	116	*62	368
4	570	186	214	300	160	600	383	220	176	164	*63	286
5	458	189	245	350	160	600	351	262	164	225	90	173
6	359	192	*169	400	160	500	308	204	159	*255	89	*129
7	*422	167	217	450	160	450	290	169	*255	176	85	154
8	545	162	210	507	*160	450	312	201	640	145	96	107
9	605	167	234	431	160	450	224	*172	675	127	*84	99
10	462	148	262	*375	160	1,000	280	174	1,060	110	73	99
11	270	140	172	350	160	2,220	256	192	1,170	105	87	105
12	198	176	144	300	160	1,720	*248	174	1,470	89	68	84
13	192	142	147	270	160	1,180	245	198	1,100	87	68	96
14	243	151	166	250	160	1,180	266	172	940	97	73	89
15	436	158	114	230	170	1,220	256	192	790	89	84	101
16	368	108	114	200	200	*1,080	228	179	*655	114	94	103
17	377	139	144	150	200	840	262	164	580	145	79	107
18	377	107	149	180	200	680	234	169	359	195	103	107
19	404	192	147	200	200	620	273	154	302	107	97	97
20	322	195	150	200	200	525	339	154	259	112	85	92
21	290	180	150	180	250	534	363	156	236	133	78	79
22	259	301	150	190	280	1,180	387	182	212	70	70	89
23	186	188	200	200	280	1,260	379	266	247	105	68	89
24	208	211	200	200	280	1,120	371	222	164	92	63	85
25	189	143	200	200	250	1,020	548	966	143	75	74	60
26	198	189	200	200	250	900	580	1,030	170	85	65	94
27	195	220	230	200	250	762	575	702	173	68	68	110
28	156	224	250	200	250	625	556	735	127	97	74	73
29	195	284	300	200	-	520	570	850	136	96	87	99
30	201	304	250	200	------	516	431	585	118	52	247	99
31	198	-- --	250	200	------	502	-------	454	--- ----	80	458	- - .
Total	9,340	5,517	6,285	8,163	5,520	25,154	10,756	10,181	13,221	3,680	2,986	4,041
Mean	301	184	203	263	197	811	359	328	441	119	96.3	135
Cfsm	0.772	0.472	0.521	0.674	0.505	2.08	0.921	0.841	1.13	0.305	0.247	0.346
In.	0.89	0.53	0.60	0.78	0.53	2.40	1.03	0.97	1.26	0.35	0.28	0.39

Calendar year 1954: Max 2,450 Min 44 Mean 283 Cfsm 0.726 In. 9.85
Water year 1954-55: Max 2,220 Min 52 Mean 287 Cfsm 0.736 In. 10.01

Peak discharge (base, 950 cfs).--Mar. 11 (10 to 11 a.m.) 2,360 cfs (6.47 ft); Mar. 22 (9 p.m.) 1,720 cfs (5.68 ft); May 25 (4 p.m.) 1,510 cfs (5.69 ft); June 12 (4 to 6 a.m.) 1,590 cfs (6.01 ft).
* Discharge measurement made on this day.
·Note.--Stage-discharge relation affected by ice Dec. 20 to Jan. 7, Jan. 11 to Mar. 10.

Tittabawassee River at Midland, Mich.

Location.--Lat 43°36', long 84°15', in NE¼ sec. 28, T. 14 N., R. 2 E., on right bank half a mile downstream from Dow Chemical Co. powerplant in Midland, 1 mile downstream from Chippewa River, and 1 mile upstream from Bullock Creek.

Drainage area.--2,400 sq mi, approximately.

Records available.--March 1936 to September 1955. Gage-height records for flood seasons collected in this vicinity 1910-26, 1928, and since 1946 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 590.28 ft above mean sea level, datum of 1929.

Average discharge.--19 years, 1,549 cfs (adjusted for diversion).

Extremes.--Maximum discharge during year, 12,700 cfs Mar. 23 (gage height, 12.71 ft); minimum, 159 cfs Aug. 24 (gage height, -0.72 ft); minimum daily, 186 cfs Aug. 24.
1936-55: Maximum discharge, 34,000 cfs Mar. 21, 1948 (gage height, 19.50 ft); minimum, 39 cfs Oct. 12, 1942; minimum daily, 111 cfs Aug. 21, 1949; minimum gage height, -0.96 ft Aug. 19, 1954.

Remarks.--Records good except those below 400 cfs, which are fair. Water is diverted from river a short distance above station for industrial use; small part returned to river a quarter of a mile below station; remainder returned 1 mile below and below control. Extremes and daily discharge not adjusted for diversion. Discharge above about 4,000 cfs regulated by powerplants above station.

Revisions (water years).--WSP 1054: 1945. WSP 1144: 1948.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

-0.7	165
0.0	440
2.0	1,450
4.0	2,970
12.5	12,400

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	448	958	1,760	1,240	967	1,770	3,440	1,360	1,340	464	328	1,260
2	644	976	1,670	1,060	646	2,110	3,300	1,300	1,220	488	310	1,070
3	1,300	*1,010	1,260	1,300	733	2,480	3,160	1,280	762	568	298	790
4	3,560	1,150	1,350	1,520	686	3,030	3,000	1,240	616	705	297	643
5	3,890	1,050	998	1,820	554	3,040	3,000	1,170	470	680	332	464
6	3,170	973	1,090	2,110	600	2,540	2,510	1,100	688	*615	369	480
7	2,950	781	*622	2,110	788	2,130	2,170	1,090	*1,190	582	479	*394
8	*1,890	892	688	1,810	*668	1,610	2,100	766	4,500	446	522	336
9	1,530	1,030	989	1,780	868	1,940	1,330	856	5,230	472	381	362
10	1,190	918	956	1,990	990	3,140	1,200	*800	3,320	425	*262	271
11	1,020	665	854	*1,590	840	7,520	1,640	700	2,700	396	231	310
12	915	538	1,040	1,620	638	11,100	1,440	700	4,240	346	259	383
13	1,200	873	726	1,410	464	10,700	*1,520	600	4,420	323	218	328
14	1,450	700	538	1,330	747	9,610	1,560	562	3,430	311	282	351
15	2,110	820	710	1,060	946	9,940	1,520	430	2,280	308	478	264
16	3,040	917	936	664	992	*8,510	1,520	665	1,870	376	436	295
17	2,970	1,030	892	634	921	5,720	1,210	644	1,270	424	290	330
18	2,900	1,030	856	802	868	4,650	1,310	800	1,040	722	270	415
19	2,610	1,220	868	812	757	4,260	1,500	655	746	474	380	476
20	1,620	1,130	831	981	828	3,880	1,580	752	770	498	325	688
21	1,060	931	772	886	1,290	3,890	2,270	578	1,030	452	246	741
22	1,020	1,120	578	610	1,480	7,410	2,490	636	712	301	224	548
23	938	1,200	596	599	1,880	12,400	2,010	846	544	294	238	256
24	915	1,280	804	863	1,730	11,500	1,820	870	469	336	186	248
25	897	1,140	688	921	1,590	8,620	2,800	5,590	352	301	260	224
26	846	1,200	809	900	1,490	5,770	4,480	9,500	431	284	211	387
27	864	1,150	1,130	777	1,560	4,760	4,140	6,860	474	360	287	726
28	1,040	1,200	1,350	714	1,830	4,360	3,650	5,540	464	408	445	766
29	1,220	1,540	1,410	680		4,100	2,680	5,330	426	300	496	708
30	998	2,760	1,140	790	-------	3,940	2,060	4,060	381	266	1,280	468
31	838	-------	1,400	657	-------	3,660	-------	2,700	-------	266	1,530	-------
Total	51,043	32,182	30,311	36,040	28,351	170,090	68,410	59,980	47,385	13,191	12,150	14,982
Mean	1,647	1,073	978	1,163	1,013	5,487	2,280	1,935	1,580	426	392	499
(†)	95	88	87	87	90	88	91	98	103	109	112	109
Adjusted for diversion by Dow Chemical Co.												
Mean	1,742	1,161	1,065	1,250	1,103	5,575	2,371	2,033	1,683	535	504	608
Cfsm	0.726	0.484	0.444	0.521	0.460	2.32	0.988	0.847	0.701	0.223	0.210	0.253
In.	0.84	0.54	0.51	0.60	0.48	2.68	1.10	0.98	0.78	0.26	0.24	0.28

		Observed				Adjusted				
Calendar year 1954:	Max	11,800	Min	172	Mean	1,519	Mean	1,612	Cfsm 0.672	In. 9.11
Water year 1954-55:	Max	12,400	Min	186	Mean	1,546	Mean	1,642	Cfsm 0.684	In. 9.29

Peak discharge (base, 5,800 cfs).--Mar. 12 (12 p.m.) 11,300 cfs (11.72 ft); Mar. 23 (8:30 a.m.) 12,700 cfs (12.71 ft); May 26 (12 m.) 9,940 cfs (10.50 ft).

* Discharge measurement made on this day.

† Average monthly diversion, furnished by Dow Chemical Co.

Pigeon River near Owendale, Mich.

Location.--Lat 43°45'35", long 83°14'45", in SE¼ sec. 36, T. 16 N., R. 10 E., on left bank 600 ft downstream from bridge on county road, 2 miles downstream from confluence of East and West Branches, and 2½ miles northeast of Owendale.

Drainage area.--55 sq mi, approximately.

Records available.--October 1952 to September 1955.

Gage.--Water-stage recorder. Prior to June 10, 1954, wire-weight gage at site 600 ft upstream at same datum.

Extremes.--Maximum discharge during year, 1,020 cfs Mar. 11 (gage height, 7.69 ft); minimum, 1.1 cfs Sept. 7, 8; minimum gage height, 1.03 ft Sept. 9, 10.
1952-55: Maximum discharge, 2,550 cfs Mar. 25, 1954 (gage height, 10.75 ft), from rating curve extended above 1,200 cfs; minimum observed, 0.5 cfs Oct. 11, 1952 (gage height, 1.00 ft).

Remarks.--Records fair except those for periods of ice effect and those below 5 cfs, which are poor.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1, 2, Oct. 25 to Nov. 4, June 2-9, Sept. 6-9, 23-30)

0.9	0.5	2.0	54
1.0	1.5	3.0	153
1.1	3.4	5.0	412
1.2	6.2	6.0	577
1.5	21	7.0	810
1.7	32		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	16	52	110	10	230	65	16	9.6	4.0	3.4	2.8
2	16	16	40	120	10	300	*50	15	7.6	4.5	3.4	2.1
3	35	20	35	130	10	310	38	*14	6.7	3.4	3.7	1.7
4	*56	*18	32	140	10	250	30	13	6.7	3.0	4.2	1.5
5	25	17	28	148	10	150	27	12	6.2	3.0	3.7	1.5
6	18	15	25	256	10	100	27	11	5.6	13	34	1.3
7	15	14	23	109	10	80	26	12	6.2	8.1	16	1.2
8	13	13	*21	71	10	70	24	12	8.1	*4.5	8.6	1.2
9	12	12	20	54	*10	80	23	11	*6.7	4.0	5.1	*1.8
10	14	12	20	44	10	400	22	12	5.9	3.4	3.4	2.6
11	17	12	20	41	10	762	20	12	6.7	2.8	3.0	3.7
12	30	12	20	*39	10	256	20	11	12	2.8	*2.6	2.4
13	38	11	20	36	11	133	20	9.1	16	2.6	2.6	1.7
14	27	11	20	32	11	73	18	8.6	14	2.6	4.2	2.1
15	167	11	19	28	12	97	18	7.6	11	20	7.6	2.3
16	250	11	17	24	12	110	17	7.6	9.1	34	4.8	2.4
17	186	11	17	21	12	*55	16	7.6	7.2	31	3.7	2.1
18	94	11	18	19	12	40	15	8.1	5.9	16	3.0	1.9
19	50	99	20	17	12	38	18	9.6	6.2	11	2.8	1.7
20	36	168	20	15	14	36	18	10	9.6	8.1	2.8	1.4
21	28	68	17	14	45	61	24	8.6	6.7	6.2	2.6	1.5
22	24	43	17	13	200	188	20	9.1	5.1	5.4	2.8	1.7
23	21	60	17	12	300	66	18	10	4.8	4.8	2.6	1.9
24	19	84	17	12	250	101	18	9.1	4.2	4.5	2.3	2.4
25	17	78	20	11	200	85	36	14	4.2	4.0	1.9	2.4
26	16	60	25	11	200	65	38	15	4.0	3.7	1.7	2.3
27	21	55	45	11	200	50	28	11	3.7	4.0	2.3	2.4
28	26	107	150	11	210	45	22	18	3.4	4.0	2.3	2.6
29	22	148	322	11	-	50	20	22	3.2	4.0	2.6	2.8
30	21	103	206	11	------	80	18	15	3.4	3.7	4.5	2.8
31	20	---	150	10	------	80	------	11	----	3.4	4.2	---
Total	1,348	1,316	1,473	1,581	1,821	4,441	754	362.0	209.7	229.5	152.4	62.2
Mean	43.5	43.9	47.5	51.0	65.0	143	25.1	11.7	6.99	7.40	4.92	2.07
Cfsm	0.791	0.798	0.864	0.927	1.18	2.60	0.456	0.213	0.127	0.135	0.089	0.038
In.	0.91	0.89	1.00	1.07	1.23	3.00	0.51	0.24	0.14	0.16	0.10	0.04

Calendar year 1954: Max 960 Min 1.3 Mean 52.3 Cfsm 0.951 In. 12.91
Water year 1954-55: Max 762 Min 1.2 Mean 37.7 Cfsm 0.685 In. 9.29

Peak discharge (base, 500 cfs).--Mar 11 (5:30 a.m.) 1,020 cfs (7.69 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-28, Dec. 31 to Jan. 4, Jan. 13 to Mar. 10, Mar. 16-18, Mar. 25 to Apr. 1.

Black River near Fargo, Mich.

Location.--Lat 43°06', long 82°37', in NW¼ sec. 32, T. 8 N., R. 16 E., on left bank 20 ft downstream from bridge on Norman Road, 2½ miles southeast of Fargo, 4½ miles upstream from Mill Creek, and 12 miles northwest of Port Huron.

Drainage area.--475 sq mi.

Records available.--February 1944 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 613.75 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to July 9, 1954, wire-weight gage at same site and datum.

Average discharge.--11 years, 338 cfs.

Extremes.--Maximum discharge during year, 5,460 cfs Oct. 16 (gage height, 10.24 ft); maximum gage height, 12.24 ft Feb. 22 (ice jam); minimum discharge, 6.5 cfs July 30, 31 (gage height, 1.61 ft).
1944-55: Maximum discharge, 14,400 cfs Apr. 5, 1947 (gage height, 16.06 ft, from floodmark), from rating curve extended above 9,500 cfs; maximum gage height observed, 18.05 ft Feb. 20, 1951 (ice jam); minimum discharge observed, 1.8 cfs Sept. 18, 19, 1946.

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

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	6.0	3.5	370
1.7	11	4.0	550
1.8	18	5.0	1,010
2.0	36	7.0	2,340
2.5	106	9.0	4,150
3.0	210	10.0	5,220

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	72	416	860	40	2,200	1,740	134	43	21	14	14
2	26	*78	249	2,330	40	1,500	960	114	40	20	14	13
3	46	169	164	2,930	40	1,200	550	103	36	19	14	13
4	330	162	121	1,880	40	2,340	349	95	35	20	10	13
5	314	144	100	1,780	40	1,510	243	86	34	20	7.0	12
6	146	125	90	3,950	40	698	198	78	32	22	13	11
7	*84	104	*95	2,560	45	458	171	71	34	89	21	10
8	57	90	100	810	45	420	150	65	37	69	20	10
9	43	80	100	475	45	400	132	60	36	*46	20	*10
10	36	69	90	*360	45	377	120	58	*37	34	20	10
11	40	67	80	300	45	2,100	108	*57	35	25	17	12
12	199	65	80	246	45	2,150	101	60	36	21	*14	11
13	377	62	90	208	45	960	98	57	43	19	15	10
14	264	60	100	160	*45	570	98	52	51	17	24	9.5
15	1,920	58	90	140	45	475	104	49	57	20	24	10
16	4,760	57	80	120	45	1,180	120	49	48	24	23	10
17	2,930	56	75	100	50	1,090	118	44	38	54	20	10
18	960	56	80	90	50	530	100	42	34	104	18	9.5
19	492	56	75	80	60	335	826	42	31	67	16	9.5
20	297	105	70	80	70	255	1,330	41	27	44	14	9.5
21	205	360	65	70	250	*418	1,090	40	26	31	14	9.0
22	160	273	65	65	2,500	1,700	649	40	23	24	14	9.0
23	132	176	65	60	3,000	1,300	314	47	23	21	14	10
24	111	167	65	60	2,500	542	234	47	23	20	13	13
25	98	366	65	50	2,000	1,040	908	53	22	17	12	12
26	88	492	70	50	1,700	1,090	*935	78	21	30	10	10
27	84	422	100	45	2,500	550	610	74	22	46	10	13
28	80	363	2,500	45	3,000	321	346	64	23	21	14	14
29	81	550	3,850	45	-	412	225	57	20	9.5	17	14
30	81	652	2,340	45	-------	1,060	167	52	21	7.0	14	9.5
31	78	--	1,390	40	-------	2,180	-------	48	-----	14	14	--
Total	14,544	5,556	12,920	20,034	18,370	31,361	13,094	1,957	988	995.5	484.0	330.5
Mean	469	185	417	646	656	1,012	436	63.1	32.9	32.1	15.6	11.0
Cfsm	0.987	0.389	0.878	1.36	1.38	2.13	0.918	0.133	0.069	0.068	0.033	0.023
In.	1.14	0.44	1.01	1.57	1.44	2.46	1.03	0.15	0.08	0.08	0.04	0.03

Calendar year 1954: Max 7,500 Min 7.1 Mean 392 Cfsm 0.825 In. 11.21
Water year 1954-55: Max 4,760 Min 7.0 Mean 331 Cfsm 0.697 In. 9.47

Peak discharge (base, 3,500 cfs).--Oct. 16 (4 p.m.) 5,460 cfs (10.24 ft); Dec. 29 (time unknown) about 4,200 cfs; Jan. 6 (10 a.m.) 4,250 cfs (9.10 ft); Feb. 22 (time and discharge unknown).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-28, Jan. 14 to Mar. 3, Mar. 8, 9 (no gage-height record Jan. 17 to Feb. 13).

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Mill Creek near Abbottsford, Mich.

Location.--Lat 43°03', long 82°37', in NW¼ sec. 17, T. 7 N., R. 16 E., on downstream side of highway bridge, 1 mile upstream from mouth and 2 miles northeast of Abbottsford.

Drainage area.--138 sq mi.

Records available.--May 1947 to September 1955.

Gage.--Wire-weight gage and crest-stage indicator; gage read twice daily. Datum of gage is 609.80 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to May 7, 1950, staff gage at same site and datum.

Average discharge.--8 years, 120 cfs.

Extremes.--Maximum discharge during year, 1,400 cfs Mar. 4 (gage height, 6.63 ft); minimum, 2.7 cfs Sept. 22 (gage height, 2.32 ft).
1947-55: Maximum discharge, 3,050 cfs Mar. 20, 1948 (gage height, 9.20 ft, from floodmark), from rating curve extended above 2,500 cfs; maximum gage height observed, 10.81 ft Jan. 3, 1951 (ice jam); minimum discharge, that of Sept. 22, 1955; minimum gage height, 2.28 ft Aug. 11, 1949.

Remarks.--Records good except those for periods of ice effect and those below 10 cfs, which are poor.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.3	2.7	3.5	130
2.4	6.1	4.0	250
2.6	15	5.0	610
3.0	48	7.0	1,600

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	40	126	400	25	655	414	57	22	10	7.4	4.7
2	13	*41	95	835	25	590	330	52	22	10	6.1	5.4
3	20	41	81	678	25	632	236	48	20	9.2	6.1	4.7
4	67	46	64	678	25	1,160	172	45	19	8.7	6.1	4.4
5	46	49	60	790	25	768	132	43	17	8.7	6.1	4.4
6	34	47	55	1,080	25	700	117	40	17	12	6.1	4.4
7	*23	44	*55	745	26	550	102	37	18	14	7.4	3.7
8	17	43	55	678	27	338	88	33	25	12	7.0	3.7
9	15	37	55	550	27	324	78	31	19	9.6	7.0	*3.7
10	14	34	47	*390	27	290	68	31	*16	9.2	6.1	4.1
11	17	31	45	303	27	486	60	*31	17	8.7	6.1	5.1
12	78	31	45	225	27	530	60	33	23	7.4	*5.4	5.1
13	91	29	42	174	27	475	57	30	26	7.0	5.1	4.4
14	78	28	51	130	*27	383	62	29	22	7.0	11	5.1
15	530	28	44	100	27	316	62	26	19	9.6	12	4.4
16	1,180	27	42	90	28	522	66	26	20	10	10	4.4
17	745	26	38	80	29	498	66	23	17	12	8.3	4.4
18	550	26	45	70	30	414	52	23	15	11	7.9	3.7
19	366	28	40	60	33	303	76	23	13	13	6.5	3.4
20	247	37	35	50	40	214	128	22	14	12	5.8	3.7
21	179	66	35	45	150	*236	159	22	12	10	4.7	3.0
22	136	68	35	40	494	428	144	23	13	9.6	8.7	3.0
23	113	57	34	35	428	400	106	25	15	8.7	7.0	4.7
24	83	72	32	32	432	472	102	26	15	7.9	7.0	6.1
25	72	98	33	30	380	472	134	28	14	7.9	6.5	7.0
26	57	104	33	28	355	450	*140	29	14	8.3	5.4	6.5
27	51	88	57	27	457	306	140	30	10	7.9	5.8	5.4
28	42	91	550	26	590	225	113	33	9.6	7.4	7.0	5.4
29	43	132	510	25	-	225	88	30	9.2	7.0	7.4	5.4
30	43	140	570	25	------	372	64	25	9.6	7.0	7.4	5.1
31	42	----	486	25	-------	457	-------	23	----	7.4	6.1	------
Total	5,006	1,629	3,495	8,444	3,838	14,191	3,616	977	502.4	290.2	216.5	138.5
Mean	161	54.3	113	272	137	458	121	31.5	16.7	9.36	6.98	4.62
Cfsm	1.17	0.393	0.819	1.97	0.993	3.32	0.877	0.228	0.121	0.068	0.051	0.033
In.	1.35	0.44	0.94	2.28	1.03	3.82	0.97	0.26	0.14	0.08	0.06	0.04

Calendar year 1954 : Max 1,800 Min 4.7 Mean 119 Cfsm 0.862 In. 11.71
Water year 1954-55 : Max 1,180 Min 3.0 Mean 116 Cfsm 0.841 In. 11.41

Peak discharge (base, 900 cfs).--Oct. 16 (11 a.m.) 1,280 cfs (6.39 ft); Jan. 2 (time and discharge unknown); Jan. 6 (time unknown) about 1,200 cfs; Mar. 4 (12 m.) 1,400 cfs (6.63 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-9, 19-22, Jan. 14 to Feb. 21.

Big Beaver Creek at Warren, Mich.

Location.--Lat 42°31'57", long 83°01'45", in NW¼ sec. 3, T. 1 N., R. 12 E., on downstream side of center pier of bridge on State Highway 53, 0.6 mile upstream from Red Run, and 1.0 mile east of Warren.

Drainage area.--25.2 sq mi.

Records available.--January 1954 to September 1955.

Gage.--Staff gage and crest-stage indicator; gage read twice daily. Altitude of gage is 610 ft (from topographic map).

Extremes.--1954: Maximum discharge during period January to September, 809 cfs Mar. 25 (gage height, 13.05 ft); no flow at times.
1954-55: Maximum discharge during water year, 316 cfs Jan. 6 (gage height, 10.44 ft); maximum gage height, 10.51 ft Feb. 21 (ice jam); no flow at times.

Remarks.--Records fair above 5 cfs and poor below.

Rating tables, Jan. 1, 1954, to Sept. 30, 1955, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 20 to Mar. 7, Apr. 29 to May 22, June 23 to July 10, Oct. 9, 10, 1954, Apr. 8-14, June 12-22, July 24 to Sept. 30, 1955)

Jan. 1 to Apr. 1, 1954

5.6	0	6.0	1.3	7.0	26
5.7	.1	6.1	2.2	8.0	75
5.8	.3	6.3	5.0	9.0	140
5.9	.7	6.5	9.7	10.0	225

Apr. 2, 1954, to Sept. 30, 1955

5.6	0	6.6	1.5	7.5	32
5.8	.1	6.7	2.6	8.0	63
6.0	.2	6.8	4.3	9.0	148
6.3	.5	6.9	6.6	10.0	261
6.5	1.0	7.0	10		

Discharge, in cubic feet per second, January to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1				a0.2	1.2	33	43	14	0.4	0.2	0.1	a0
2				a.2	1.2	22	52	9.7	.9	.2	a0	a0
3				a.2	1.2	18	25	8.3	.5	.2	0	a0
4				a.2	.1	29	10	12	3.6	.2	0	a0
5				a.1	.1	15	8.6	*9.0	4.3	.2	0	a0
6				a.1	.1	*9.4	10	8.0	1.2	.2	0	a0
7				a.1	.1	11	10	5.7	.9	.2	a0	a0
8				a.1	.1	26	37	4.5	.6	.2	a0	a0
9				a.1	.1	36	19	4.5	.5	.1	a.1	a0
10				a.1	.1	34	17	5.0	.5	.1	.1	a0
11				a0	.1	24	30	4.3	.4	.1	0	a0
12				0	.2	17	*17	3.3	*.3	.1	*0	0
13				0	.3	15	15	1.8	.2	.1	0	0
14				*0	a6	15	10	1.2	.1	.1	.1	0
15				0	34	7.1	*14	1.0	.1	0	.1	0
16				0	*187	5.0	78	.7	.1	0	.1	*0
17				0	*75	5.0	56	.6	.2	0	.1	0
18				0	*34	*5.0	27	.6	.2	0	.1	0
19				0	17	7.1	19	.5	.1	0	.1	0
20				.4	*14	93	48	.5	6.6	*0	.1	0
21				1.2	45	43	28	.5	4.8	0	.1	0
22				1.2	28	23	24	*.5	2.4	0	0	0
23				1.2	13	21	18	.2	*1.3	0	0	*0
24				1.2	13	16	*11	.1	.7	0	a0	0
25				1.2	14	70	19	.1	.5	0	a0	0
26				1.2	14	*225	103	.1	.5	0	a0	0
27				*1.2	51	69	130	.2	.4	0	*.1	.1
28				1.2	51	38	47	.2	.4	0	a.1	0
29				1.2	-	34	26	.2	.3	0	a.1	.1
30				1.2	------	34	19	.2	.3	0	a.1	0
31				1.2	------	34	------	.2	------	.1	a0	------
Total				15.0	600.9	1,033.6	970.6	97.7	33.3	2.3	1.5	0.2
Mean				0.48	21.5	33.3	32.4	3.15	1.11	0.07	0.05	0.01
Cfsm				0.019	0.853	1.32	1.29	0.125	0.044	0.0028	0.0020	0.00040
In.				0.02	0.89	1.53	1.43	0.14	0.05	0.003	0.002	0.0003

Calendar year	: Max	Min	Mean	Cfsm	In.	
Water year	: Max	Min	Mean	Cfsm	In.	

Peak discharge (base, 170 cfs).--Feb. 16 (time unknown) 230 cfs (10.03 ft); Mar. 25 (time unknown) 809 cfs (13.05 ft); Apr. 26 (time unknown) 291 cfs (10.35 ft).
* Discharge measurement or observation of no flow made on this day.
a No gage-height record; discharge estimated on basis of records for River Rouge at Birmingham and Plum Brook near Utica.
Note.--Stage-discharge relation affected by ice Jan. 12 to Feb. 13.

Big Beaver Creek at Warren, Mich.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.5	3.1	13	63	2.5	186	18	2.9	0.7	3.1	0	0.2
2	3	2.9	11	237	2.4	54	13	2.6	.5	3.4	*0	.2
3	5	6.9	8.3	86	2.4	40	12	2.3	.4	.2	0	.2
4	100	*6.6	6.6	80	2.3	148	7.3	2.0	.4	.1	.1	.2
5	*15	12	6	102	2.3	56	6.1	1.5	.4	.1	.2	.2
6	9	6.9	6	*249	2.2	16	5.2	1.4	.3	.1	.3	.1
7	5	5.2	5.5	58	2.2	16	4.1	1.1	.3	.1	1.7	.1
8	3	4.0	5	30	2.2	17	3.4	1.0	.5	.1	.8	.1
9	*1.7	2.6	*2.9	27	2.2	19	*3.1	.9	.7	.1	.6	.1
10	1.4	2.2	4.5	25	*2.2	21	2.8	.9	1.0	.1	.5	.2
11	6.6	1.8	6.1	21	2.2	102	2.5	.9	1.2	0	.4	.2
12	*33	1.7	6.1	18	2.2	51	3.1	*.9	.9	0	.1	.1
13	28	1.7	5.7	15	2.2	31	4.0	.9	1.2	0	0	.1
14	37	1.7	6.1	11	2.3	28	5.2	.8	*1.0	.1	.2	.1
15	102	1.5	5.7	9	2.4	37	23	.7	.8	.1	.1	.1
16	86	1.5	6.1	7	2.5	164	14	.6	.6	.1	.1	.1
17	50	1.4	6.6	6.5	2.6	50	12	.6	.4	.1	0	.1
18	25	1.4	21	6	2.8	27	7.3	.5	.3	.1	*0	0
19	16	2.8	17	5.5	3	23	28	.5	.2	0	0	0
20	10	5.7	13	5	4	19	17	.5	.4	*0	0	0
21	8.0	6.6	9	4.5	160	27	14	.5	.4	0	0	0
22	5.4	4.8	4.0	4.5	78	78	13	.5	.3	0	.1	*0
23	4.1	4.3	4.0	4	36	*42	12	.9	.2	0	.2	.2
24	3.1	8.3	4.0	3.5	31	46	20	3.6	.1	0	.3	.3
25	2.5	21	4.0	3.5	25	37	30	5.0	.1	0	.2	.3
26	2.4	12	6.6	3.3	22	27	21	3.8	.1	0	.2	.3
27	3.4	11	16	3.0	27	25	14	2.4	.1	0	.2	.4
28	4.5	16	*111	3.0	129	25	8.3	2.2	.1	0	.5	.2
29	3.6	20	52	2.8	-	26	5.9	1.9	.1	0	.6	.2
30	4.5	16	49	2.7	------	25	4.0	1.0	.1	0	.5	.2
31	4.0	---	44	2.6	-------	22	-------	.8	-------	0	.4	---
Total	583.7	193.6	465.8	1,098.4	557.1	1,485	333.3	46.1	13.8	7.9	8.3	4.5
Mean	18.8	6.45	15.0	35.4	19.9	47.9	11.1	1.49	0.46	0.25	0.27	0.15
Cfsm	0.746	0.256	0.595	1.40	0.790	1.90	0.440	0.059	0.018	0.0099	0.011	0.0060
In.	0.86	0.29	0.69	1.62	0.82	2.19	0.49	0.07	0.02	0.01	0.01	0.007

Calendar year 1954: Max 225 Min 0 Mean 11.0 Cfsm 0.437 In. 5.91
Water year 1954-55: Max 249 Min 0 Mean 13.1 Cfsm 0.520 In. 7.08

Peak discharge (base, 170 cfs).--Jan. 2 (time unknown) about 310 cfs; Jan. 6 (time unknown) 316 cfs (10.44 ft); Feb. 21 (time and discharge unknown); Mar. 1 (time unknown) about 260 cfs; Mar. 4 (time unknown) about 200 cfs; Mar. 16 (time unknown) about 230 cfs.

* Discharge mearurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-8, 19-21, Jan. 13 to Feb. 21, Mar. 7-9.

Plum Brook near Utica, Mich.

Location.--Lat 42°35'01", long 83°01'49", in SW¼ sec. 15, T. 2 N., R. 12 E., on right bank at downstream side of bridge on State Highway 53, 3.0 miles south of Utica and 3.4 miles upstream from mouth.

Drainage area.--22.5 sq mi.

Records available.--January 1954 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 610 ft (from topographic map).

Extremes.--Maximum discharge during year, 245 cfs Jan. 6 (gage height, 6.39 ft); maximum gage height, 6.98 ft Feb. 27 (ice jam); no flow at times.
1954-55: Maximum discharge, 720 cfs Mar. 25, 1954 (gage height, 8.20 ft); no flow at times.

Remarks.--Records fair except those for periods of ice effect or no gage-height record and those below 2 cfs, which are poor.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 5-7, 13, 14, Mar. 1-3, 5-31, Apr. 24 to June 10, July 7 to Sept. 30)

Oct. 1-14

0.9	1.6	2.0	23
1.0	2.7	3.0	53
1.2	5.4	4.0	100
1.5	11		

Oct. 15 to Sept. 30

0.8	0	2.5	23
.9	.7	3.0	37
1.0	1.5	4.0	79
1.5	6.2	6.0	210
2.0	13		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	a6	a7	46	2.5	100	a15	a6	1.3	0.6	a0	0
2	2.8	a7	a7	112	2.5	31	a14	a5	1.0	.4	*0	0
3	4.9	a7	a6	41	2.5	34	a13	a4.5	.9	.1	0	0
4	61	*8.2	a6	44	3	139	a11	a4	1.0	.3	0	0
5	*13	8.9	a5	92	3	34	a10	3.2	.9	.2	a.1	a0
6	7.2	7.3	a5	*145	3	21	a9	2.8	.9	0	a.2	a0
7	3.9	6.0	a4.5	38	3.5	16	a8	3.0	1.7	0	a.3	a0
8	2.7	5.5	a4.5	25	3.5	15	a7	2.6	2.9	0	a.2	a0
9	*2.5	4.6	*5.5	22	4	15	*6.1	2.3	2.4	0	a.2	0
10	2.5	4.8	6.3	20	*4.5	19	5.7	2.6	1.7	0	a.1	0
11	4.7	3.9	6.1	18	4.5	113	5.5	2.6	1.7	0	a0	0
12	22	4.3	6.0	16	4.5	42	8.9	*2.5	2.5	0	a0	0
13	20	3.6	6.1	14	4	23	7.7	2.1	4.0	0	a0	0
14	36	3.6	5.9	10	4	17	7.8	1.9	*3.1	0	a.1	0
15	48	3.2	6.0	8	3.5	31	17	1.9	1.9	0	a.1	0
16	56	3.2	6.0	7	3.5	83	12	1.7	1.3	.4	a.1	0
17	22	3.6	6.2	6	3.5	22	a10	1.7	1.1	0	a0	0
18	13	3.4	9.6	5	3.5	18	a8	1.4	.8	a0	a0	0
19	8.9	4.2	8	5	4.5	13	a10	1.4	.5	a0	a0	0
20	7.1	6.9	6	4.5	10	12	a11	1.4	1.1	a0	*0	0
21	5.9	6.6	4.3	4.5	*160	26	a10	1.7	1.3	a0	0	0
22	5.0	5.2	3.7	4	70	56	a8	4.6	1.0	0	.2	0
23	4.4	4.8	4.7	4	30	*34	a7	3.9	.5	.3	.7	0
24	3.8	8.6	5.3	3.5	20	33	a10	5.9	.2	a.2	.6	.5
25	3.5	12	5.3	3.5	15	a25	a12	4.5	.2	a.1	.4	.8
26	3.5	9.3	5.9	3	20	a17	a11	3.2	.1	0	.2	.3
27	4.8	a8	23	3	25	a15	a9	2.7	0	a0	.3	.6
28	5.3	a9	66	3	88	a15	a8	3.2	0	a0	1.1	.9
29	a6	a10	36	2.5	-	a20	a7	2.7	0	a0	1.6	.9
30	a6	a8	31	2.5	------	a20	a6	2.5	.4	a0	.6	.5
31	a6	-- ---	25	2.5	-------	a17	--------	1.8	--------	a0	.4	- - -
Total	394.2	186.7	332.9	714.5	505.5	1,076	284.7	91.3	36.4	2.6	7.5	4.5
Mean	12.7	6.22	10.7	23.0	18.1	34.7	9.49	2.95	1.21	0.08	0.24	0.15
Cfsm	0.564	0.276	0.476	1.02	0.804	1.54	0.422	0.131	0.054	0.0036	0.011	0.0067
In.	0.65	0.31	0.55	1.18	0.84	1.78	0.47	0.15	0.06	0.004	0.01	0.007

Calendar year 1954: Max 361 Min 0 Mean 12.2 Cfsm 0.542 In. 7.39
Water year 1954-55: Max 160 Min 0 Mean 9.96 Cfsm 0.443 In. 6.01

Peak discharge (base, 150 cfs).--Jan. 2 (3 a.m.) 180 cfs (5.61 ft); Jan. 6 (2 a.m.) 245 cfs (6.39 ft); Feb. 21 (time unknown) about 200 cfs; Mar. 1 (6 a.m.) 162 cfs (5.50 ft); Mar. 4 (6 a.m.) 210 cfs (6.10 ft); Mar. 11 (10 a.m.) 176 cfs (5.69 ft).

* Discharge measurement or observation of no flow made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Big Beaver Creek near Warren, River Rouge at Birmingham, and North Branch Clinton River near Mount Clemens.

Note.--Stage-discharge relation affected by ice Dec. 19,20, Jan. 13 to Feb. 27, Mar. 7,8.

Clinton River near Fraser, Mich.

Location.--Lat 42°34'40", long 82°57'00", in NW¼ sec. 20, T. 2 N., R. 13 E., on left bank 800 ft downstream from bridge on Garfield Road, 2⅝ miles north of Fraser, and 4 miles upstream from North Branch.

Drainage area.--454 sq mi.

Records available.--May 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 577.71 ft above mean sea level, datum of 1929. Prior to Nov. 17, 1949, wire-weight gage at site 800 ft upstream at same datum.

Average discharge.--8 years, 352 cfs.

Extremes.--Maximum discharge during year, 2,290 cfs Oct. 4 (gage height, 13.54 ft); minimum, 47 cfs Sept. 6 (gage height, 4.32 ft).
1947-55: Maximum discharge, 8,000 cfs May 11, 1948 (gage height, 19.5 ft, from graph based on gage readings), from rating curve extended above 4,000 cfs; minimum, that of Sept. 6, 1955; minimum gage height, 4.29 ft Sept. 7, 1954.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 22, 23, Feb. 27 to Mar. 1)

Oct. 1 to Mar. 1				Mar. 2 to Sept. 30			
5.5	150	10.0	957	4.3	46	8.0	581
6.0	218	12.0	1,540	5.0	106	10.0	1,040
8.0	539	13.0	1,990	6.0	232	12.0	1,660

Discharge, in cubic feet per second, water year October 1954 to September 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	225	254	277	468	150	1,540	480	254	123	113	84	95
2	225	292	277	1,210	150	*966	443	239	122	120	116	91
3	157	307	247	776	150	711	407	239	116	120	80	87
4	1,770	*307	240	693	150	1,500	382	246	114	78	82	63
5	838	337	225	798	150	1,160	364	254	112	82	76	53
6	*369	292	197	1,500	150	824	364	246	105	75	86	49
7	240	262	211	887	150	667	348	232	126	75	276	55
8	183	225	*225	576	150	540	324	197	254	76	115	92
9	170	218	211	503	160	540	308	170	183	89	87	93
10	153	211	218	451	160	*602	292	176	151	71	81	97
11	322	211	211	*417	170	1,040	268	176	176	61	66	230
12	485	204	204	385	170	1,020	340	*170	176	63	63	89
13	521	197	197	350	180	755	308	156	225	63	62	85
14	561	183	197	320	190	645	300	127	*176	62	117	83
15	1,060	170	204	300	*190	645	382	108	156	78	89	82
16	1,060	176	213	270	190	1,250	316	98	139	147	75	87
17	776	170	204	250	190	824	316	106	127	124	75	81
18	521	176	270	230	190	645	276	108	125	77	70	75
19	426	197	254	210	200	560	398	103	119	75	*69	70
20	385	254	197	200	250	500	382	104	183	76	67	70
21	353	240	180	190	1,400	581	382	109	254	*71	63	69
22	322	211	170	180	1,080	*778	332	110	183	70	82	*71
23	300	211	170	180	557	755	284	211	133	105	76	117
24	277	277	180	170	434	755	340	232	118	110	77	194
25	262	345	200	160	417	602	470	332	113	71	71	100
26	270	262	232	160	385	560	398	239	106	69	62	77
27	307	247	385	160	995	520	*356	204	97	108	66	78
28	300	277	776	150	1,500	500	324	183	98	149	103	85
29	284	300	633	150	-	540	292	176	100	86	106	81
30	300	292	576	150	------	540	261	135	125	72	83	87
31	277	-- ---	451	150	------	500	------	124	------	64	93	- -
Total	13,699	7,305	8,437	12,594	10,208	23,565	10,437	5,564	4,335	2,700	2,718	2,686
Mean	442	244	272	406	365	760	348	179	144	87.1	87.7	89.5
Cfsm	0.974	0.537	0.599	0.894	0.804	1.67	0.767	0.394	0.317	0.192	0.193	0.197
In.	1.12	0.60	0.69	1.03	0.84	1.93	0.85	0.46	0.36	0.22	0.22	0.22

Calendar year 1954: Max 2,580 Min 54 Mean 290 Cfsm 0.639 In. 8.67
Water year 1954-55: Max 1,770 Min 49 Mean 286 Cfsm 0.630 In. 8.54

Peak discharge (base, 1,100 cfs).--Oct. 4 (10:30 a.m.) 2,290 cfs (13.54 ft); Oct. 16 (8 to 9 a.m.) 1,130 cfs (10.70 ft); Jan. 2 (9 a.m.) 1,300 cfs (11.26 ft); Jan. 6 (9 a.m.) 1,620 cfs (12.18 ft); Feb. 21 (time unknown) about 1,600 cfs; Mar. 1 (11 a.m.) 1,700 cfs (12.09 ft); Mar. 4 (1 to 2 p.m.) 1,580 cfs (11.85 ft); Mar. 11 (7 p.m.) 1,280 cfs (10.86 ft); Mar. 16 (9 to 10 a.m.) 1,340 cfs (11.06 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 21-25, Jan. 13 to Feb. 21.

North Branch Clinton River near Mount Clemens, Mich.

Location.--Lat 42°37'45", long 82°53'25", in NW¼ sec. 2, T. 2 N., R. 13 E., on left bank 30 ft upstream from bridge on State Highway 59, 2 miles north of Mount Clemens, and 3½ miles upstream from mouth.

Drainage area.--185 sq mi.

Records available.--May 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 576.38 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Nov. 15, 1949, wire-weight gage at same site and datum.

Average discharge.--8 years, 132 cfs.

Extremes.--Maximum discharge during year, 1,270 cfs Feb. 28 (gage height, 11.74 ft); minimum, 0.4 cfs Sept. 17, 18, 19; minimum gage height, 3.13 ft Sept. 17, 18, 19, 20, 21, 22.

1947-55: Maximum gage height, 17.5 ft Apr. 4 or 5, 1950, from high-water mark in gage well (backwater from Clinton River); maximum daily discharge, 4,500 cfs Apr. 4, 1950; minimum discharge, 0.2 cfs Sept. 13, 14, 1954 (gage height, 3.12 ft).

Flood of Apr. 5 or 6, 1947, reached a stage of 20.0 ft, from floodmark.

Remarks.--Records good except those for periods of ice effect and those below 10 cfs, which are poor. Some regulation at times from mill above station.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	24	52	191	20	995	203	69	22	4.8	1.4	4.0
2	23	*27	51	401	20	*590	150	63	20	4.8	1.6	5.3
3	24	30	44	560	20	341	119	58	16	8.6	.9	4.8
4	29	43	40	605	20	637	100	51	14	9.2	.9	4.0
5	23	43	35	461	20	1,100	92	52	13	6.2	1.4	3.2
6	*26	44	30	718	20	533	89	52	7.7	5.0	1.6	2.5
7	23	41	30	875	20	203	85	43	12	5.6	2.5	2.4
8	20	39	*32	413	20	160	81	35	9.2	3.5	2.0	1.8
9	20	36	34	191	20	160	77	31	7.1	3.5	1.6	1.3
10	20	34	33	144	20	173	73	29	15	2.8	.9	1.2
11	20	33	33	*124	25	365	70	28	21	2.0	.9	2.2
12	21	31	34	100	25	620	69	*27	27	1.2	.9	1.4
13	27	29	30	85	25	449	68	25	33	1.0	.8	1.3
14	39	28	32	75	25	239	70	23	*32	1.0	.9	.9
15	70	27	34	65	*25	185	78	21	31	1.2	1.0	.6
16	150	27	32	60	25	449	77	20	23	1.4	2.2	.6
17	150	25	31	50	25	590	74	19	19	1.4	3.0	.6
18	96	25	36	45	25	281	70	17	15	2.5	4.0	.5
19	64	27	35	40	30	161	73	13	12	6.5	*3.0	.5
20	57	30	30	35	35	130	80	12	10	4.0	2.5	.6
21	53	35	27	35	389	150	86	9.2	14	*3.2	1.8	.5
22	52	39	25	30	835	*329	85	9.2	10	2.2	2.2	*.5
23	48	38	24	30	915	401	76	9.2	7.7	3.5	2.4	.8
24	44	40	24	25	665	365	73	21	7.7	4.0	2.5	1.2
25	39	50	24	25	377	353	122	41	3.8	2.4	2.2	4.2
26	31	52	26	25	287	191	120	49	2.8	2.2	1.8	8.6
27	27	51	35	25	425	134	*103	41	2.5	2.2	1.6	6.5
28	23	50	209	20	1,100	108	89	33	3.5	3.5	3.0	10
29	22	52	377	20	-	129	81	29	3.2	3.2	4.2	12
30	24	54	329	20	------	185	72	24	3.5	2.2	5.6	10
31	24	-- --	257	20	------	227	-------	24	-------	1.8	5.0	-----
Total	1,305	1,104	2,065	5,513	5,458	10,933	2,705	977.6	417.7	106.6	66.3	94.0
Mean	42.1	36.8	66.6	178	195	353	90.2	31.5	13.9	3.44	2.14	3.13
Cfsm	0.228	0.199	0.360	0.962	1.05	1.91	0.488	0.170	0.075	0.019	0.012	0.017
In.	0.26	0.22	0.42	1.11	1.10	2.20	0.54	0.20	0.08	0.02	0.01	0.02

Calendar year 1954: Max 3,260 Min 0.2 Mean 96.6 Cfsm 0.522 In. 7.10
Water year 1954-55: Max 1,100 Min 0.5 Mean 84.2 Cfsm 0.455 In. 6.18

Peak discharge (base, 650 cfs).--Jan. 7 (6 to 7 a.m.) 975 cfs (10.46 ft); Feb. 23 (1 to 2 a.m.) 975 cfs (10.54 ft); Feb. 28 (5 p.m.) 1,270 cfs (11.74 ft); Mar. 5 (6 to 7 a.m.) 1,220 cfs (11.47 ft); Mar. 12 (4 p.m.) 650 cfs (8.80 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4-7, 19-22, Jan. 12 to Feb. 20, Mar. 8, 9.

Clinton River at Mount Clemens, Mich.

Location.--Lat 42°35'45", long 82°54'35", on left bank 20 ft downstream from bridge on Moravian Drive, a quarter of a mile downstream from North Branch, and half a mile west of Mount Clemens.

Drainage area.--733 sq mi.

Records available.--May 1934 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 570.43 ft above mean sea level, datum of 1929. May 10, 1934, to May 7, 1935, chain gage and May 8, 1935, to Jan. 11, 1939, wire-weight gage, at same site and datum. Auxiliary water-stage recorder on right bank 2 miles downstream from base gage at same datum. Mar. 15, 1938, to Jan. 3, 1952, auxiliary wire-weight gage 1¾ miles downstream from base gage.

Average discharge.--21 years, 490 cfs.

Extremes.--Maximum discharge during year, 2,970 cfs Mar. 1 (gage height, 9.67 ft); maximum gage height, 11.68 ft Feb. 22 (ice jam); minimum not determined; minimum gage height, 4.76 ft Sept. 30.
1934-55: Maximum discharge, 21,200 cfs Apr. 6, 1947 (gage height, 23.55 ft, from floodmark); minimum not determined; minimum gage height, 2.90 ft Oct. 15, 1934.

Remarks.--Records good except those for periods of ice effect or indefinite fall-stage-discharge relation, which are poor.

Revisions (water years).--WSP 894: 1938. WSP 1084: 1938, 1943, 1945-46.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	274	336	355	751	190	2,790	762	370	170	140	100	110
2	251	367	364	1,980	190	*1,940	700	350	160	140	130	110
3	216	*371	309	1,580	190	1,220	600	330	150	150	95	100
4	1,560	405	320	1,520	190	2,540	560	340	150	100	95	80
5	1,130	423	283	1,530	190	2,610	520	350	140	100	90	65
6	*477	395	279	2,610	190	1,560	520	340	130	90	100	60
7	301	356	280	2,100	190	993	500	320	150	90	310	65
8	256	320	290	1,160	190	869	470	280	300	90	140	110
9	226	299	290	819	190	794	450	230	230	*100	100	110
10	222	282	280	688	200	*883	420	230	190	90	90	110
11	351	288	259	*647	210	1,750	390	230	220	70	80	270
12	499	264	259	609	210	1,980	450	*220	230	70	75	140
13	634	264	245	559	210	1,470	440	210	310	70	70	100
14	623	282	256	467	210	1,010	430	180	250	70	130	95
15	1,260	225	259	400	*210	947	520	150	*210	90	100	95
16	1,360	226	237	360	220	2,090	450	140	190	170	90	100
17	1,110	222	252	330	230	1,740	450	140	170	140	90	95
18	744	235	338	300	250	1,110	400	140	160	90	85	85
19	578	258	307	280	270	866	540	130	150	90	80	80
20	508	311	270	260	320	758	540	130	210	90	80	80
21	467	311	240	250	1,700	893	540	130	300	85	75	80
22	434	279	220	230	2,400	*1,370	480	140	230	80	95	80
23	430	271	220	220	1,460	1,400	410	250	170	120	90	*140
24	379	362	230	210	1,110	1,310	470	300	150	130	90	220
25	361	456	250	210	817	1,110	680	430	130	85	85	130
26	354	365	269	200	641	867	600	340	130	80	75	100
27	374	343	452	190	1,500	741	*520	290	120	120	80	95
28	377	380	1,200	190	2,730	687	470	250	120	170	120	110
29	363	382	1,120	190	-	773	450	230	120	110	130	110
30	360	359	989	190	-----	822	390	190	150	90	100	110
31	341	-- --	804	190	-----	819	-----	170	-----	75	110	- -
Total	16,820	9,637	11,726	21,220	16,608	40,712	15,122	7,530	5,490	3,185	3,180	3,235
Mean	543	321	378	685	593	1,313	504	243	183	103	103	108
Cfsm	0.741	0.438	0.516	0.935	0.809	1.79	0.688	0.332	0.250	0.141	0.141	0.147
In.	0.85	0.49	0.59	1.08	0.84	2.07	0.77	0.38	0.28	0.16	0.16	0.16

Calendar year 1954: Max 5,520 Min 65 Mean 432 Cfsm 0.589 In. 8.00
Water year 1954-55: Max 2,790 Min 60 Mean 423 Cfsm 0.577 In. 7.83

Peak discharge (base, 3,000 cfs).--No peak above base.
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 7-10, 20-25, Jan. 15 to Feb. 22. Fall-stage-discharge relation indefinite Apr. 2 to Sept. 30; discharge computed on basis of 4 discharge measurements and sum of records for Clinton River near Frazer and North Branch Clinton River near Mount Clemens.

River Rouge at Birmingham, Mich.

Location.--Lat 42°32'45", long 83°13'25", in NW¼ sec. 36, T. 2 N., R. 10 E., on left bank in Birmingham, 25 ft downstream from mouth of Quarton Lake outlet and 100 ft upstream from bridge on West Maple Road.

Drainage area.--33 sq mi, approximately.

Records available.--June 1950 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 720 ft (by barometer).

Average discharge.--5 years, 16.2 cfs.

Extremes.--Maximum discharge during year, 170 cfs Oct. 3 (gage height, 3.33 ft); minimum recorded, 0.5 cfs Sept. 16 (gage height, 1.27 ft).

1950-55: Maximum discharge, 370 cfs (revised) Mar. 11, 1952 (gage height, about 4.1 ft), from rating curve extended above 160 cfs by logarithmic plotting; minimum, 0.4 cfs Sept. 1, 3, 4, 6-8, 1954; minimum gage height, that of Sept. 16, 1955.

Revisions.--The figures of maximum discharge for the water years 1951 and 1952 have been revised to 320 cfs Dec. 7, 1950 (gage height, 3.85 ft), and 370 cfs Mar. 11, 1952 (gage height, about 4.1 ft), superseding those published in WSP 1207 and 1237, respectively.

Remarks.--Records good above 5 cfs and fair below. Occasional regulation by Quarton Lake above station.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 20				Feb. 21 to Sept. 30			
1.4	1.8	2.0	28	1.28	0.6	1.6	8.0
1.5	4.2	2.5	70	1.3	.8	1.9	24
1.7	12	3.0	126	1.4	2.3	2.4	61
				1.5	4.7	3.0	126

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.5	8.3	11	30	4.2	79	31	12	4.7	5	4	1.5
2	7.9	10	10	55	4.2	46	29	12	4.2	6	2	1.1
3	22	11	8.7	34	3.5	44	27	11	3.9	3	1.5	1.1
4	*85	11	8.7	34	4.0	83	25	9.5	3.9	2	1.5	1.1
5	23	*11	7.9	54	4.2	54	24	9.5	3.7	2	1.5	1.1
6	12	9.9	6.8	69	4.5	40	22	7.4	3.4	2	8	1.1
7	8.3	9.1	6.5	41	4.5	31	19	7.0	8.9	2	10	1.1
8	6.5	8.7	6.2	30	4.5	27	18	6.3	10	1.5	3	1.1
9	5.8	7.5	*7.2	24	5.5	28	16	6.0	7.0	1.5	2	1.6
10	6.2	7.9	7.5	20	6.8	31	16	6.6	5.6	1.5	1.5	1.1
11	8.3	8.3	7.5	18	6.5	71	16	6.6	7.4	1.5	1	.9
12	25	7.2	7.5	*16	5.5	56	*23	6.3	9.5	1	1	.9
13	20	7.2	7.2	14	5.2	43	20	5.3	10	1	2	.9
14	35	7.5	7.2	13	5.5	37	21	5.3	*7.7	1.5	2.5	.9
15	55	6.8	7.5	12	5.5	44	28	6.3	6.3	3.5	2.5	*.8
16	44	6.8	7.5	10	6.2	66	22	4.7	5.3	4.5	2	.6
17	27	6.8	7.9	8.3	5.8	41	20	4.2	4.2	3	2	.7
18	20	6.5	9.5	7.5	5.2	36	16	3.9	3.9	2	1.5	.6
19	16	7.5	8.7	7.5	5.5	30	23	3.4	3.4	2	1.5	.8
20	13	12	7.5	6.2	14	28	23	3.7	3.4	*1.6	*1.5	.9
21	11	10	6.2	6.5	81	36	22	3.4	6.5	1.8	1.3	1.1
22	9.5	9.1	5.5	6.5	57	52	18	13	5	2	1.4	1.0
23	8.7	8.3	5.8	5.5	34	*44	16	22	3	2.5	1.5	5.4
24	8.3	14	6.5	5.5	*26	44	20	*20	2.5	2.5	1.1	4.5
25	7.9	14	6.8	5.8	23	36	26	20	2.5	1.5	1.1	3
26	7.5	12	7.9	5.5	24	33	22	14	2.5	1.5	1.1	2.5
27	9.9	12	22	4.9	100	30	19	9.5	2	2	1.5	1.8
28	8.7	13	43	4.9	84	31	16	7.7	2	2	2	1.5
29	9.5	16	28	4.9	-	36	14	7.7	2	1.5	2	1.1
30	10	12	24	4.5	-----	36	14	6.3	3	1.5	2	1.5
31	8.7	--	19	4.0	------	33	-- ----	5.3	- -- -	4	2	- -
Total	548.2	291.4	333.2	562.0	539.8	1,326	626	265.9	147.4	70.9	69.5	43.3
Mean	17.7	9.71	10.7	18.1	19.3	42.8	20.9	8.58	4.91	2.29	2.24	1.44
Cfsm	0.536	0.294	0.324	0.548	0.585	1.30	0.633	0.260	0.149	0.069	0.068	0.044
In.	0.62	0.33	0.38	0.63	0.61	1.49	0.71	0.30	0.17	0.08	0.08	0.05

Calendar year 1954: Max 180 Min 0.4 Mean 12.4 Cfsm 0.376 In. 5.11
Water year 1954-55: Max 100. Min 0.6 Mean 13.2 Cfsm 0.400 In. 5.45

Peak discharge (base, 110 cfs).--Oct. 3 (11 p.m.) 170 cfs (3.33 ft); Feb. 27 (7 p.m.) 164 cfs (3.29 ft); May 22 (9:30 p.m.) 122 cfs (2.97 ft).

* Discharge measurement made on this day.

Note.--No gage-height record June 22 to July 20, July 22 to Aug. 19, Aug. 22 to Sept. 8, Sept. 12-15, 19, 20, 25, 26; discharge estimated on basis of 3 discharge measurements, recorded range in stage, and records for River Rouge at Detroit, Middle River Rouge near Garden City, and Lower River Rouge at Inkster.

River Rouge at Detroit, Mich.

Location.--Lat 42°22'20", long 83°15'20", in SW¼ sec. 27, T. 1 S., R. 10 E., on right bank 500 ft upstream from bridge on Plymouth Road in Detroit and 4 miles upstream from Middle River Rouge.

Drainage area.--193 sq mi.

Records available.--November 1930 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 584.00 ft above mean sea level, datum of 1929. Prior to Aug. 10, 1943, chain gage and Aug. 11, 1943, to Oct. 15, 1948, wire-weight gage, at site 1 mile downstream at datum 4.10 ft lower.

Average discharge.--25 years, 109 cfs.

Extremes.--Maximum discharge during year, 1,510 cfs Oct. 4 (gage height, 11.64 ft); minimum, 3.6 cfs Sept. 21, 22 (gage height, 2.77 ft).
1930-55: Maximum discharge, 13,000 cfs Apr. 5, 1947; maximum gage height, 23.0 ft Apr. 6, 1947, from floodmark, site and datum then in use; minimum discharge observed, 2.7 cfs Aug. 11, 1934 (gage height, 3.50 ft, site and datum then in use).

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1034: 1933(M). WSP 1054: 1937-39, 1943, 1945(M).

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 16 to Nov. 20, June 8 to Sept. 30)

2.6	4.0	4.0	93
2.8	9.0	5.0	203
3.0	17	7.0	503
3.2	28	9.0	875
3.5	51	12.0	1,630

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	72	102	222	40	796	159	81	34	17	26	9.4
2	130	98	101	715	40	423	141	73	29	40	20	7.5
3	168	116	87	439	40	303	130	73	26	18	12	6.3
4	*1,450	106	76	378	40	695	118	69	24	15	7.8	5.8
5	593	127	73	466	40	439	110	59	25	13	6.6	5.8
6	177	103	59	1,020	40	288	107	56	22	13	8.6	4.8
7	105	88	52	455	40	210	100	*52	24	11	72	4.4
8	80	80	52	266	40	159	93	48	67	*11	23	4.8
9	67	73	56	223	40	184	88	45	53	9.4	12	4.8
10	69	*64	66	196	45	230	87	46	37	8.7	9.4	19
11	171	61	66	165	45	455	83	50	41	8.4	8.7	13
12	393	61	64	*148	45	408	123	47	47	7.2	6.9	5.2
13	393	59	64	148	45	280	122	41	60	6.9	6.3	5.2
14	487	56	60	115	45	223	131	34	45	6.3	14	5.2
15	1,020	56	62	114	45	223	177	34	34	9.4	17	*6.0
16	599	53	69	90	45	583	*131	34	26	28	13	5.8
17	356	56	*68	80	50	326	108	32	23	22	10	5.8
18	210	52	89	70	50	237	92	29	20	17	9.4	5.8
19	153	60	92	65	50	190	165	29	17	13	8.4	5.0
20	122	96	90	60	129	165	153	27	18	9.8	*7.5	5.2
21	107	97	74	55	735	223	148	26	*19	8.1	6.6	4.0
22	93	83	53	50	535	340	117	30	27	7.5	6.6	4.6
23	84	71	45	50	273	*296	95	146	18	8.1	8.4	30
24	76	88	49	50	*196	303	148	101	15	17	8.7	18
25	71	118	55	50	171	216	364	210	15	15	6.8	12
26	66	97	57	45	153	184	237	107	15	8.7	5.6	7.5
27	86	89	177	45	596	171	165	71	14	9.8	6.0	6.6
28	89	107	519	45	635	165	126	57	13	12	11	7.2
29	78	134	378	40	-	196	106	51	12	12	13	8.1
30	91	123	258	40	------	196	91	47	15	9.0	10	7.2
31	81	-- --	203	40	------	171	------	39	-- ---	7.5	11	- ---
Total	7,761	2,544	3,316	5,945	4,448	9,278	4,015	1,844	835	398.8	392.1	240.0
Mean	250	84.8	107	192	159	299	134	59.5	27.8	12.9	12.6	8.00
Cfsm	1.30	0.439	0.554	0.995	0.824	1.55	0.694	0.308	0.144	0.067	0.065	0.041
In.	1.50	0.49	0.64	1.15	0.86	1.79	0.77	0.36	0.16	0.08	0.08	0.05

Calendar year 1954: Max 2,300 Min 6.6 Mean 120 Cfsm 0.622 In. 8.44
Water year 1954-55: Max 1,450 Min 4.0 Mean 112 Cfsm 0.580 In. 7.93

Peak discharge (base, 800 cfs).--Oct. 4 (4 a.m.) 1,510 cfs (11.64 ft); Oct. 15 (3 to 4 p.m.) 1,120 cfs (10.13 ft); Jan. 2 (11 a.m. to 12 m.) 835 cfs (8.79 ft); Jan. 6 (10 to 11 a.m.) 1,200 cfs (10.35 ft); Feb. 21 (5 p.m.) 935 cfs (9.26 ft); Feb. 28 (2 to 3 a.m.) 1,240 cfs (10.58 ft); Mar. 4 (2 p.m.) 875 cfs (9.02 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 16 to Feb. 19.

Middle River Rouge near Garden City, Mich.

Location.--Lat 42°20'55", long 83°18'45", in W½ sec. 6, T. 2 S., R. 10 E., on right bank 200 ft downstream from bridge on Inkster Road, 1¼ miles northeast of Garden City, and 6¼ miles upstream from mouth.

Drainage area.--93 sq mi, approximately (revised).

Records available.--November 1930 to September 1933 (published as "at Detroit"), June 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 600.95 ft above mean sea level, datum of 1929. Nov. 21, 1930, to Sept. 30, 1933, staff gage at site 4¾ miles downstream at datum 17.48 ft lower. June 6, 1947, to Oct. 18, 1948, wire-weight gage at site 200 ft upstream at present datum.

Average discharge.--11 years (1930-33, 1947-55), 72.5 cfs.

Extremes.--Maximum discharge during year, 615 cfs Jan. 6, Feb. 28; maximum gage height, 8.01 ft Jan. 6; minimum discharge, 2.1 cfs Sept. 6 (gage height, 1.17 ft).
1930-33, 1947-55: Maximum discharge, 2,150 cfs May 10, 1948 (gage height, 10.50 ft, from floodmark); minimum observed, 1.4 cfs Aug. 21, 24, 28, Sept. 21, 1931 (site and datum then in use).

Remarks.--Records good except those for period of ice effect, which are fair.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 4-8, Oct. 11 to Nov. 15, Nov. 19 to Dec. 7, Dec. 9-20, Dec. 27 to Jan. 21, Feb. 19 to Mar. 7, Mar. 9-19, 21-26, 29-31, Apr. 24-26)

Oct. 1-3		Oct. 4 to Sept. 30			
2.3	49	1.2	2.5	2.5	60
2.5	63	1.5	8.8	3.0	100
2.7	77	1.8	17	5.0	285
		2.0	28	7.3	575

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	52	82	151	35	500	108	56	35	14	16	6.5
2	55	73	78	305	35	326	95	56	33	32	9.8	5.4
3	71	77	69	265	35	225	84	56	32	18	7.2	4.5
4	359	78	59	250	35	381	78	53	30	13	11	4.7
5	174	83	54	337	35	285	75	50	27	11	8.8	4.1
6	92	76	50	575	35	187	72	46	27	10	11	2.9
7	60	66	47	348	35	142	68	*44	32	9.3	45	3.4
8	48	61	44	196	35	116	64	40	38	9.8	20	3.2
9	43	56	47	151	35	116	62	39	38	*9.5	11	3.9
10	44	*52	50	128	35	133	57	45	33	8.6	8.8	9.0
11	67	52	48	112	35	205	57	46	39	5.8	7.9	9.4
12	156	51	47	*100	35	205	86	45	36	5.0	6.1	5.0
13	178	49	47	96	40	160	80	42	35	5.0	5.6	4.1
14	264	47	47	84	40	133	104	39	27	5.2	11	4.1
15	431	46	50	78	40	142	112	35	22	11	11	4.7
16	418	46	50	66	40	255	*82	36	18	17	10	5.0
17	255	46	*50	60	40	192	71	36	16	16	9.0	5.2
18	164	45	60	56	45	146	64	34	15	11	8.1	5.2
19	120	53	55	54	50	124	104	34	14	9.3	6.7	3.9
20	97	75	47	50	116	108	104	33	14	7.9	*6.5	4.1
21	83	76	44	50	*431	146	99	30	*16	6.7	6.1	*4.1
22	*73	67	41	45	326	178	82	33	12	5.8	5.0	3.6
23	64	60	41	40	178	*169	68	93	11	12	5.2	17
24	56	71	41	40	124	169	116	75	10	11	4.7	21
25	54	77	41	40	104	142	174	100	10	7.9	4.3	12
26	52	70	42	40	111	124	142	70	10	6.3	5.0	7.9
27	60	63	96	35	359	112	108	55	9.5	12	7.9	7.0
28	58	66	240	35	500	108	89	47	9.0	10	10	8.6
29	59	85	235	35	-	120	76	41	8.6	9.8	10	8.1
30	60	87	174	35	-------	124	64	37	12	8.8	9.5	7.9
31	55	----	133	35	-------	116	-------	37	-------	7.4	9.5	------
Total	3,830	1,906	2,209	3,892	2,964	5,589	2,645	1,483	669.1	326.1	307.7	195.5
Mean	124	63.5	71.3	126	106	180	88.2	47.8	22.3	10.5	9.93	6.52
Cfsm	1.33	0.683	0.767	1.35	1.14	1.94	0.948	0.514	0.240	0.113	0.107	0.070
In.	1.53	0.76	0.88	1.56	1.19	2.23	1.06	0.59	0.27	0.13	0.12	0.08

Calendar year 1954: Max 945 Min 11 Mean 76.9 Cfsm 0.827 In. 11.58
Water year 1954-55: Max 575 Min 2.9 Mean 71.3 Cfsm 0.767 In. 10.40

Peak discharge (base, 500 cfs).--Jan. 6 (11 a.m.) 615 cfs (8.01 ft); Feb. 21 (3:30 p.m.) 515 cfs (7.36 ft); Feb. 28 (2 to 3 a.m.) 615 cfs (7.98 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 22 to Feb. 18.

Lower River Rouge at Inkster, Mich.

Location.--Lat 42°18'00", long 83°18'00", in S½ sec. 19, T. 2 S., R. 10 E., on right bank 10 ft downstream from bridge on John Daly Road, 0.6 mile northeast of Inkster, and 4¾ miles upstream from mouth.

Drainage area.--90 sq mi, approximately.

Records available.--November 1930 to September 1933 (published as "at Dearborn"), June 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 593.14 ft above mean sea level, datum of 1929. Nov. 21, 1930, to Sept. 30, 1933, staff gage at site 3½ miles downstream at datum 16.26 ft lower. June 5, 1947, to Oct. 19, 1948, wire-weight gage at present site and datum.

Average discharge.--11 years (1930-33, 1947-55), 52.6 cfs.

Extremes.--Maximum discharge during year, 1,020 cfs Jan. 6 (gage height, 9.34 ft); minimum, 0.2 cfs Sept. 13; minimum gage height, 2.78 ft Sept. 21.
1930-33, 1947-55: Maximum discharge, 3,120 cfs Apr. 4, 1950 (gage height, 12.42 ft); minimum, that of Sept. 13, 1955.

Remarks.--Records good except those for periods of ice effect and those below 5 cfs, which are fair.

Revisions (water years).--WSP 1174: 1948(M).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 4, 8-17, Sept. 16-21)

Oct. 1 to Feb. 20

3.0	3.9	4.5	102
3.1	6.2	5.0	167
3.4	17	6.0	314
3.7	33	8.0	700
4.0	54	9.0	950

Feb. 21 to Sept. 30

2.7	0.1	3.5	25
2.8	.8	4.0	60
2.9	1.8	5.0	161
3.0	4.0	6.0	314
3.1	6.7	8.0	700
3.2	10	9.0	950
3.3	14		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	13	37	127	6	*750	55	24	7.7	3.6	15	2.2
2	17	18	36	472	6	313	45	19	6.4	4.8	3.3	2.7
3	38	26	26	240	6	173	37	17	5.4	2.0	2.0	2.7
4	306	29	23	272	6	509	29	15	4.8	2.2	2.0	2.7
5	106	32	15	393	6	232	26	12	4.0	2.0	2.5	2.5
6	46	29	12	925	6	134	24	10	3.8	2.7	7.1	1.6
7	26	22	9.0	266	6	84	21	*9.3	5.1	*2.7	17	1.3
8	17	18	7.9	118	6	66	18	8.0	9.3	2.0	3.8	1.4
9	14	16	15	89	7	62	17	7.7	9.0	1.7	4.3	2.0
10	15	*13	19	76	7	84	15	11	7.0	1.4	2.9	3.7
11	19	13	18	58	7	186	14	12	18	1.2	2.0	1.6
12	88	12	18	52	7	147	38	11	13	1.1	2.0	.8
13	142	11	14	*48	7	93	39	9.3	12	1.2	2.0	.3
14	188	10	16	37	7	68	79	8.4	11	1.5	6.4	.7
15	454	10	17	30	7	74	118	7.7	7.4	4.8	3.6	1.4
16	224	9.0	15	20	8	280	*60	6.4	5.6	2.9	1.6	1.1
17	132	8.4	*16	20	8	114	42	6.7	4.3	1.3	1.7	1.3
18	79	9.4	24	15	8	81	30	7.0	3.6	1.1	1.7	1.1
19	54	11	22	13	10	62	60	6.4	2.9	1.6	1.7	.7
20	40	24	16	12	60	54	63	6.4	2.7	1.8	*1.6	.6
21	32	26	12	10	585	100	55	6.2	*1.8	1.6	1.3	*.7
22	*26	20	8.2	10	*210	161	39	8.4	2.0	1.4	1.1	1.5
23	20	16	8.2	9	100	125	28	38	1.8	9.1	1.0	15
24	17	21	9.0	8	73	*129	92	43	1.8	5.1	1.4	5.4
25	16	31	9.8	8	65	72	280	74	1.8	1.3	1.5	1.6
26	15	25	12	8	71	62	138	43	2.0	1.5	1.5	1.4
27	15	22	40	7	491	55	78	24	1.6	2.9	2.2	1.6
28	15	26	245	7	618	54	53	17	1.6	3.1	2.2	2.0
29	15	43	174	7	-	77	40	14	1.7	1.7	1.8	1.8
30	15	48	111	6	------	81	30	12	4.8	1.7	2.0	1.8
31	15	--	86	6	------	68	------	8.4	-- ----	1.5	2.5	- -
Total	2,220	611.8	1,091.1	3,369	2,404	4,550	1,663	502.3	163.9	74.5	102.7	65.2
Mean	71.6	20.4	35.2	109	85.9	147	55.4	16.2	5.46	2.40	3.31	2.17
Cfsm	0.796	0.227	0.391	1.21	0.954	1.63	0.616	0.180	0.061	0.027	0.037	0.024
In.	0.92	0.25	0.45	1.39	0.99	1.88	0.69	0.21	0.07	0.03	0.04	0.03

Calendar year 1954: Max 1,530 Min 1.0 Mean 49.0 Cfsm 0.544 In. 7.39
Water year 1954-55: Max 925 Min 0.3 Mean 46.1 Cfsm 0.512 In. 6.95

Peak discharge (base, 600 cfs).--Jan. 6 (3:30 p.m.) 1,020 cfs (9.34 ft); Feb. 21 (6 p.m.) 750 cfs (8.24 ft); Feb. 28 (7 a.m.) 925 cfs (8.88 ft); Mar. 4 (1 to 2 p.m.) 650 cfs (7.85 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-7, Jan. 15 to Feb. 20.

Huron River at Commerce, Mich.

Location.--Lat 42°35'25", long 83°29'05", on line between NE¼ and SE¼ sec. 10, T. 2 N., R. 8 E., on downstream left abutment of bridge on Commerce Road, 10 ft upstream from Hayes Creek and 0.2 mile east of Commerce. Records include flow of Hayes Creek.

Drainage area.--51 sq mi, approximately, includes that of Hayes Creek.

Records available.--March 1946 to September 1955.

Gage.--Staff gage read twice daily. Datum of gage is 910.00 ft above mean sea level, datum of 1929.

Average discharge.--9 years, 45.2 cfs.

Extremes.--Maximum discharge during year, 91 cfs Mar. 11, 16, 17; maximum gage height, 1.80 ft Oct. 17, Mar. 11, 16, 17; minimum discharge, 11 cfs Aug. 21, 25-27, Sept. 10, 12, 13; minimum gage height, 0.86 ft Aug. 19-21, 25, 26, Sept. 10.
1946-55: Maximum discharge, 266 cfs Apr. 7, 1947 (gage height, 2.98 ft, from graph based on gage readings); maximum gage height, 3.10 ft May 12, 1948, from graph based on gage readings (backwater from debris); minimum discharge observed, 7.2 cfs Aug. 18, Sept. 28, 1946; minimum gage height, 0.66 ft Sept. 10, 1953.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation by dams operated for lake level control at outlets of Pontiac, Oxbow, and Union Lakes.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 30 to Sept. 30)

0.7	10
1.0	21
1.3	41
1.8	91

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	54	59	a50	35	71	82	30	23	19	15	12
2	17	54	58	52	35	70	80	30	22	20	15	12
3	20	54	54	56	34	79	80	30	22	18	14	12
4	55	54	51	59	33	80	79	30	21	18	14	12
5	53	*55	48	61	32	78	76	30	20	18	13	12
6	51	55	46	66	33	77	73	30	20	18	14	12
7	51	55	44	67	32	74	71	30	21	17	16	12
8	50	57	41	67	32	73	66	30	22	17	14	12
9	48	53	*44	67	32	73	58	30	23	18	14	12
10	47	49	46	67	b31	73	57	29	22	a18	14	11
11	45	46	43	65	b31	89	57	30	22	a17	13	12
12	52	46	40	63	b31	87	*55	30	26	a17	13	11
13	a56	46	39	63	b31	88	54	29	25	a18	13	11
14	a60	46	38	63	b31	82	51	27	*24	a20	13	*12
15	a70	47	39	63	b31	*84	50	24	22	a20	13	12
16	a80	48	38	61	b31	91	a45	24	22	a20	13	12
17	84	50	37	60	b31	90	a42	22	21	18	*12	12
18	82	51	36	59	b31	88	42	22	20	17	12	12
19	78	53	36	57	b31	82	46	21	20	16	12	12
20	73	55	38	55	b35	80	45	21	21	16	12	12
21	70	57	38	54	43	80	44	20	22	16	11	12
22	*66	54	38	*51	*45	a85	42	21	21	*16	12	12
23	64	53	38	50	46	88	41	21	20	16	12	14
24	62	54	37	48	48	87	41	*24	19	16	12	15
25	60	53	35	46	48	82	41	27	19	15	11	14
26	54	51	35	43	52	83	40	25	19	15	11	14
27	54	50	39	b40	63	87	37	25	18	16	a11	14
28	53	48	44	b37	69	86	35	25	17	16	a12	14
29	53	54	46	b36	-	87	32	24	16	15	12	14
30	52	60	47	b35	------	84	32	23	18	15	12	14
31	53	-- -	48	35	------	82	------	23	--- -- -	15	12	- -
Total	1,729	1,562	1,320	1,696	1,057	2,540	1,594	807	630	531	397	374
Mean	55.8	52.1	42.6	54.7	37.8	81.9	53.1	26.0	21.0	17.1	12.8	12.5
Cfsm	1.09	1.02	0.835	1.07	0.741	1.61	1.04	0.510	0.412	0.335	0.251	0.245
In.	1.26	1.14	0.96	1.24	0.77	1.85	1.16	0.59	0.46	0.39	0.29	0.27

Calendar year 1954: Max 84 Min 8.0 Mean 36.0 Cfsm 0.706 In. 9.58
Water year 1954-55: Max 91 Min 11 Mean 39.0 Cfsm 0.765 In. 10.38

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for stations at Milford and near Dexter.
b Stage-discharge relation affected by ice.

Huron River at Milford, Mich.

Location.--Lat 42°34'45", long 83°37'35", in SE¼ sec. 9, T. 2 N., R. 7 E., on right bank 200 ft upstream from bridge on General Motors Road, half a mile downstream from Sherwood Creek, and half a mile west of Milford city limits.

Drainage area.--125 sq mi.

Records available.--September 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 880.00 ft above mean sea level, datum of 1929.

Average discharge.--7 years, 111 cfs.

Extremes.--Maximum discharge during year, 278 cfs Feb. 28 (gage height, 6.66 ft); minimum daily, 12 cfs Aug. 14.
1948-55: Maximum discharge, 645 cfs Apr. 5, 1950 (gage height, 8.25 ft); minimum daily, 8.3 cfs Sept. 17, 1949.

Remarks.--Records good above 50 cfs and fair below. Flow below about 300 cfs regulated by powerplant 1½ miles above station.

Revisions (water years).--WSP 1337: 1952(m).

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 14, May 10 to Sept. 30)

4.1	8.0
4.5	33
5.0	73
6.0	185
6.5	255

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64	138	137	101	103	234	175	65	75	56	43	39
2	25	140	138	117	101	200	172	130	64	52	44	32
3	66	136	140	182	90	191	115	89	67	42	45	39
4	188	134	70	173	87	216	188	82	67	46	45	17
5	176	*136	84	178	26	217	171	82	48	59	37	18
6	152	103	144	196	65	189	166	79	48	60	26	36
7	136	76	138	204	105	189	163	85	65	58	30	35
8	125	130	105	175	85	179	163	24	65	56	52	35
9	66	130	106	150	84	166	67	90	64	56	47	36
10	94	107	*138	165	93	183	106	77	63	34	43	19
11	130	105	26	164	94	218	175	73	72	48	42	18
12	141	132	77	158	39	203	*147	72	33	47	51	39
13	148	52	126	148	57	223	132	78	90	46	26	38
14	157	85	111	145	112	217	137	85	*62	47	12	37
15	205	116	107	135	85	*211	135	25	68	86	46	*37
16	218	133	103	102	83	212	60	82	67	86	42	42
17	215	95	104	128	89	217	101	67	61	58	40	14
18	214	100	63	136	93	203	155	57	59	73	34	21
19	196	132	74	128	47	163	132	58	30	64	34	46
20	170	90	117	122	55	156	131	61	66	51	*23	36
21	160	86	106	122	190	201	130	65	56	50	20	*38
22	*158	155	99	*81	171	203	139	34	60	*47	32	38
23	146	142	97	77	*146	196	66	100	54	44	36	46
24	104	137	73	132	123	190	72	*85	55	32	34	20
25	167	94	51	118	126	201	178	108	53	48	34	26
26	148	124	62	117	96	195	143	91	40	49	30	58
27	137	107	129	99	160	106	134	99	54	49	26	47
28	134	104	142	98	250	197	116	59	55	49	24	52
29	132	152	148	41	-	181	114	57	57	48	42	45
30	120	142	130	76	------	170	51	66	56	47	42	46
31	86	---	134	107	------	174	------	95	---	25	40	---
Total	4,378	3,513	3,279	4,075	2,855	6,001	3,934	2,320	1,774	1,613	1,122	1,050
Mean	141	117	106	131	102	194	131	74.8	59.1	52.0	36.2	35.0
Cfsm	1.13	0.936	0.848	1.05	0.816	1.55	1.05	0.598	0.473	0.416	0.290	0.280
In.	1.30	1.05	0.98	1.21	0.85	1.79	1.17	0.69	0.53	0.48	0.33	0.31

Calendar year 1954: Max 294 Min 10 Mean 93.1 Cfsm 0.745 In. 10.11
Water year 1954-55: Max 250 Min 12 Mean 98.4 Cfsm 0.787 In. 10.69

* Discharge measurement made on this day.

Huron River near New Hudson, Mich.

Location.--Lat 42°30'45", long 83°40'35", in NE¼ sec. 1, T. 1 N., R. 6 E., on right bank 150 ft downstream from Kent Lake Dam, 2 miles upstream from Woodruff Creek, and 3 miles west of New Hudson.

Drainage area.--143 sq mi.

Records available.--August 1948 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 868.00 ft above mean sea level, datum of 1929.

Average discharge.--7 years, 126 cfs.

Extremes.--Maximum discharge during year, 330 cfs Nov. 22 (gage height, 3.22 ft); minimum, 9.4 cfs Apr. 15 (gage height, 0.76 ft).
1948-55: Maximum discharge, 1,080 cfs Dec. 29, 1950 (gage height, 5.05 ft), from rating curve extended above 600 cfs by logarithmic plotting; minimum, 3.4 cfs July 18, 1952; minimum gage height, 0.63 ft Mar. 16, 17, 1953.

Remarks.--Records good except those below 60 cfs, which are fair. Occasional regulation by Kent Lake.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Dec. 25, July 24 to Sept. 30)

Oct. 1 to Feb. 28		Mar. 1 to Sept. 30	
1.4	66	1.0	25
2.7	271	1.5	86
3.0	321	2.6	258
		3.0	328

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	130	202	137	101	250	187	89	86	58	49	63
2	70	138	173	140	106	241	187	53	*78	62	51	63
3	74	145	161	153	106	233	177	47	73	58	52	59
4	202	148	135	173	101	241	164	63	72	51	52	52
5	231	151	114	189	90	241	103	*67	71	51	49	43
6	223	146	191	205	74	225	72	75	63	53	54	33
7	191	125	239	207	82	217	118	78	67	53	100	39
8	169	*121	178	207	92	209	138	72	73	53	72	39
9	140	207	149	189	94	203	132	66	73	53	64	39
10	124	215	*146	177	98	198	115	79	72	51	59	36
11	141	165	122	178	103	225	72	83	79	46	58	40
12	169	154	89	177	94	241	69	87	82	43	55	32
13	175	125	92	173	73	233	104	90	76	42	47	35
14	189	100	108	164	80	233	121	90	83	49	32	36
15	247	205	113	159	95	*233	69	76	80	136	32	*45
16	255	239	113	141	98	233	34	71	78	150	43	46
17	255	177	109	132	95	233	51	71	76	124	*47	42
18	247	143	109	141	100	225	78	66	72	104	49	29
19	231	153	89	141	95	209	*116	66	64	96	46	28
20	215	140	83	141	79	193	130	40	59	87	39	38
21	196	117	97	135	137	191	134	27	67	75	35	37
22	*186	193	100	*127	177	185	91	49	60	68	51	34
23	173	271	101	103	*178	225	39	76	60	76	53	52
24	151	207	100	106	159	217	54	94	62	79	51	54
25	141	169	79	124	154	225	83	109	64	57	47	38
26	156	137	72	129	140	217	122	110	58	*55	47	35
27	164	138	88	117	159	195	130	100	54	60	53	42
28	143	132	125	114	215	174	132	106	55	60	57	48
29	145	207	148	106	-	188	128	90	54	59	58	48
30	143	247	146	83	------	188	112	83	59	55	64	48
31	133	- --	148	89	------	187	-------	79	-------	53	66	- - -
Total	5,345	4,945	3,919	4,557	3,175	6,708	3,262	2,352	2,070	2,117	1,632	1,273
Mean	172	165	126	147	113	216	109	75.9	69.0	68.3	52.6	42.4
Cfsm	1.20	1.15	0.881	1.03	0.790	1.51	0.762	0.531	0.483	0.478	0.368	0.297
In.	1.39	1.29	1.02	1.19	0.83	1.74	0.85	0.61	0.54	0.55	0.42	0.33

Calendar year 1954: Max 312 Min 20 Mean 106 Cfsm 0.741 In. 10.12
Water year 1954-55: Max 271 Min 27 Mean 113 Cfsm 0.790 In. 10.76

* Discharge measurement made on this day.

Ore Creek near Brighton, Mich.

Location.--Lat 42°29'40", long 83°48'05", in NW¼ sec. 12, T. 1 N., R. 5 E., on left bank at downstream side of bridge on Hamburg Road, half a mile upstream from Ore Lake and 2½ miles southwest of Brighton.

Drainage area.--31 sq mi, approximately.

Records available.--February 1951 to September 1955.

Gage.--Staff gage read once daily. Datum of gage is 850.56 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Extremes.--Maximum discharge during year, 82 cfs Oct. 15, 16; maximum gage height, 15.51 ft Oct. 15; minimum discharge observed, 2.0 cfs Sept. 10, 11; minimum gage height, 13.88 ft Sept. 29, 30.

1951-55: Maximum discharge observed, 131 cfs Feb. 28, 1951 (gage height, 16.51 ft), from rating curve extended above 86 cfs by logarithmic plotting; minimum, 1.5 cfs July 16, 1952; minimum gage height, that of Sept. 29, 30, 1955.

Remarks.--Records fair above 10 cfs and poor below. Occasional regulation by lakes above station.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 8 to Apr. 29, May 24 to June 2, June 8 to Sept. 3)

13.8	1.0	14.3	17
13.9	2.9	15.0	57
14.0	4.8	15.5	82
14.1	7.4		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	24	34	a38	12	62	44	a26	13	12	4.4	4.4
2	9.0	23	33	a40	12	62	40	26	*13	12	4.0	4.6
3	a14	26	35	43	11	64	a38	25	13	a12	2.9	4.4
4	59	28	34	48	11	72	37	24	13	a12	4.0	a4
5	57	28	a32	52	11	a78	36	*22	a12	11	3.8	a3
6	52	26	30	58	a11	a76	36	18	11	10	3.5	2.7
7	48	a25	24	56	11	72	a35	16	12	9.4	a6	2.7
8	46	*25	23	54	11	67	a33	a15	19	7.8	9.4	2.3
9	46	25	24	a56	11	64	a32	15	19	8.2	8.2	2.1
10	a50	25	*24	57	12	62	a32	16	18	a7	8.2	2.0
11	58	a25	23	56	12	77	a33	16	22	6.1	8.2	a2
12	70	24	a22	53	12	72	35	15	a23	5.3	7.4	2.3
13	60	21	21	51	a12	a68	31	14	24	4.6	4.2	2.5
14	61	a21	22	*47	12	63	28	12	21	4.4	a5	*2.7
15	82	21	21	42	12	*62	33	a11	21	19	5.3	8.6
16	82	20	21	a38	13	66	34	9.4	19	11	*5.1	8.2
17	a89	19	a21	36	14	60	a33	9.0	18	a9.5	4.8	6.6
18	77	19	a21	33	15	58	31	7.8	17	8.6	4.8	a5.5
19	74	30	a21	30	20	56	*40	7.1	a18	7.8	7.8	4.4
20	*74	31	21	28	a28	a55	39	6.6	19	8.2	6.9	3.8
21	72	a31	21	24	36	54	38	6.4	18	7.8	a6.5	3.8
22	67	30	18	22	*39	58	35	a7	16	9.9	5.8	2.9
23	54	28	17	a20	40	54	35	a7.5	14	9.4	4.4	4.2
24	a52	30	17	19	41	56	a37	8.2	13	a9.5	a4.5	4.2
25	50	a30	a18	18	44	54	39	10	13	9.4	a4	a3.5
26	46	30	a20	17	45	52	36	9.4	a12	*8.6	a4	2.9
27	50	30	24	16	a50	a50	34	8.6	12	6.6	a4	2.9
28	43	a32	36	15	60	46	33	8.2	11	5.3	a4.5	3.1
29	43	34	34	14	-	47	29	a9	11	5.3	a5	2.9
30	40	34	a35	a13	------	49	27	a10	13	4.6	5.6	2.9
31	a30	------	37	12	------	48	------	13	------	a4.5	4.4	------
Total	1,653.8	795	784	1,106	618	1,884	1,043	408.2	478	266.8	166.6	112.1
Mean	53.3	26.5	25.3	35.7	22.1	60.8	34.8	13.2	15.9	8.61	5.37	3.74
Cfsm	1.72	0.855	0.816	1.15	0.713	1.96	1.12	0.426	0.513	0.278	0.173	0.121
In.	1.98	0.95	0.94	1.33	0.74	2.26	1.25	0.49	0.57	0.32	0.20	0.13

Calendar year 1954: Max 82 Min 4.8 Mean 28.6 Cfsm 0.923 In. 12.49
Water year 1954-55: Max 82 Min 2.0 Mean 25.5 Cfsm 0.823 In. 11.16

* Discharge measurement made on this day.
a No gage-height record; discharge interpolated or estimated on basis of records for Portage River below Little Portage Lake near Munith, Mill Creek near Dexter and Huron River near Dexter.
Note.--Stage-discharge relation affected by ice Jan. 23 to Feb. 20.

Huron River near Hamburg, Mich.

Location.--Lat 42°27'55", long 83°48'00", in sec. 24, T. 1 N., R. 5 E., on right bank at downstream side of bridge on Hamburg Road, 1.1 miles north of Hamburg and 3 miles upstream from Strawberry Lake.

Drainage area.--299 sq mi.

Records available.--October 1951 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 850.00 ft above mean sea level, datum of 1929 (levels by Michigan State Department of Conservation). Prior to Aug. 12, 1953, staff gage at same site and datum.

Extremes.--Maximum discharge during year, 611 cfs Mar. 5, 6; maximum gage height, 6.17 ft Oct. 18; minimum discharge, 50 cfs Sept. 14; minimum gage height, 3.43 ft May 22.
1951-55: Maximum discharge, 735 cfs Apr. 17, 1952 (gage height, 6.26 ft); minimum, that of Sept. 14, 1955; minimum gage height, that of May 22, 1955.

Remarks --Records good except those for periods of ice effect or no gage-height record and those below 100 cfs, which are fair. Occasional regulation by Kent Lake 11 miles above station.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	254	356	312	180	507	380	236	152	82	77	84
2	104	250	368	323	170	559	380	210	*147	85	75	81
3	118	252	334	334	170	585	368	162	137	89	73	80
4	221	260	312	356	170	598	356	150	130	87	72	77
5	302	262	282	392	160	611	334	*153	124	85	70	73
6	356	272	248	442	160	611	282	150	118	82	71	65
7	380	262	262	494	160	580	254	152	116	81	97	59
8	356	*246	312	520	160	520	258	152	128	80	113	56
9	323	234	302	533	160	490	272	142	132	81	110	54
10	282	258	*262	520	160	494	262	145	131	80	100	56
11	254	302	244	481	160	507	246	153	131	75	91	57
12	272	292	215	442	160	520	219	155	140	69	85	56
13	302	262	189	417	160	546	219	158	150	65	80	51
14	323	236	181	*392	160	533	234	155	148	63	70	*51
15	404	212	187	368	160	533	256	152	145	91	70	54
16	468	244	189	334	160	533	208	140	137	158	*72	61
17	520	302	189	302	160	533	178	132	131	194	75	65
18	559	302	191	272	170	520	176	130	125	183	80	65
19	559	282	191	272	180	494	*206	125	119	155	80	59
20	546	282	• 183	256	210	481	244	124	113	134	78	56
21	*507	282	b180	250	250	455	272	98	107	119	73	54
22	468	254	b180	248	312	442	272	94	106	107	73	56
23	430	272	b170	229	*368	442	227	114	98	103	77	61
24	392	345	b170	227	392	442	194	142	96	103	76	76
25	345	356	b160	215	392	*442	210	172	94	100	75	81
26	312	323	158	210	392	455	232	185	94	*91	72	75
27	302	292	167	200	392	455	258	189	90	89	73	72
28	292	272	219	200	430	430	272	187	85	87	76	77
29	292	272	258	190	-	404	272	187	81	85	80	80
30	282	302	292	190	------	392	262	174	81	82	84	84
31	272	--	302	180	------	392	--------	160	- -- -	80	84	- - -
Total	10,634	8,236	7,253	10,101	6,258	15,506	7,803	4,778	3,586	3,065	2,482	1,976
Mean	343	275	234	326	224	500	260	154	120	98.9	80.1	65.9
Cfsm	1.15	0.920	0.783	1.09	0.749	1.67	0.870	0.515	0.401	0.331	0.268	0.220
In.	1.32	1.02	0.90	1.26	0.78	1.93	0.97	0.59	0.45	0.38	0.31	0.25

Calendar year 1954: Max 645 Min 59 Mean 235 Cfsm 0.786 In. 10.66
Water year 1954-55: Max 611 Min 51 Mean 224 Cfsm 0.749 In. 10.16

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--No gage-height record Jan. 27 to Feb. 21, Mar. 7-9, Aug. 12-15; discharge estimated on basis of weather records and records for stations near Dexter, near New Hudson, and at Ann Arbor.

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Portage Creek near Pinckney, Mich.

Location.--Lat 42°25'40", long 83°57'35", in sec. 34, T. 1 N., R. 4 E., on right abutment of upstream side of bridge on Tiplady Road, 2 miles upstream from Little Portage Lake and 2¼ miles southwest of Pinckney.

Drainage area.--79 sq mi, approximately.

Records available.--November 1944 to September 1955.

Gage.--Staff gage read twice daily. Datum of gage is 860.38 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation).

Average discharge.--11 years, 57.4 cfs.

Extremes.--Maximum discharge during year, 128 cfs Oct. 17, Mar. 16; maximum gage height, 3.76 ft Oct. 17, 18; minimum discharge, 1.2 cfs Sept. 20 (gage height, 0.76 ft).
1944-55: Maximum discharge, 529 cfs Apr. 9, 10, 1947 (gage height, 5.72 ft, from graph based on gage readings); minimum observed, 0.6 cfs Oct. 5, 1946 (gage height, 0.56 ft).

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Regulation by Hiland Lake 2½ miles above station.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 14 to Dec. 31)

Oct. 1 to Feb. 20				Feb. 21 to Sept. 30			
1.3	7.8	3.0	73	0.7	0.7	2.0	27
1.8	17	3.7	135	.8	1.5	2.5	45
2.0	23	4.0	173	.9	3.0	3.0	75
2.5	43			1.0	5.0	3.6	132
				1.5	15		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.3	91	66	a66	33	100	105	a60	38	19	a9	2.8
2	9.9	90	65	a70	32	102	104	59	36	18	a8	2.7
3	11	86	63	a72	31	104	98	56	34	a18	a7	5.0
4	52	86	65	75	30	114	96	54	32	a17	a7	a4.5
5	90	82	65	78	28	114	92	51	31	17	a6	3.8
6	82	a80	62	90	28	117	90	48	27	17	a5.5	4.4
7	60	76	60	90	27	119	88	45	28	17	a5	4.2
8	64	72	61	90	27	118	85	a42	32	17	4.6	4.8
9	67	*70	62	94	27	114	82	39	33	a17	4.2	4.8
10	72	67	62	95	27	114	a80	39	32	*16	3.8	4.6
11	80	65	60	96	27	122	76	25	34	a13	4.2	a4.6
12	91	62	59	94	27	123	78	24	38	11	4.2	4.6
13	110	a60	59	94	27	a124	76	24	39	a10	3.8	*2.8
14	105	a60	57	*94	27	124	74	23	37	10	a4	2.1
15	124	58	56	93	27	124	75	22	56	a12	4.6	2.1
16	127	57	*56	90	27	128	54	22	54	16	*2.2	2.1
17	128	54	55	80	27	124	56	21	49	a18	1.8	2.2
18	127	52	52	72	27	123	56	21	46	14	1.6	a1.5
19	124	59	52	70	27	a120	*59	20	a35	13	1.8	1.3
20	*123	58	50	65	30	a120	59	19	*29	13	a2	1.2
21	121	58	48	60	40	118	60	*18	29	11	a2	2.4
22	120	57	47	55	*45	120	60	18	28	11	2.1	2.7
23	a120	46	45	55	51	122	59	21	26	a11	1.8	3.8
24	113	48	45	50	57	117	62	22	24	a10	1.5	3.4
25	110	a52	45	50	61	*113	64	40	23	9.6	1.5	a3
26	106	a56	45	45	64	112	64	39	21	9.2	1.4	3.0
27	107	60	49	45	80	112	64	39	20	*8.8	1.5	3.0
28	104	60	58	40	84	110	62	39	20	10	a2	3.0
29	101	63	58	40	-	107	62	43	19	9.6	2.4	3.0
30	97	65	65	37	-------	106	61	41	20	a9	2.8	3.4
31	94	--- -	66	35	-------	104	-------	39	------ -	a9	2.8	- -
Total	2,848.2	1,950	1,758	2,180	1,045	3,589	2,201	1,073	970	411.2	112.1	96.8
Mean	91.9	65.0	56.7	70.3	37.3	116	73.4	34.6	32.3	13.3	3.62	3.23
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 170 Min 4.5 Mean 62.2 Cfsm - In. -
Water year 1954-55: Max 128 Min 1.2 Mean 50.0 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for Huron River near Dexter, Portage River below Little Portage Lake near Munith, and Huron River near Hamburg.
Note.--Stage-discharge relation affected by ice Dec. 18-25, Jan. 16 to Feb. 21.

Huron River near Dexter, Mich.

Location.--Lat 42°23'10", long 83°54'40", in S½ sec. 13, T. 1 S., R. 4 E., on right bank 20 ft downstream from highway bridge on North Territorial Road, half a mile east of Hudson Mills, 2 miles downstream from Portage Lake Outlet, and 4 miles north of Dexter.

Drainage area.--506 sq mi.

Records available.--August to December 1904 (gage heights only), March 1946 to September 1955. Published as "at Dover" 1904.

Gage.--Water-stage recorder. Datum of gage is 837.11 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). August to December 1904 chain gage at site 1 mile upstream at different datum. Mar. 5, 1946, to July 30, 1953, wire-weight gage at present site and datum.

Average discharge.--9 years 430 cfs.

Extremes.--Maximum discharge during year, 894 cfs Mar. 5-8; maximum gage height, 4.95 ft Oct. 17; minimum discharge, 81 cfs part of each day Sept. 14-17 (gage height, 2.99 ft) 1946-55: Maximum discharge, 3,120 cfs Apr. 9, 1947 (gage height, 8.17 ft, from graph based on gage readings); minimum observed, 56 cfs Sept. 6, 9, 10, 1946; minimum gage height, 2.92 ft Sept. 12, 13, 1954.

Remarks.--Records good.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 11, July 21 to Sept. 30

3.0	82	4.0	396
3.2	118	5.0	896
3.5	197		

Jan. 12 to July 20

3.1	99	4.0	420
3.3	145	5.0	950
3.5	210		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	503	461	484	298	729	648	411	261	128	114	89
2	133	489	475	522	290	756	633	393	253	130	112	89
3	158	470	480	546	277	783	622	375	238	125	108	90
4	314	461	484	574	269	838	601	344	228	120	105	90
5	396	456	475	613	269	894	591	316	210	132	101	96
6	456	447	456	683	273	894	570	285	203	132	97	101
7	484	442	433	709	269	894	540	265	200	130	107	96
8	503	437	419	735	261	894	495	203	200	130	105	92
9	508	*424	424	762	257	866	475	166	200	122	105	90
10	508	410	433	788	261	838	460	175	200	118	110	87
11	512	410	419	788	265	838	450	172	210	116	118	89
12	536	414	410	756	269	838	455	175	220	112	114	85
13	550	414	387	*756	257	838	440	192	231	110	110	*85
14	604	410	370	702	261	838	430	192	231	105	110	82
15	683	392	352	675	265	838	440	196	234	120	108	82
16	735	378	*339	643	273	866	435	200	234	135	*103	82
17	788	374	335	606	273	838	416	192	234	166	101	84
18	842	387	339	570	273	838	384	186	228	189	99	87
19	842	424	339	540	269	811	384	175	217	203	94	89
20	842	447	327	500	277	783	388	172	*210	203	87	87
21	*842	447	310	475	339	783	406	*169	200	200	87	85
22	815	442	298	455	398	756	416	157	186	191	85	84
23	788	433	294	435	*450	756	420	154	172	191	85	89
24	762	428	302	406	495	729	425	166	166	188	84	97
25	709	447	302	393	535	*729	425	192	157	175	85	101
26	658	466	302	380	565	729	*420	220	148	166	84	105
27	633	470	323	357	612	729	416	245	135	*158	84	107
28	594	470	356	339	664	702	420	269	132	156	85	110
29	574	466	387	326	-	675	420	281	128	150	87	112
30	550	461	428	321	-------	675	420	285	128	133	89	114
31	522	---	461	312	-------	664	-------	277	-------	122	89	-------
Total	17,957	13,119	11,920	17,151	9,464	24,639	14,045	7,200	5,994	4,556	3,052	2,776
Mean	579	437	385	553	338	795	468	232	200	147	98.5	92.5
Cfsm	1.14	0.864	0.761	1.09	0.668	1.57	0.925	0.458	0.395	0.291	0.195	0.183
In.	1.32	0.96	0.88	1.26	0.70	1.81	1.03	0.53	0.44	0.33	0.22	0.20

Calendar year 1954: Max 924 Min 74 Mean 386 Cfsm 0.763 In. 10.37
Water year 1954-55: Max 894 Min 82 Mean 361 Cfsm 0.713 In. 9.68

* Discharge measurement made on this day.

Mill Creek near Dexter, Mich.

Location.--Lat 42°18'00", long 83°53'55", on line between sec. 13, T. 2 S., R. 4 E., and sec. 18, T. 2 S., R. 5 E., on downstream side of highway bridge, 2½ miles south of Dexter and 4 miles upstream from mouth.

Drainage area.--134 sq mi.

Records available.--February 1952 to September 1955.

Gage.--Wire-weight gage read twice daily. Altitude of gage is 850 ft (from topographic map).

Extremes.--Maximum discharge observed during year, 690 cfs Oct. 15 (gage height, 9.82 ft); minimum discharge, 12 cfs Sept. 7-10; minimum gage height, 5.23 ft Aug. 1, 4, 5.
1952-55: Maximum discharge, 890 cfs Mar. 25, 1954 (gage height, 10.8 ft, from graph based on gage readings); minimum, that of Sept. 7-10, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 16 to Sept. 30)

Oct. 1-15				Oct. 16 to Sept. 30			
5.4	24	8.0	375	5.1	12	6.0	85
5.7	49	10.0	730	5.2	16	7.0	211
6.0	85			5.5	37	10.0	730

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	68	102	117	31	510	111	64	49	26	18	16
2	29	76	99	151	30	370	102	60	42	28	29	15
3	29	78	86	204	30	249	88	56	40	23	24	15
4	330	86	82	264	30	404	88	53	36	22	19	14
5	285	88	76	370	30	320	80	53	33	21	18	14
6	255	83	68	564	30	226	76	50	31	20	21	14
7	210	78	64	396	30	167	72	46	38	19	93	12
8	169	72	60	272	30	132	68	44	82	19	59	12
9	104	*67	58	211	30	122	64	42	72	19	45	12
10	108	64	58	163	31	130	62	50	60	19	31	12
11	232	64	60	132	33	175	60	56	62	18	21	16
12	406	72	58	119	34	211	58	51	69	17	20	15
13	330	65	58	109	35	168	56	46	70	17	18	*14
14	330	58	58	*100	35	142	64	42	65	16	20	14
15	654	56	*59	95	36	132	84	41	52	60	25	14
16	474	54	59	82	37	234	82	36	40	60	*21	15
17	370	50	60	82	37	159	73	34	38	49	21	15
18	296	52	66	79	38	134	66	33	33	35	20	16
19	226	104	64	66	40	114	111	33	31	30	18	16
20	162	119	62	62	200	102	128	34	32	26	17	21
21	*128	107	58	58	400	130	120	*32	31	25	17	20
22	108	93	56	54	300	162	89	35	28	23	16	18
23	95	82	55	52	189	168	83	52	26	24	18	27
24	86	90	54	48	*137	168	115	47	*24	23	17	23
25	81	95	52	45	115	*134	140	129	22	21	17	19
26	77	88	56	42	131	117	*128	115	21	20	16	17
27	80	84	162	40	528	126	116	106	21	*19	18	17
28	75	94	312	37	430	125	105	72	20	20	19	18
29	78	108	226	35	-	122	196	80	20	20	18	17
30	78	110	164	33	-------	122	196	68	23	20	18	16
31	72	--- ---	131	32	-------	122	-------	58	-- ----	19	18	- - -
Total	5,984	2,405	2,683	4,114	3,057	5,697	2,881	1,718	1,211	778	750	484
Mean	193	80.2	86.5	133	109	184	96.0	55.4	40.4	25.1	24.2	16.1
Cfsm	1.44	0.599	0.646	0.993	0.813	1.37	0.716	0.413	0.301	0.187	0.181	0.120
In.	1.66	0.67	0.74	1.14	0.85	1.58	0.80	0.48	0.34	0.22	0.21	0.13

Calendar year 1954: Max 710 Min 13 Mean 96.6 Cfsm 0.721 In. 9.80
Water year 1954-55: Max 654 Min 12 Mean 87.0 Cfsm 0.649 In. 8.82

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 20-22, Jan. 23 to Feb. 22.

Huron River at Ann Arbor, Mich.

Location.--Lat 42°17'10", long 83°44'00", in NW¼ sec. 28, T. 2 S., R. 6 E., on left bank 100 ft upstream from bridge on Wall Street in Ann Arbor, three-quarters of a mile downstream from Argo Dam, and 4 miles upstream from Geddes Dam.

Drainage area.--711 sq mi.

Records available.--February 1904 to September 1940, August 1948 to September 1955. Published as "at Geddes" February 1904 to December 1914 and as "at Barton" January 1914 to September 1940.

Gage.--Water-stage recorder Datum of gage is 744.81 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). February 1904 to December 1914 at Geddes Dam, 4 miles downstream and January 1914 to September 1940 at Barton Dam, 3 miles upstream; flow computed from records of operation of powerplants and records of depth of flow over dam and/or flow through undersluices.

Average discharge.--41 years (1906-40, 1948-55), 430 cfs (adjusted for diversion since 1955).

Extremes.--Maximum discharge during year, 2,080 cfs Oct. 15 (gage height, 14.71 ft); minimum, 14 cfs Sept. 14, 15; minimum gage height, 11.43 ft Oct. 1; minimum daily discharge, 69 cfs Sept. 25.
1904-40, 1948-55: Maximum daily discharge, 5,840 cfs Mar. 14, 1918; minimum daily, 4 cfs Aug. 2, Sept. 11, 1931 (plant leakage).

Remarks.--Records good. Diversion above station for Ann Arbor municipal supply had negligible effect on natural flow prior to 1955; figures of runoff adjusted since. Flow regulated by powerplants above station.

Revisions (water years).--WSP 874: 1938.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 14 to Sept. 30)

11.7	69	13.0	600
12.0	147	14.0	1,360
12.5	340	15.0	2,330

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	137	614	614	722	412	1,350	843	600	381	146	164	112
2	154	636	642	856	350	1,270	808	541	352	198	231	106
3	264	566	652	988	354	1,160	781	528	256	153	136	100
4	886	602	622	906	382	1,340	790	506	332	156	131	102
5	739	592	636	1,180	326	1,410	718	441	298	148	153	112
6	766	568	592	1,530	384	1,260	746	400	274	168	234	120
7	726	566	552	1,350	370	1,150	692	355	297	135	206	136
8	772	590	534	1,120	365	1,040	665	335	306	132	189	77
9	718	*520	501	1,150	366	1,080	608	260	319	154	167	109
10	720	446	564	1,040	400	1,040	612	314	312	135	170	100
11	767	564	528	980	342	1,120	614	257	313	146	153	115
12	1,090	472	530	1,000	274	1,140	696	260	352	132	145	100
13	1,020	522	476	*942	394	1,110	669	276	320	150	166	*85
14	1,260	541	504	882	372	1,040	662	254	343	130	166	*109
15	1,820	522	462	876	382	1,060	673	274	341	304	152	79
16	1,680	454	*445	772	397	1,200	651	262	312	272	175	89
17	1,290	446	466	706	362	1,110	672	262	330	216	*131	88
18	1,320	472	474	718	380	1,070	598	668	281	220	188	86
19	1,240	686	476	676	394	989	734	242	238	215	76	96
20	1,160	590	413	575	564	946	699	250	320	214	132	90
21	*1,110	660	464	572	1,270	990	680	*228	250	205	110	95
22	1,050	658	372	536	832	976	666	250	237	200	126	100
23	944	542	464	522	748	1,010	640	281	228	238	106	162
24	876	592	428	459	*698	*982	672	266	*251	211	84	118
25	870	625	394	538	698	982	769	272	166	193	100	69
26	771	622	462	379	760	940	*790	380	200	*180	96	104
27	799	646	638	438	1,240	906	643	386	160	*167	113	100
28	738	674	742	452	1,520	818	656	399	164	172	149	108
29	726	640	828	422	-	854	590	395	142	189	118	116
30	654	680	758	439	--------	909	570	435	210	150	130	121
31	690	--------	545	493	--------	814	--------	372	--------	102	107	--------
Total	27,757	17,308	16,778	24,219	15,336	33,066	20,607	10,949	8,285	5,531	4,504	3,104
Mean	895	577	541	781	548	1,067	687	353	276	178	145	103
(†)	5.3	3.9	3.1	6.9	8.1	7.8	8.8	9.4	9.6	9.7	8.8	10.6
Adjusted for diversion												
Mean	900	581	544	788	556	1,075	696	362	286	188	154	114
Cfsm	1.27	0.817	0.765	1.11	0.782	1.51	0.979	0.509	0.402	0.264	0.217	0.160
In.	1.46	0.91	0.88	1.28	0.81	1.74	1.09	0.59	0.45	0.30	0.25	0.18

	Observed			Adjusted			
Calendar year 1954:	Max 1,820	Min 70	Mean 525	Mean 531	Cfsm 0.747	In. 10.14	
Water year 1954-55:	Max 1,820	Min 69	Mean 514	Mean 521	Cfsm 0.733	In. 9.94	

* Discharge measurement made on this day.
† Average monthly diversion, equivalent in cubic-feet per second; furnished by city of Ann Arbor.

River Raisin near Adrian, Mich.

Location.--Lat 41°54'15", long 83°58'50", in NW¼ sec. 5, T. 7 S., R. 4 E., on right bank 10 ft downstream from bridge on Academy Road, 1.7 miles east of Adrian, and 2.6 miles downstream from South Branch River Raisin.

Drainage area.--455 sq mi.

Records available.--October 1930 to August 1931, October 1932 to April 1938, October 1953 to September 1955. Published as Raisin River near Adrian, 1930-31, 1932-38.

Gage.--Water-stage recorder. Altitude of gage is 730 ft (from topographic map). Oct. 10, 1930, to Aug. 20, 1931, Oct. 1, 1932, to Apr. 30, 1938, chain gage at bridge 2 miles upstream at different datum.

Average discharge.--5 years (1934-37, 1953-55), 240 cfs.

Extremes.--Maximum discharge during year, 2,030 cfs Mar. 1 (gage height, 11.33 ft); minimum, 24 cfs Sept. 19 (gage height, 1.71 ft); minimum daily, 28 cfs Sept. 19.
1930-31, 1932-38, 1953-55: Maximum discharge observed, 2,950 cfs June 22, 1937 (gage height, 16.98 ft, site and datum then in use), from rating curve extended above 1,600 cfs; minimum observed, 16 cfs July 21, 1936; minimum daily, 16 cfs July 21, 1936.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are fair. Diurnal fluctuation caused by powerplant at Tecumseh 11 miles above station.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 4-7)

1.8	28	6.0	537
2.0	39	8.0	955
2.5	71	11.0	1,910
3.0	114		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	213	388	458	140	1,910	466	312	138	206	100	55
2	71	252	340	625	130	1,870	426	268	200	86	70	50
3	60	267	316	765	130	1,500	370	272	104	102	65	45
4	279	262	296	785	130	1,230	356	241	118	82	*90	40
5	327	288	280	805	130	1,290	366	230	104	126	80	35
6	384	290	233	1,400	120	1,060	312	226	131	*188	134	32
7	293	243	253	1,700	120	785	313	212	152	116	473	30
8	256	230	219	1,400	120	589	292	156	238	140	450	30
9	232	258	240	980	130	520	262	200	203	138	400	40
10	247	238	186	685	130	520	286	148	214	56	310	45
11	336	*197	242	589	130	645	258	222	251	92	230	40
12	473	176	202	520	140	745	284	176	302	46	150	35
13	645	176	182	478	140	705	272	182	367	67	110	30
14	765	170	189	420	150	473	298	207	232	90	100	30
15	1,000	196	238	400	160	571	316	148	308	101	130	35
16	1,230	176	198	350	170	685	366	179	190	240	90	*38
17	1,110	176	182	330	190	745	336	*104	222	200	75	54
18	785	176	*228	310	210	571	286	144	156	188	75	55
19	625	194	192	290	252	537	338	146	192	97	60	28
20	537	254	97	*280	397	443	372	151	133	70	50	32
21	415	300	236	250	1,100	474	341	116	143	80	40	46
22	*382	297	224	230	1,200	589	298	120	*130	90	35	46
23	353	292	170	210	1,000	665	*270	172	57	90	45	66
24	295	290	204	200	607	*589	335	262	121	100	55	74
25	303	285	182	190	*488	589	372	512	92	150	60	54
26	275	291	210	180	473	490	685	420	110	120	50	38
27	280	289	174	170	848	480	554	330	92	95	60	68
28	254	306	458	160	1,470	452	472	294	85	95	70	66
29	235	324	725	160	-	444	408	237	92	90	55	56
30	233	410	665	150	-------	444	330	120	106	80	55	66
31	332	----	488	150	-------	475	-------	222	--------	80	60	-----
Total	13,090	7,516	8,437	15,620	10,405	23,085	10,640	6,729	4,983	3,501	3,847	1,379
Mean	422	251	272	504	372	745	355	217	166	113	124	46.0
Cfsm	0.927	0.552	0.598	1.11	0.818	1.64	0.780	0.477	0.365	0.248	0.273	0.101
In.	1.07	0.61	0.69	1.28	0.85	1.89	0.87	0.55	0.41	0.29	0.31	0.11

Calendar year 1954: Max 2,150 Min 34 Mean 279 Cfsm 0.613 In. 8.32
Water year 1954-55: Max 1,910 Min 28 Mean 299 Cfsm 0.657 In. 8.93

Peak discharge (base, 1,000 cfs).--Oct. 16 (3 to 5 a.m.) 1,230 cfs (9.00 ft); Jan. 7 (time unknown) about 1,700 cfs; Feb. 22 (time unknown) about 1,300 cfs; Mar. 1 (3 p.m.) 2,030 cfs (11.33 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 15 to Feb. 18. No gage-height record Jan. 6-8, Feb. 21-23, July 20 to Aug. 3, Aug. 8 to Sept. 16; discharge estimated on basis of recorded range in stage and records for station near Monroe.

River Raisin near Monroe, Mich.

Location.--Lat 41°57'40", long 83°31'55", on left bank 0.8 mile downstream from bridge on Ida Maybee Road, 5.0 miles downstream from Saline River and 7.5 miles west of Monroe, Monroe County.

Drainage area.--1,034 sq mi.

Records available.--September 1937 to September 1955. Published as Raisin River at Monroe 1937-52 and as River Raisin at Monroe 1952-53.

Gage.--Water-stage recorder. Datum of gage is 616.26 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1953, at site 9 miles downstream at datum 46.26 ft lower.

Average discharge.--18 years, 726 cfs.

Extremes.--Maximum discharge during year, 4,940 cfs Mar. 1 (gage height, 7.33 ft); minimum, 27 cfs Sept. 9 (gage height, 1.84 ft); minimum daily, 33 cfs Sept. 9.
1937-55: Maximum discharge, 12,900 cfs May 19, 1945, Mar. 29, 1950; maximum gage height, 10.7 ft Feb. 1, 1949 (ice jam), site and datum then in use; minimum discharge, about 2 cfs Sept. 4, 1938, Sept. 19, 20, 1941, site then in use.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Prior to Feb. 14, 1954, diurnal fluctuation caused by powerplant at Dundee 11 miles above station. Occasional slight diurnal fluctuation by powerplants further upstream.

Revisions (water years).--WSP 954: 1938-40(m), 1941. WSP 1337: Drainage area.

Rating table, water year 1954-55, except periods of ice effect and indefinite stage-discharge relation (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 20-24)

1.8	20	3.5	615
2.0	57	4.0	1,000
2.5	162	5.0	1,960
3.0	335	7.0	4,490

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	102	340	715	1,400	230	4,210	1,030	615	314	e149	a140	119
2	121	335	738	1,850	220	4,210	968	508	348	e229	a190	104
3	132	327	678	2,070	210	3,660	856	466	266	e273	a140	100
4	e205	380	582	2,180	210	3,790	722	405	285	238	a110	84
5	e282	400	520	2,290	210	3,660	615	380	208	192	*144	61
6	e371	420	454	3,530	210	3,200	596	358	198	*155	247	61
7	e403	436	390	3,530	210	2,530	550	335	198	184	e458	53
8	e424	410	348	3,400	210	1,900	490	335	e213	248	e424	36
9	e360	371	390	3,200	220	1,400	460	293	e264	201	e504	33
10	e339	340	366	2,890	220	1,150	420	278	e328	a180	e576	34
11	e349	*348	344	2,240	230	1,490	395	289	e392	148	e492	63
12	e414	322	306	1,540	230	1,540	425	278	e414	106	e392	76
13	e641	301	314	1,220	240	1,440	436	310	e516	117	310	76
14	e940	274	293	1,050	250	1,260	454	270	e589	80	220	57
15	e1,380	266	289	920	260	1,110	454	263	e602	78	198	44
16	e1,720	255	293	800	260	1,690	466	274	526	a110	252	*55
17	e1,790	266	*314	650	280	1,540	556	*227	508	a140	176	66
18	e1,830	270	301	550	350	1,440	550	230	358	a200	146	68
19	e1,580	270	297	500	450	1,220	596	189	348	263	146	61
20	1,260	322	314	*450	700	1,020	582	227	289	a240	113	57
21	976	358	306	400	1,940	1,050	615	241	318	137	96	48
22	*776	395	238	370	2,070	1,400	602	244	*238	148	72	36
23	629	425	270	350	2,350	1,440	*532	230	214	a180	119	61
24	556	425	263	330	2,350	*1,640	608	296	248	176	86	65
25	496	460	278	310	*2,240	1,440	880	e1,020	132	a180	102	92
26	442	484	293	300	1,690	1,260	1,130	e1,330	162	282	119	104
27	436	466	306	280	2,070	1,060	1,300	1,220	144	227	100	63
28	415	484	880	270	3,010	936	1,220	880	135	186	109	48
29	410	550	1,540	260	-	952	952	671	121	181	150	59
30	385	650	1,640	250	------	1,020	760	570	126	181	98	78
31	353	-- -	1,590	240	------	1,060	------	430	-- ----	153	102	- -
Total	20,517	11,350	15,850	39,620	23,120	56,718	20,220	13,662	9,002	5,562	6,531	1,962
Mean	662	378	511	1,278	826	1,830	674	441	300	179	211	65.4
Cfsm	0.640	0.366	0.494	1.24	0.799	1.77	0.652	0.426	0.290	0.173	0.204	0.063
In.	0.74	0.41	0.57	1.43	0.83	2.04	0.73	0.49	0.32	0.20	0.23	0.07

Calendar year 1954: Max 4,350 Min 40 Mean 571 Cfsm 0.552 In. 7.52
Water year 1954-55: Max 4,210 Min 33 Mean 614 Cfsm 0.594 In. 8.06

Peak discharge (base, 2,200 cfs).--Jan. 6 (6 p.m.) 3,790 cfs (6.47 ft); Feb. 23 (6 p.m.) 2,590 cfs (5.54 ft); Mar. 1 (8 to 10 p.m.) 4,940 cfs (7.33 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of unpublished records for former station at Monroe.

e Stage-discharge relation indefinite; discharge computed on basis of unpublished records for former station at Monroe.

Note.--Stage-discharge relation affected by ice Jan. 16 to Feb. 19.

St. Joseph River near Newville, Ind.

Location.--Lat 41°23'10", long 84°48'05", in Ohio, in SW¼ sec. 18, T. 5 N., R. 1 E., on left bank 20 ft downstream from bridge on Ohio State Highway 249 and 3½ miles northeast of Newville.

Drainage area.--614 sq mi.

Records available.--November 1946 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 795.40 ft above mean sea level, datum of 1929. Prior to Oct. 22, 1947, wire-weight gage at same site and datum.

Average discharge.--9 years, 566 cfs.

Extremes.--Maximum discharge during year, 3,250 cfs Jan. 7, 8; maximum gage height, 12.32 ft Jan. 7; minimum, 19 cfs Sept. 21, 22 (gage height, 1.48 ft).
1946-55: Maximum discharge, 9,710 cfs Apr. 6, 1950 (gage height, 17.05 ft); minimum, 16 cfs Sept. 30, 1953 (gage height, 1.45 ft).

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-16, Mar. 5 to Sept. 30				Oct. 17 to Mar. 4			
1.5	17	4.0	330	3.1	172	10.0	1,880
1.7	28	8.0	1,210	4.0	308	12.0	3,020
2.3	82	11.0	2,520	6.0	714	13.0	3,800
3.0	163	12.0	3,180	8.0	1,190		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	292	915	1,560	*190	2,280	915	440	144	53	58	*36
2	44	292	714	1,560	190	*2,700	790	380	*126	93	71	33
3	66	292	560	1,490	188	2,830	650	*330	115	132	66	33
4	88	308	480	1,490	185	2,830	550	280	104	138	61	31
5	126	308	400	1,600	182	2,900	470	252	93	110	49	29
6	182	325	342	2,460	182	2,580	*430	226	88	115	137	28
7	261	325	276	3,180	183	1,950	390	210	88	126	280	26
8	196	308	244	3,250	190	1,400	350	189	110	104	320	26
9	150	276	260	3,100	200	1,020	320	176	189	88	350	25
10	333	260	260	2,830	214	810	290	170	226	82	226	24
11	830	244	228	2,220	244	750	280	176	196	71	156	23
12	1,340	228	214	1,520	260	710	340	182	234	61	115	23
13	1,780	214	214	1,020	244	670	410	182	360	54	93	22
14	2,100	200	214	780	214	610	470	170	310	49	76	24
15	2,640	193	214	648	214	550	710	156	234	117	71	26
16	2,760	186	200	540	228	530	770	144	196	234	61	24
17	2,520	179	200	480	342	590	630	132	163	340	58	23
18	2,340	179	200	440	582	590	490	120	138	218	52	22
19	2,060	284	214	380	714	530	410	115	120	144	48	22
20	1,660	540	308	342	915	470	430	110	104	104	46	20
21	1,220	670	308	320	1,430	490	450	110	93	88	42	20
22	868	582	228	300	1,660	690	430	104	88	71	54	20
23	648	460	244	280	1,700	915	380	104	76	61	58	23
24	520	420	228	260	1,600	965	460	104	66	66	82	26
25	460	560	214	240	1,660	890	850	126	61	82	82	27
26	400	692	244	230	1,430	790	1,090	163	59	120	61	31
27	361	670	308	214	1,490	670	1,150	182	56	*93	51	37
28	*325	670	1,120	210	1,920	590	965	156	*51	88	46	35
29	308	*965	*1,630	205	-	590	710	138	50	110	45	32
30	292	1,040	1,740	200	------	770	550	144	50	76	42	31
31	292	-	1,700	200	------	915	--------	163	- ----	61	40	-
Total	27,198	12,162	14,621	33,549	18,751	35,575	17,130	5,634	3,988	3,349	2,997	802
Mean	877	405	472	1,082	670	1,148	571	182	133	108	96.7	26.7
Cfsm	1.43	0.660	0.769	1.76	1.09	1.87	0.930	0.296	0.217	0.176	0.157	0.043
In.	1.65	0.74	0.89	2.03	1.14	2.16	1.04	0.34	0.24	0.20	0.18	0.05

Calendar year 1954: Max 3,870 Min 21 Mean 481 Cfsm 0.783 In. 10.64
Water year 1954-55: Max 3,250 Min 20 Mean 482 Cfsm 0.785 In. 10.66

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 21-26, Jan. 28 to Feb. 8.

Cedar Creek at Auburn, Ind.

Location.--Lat 41°21', long 85°03', in SW¼ sec. 29, T. 34 N., R. 13 E., near center of span on upstream side of Ninth Street Bridge in Auburn, 2 miles upstream from Peckhart ditch.

Drainage area.--93 sq mi, approximately.

Records available.--July 1943 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 847.14 ft above mean sea level (city of Auburn benchmark). Prior to Aug. 28, 1946, staff gage, and Aug. 28, 1946, to Sept. 30, 1953, wire-weight gage, at same site and datum.

Average discharge.--12 years, 74.8 cfs.

Extremes.--Maximum discharge during year, 707 cfs Jan. 6 (gage height, 7.61 ft); minimum, 0.6 cfs Sept. 25; minimum gage height, 0.90 ft Aug. 21.
1943-55: Maximum discharge, 1,520 cfs Apr. 5, 1950 (gage height, 9.90 ft); minimum, 0.5 cfs Nov. 12, 1953; minimum gage height, 0.81 ft Feb. 9, 1954.

Remarks.--Records good except those for period of ice effect, which are fair.

Revisions (water years).--WSP 1337: 1944-45(M), 1947-49, 1950(M).

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 24 to Apr. 24, Sept. 6-30)

0.7	0.4	2.3	96
.8	2.2	4.0	270
.9	4.8	7.0	618
1.2	16	7.5	689
1.7	47	8.0	785

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	50	120	155	26	*495	96	38	14	9.8	5.9	*5.5
2	21	54	100	215	25	380	70	35	13	13	5.9	5.5
3	64	54	82	195	25	264	54	32	*12	9.1	5.5	4.5
4	150	54	70	200	25	358	44	*30	11	39	5.2	4.5
5	175	50	62	325	24	314	40	28	11	31	5.9	4.2
6	185	50	54	689	24	220	36	26	14	22	35	4.1
7	110	47	47	495	24	160	32	25	35	22	70	3.4
8	74	44	44	336	*24	125	28	23	87	18	40	3.7
9	54	40	44	248	28	120	25	22	54	18	25	3.4
10	312	37	40	195	34	120	24	25	37	15	18	4.0
11	531	35	38	150	36	110	26	25	75	13	13	2.6
12	605	33	36	*120	45	96	44	23	105	12	11	2.6
13	579	32	36	105	31	78	58	21	62	11	8.8	2.4
14	519	31	37	92	30	70	58	20	44	11	8.4	2.2
15	644	31	36	82	28	70	62	18	34	38	7.7	2.2
16	447	30	34	74	34	78	47	18	28	50	6.6	2.0
17	336	29	35	66	82	70	37	16	23	44	6.6	2.0
18	264	31	40	58	120	66	31	16	20	28	5.9	2.0
19	205	135	39	54	112	58	37	16	16	20	5.2	3.7
20	165	135	35	47	281	54	47	15	16	15	4.5	4.2
21	140	92	32	45	413	82	44	14	15	12	3.7	2.6
22	115	70	31	43	270	190	36	14	14	11	40	2.9
23	96	62	31	40	190	210	29	14	12	10	29	4.5
24	82	96	32	37	135	165	79	18	12	11	16	3.2
25	74	165	34	35	110	100	140	20	11	9.1	12	1.2
26	66	145	34	33	120	82	100	18	9.8	8.8	9.8	2.4
27	62	115	120	31	369	66	74	16	9.8	*7.3	8.4	2.4
28	*54	140	413	30	369	62	62	16	*9.5	7.7	7.0	2.4
29	54	254	314	29	-	92	50	18	9.1	7.3	7.0	2.4
30	54	*165	226	28	-----	*155	44	17	12	6.6	6.2	2.6
31	50	--	165	27	------	140	-------	16	-- -- -	5.5	5.9	- -
Total	6,303	2,306	2,461	4,279	3,034	4,650	1,554	653	825.2	535.2	439.1	95.3
Mean	203	76.9	79.4	138	108	150	51.8	21.1	27.5	17.3	14.2	3.18
Cfsm	2.18	0.827	0.854	1.48	1.16	1.61	0.557	0.227	0.296	0.186	0.153	0.034
In.	2.51	0.92	0.98	1.71	1.21	1.86	0.62	0.26	0.33	0.21	0.18	0.04

Calendar year 1954: Max 644 Min 2.6 Mean 74.8 Cfsm 0.804 In. 10.89
Water year 1954-55: Max 689 Min 1.2 Mean 74.3 Cfsm 0.799 In. 10.83

Peak discharge (base, 850 cfs).--No peak above base.
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 21 to Feb. 8.

Cedar Creek near Cedarville, Ind.

Location.--Lat 41°13', long 85°05', in NW¼ sec. 19, T. 32 N., R. 13 E., on left bank at downstream side of bridge on State Highway 427, 2¾ miles northwest of Cedarville and 4 miles upstream from mouth.

Drainage area.--279 sq mi.

Records available.--October 1946 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 780.09 ft above mean sea level, datum of 1929. Prior to Nov. 4, 1947, wire-weight gage at same site and datum.

Average discharge.--9 years, 271 cfs.

Extremes.--Maximum daily discharge during year, 2,800 cfs Oct. 15; minimum, 25 cfs Sept. 20 (gage height, 1.36 ft).
1946-55: Maximum discharge, 4,870 cfs Apr. 5, 1950 (gage height, 11.67 ft); minimum, 12 cfs Oct. 3, 1949; minimum gage height, 1.30 ft Sept. 3, Oct. 1, 1953.

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

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	21	5.0	1,260
1.5	44	8.0	2,580
2.0	138	9.0	3,100
3.0	469		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	151	417	580	*b98	1,340	369	141	64	55	43	36
2	65	159	346	740	b97	*1,260	303	134	*57	44	46	35
3	184	159	296	640	b96	820	260	125	55	64	43	35
4	600	156	253	680	b96	1,000	220	*120	52	47	40	34
5	820	156	220	783	b95	920	204	120	50	251	39	32
6	900	151	184	1,940	b95	680	187	112	54	116	130	*32
7	524	143	161	1,840	b94	488	171	108	128	87	436	31
8	340	134	148	1,110	b94	385	156	106	276	73	217	*29
9	250	127	148	760	98	346	146	102	214	91	127	29
10	786	120	141	580	127	342	141	116	138	112	91	29
11	a1,800	118	129	462	148	342	146	116	146	74	74	29
12	a2,700	112	123	378	138	306	220	110	263	57	62	29
13	a2,600	110	123	340	207	263	263	106	187	47	52	30
14	a2,400	108	123	296	108	237	289	102	136	44	49	29
15	a2,800	104	123	280	106	230	276	98	110	267	47	28
16	a1,900	102	118	243	116	250	237	94	94	378	46	28
17	1,180	102	112	220	280	230	204	92	82	332	43	28
18	960	102	134	197	410	214	177	89	73	171	41	27
19	680	390	138	180	388	187	190	87	67	118	39	26
20	543	488	123	164	745	177	303	87	62	89	38	26
21	458	322	112	156	1,260	280	293	82	57	74	35	27
22	385	250	104	151	900	562	233	76	54	64	96	28
23	329	217	104	138	620	620	194	76	50	58	161	34
24	283	286	104	131	454	543	359	74	47	65	89	38
25	253	469	112	127	378	402	506	80	47	57	62	31
26	230	488	112	b120	359	336	382	73	44	52	52	29
27	207	385	325	b115	980	283	299	67	43	49	47	32
28	190	432	1,300	b110	1,260	270	243	67	41	*52	43	36
29	*184	820	*1,220	b108	-	332	194	82	*40	57	41	*32
30	174	*580	880	b105	------	488	161	73	43	50	41	34
31	159	... ..	640	b102	------	*454	-------	67	-------	46	39	.. -
Total	24,951	7,441	8,573	13,776	9,847	14,587	7,326	2,982	2,774	3,141	2,409	923
Mean	805	248	277	444	352	471	244	96.2	92.5	101	77.7	30.8
Cfsm	2.89	0.889	0.993	1.59	1.26	1.69	0.875	0.345	0.332	0.362	0.278	0.110
In.	3.33	0.99	1.14	1.83	1.31	1.95	0.98	0.40	0.37	0.42	0.32	0.12

Calendar year 1954: Max 2,800 Min 23 Mean 285 Cfsm 1.02 In. 13.88
Water year 1954-55: Max 2,800 Min 26 Mean 270 Cfsm 0.968 In. 13.16

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of records for nearby stations.
b Stage-discharge relation affected by ice.

St. Joseph River near Fort Wayne, Ind.

Location.--Lat 41°10', long 85°04', in SW¼NW¼SE¼ sec. 4, T. 31 N., R. 13 E., on right bank at upstream side of bridge on Mayhew Road, 3½ miles downstream from Cedar Creek and 8 miles northeast of Fort Wayne.

Drainage area.--1,060 sq mi.

Records available.--August 1941 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 751.42 ft above mean sea level; datum of 1929. Since Sept. 15, 1944, auxiliary water-stage recorder at St. Joe Dam 5½ miles downstream from base gage. Datum of auxiliary gage is 741.42 ft above mean sea level (Fort Wayne Water Co. benchmark).

Average discharge.--14 years, 967 cfs.

Extremes.--Maximum discharge during year, 6,930 cfs Mar. 4 (gage height, 12.72 ft); minimum daily, 52 cfs Sept. 6-8.
1941-55: Maximum discharge, 12,200 cfs Apr. 7, 1950 (gage height, 17.90 ft); minimum daily, 27 cfs Aug. 21, 1941.

Remarks.--Records poor.

Revisions (water years).--WSP 1277: 1952.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 22 to June 14, June 20 to July 4, July 11-14, July 19 to Aug. 6, Aug. 11-22, 24-30; stage-discharge relation indefinite Dec. 7-9, May 17-21, Sept. 14-28)

Oct. 1 to Dec. 9, May 22 to Sept. 30

3.2	51	6.0	1,180
3.5	117	9.0	3,600
4.0	300	11.0	5,400
5.0	700	12.0	6,300

Dec. 10 to May 21

2.1	184	10.0	4,500
3.0	430	11.0	5,400
6.0	1,570		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	68	540	1,530	3,000	410	4,500	1,520	715	*400	166	53	62
2	98	460	1,180	3,000	410	4,020	1,310	629	520	80	137	60
3	320	360	1,320	2,860	410	*3,860	1,270	*490	360	140	140	60
4	700	520	780	2,650	410	5,310	950	520	380	156	170	56
5	1,070	540	820	2,930	410	4,260	765	590	380	320	200	54
6	1,250	580	660	5,400	420	3,860	800	460	380	248	132	52
7	920	440	540	5,220	430	3,220	730	430	380	280	420	52
8	740	540	490	4,680	470	2,510	625	385	580	228	520	52
9	620	520	520	4,180	555	2,050	430	264	480	220	420	58
10	1,340	500	590	3,780	598	1,500	460	307	300	280	340	66
11	3,510	420	520	3,540	550	1,580	872	430	400	146	236	67
12	4,320	460	355	2,250	510	1,270	832	301	520	163	98	67
13	5,310	480	296	2,510	480	1,110	986	290	440	153	76	68
14	4,500	400	340	1,250	500	990	870	370	480	126	82	68
15	5,850	360	184	1,340	430	950	1,070	325	220	524	98	68
16	5,220	280	258	1,020	590	990	1,230	283	300	540	216	67
17	4,410	204	340	325	765	910	1,110	260	340	620	129	64
18	3,780	101	520	734	1,150	950	792	230	236	500	132	63
19	2,970	598	520	745	1,070	870	889	250	192	173	170	62
20	2,200	870	460	746	1,610	800	765	270	134	156	129	60
21	2,120	970	400	590	2,930	1,030	1,070	362	88	192	132	61
22	1,530	1,070	355	520	2,780	1,560	641	440	70	106	72	73
23	1,320	820	270	500	2,060	1,920	656	380	117	140	380	87
24	970	870	385	500	2,060	1,890	1,190	236	106	146	224	77
25	820	1,120	460	480	1,880	1,570	1,270	438	117	126	101	61
26	780	1,320	430	470	2,120	1,430	1,810	480	123	66	84	60
27	740	1,240	865	450	2,980	1,270	1,520	340	146	98	104	66
28	660	1,390	3,220	450	3,700	950	1,470	440	163	177	86	78
29	*620	2,280	3,300	430	-	1,200	987	580	53	*134	177	76
30	620	*1,980	*3,540	420	-------	*1,390	1,140	460	*62	112	101	82
31	580	-- --	2,320	*410	-------	1,710	-------	320	-------	156	*76	-- --
Total	59,956	22,233	27,768	57,380	32,688	61,430	30,030	12,275	8,467	6,672	5,435	1,947
Mean	1,934	741	896	1,851	1,167	1,982	1,001	396	282	215	175	64.9
Cfsm	1.82	0.699	0.845	1.75	1.10	1.87	0.944	0.374	0.266	0.203	0.165	0.061
In.	2.10	0.78	0.97	2.02	1.14	2.16	1.05	0.43	0.30	0.23	0.19	0.07

Calendar year 1954: Max 6,120 Min 36 Mean 892 Cfsm 0.842 In. 11.42
Water year 1954-55: Max 5,850 Min 52 Mean 894 Cfsm 0.843 In. 11.44

* Discharge measurement made on this day.

Note.--No gage-height record Aug. 31 to Sept. 13, Sept. 29-30; discharge estimated on basis of weather records and records for stations on nearby streams. Stage-discharge relation affected by ice Jan. 23 to Feb. 8, Feb. 11-15.

St. Marys River at Decatur, Ind.

Location.--Lat 40°51', long 84°56', in SW¼ sec. 27, T. 28 N., R. 14 E., on right bank 10 ft downstream from bridge on U. S. Highway 27, half a mile north of city limits of Decatur, and half a mile upstream from Holthouse ditch.

Drainage area.--615 sq mi.

Records available.--November 1946 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 760.44 ft above mean sea level, datum of 1929. Prior to July 27, 1948, wire-weight gage at same site and datum.

Average discharge.--9 years, 537 cfs.

Extremes.--Maximum discharge during year, 7,740 cfs Mar. 4 (gage height, 21.57 ft); minimum, 3.6 cfs Aug. 5, 6; minimum gage height, 1.73 ft Sept. 12.
1946-55: Maximum discharge, 12,500 cfs Feb. 15, 1950 (gage height, 23.60 ft); minimum, that of Aug. 5, 6, 1955; minimum gage height, that of Sept. 12, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by Lake St. Marys. Some diversion from or into Wabash River and into Miami & Erie Canal.

Revisions (water years).--WSP 1114: 1948. WSP 1337: 1947.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 27 to Mar. 4, July 16 to Aug. 6)

1.4	3.0	7.0	630
1.5	4.0	12.0	1,830
1.7	8.0	17.0	3,340
1.9	14	20.0	5,300
2.5	47	21.0	6,600
3.5	118	22.0	8,700
4.5	224		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	82	650	1,510	61	*2,750	750	145	*47	24	8.9	14
2	26	76	610	1,910	58	2,500	630	*127	59	20	7.6	13
3	250	72	520	1,640	57	2,030	520	109	50	19	6.6	12
4	384	72	368	1,480	55	5,630	368	97	37	19	5.0	12
5	941	101	264	1,720	57	6,960	264	90	30	20	3.6	13
6	1,010	136	199	3,270	59	5,210	211	79	27	18	20	*13
7	435	155	145	*3,440	61	3,990	176	72	30	33	250	13
8	224	176	127	3,050	65	*2,840	145	68	64	24	187	12
9	165	176	*145	2,610	87	1,640	127	62	101	18	97	12
10	1,000	145	127	2,170	270	871	114	68	79	16	59	10
11	1,380	127	101	1,560	255	1,940	109	65	79	29	53	11
12	2,470	105	101	*982	230	2,050	118	59	109	26	44	9.2
13	2,050	93	93	630	210	1,220	187	53	114	24	33	9.8
14	1,910	86	90	401	202	1,030	384	53	93	39	30	12
15	2,880	79	90	292	200	1,100	610	53	79	669	26	12
16	2,590	76	86	211	190	1,100	401	47	72	710	24	12
17	1,970	72	90	170	*470	1,050	306	44	59	320	22	12
18	1,660	72	127	145	530	770	224	41	50	127	20	11
19	1,480	481	136	130	610	650	199	39	41	72	20	11
20	1,200	610	105	120	830	520	306	37	35	62	18	11
21	871	320	86	111	1,460	1,250	237	36	30	41	18	12
22	554	224	105	103	1,350	2,050	187	37	26	24	32	12
23	320	199	109	96	1,130	1,560	176	37	22	12	50	14
24	211	224	105	90	1,200	1,200	1,190	40	20	8.3	37	14
25	165	292	93	86	1,280	1,250	2,360	44	19	11	26	13
26	136	384	93	80	1,200	1,150	1,330	50	22	13	22	12
27	*127	435	170	76	1,610	790	590	41	30	10	22	20
28	109	730	1,510	72	1,720	554	368	41	34	*24	22	28
29	101	1,150	2,140	68	-	520	264	40	*31	22	20	34
30	97	850	2,050	65	------	914	187	39	28	18	18	31
31	90	----	1,720	83	------	*936	-------	39	-------	12	15	----
Total	26,837	7,800	12,355	28,351	15,507	58,025	13,038	1,852	1,517	2,484.3	1,216.7	425.0
Mean	866	260	399	915	554	1,872	435	59.7	50.6	80.1	39.2	14.2
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 2,880 Min 13 Mean 288 Cfsm - In. -
Water year 1954-55: Max 6,960 Min 3.6 Mean 464 Cfsm - In. -

Peak discharge (base, 3,500 cfs).--Jan. 6 (11 p.m.) 3,580 cfs (17.46 ft); Mar. 4 (10 p.m.) 7,740 cfs (21.57 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 17, Jan. 19 to Feb. 7, Feb. 10-18.

St. Marys River near Fort Wayne, Ind.

Location.--Lat 41°00', long 85°07', in NE¼ sec. 12, T. 29 N., R. 12 E., on left bank 130 ft downstream from highway bridge, 4 miles south of Fort Wayne, and 12 miles upstream from mouth.

Drainage area.--753 sq mi.

Records available.--November 1930 to September 1955 in reports of Geological Survey. October 1924 to October 1925 and July to September 1927 in reports of Indiana Department of Conservation.

Gage.--Water-stage recorder. Datum of gage is 748.61 ft above mean sea level, unadjusted. Prior to Apr. 13, 1939, chain gage on highway bridge at same datum.

Average discharge.--23 years (1931-33, 1934-55), 574 cfs.

Extremes.--Maximum discharge during year, 8,350 cfs Mar. 5 (gage height, 16.18 ft); minimum, 4.5 cfs Sept. 15 (gage height, 0.48 ft).
1930-55: Maximum discharge, 13,400 cfs May 19, 1943 (gage height, 18.79 ft); minimum observed, 3.4 cfs Oct. 19, 1934 (gage height, 0.28 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated by Lake St. Marys. Some diversion from or into Wabash River basin and into Miami & Erie Canal.

Revisions (water years).--WSP 824: Drainage area. WSP 974: 1942. WSP 1337: 1933, 1947.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 28 to Dec. 6, Dec. 27 to Jan. 6)

0.47	4.8	3.0	365
.5	5.7	5.0	955
.6	11	9.0	2,720
1.3	77	12.0	4,470
2.1	176	16.0	8,070

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	111	785	1,860	82	4,110	1,020	227	*42	29	45	16
2	111	106	680	2,270	82	*4,230	815	*187	48	23	43	11
3	359	99	590	2,080	82	3,450	680	159	61	18	34	10
4	955	96	478	1,770	82	5,610	515	138	53	16	30	10
5	1,920	121	352	2,040	82	7,790	390	122	42	16	24	7.4
6	2,220	162	259	3,750	82	7,670	305	107	36	17	46	7.4
7	1,050	187	233	4,230	84	6,110	242	97	36	23	428	9.4
8	490	197	221	4,050	90	4,470	202	88	61	34	328	9.4
9	308	218	216	3,570	120	2,670	173	82	113	48	194	8.6
10	1,800	200	173	2,880	300	1,340	150	86	117	66	102	8.6
11	1,950	168	143	2,180	280	2,830	140	90	97	27	69	8.0
12	3,050	143	124	1,420	250	2,880	156	83	110	26	58	6.3
13	3,100	125	117	920	230	1,860	194	72	139	30	48	6.3
14	2,780	113	113	605	240	1,260	315	64	129	37	40	5.4
15	4,050	106	111	415	220	1,260	800	61	106	1,090	34	4.8
16	3,750	99	109	328	400	1,300	605	60	92	1,380	30	7.0
17	2,780	95	107	280	590	1,300	440	55	82	740	28	9.4
18	2,130	90	154	230	700	990	328	48	69	390	24	9.4
19	1,860	384	189	200	800	800	272	45	57	219	22	8.0
20	1,590	920	166	180	1,020	665	452	44	48	146	20	7.0
21	1,180	605	134	160	1,900	1,300	428	42	42	115	19	6.6
22	815	352	143	150	2,000	2,830	302	40	35	84	23	7.0
23	515	277	147	139	1,720	2,320	240	42	30	59	37	11
24	328	308	139	128	1,380	1,590	1,280	43	25	43	54	12
25	229	378	126	120	1,460	1,460	3,220	45	22	34	44	14
26	187	478	113	111	1,460	1,420	2,370	51	20	38	32	12
27	162	530	206	106	2,130	1,100	1,080	53	20	47	24	13
28	146	817	1,660	100	2,520	770	590	48	27	53	22	15
29	*137	1,420	2,720	94	-	710	428	47	34	*117	21	30
30	128	*1,140	2,780	89	------	*1,140	305	46	*34	68	21	*36
31	119	-- ---	*2,320	*82	------	1,260	-------	43	-------	53	*18	- - -
Total	40,265	10,045	15,808	36,537	20,386	78,495	18,437	2,415	1,827	5,086	1,962	326.0
Mean	1,299	335	510	1,179	728	2,532	615	77.9	60.9	164	63.3	10.9
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 4,050 Min 8.6 Mean 385 Cfsm - In. -
Water year 1954-55: Max 7,790 Min 4.8 Mean 634 Cfsm - In. -

Peak discharge (base, 3,200 cfs).--Oct. 12 (7 p.m.) 3,450 cfs (10.30 ft); Oct. 15 (11 a.m.) 4,170 cfs (11.50 ft); Jan. 7 (3 p.m.) 4,230 cfs (11.62 ft); Mar. 1 (8 p.m.) 4,470 cfs (11.98 ft); Mar. 5 (9 p.m.) 8,350 cfs (16.18 ft); Apr. 25 (12 m.) 3,390 cfs (10.18 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Jan. 17 to Feb. 18.

Maumee River at New Haven, Ind.

Location.--Lat 41°05', long 85°01', in SW¼ sec. 1, T. 30 N., R. 13 E., near left bank on downstream side of highway bridge, a quarter of a mile upstream from Wabash Railroad bridge, half a mile north of New Haven, and 6 miles downstream from confluence of St. Marys and St. Joseph Rivers.

Drainage area.--1,940 sq mi.

Records available.--December 1946 to September 1955 (high-water records only).

Gage.--Wire-weight gage read twice daily. Datum of gage is 724.51 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 12,200 cfs Mar. 5 (gage height, 17.8 ft).
1946-55: Maximum discharge, 19,100 cfs Feb. 16, 1950 (gage height, 21.4 ft).

Remarks.--Records good. Discharge computed for stages above 5.0 ft only. Flow regulated at low stage by powerplants above station. Flow slightly regulated by Lake St. Marys. Some diversion from or into Wabash River basin and into Miami & Erie Canal.

Revisions.--WSP 1337: Drainage area.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Feb. 24-26)

5.0	1,400	13.0	7,430
7.0	2,660	17.0	11,400
10.0	4,820	18.0	12,400

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	*3,010	4,820	-	*9,130	3,080			-		
2	-	-	2,590	5,620	-	9,430	2,590			-		
3	-	-	2,120	5,060	-	7,930	2,180			-		
4	1,880	-	2,120	4,980	-	10,800	2,000			-		
5	3,220	-	1,700	4,900	-	12,100	1,490			-		
6	4,660	-	1,640	9,030	-	12,000	-			-		
7	2,660	-	-	10,000	-	11,200	-			-	1,520	
8	1,520	-	-	9,330	-	9,030	-			-		
9	-	-	1,430	8,230	-	6,210	-			-		
10	4,760	-	-	7,130	-	3,780	-			-		
11	7,230	-	-	5,860	-	6,570	-			-		
12	8,730	-	-	4,660	-	5,460	-			-		
13	9,230	-	-	3,640	-	3,920	-			-		
14	8,030	-	-	2,870	-	2,590	1,400			-		
15	10,100	-	-	-	-	2,520	1,820			2,940		
16	10,100	-	-	2,060	-	2,520	2,120			3,220		
17	8,430	-	-	-	-	2,380	1,820			2,310		
18	6,480	-	-	-	1,580	2,240	1,580			1,640		
19	5,300	-	-	-	1,880	1,880	-			-		
20	4,740	2,120	-	-	2,520	1,760	1,880			-		
21	3,290	1,760	-	-	4,580	2,520	1,700			-		
22	2,450	1,640	-	-	5,060	5,620	1,490			-		
23	2,120	1,460	-	-	4,500	4,820	-			-		
24	1,700	-	-	-	3,750	3,780	2,520			-		
25	-	1,640	-	-	3,800	3,430	5,060			-		
26	-	2,000	-	-	3,750	3,500	4,500			-		
27	-	2,120	-	-	5,620	2,940	3,290			-		
28	-	2,310	4,130	-	7,030	2,240	2,520			-		
29	-	4,200	7,030	-	-	2,000	2,000			-		
30	-	4,060	6,660	-	------	2,800	1,460			-		
31	-	------	*6,030	-	------	*3,150	------		------	-		------
Total	-	-	-	-	-	160,250	-			-	-	
Mean	-	-	-	-	-	5,169	-			-	-	
Cfsm	-	-	-	-	-	-	-			-	-	
In.	-	-	-	-	-	-	-			-	-	

Calendar year	: Max		Min		Mean		Cfsm		In.	
Water year	: Max		Min		Mean		Cfsm		In.	

* Discharge measurement made on this day.

Maumee River at Antwerp, Ohio

Location.--Lat 41°11'56", long 84°44'40", in sec. 22, T. 3 N., R. 1 E., on left bank 425 ft downstream from bridge on State Highway 49, 1 mile north of Antwerp, Paulding County, 7 miles downstream from Indiana State line, and 10 miles upstream from Marie DeLarme Creek.

Drainage area.--2,049 sq mi.

Records available.--September 1921 to December 1935, April 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 695.49 ft above mean sea level, adjustment of 1912. Prior to Sept. 13, 1925, chain gage at site 400 ft upstream at same datum.

Average discharge.--30 years, 1,683 cfs.

Extremes.--Maximum discharge during year, 13,000 cfs Mar. 6 (gage height, 15.59 ft); minimum, 61 cfs Sept. 20, 21 (gage height, 0.63 ft).

1921-35, 1939-55: Maximum discharge, 26,200 cfs May 20, 1943 (gage height, 20.29 ft); minimum, 24 cfs Oct. 17, 1930, June 21, 22, 1933 (gage height, 0.32 ft).

Remarks.--Records good except those for period of ice effect, which are fair. Low flow slightly regulated by powerplant at Fort Wayne, Ind.

Revisions (water years).--WSP 759: Drainage area. WSP 1174: 1927, 1933, 1940. Revised figures of discharge in cubic feet per second, for the water years 1922, 1923, 1925, 1926, 1927, 1934, superseding those published in WSP 544, 564, 604, 624, 644 and 759, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1921		1922-Con.		1923-Con.		1925-Con.		1926-Con.	
Nov. 19	5,800	Feb. 13	1,900	Feb. 27	800	Jan. 24	220	Jan. 14	350
20	9,060	14	1,700			25	250	15	300
21	10,000	15	1,600	1924		26	230	16	300
22	9,780	16	1,300	Dec. 22	6,000	27	190	17	300
23	8,480	17	1,050	23	4,500	28	190	18	1,200
24	6,830	18	1,000	24	3,000	29	190	19	6,070
		20	850	25	1,500	30	190	29	700
1922		22	1,300			Dec. 18	550	30	700
Jan. 20	890			1925		19	500	31	900
21	890	1923		Jan. 1	600	20	550	Oct. 1	6,700
22	850	Feb. 5	1,810	3	400	23	500	2	7,300
23	800	6	1,440	4	380	24	400	3	7,800
24	800	7	1,320	5	350	25	300	4	8,800
25	750	8	990	6	340	26	250	5	8,600
26	700	9	790	7	330	27	250	6	7,700
27	700	10	840	8	320	28	250	7	6,800
28	700	11	1,040	9	300	29	250	8	5,000
29	740	12	990	10	300	30	250	9	4,000
30	640	13	2,090	11	300	31	250	10	3,200
31	595	14	5,000	12	300			11	2,600
Feb. 1	595	15	4,700	13	250	1926		12	2,000
2	1,040	16	3,680	14	250	Jan. 1	300	13	1,600
3	3,300	17	3,320	15	250	2	300		
4	3,400	18	2,500	16	240	3	300	1927	
5	3,400	19	1,400	17	240	4	300	July 6	888
6	2,900	20	1,200	18	280	5	300		
7	2,600	22	800	19	250	6	350	1933	
8	2,200	23	700	20	240	9	450	Dec. 20	374
9	1,900	24	600	21	240	11	350		
11	1,800	25	500	22	230	12	350		
12	2,100	26	450	23	220	13	350		

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
November 1921	10,000	355	3,070	1.50	1.67
January 1922	4,900	595	1,440	.703	.81
February	3,590	595	2,010	.981	1.02
Water year 1921-22	14,700	148	2,340	1.14	15.48
Calendar year 1922	14,700	145	1,940	.947	12.85
February 1923	5,000	450	1,780	.869	.90
Water year 1922-23	14,200	145	1,330	.649	8.82
Calendar year 1923	14,200	155	1,700	.830	11.25
December 1924	9,420	207	1,750	.854	.98
Calendar year 1924	14,700	164	1,960	.957	12.99
January 1925	600	190	286	.140	.16
Water year 1924-25	15,300	99	1,100	.537	7.31
December 1925	2,170	250	811	.396	.46
Calendar year 1925	15,300	99	1,250	.610	8.32
January 1926	6,070	300	1,310	.639	.74
Water year 1925-26	15,500	160	1,930	.942	12.80
October 1926	8,800	705	2,970	1.45	1.67
Calendar year 1926	15,500	160	2,050	1.00	13.59
July 1927	1,020	83	324	.158	.18
Water year 1926-27	12,500	75	2,140	1.04	14.19
Calendar year 1927	14,600	75	2,410	1.18	15.98
December 1933	806	183	359	.175	.20
Calendar year 1933	14,600	26	1,798	.878	11.88
Water year 1933-34	7,520	46	710	.347	4.69

Maumee River at Antwerp, Ohio--Continued

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	56	5.0	2,020
1.0	135	9.0	5,220
1.5	275	12.0	8,460
2.0	446	16.0	13,700
3.0	880		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	135	782	3,470	4,920	410	9,180	3,150	1,530	305	137	318	142
2	175	782	2,700	6,130	400	10,100	2,700	1,060	345	121	373	130
3	196	689	2,140	5,620	380	9,180	2,280	905	*404	149	335	128
4	1,690	645	2,210	5,220	370	10,800	2,080	758	278	142	216	149
5	2,350	880	1,500	4,920	380	*12,600	1,590	806	219	243	196	147
6	4,920	645	1,500	8,460	390	13,000	1,270	782	262	432	182	112
7	3,630	830	1,160	10,300	400	12,600	*1,180	667	369	475	684	106
8	2,140	712	689	9,900	*430	10,800	1,100	602	520	369	1,390	104
9	1,410	782	*712	9,060	470	7,560	930	540	645	390	1,180	97
10	2,490	806	955	7,780	600	4,550	758	560	624	645	880	95
11	7,230	758	806	6,480	1,100	5,420	667	602	667	482	689	97
12	8,460	712	735	5,320	1,200	7,340	1,160	624	667	369	501	91
13	10,100	667	645	3,310	1,000	4,640	1,210	540	758	256	394	70
14	9,660	667	471	3,390	1,000	3,080	1,410	411	758	243	342	67
15	11,000	602	602	1,880	1,000	2,490	1,530	501	735	1,250	243	67
16	11,400	560	404	1,890	1,100	2,420	2,080	471	624	4,030	213	69
17	9,900	560	432	1,460	1,300	2,420	1,890	446	501	2,630	182	69
18	7,670	540	581	830	1,600	2,280	1,650	359	482	1,830	185	72
19	5,820	830	758	1,030	2,100	2,020	1,270	249	397	1,320	180	69
20	4,920	1,590	855	1,160	2,400	1,770	1,940	202	352	806	175	*62
21	3,630	1,950	735	1,060	3,950	1,950	1,710	228	369	501	191	66
22	3,630	1,710	735	955	5,020	4,110	1,650	180	285	482	157	70
23	2,280	1,590	602	806	4,730	5,520	1,100	177	231	394	231	89
24	1,950	1,390	560	782	3,950	4,460	2,170	359	169	282	320	95
25	1,500	1,590	540	758	3,710	3,550	4,820	482	199	272	482	99
26	1,240	2,020	645	712	3,710	3,230	4,920	411	234	262	225	104
27	1,130	2,140	782	560	5,420	2,850	4,110	501	205	*262	216	87
28	1,030	2,420	3,580	500	7,450	2,420	2,700	282	162	272	210	112
29	955	3,950	6,900	480	-	2,020	2,210	436	154	428	228	130
30	905	4,460	7,120	460	-----	2,700	1,440	471	185	394	137	108
31	830	-- -	6,900	440	-----	3,000	-------	425	- -- -	318	149	- -
Total	124,376	38,259	52,424	106,573	55,970	170,060	58,675	16,567	12,105	20,186	11,404	2,903
Mean	4,012	1,275	1,691	3,438	1,999	5,486	1,956	534	404	651	368	96.8
Cfsm	1.96	0.622	0.825	1.68	0.976	2.68	0.955	0.261	0.197	0.318	0.180	0.047
In.	2.26	0.69	0.95	1.94	1.02	3.09	1.07	0.30	0.22	0.37	0.21	0.05

Calendar year 1954: Max 11,400 Min 85 Mean 1,542 Cfsm 0.753 In. 10.21
Water year 1954-55: Max 13,000 Min 62 Mean 1,834 Cfsm 0.895 In. 12.17

Peak discharge (base, 8,000 cfs).--Oct. 16 (1 a.m.) 11,700 cfs (14.60 ft); Jan. 7 (7 p.m.) 10,400 cfs (13.59 ft); Mar. 6 (1 p.m.) 13,000 cfs (15.59 ft); Mar. 12 (1 a.m.) 8,340 cfs (11.92 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 28 to Feb. 20.

Bean Creek at Powers, Ohio

Location.--Lat 41°40'40", long 84°13'50", in NE¼ sec. 24, T. 9 S., R. 1 E., on right bank at downstream side of bridge on U. S. Highway 20, 1 mile east of Powers, Fulton County, and 2¼ miles upstream from Iron Creek.

Drainage area.--238 sq mi.

Records available.--October 1940 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 722.6 ft above mean sea level, adjustment of 1912. Prior to Jan. 18, 1941, wire-weight gage at same site and datum.

Average discharge.--15 years, 172 cfs.

Extremes.--Maximum discharge during year, 1,450 cfs Jan. 6 (gage height, 8.99 ft); minimum, 7.6 cfs Sept. 19, 20, 21 (gage height, 0.25 ft).
1940-55: Maximum discharge, 3,980 cfs Apr. 5, 1950 (gage height, 13.30 ft); minimum, 5.9 cfs Sept. 1-3, 1953.

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

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 6				Jan. 7 to Sept. 30			
0.5	17	3.0	277	0.2	5.9	2.0	159
.7	30	6.0	813	.5	19	4.0	450
1.0	56	9.0	1,450	1.0	60	8.0	1,200
2.0	150						

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	72	121	246	*55	1,120	226	159	50	49	20	12
2	21	71	114	456	55	1,020	200	133	43	47	22	11
3	21	76	105	465	55	645	182	127	39	36	21	a10
4	28	78	97	501	50	718	164	111	35	30	18	a10
5	65	83	90	573	50	645	148	101	33	44	19	a10
6	52	86	82	*1,320	55	501	142	97	35	47	28	9.4
7	40	80	73	1,020	55	375	124	87	51	37	39	9.0
8	32	74	79	699	60	298	115	77	182	33	42	9.0
9	29	70	70	501	60	275	112	71	182	31	31	9.0
10	60	65	66	391	75	261	103	72	*133	29	25	8.7
11	155	61	64	320	110	261	103	82	137	26	21	8.7
12	210	59	62	261	95	298	113	80	207	23	18	8.7
13	352	57	61	233	80	268	122	73	170	21	17	8.7
14	293	56	60	200	75	226	124	66	142	20	18	9.0
15	609	54	61	182	70	207	248	61	117	42	18	9.0
16	537	52	60	159	110	275	214	55	96	120	17	9.0
17	420	51	60	154	220	290	170	50	74	68	17	8.7
18	334	51	65	142	290	233	137	54	63	54	*16	8.4
19	246	66	74	133	280	207	137	45	56	42	15	8.0
20	*198	116	63	112	370	176	164	42	50	36	14	8.0
21	160	120	60	116	650	207	159	40	53	31	13	*8.0
22	135	101	55	103	700	312	142	39	44	28	14	8.4
23	116	*89	70	89	609	359	126	*43	40	28	14	12
24	102	90	64	75	424	375	193	46	36	40	13	15
25	91	100	60	80	305	298	627	83	34	31	*13	a15
26	84	100	67	85	275	261	537	88	38	*27	13	a15
27	78	94	73	75	699	226	399	80	33	26	13	a15
28	75	105	352	70	946	207	290	68	28	24	13	a16
29	72	150	447	65	-	226	220	58	26	24	14	a17
30	72	140	334	60	------	261	182	65	31	23	13	a16
31	76	-- -	277	60	------	*254	-- ----	58	- -- -	21	13	-
Total	4,783	2,467	3,386	8,946	6,878	11,285	5,923	2,311	2,258	1,138	582	321.7
Mean	154	82.2	109	289	246	364	197	74.5	75.3	36.7	18.8	10.7
Cfsm	0.647	0.345	0.458	1.21	1.03	1.53	0.828	0.313	0.316	0.154	0.079	0.045
In.	0.75	0.38	0.53	1.40	1.07	1.76	0.92	0.36	0.35	0.18	0.09	0.05

Calendar year 1954: Max 1,580 Min 11 Mean 124 Cfsm 0.521 In. 7.06
Water year 1954-55: Max 1,320 Min 8.0 Mean 138 Cfsm 0.580 In. 7.84

Peak discharge (base, 1,200 cfs).--Jan. 6 (3:30 p.m.) 1,450 cfs (8.99 ft); Mar. 1 (9 p.m.) 1,380 cfs (8.73 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for Tiffin River at Stryker.

Note.--Stage-discharge relation affected by ice Dec. 21-23, Jan. 24 to Feb. 22.

Tiffin River at Stryker, Ohio

Location.--Lat 41°30'15", long 84°25'50", in SW¼ sec. 5, T. 6 N., R. 4 E., on right bank at downstream side of bridge on State Highway 191 at west edge of Stryker, Williams County, 0.6 mile upstream from New York Central Railroad bridge and 1½ miles downstream from Leatherwood Creek.
Drainage area.--441 sq mi.
Records available.--September 1921 to September 1928 (published as "near Stryker"), October 1940 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 685.5 ft above mean sea level, adjustment of 1912. Prior to Sept. 30, 1928, chain gage at site 3½ miles downstream at different datum. Oct. 13, 1940, to Jan. 17, 1941, staff gage and Jan. 18, 1941, to Sept. 30, 1953, water-stage recorder, at site half a mile downstream at same datum.
Average discharge.--22 years, 324 cfs.
Extremes.--Maximum discharge during year, 2,360 cfs Jan. 8 (gage height, 12.51 ft); minimum, 8.0 cfs Sept. 20, 21.
1921-28, 1940-55: Maximum discharge, 6,640 cfs Apr. 25, 1950 (gage height, 15.45 ft); minimum, 3.6 cfs Aug. 30, 31, 1953.
Flood in March 1913 reached a stage of 16.0 ft, from floodmarks (discharge, 7,600 cfs).
Remarks.--Records good except those for periods of shifting-control method, which are fair.
Revisions (water years).--WSP 564: Drainage area. WSP 1144: 1922-28. Revised figures of discharge, in cubic feet per second, for the water year 1925, superseding those published in WSP 604, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1924		1925-Con.		1925-Con.	
Dec. 23	259	Jan. 4	45	Jan. 18	30
24	217	5	45	19	30
25	128	6	45	20	30
26	99	7	40	21	25
27	82	8	40	22	30
28	67	9	40	23	30
29	62	10	40	24	30
30	58	11	35	25	30
31	55	12	35	26	30
		13	35	27	35
1925		14	35	28	30
Jan. 1	50	15	35	29	30
2	50	16	30	30	30
3	50	17	30	31	35

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
December 1924	399	27	106	0.236	0.27
Calendar year 1924	4,070	25	274	.609	8.29
January 1925	50	25	35.6	.079	.09
Water year 1924-25	3,370	10	190	.422	5.74
Calendar year 1925	3,370	10	235	.522	7.08

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	132	257	646	114	*1,520	492	275	76	76	26	16
2	33	140	230	715	116	1,770	408	239	66	105	24	14
3	40	144	216	800	113	1,890	338	200	56	86	26	13
4	45	148	200	820	103	1,770	293	188	50	59	27	13
5	54	156	180	927	102	1,620	257	164	46	46	24	12
6	106	164	156	*1,670	107	1,520	239	152	44	56	64	12
7	102	168	140	2,090	113	1,260	221	140	57	58	216	12
8	71	160	136	2,260	120	806	192	128	156	46	239	11
9	50	144	156	1,890	120	503	176	115	275	41	128	11
10	98	132	152	1,440	140	428	168	111	*248	39	70	10
11	275	120	132	975	200	428	156	120	200	34	48	11
12	388	116	124	608	216	438	172	124	266	29	37	9.5
13	492	109	120	438	168	418	188	116	293	26	29	9.5
14	525	105	120	368	144	368	*196	105	239	24	26	10
15	780	102	116	320	140	329	470	95	192	40	26	10
16	900	101	116	284	156	338	536	85	156	124	26	10
17	925	98	113	284	302	398	408	76	128	168	24	10
18	820	96	120	266	459	398	302	70	101	109	22	9.5
19	596	116	136	216	514	338	248	71	83	76	20	9.0
20	428	176	120	200	536	293	257	63	74	54	18	*8.0
21	*329	216	107	172	800	311	266	57	65	44	17	8.0
22	275	*196	103	180	950	459	248	54	65	38	19	8.5
23	226	164	124	168	1,160	560	212	58	54	33	23	12
24	196	152	124	136	1,220	560	295	67	48	46	20	15
25	172	176	113	148	953	525	820	87	44	98	*17	17
26	156	200	116	152	572	448	925	124	40	72	16	17
27	144	188	156	136	810	388	925	120	43	*46	16	17
28	140	192	518	124	1,100	348	730	108	39	44	16	17
29	136	257	780	120	-	368	492	95	33	40	16	18
30	132	311	880	115	------	481	348	82	35	34	17	17
31	132	------	780	115	------	536	------	85	------	29	16	------
Total	8,794	4,679	6,841	18,783	11,548	21,817	10,978	3,574	3,272	1,820	1,313	367.0
Mean	284	156	221	606	412	704	366	115	109	58.7	42.4	12.2
Cfsm	0.644	0.354	0.501	1.37	0.934	1.60	0.830	0.261	0.247	0.133	0.096	0.028
In.	0.74	0.40	0.58	1.58	0.97	1.84	0.93	0.30	0.28	0.15	0.11	0.03

Calendar year 1954: Max 2,560 Min 12 Mean 232 Cfsm 0.526 In. 7.14
Water year 1954-55: Max 2,260 Min 8.0 Mean 257 Cfsm 0.583 In. 7.91

Peak discharge (base, 1,400 cfs).--Jan. 8 (6 a.m.) 2,360 cfs (12.51 ft); Mar. 3 (8 a.m.) 1,890 cfs (11.92 ft).
* Discharge measurement made on this day.
Note.--Shifting-control method used Nov. 7 to Dec. 6, Sept. 16-30.

Auglaize River near Fort Jennings, Ohio

Location.--Lat 40°56'55", long 84°15'58", in SE¼ sec. 15, T. 1 S., R. 5 E., on left bank 200 ft upstream from bridge on U. S. Highway 224, 3½ miles northeast of Fort Jennings, Putnam County, and 6 miles upstream from Ottawa River.

Drainage area.--333 sq mi.

Records available.--August 1921 to December 1935, October 1940 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 713.9 ft above mean sea level, adjustment of 1912. Prior to Oct. 6, 1930, chain gage at same site and datum.

Average discharge.--29 years, 288 cfs.

Extremes.--Maximum discharge during year, 4,960 cfs Mar. 5 (gage height, 14.20 ft); minimum, 11 cfs Sept. 10 (gage height, 1.45 ft).
1921-35, 1940-55: Maximum discharge, 9,550 cfs Feb. 15, 1950 (gage height, 17.8 ft, from high-water mark); minimum, 5.0 cfs Aug. 28, 1932, Sept. 29, 30, 1953; minimum gage height, 0.75 ft Aug. 28, 1932.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some diversion from Lake St. Marys by Miami & Erie Canal into Jennings Creek, tributary to Auglaize River above station.

Revisions (water years).--WSP 744: 1932. WSP 974: 1930(M).

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-15				Oct. 16 to Sept. 30			
1.6	21	4.0	326	1.4	12	4.0	331
1.8	36	5.0	510	1.6	20	6.0	804
2.1	70	7.0	1,060	1.9	40	9.0	1,780
2.5	118	10.0	2,190	2.2	68	12.0	3,140
3.0	182			2.5	101	14.0	4,740
				3.0	163		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	47	293	700	55	1,370	467	64	49	21	39	18
2	23	*45	213	752	50	*2,100	322	60	41	22	38	17
3	26	43	*176	778	50	1,150	247	56	34	21	33	16
4	74	43	145	562	50	2,970	183	52	30	20	28	16
5	280	52	120	816	50	*4,640	149	50	33	18	24	14
6	448	74	87	2,600	50	3,260	131	46	31	18	23	14
7	258	111	81	3,320	45	994	*117	45	*31	20	33	14
8	139	101	77	2,360	*45	514	102	45	49	40	44	13
9	95	84	74	804	55	361	77	41	52	27	105	12
10	182	68	71	514	120	312	76	47	117	60	96	12
11	430	58	60	361	532	986	81	51	98	555	88	13
12	962	45	60	284	a410	1,980	108	44	68	274	53	14
13	1,090	41	54	*238	a270	1,070	126	44	53	159	37	13
14	1,510	47	52	190	a200	478	163	41	52	101	33	13
15	1,820	47	53	170	a150	341	176	37	41	83	33	13
16	1,900	45	55	149	a130	392	149	33	38	98	29	16
17	944	45	54	154	a280	635	120	33	33	247	27	16
18	526	44	58	127	a460	402	98	32	32	256	27	14
19	361	45	58	100	a550	284	94	31	30	155	25	13
20	256	214	58	85	a650	230	99	*34	30	89	24	*13
21	183	230	66	80	1,400	556	123	33	28	58	23	14
22	145	126	60	75	2,190	1,740	126	33	26	42	22	14
23	115	92	58	70	a2,000	1,820	103	35	24	34	24	15
24	97	96	60	65	a1,200	818	159	38	31	30	*23	20
25	83	130	62	65	*610	456	265	40	30	27	22	21
26	78	238	68	60	538	331	247	37	26	26	24	20
27	71	351	80	60	876	230	163	48	23	27	24	37
28	64	413	572	55	1,240	190	115	40	23	*30	22	37
29	60	610	1,700	55	-	285	90	40	21	36	20	31
30	57	502	1,620	55	------	562	75	40	21	35	20	29
31	51	...	1,300	50	------	635	-------	64	-------	54	19	-----
Total	12,357	4,087	7,545	15,754	14,256	32,072	4,551	1,534	1,195	2,683	1,082	522
Mean	399	136	243	508	509	1,035	152	43.0	39.8	86.5	34.9	17.4
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,900 Min 14 Mean 162 Cfsm - In. -
Water year 1954-55: Max 4,640 Min 12 Mean 267 Cfsm - In. -

Peak discharge (base, 2,700 cfs).--Jan. 7 (12 m.) 3,380 cfs (12.40 ft); Mar. 5 (2 a.m) 4,960 cfs (14.20 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Blanchard River near Findlay.
Note.--Stage-discharge relation affected by ice Jan. 19 to Feb. 10.

Ottawa River at Allentown, Ohio

Location.--Lat 40°45'18", long 84°11'41", in NW¼ sec. 29, T. 3 S., R. 6 E., on left bank at upstream side of bridge on State Highway 81 at Allentown, Allen County, 0.3 mile downstream from Kessler Run.
Drainage area.--168 sq mi.
Records available.--October 1923 to December 1935, August 1943 to September 1955.
Gage.--Water-stage recorder and concrete control. Datum of gage is 789.67 ft above mean sea level, adjustment of 1912. Prior to Oct. 1, 1925, chain gage and Oct. 1, 1925, to Dec. 30, 1935, water-stage recorder, at site 35 ft downstream at same datum.
Average discharge.--24 years, 123 cfs.
Extremes.--Maximum discharge during during year, 2,780 cfs Mar. 4 (gage height, 7.76 ft); minimum, 8.8 cfs June 19 (gage height, 2.31 ft).
1923-35, 1943-55: Maximum discharge, 4,760 cfs Feb. 14, 1950 (gage height, 9.17 ft); minimum, 1.4 cfs June 28, 29, 1933.
Flood of Mar. 15, 1939, reached a stage of 10.1 ft and flood of May 1943, a stage of about 10 ft (discharge not determined).
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
604	1924	Mar. 29, 1924	3,750	8.6
644,744	1927	Mar. 20, 1927	4,490	9.0
664	1928	Mar. 30, 1928	3,100	8.2
684	1929	Jan. 19, 1929	2,850	8.0
699	1930	Jan. 8, 1930	3,550	8.54
784	1935	May 4, 1935	2,500	7.62

Remarks.--Records good. Diurnal fluctuation and some regulation due to operation of water supply and sewage-treatment plants of city of Lima above station.
Revisions (water years).--WSP 1004: 1924. WSP 1144: 1944(M). WSP 1207: 1927. Revised figures of discharge, in cubic feet per second, for the water year 1929, superseding those published in WSP 684, are given herewith:

1929		1929-Con.	
Jan. 26	600	Jan. 29	220
27	250	30	170
28	170	31	130

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
January 1929	2,280	16	292	1.74	2.01
Water year 1928-29	2,280	9.0	140	.833	11.29
Calendar year 1929	2,280	10	195	1.16	15.74

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	19	34	195	27	1,050	156	27	22	38	20	21
2	20	*27	32	312	25	628	118	26	21	25	29	20
3	42	22	*30	183	24	286	105	26	19	23	28	19
4	39	36	28	156	23	*2,240	80	25	19	21	23	17
5	79	33	25	410	23	1,750	64	25	18	21	17	16
6	34	28	24	1,800	24	607	55	26	*28	42	16	17
7	25	24	25	964	25	288	*48	24	66	33	428	20
8	23	24	25	332	24	163	41	23	53	64	69	19
9	22	25	26	195	*33	142	36	20	29	231	28	19
10	27	22	25	136	107	133	41	32	25	255	27	19
11	65	22	23	105	209	867	50	25	27	36	23	48
12	97	24	21	86	183	726	62	27	21	27	23	17
13	103	25	22	*80	105	264	85	26	20	24	22	17
14	72	23	24	67	76	149	58	23	22	26	55	17
15	570	22	24	66	46	126	62	20	26	54	25	19
16	152	22	23	57	93	258	47	19	23	40	24	19
17	89	22	24	54	219	214	50	21	17	26	24	17
18	57	22	27	36	187	136	42	22	14	25	23	15
19	28	23	25	31	183	116	40	22	11	26	23	*15
20	25	30	24	30	320	96	54	22	14	24	22	19
21	24	23	24	29	1,360	493	55	21	21	24	19	19
22	23	22	23	30	965	1,220	47	21	20	23	46	20
23	22	24	23	37	621	719	37	23	27	28	26	50
24	19	34	26	31	344	265	69	23	26	24	*21	29
25	20	34	25	29	224	171	108	25	24	19	22	17
26	23	35	24	28	199	146	55	23	20	22	21	16
27	22	40	31	27	464	105	51	21	18	23	20	23
28	22	60	439	26	438	108	38	46	23	61	18	22
29	23	67	400	23	-	171	32	45	24	*46	17	26
30	20	44	469	26	------	282	29	23	32	25	28	31
31	19	--	265	28	------	228	-- ----	23	---- ----	22	22	-
Total	1,832	878	2,260	5,609	6,571	14,147	1,815	775	730	1,378	1,209	643
Mean	59.1	29.3	72.9	181	235	456	60.5	25.0	24.3	44.5	39.0	21.4
Cfsm	0.352	0.174	0.434	1.08	1.40	2.71	0.360	0.149	0.145	0.265	0.232	0.127
In.	0.41	0.19	0.50	1.24	1.46	3.12	0.40	0.17	0.16	0.31	0.27	0.14

Calendar year 1954: Max 1,020 Min 16 Mean 46.8 Cfsm 0.279 In. 3.79
Water year 1954-55: Max 2,240 Min 11 Mean 104 Cfsm 0.619 In. 8.37

Peak discharge (base, 1,600 cfs).--Jan. 6 (11 a.m.) 2,040 cfs (6.82 ft); Mar. 4 (4 p.m.) 2,780 cfs (7.76 ft).
* Discharge measurement made on this day.

Eagle Creek near Findlay, Ohio

Location.--Lat 40°59'35", long 83°39'05", on line between sec. 1, T. 1 S., R. 10 E., and sec. 36, T. 1 N., R. 10 E., on right bank at downstream side of highway bridge, 3¼ miles south of Findlay, Hancock County, and 4½ miles upstream from mouth.

Drainage area.--46.5 sq mi.

Records available.--January 1947 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 780.02 ft above mean sea level (State Highway Department benchmark). Prior to Jan. 1, 1949, wire-weight gage at same site and datum.

Average discharge.--8 years, 45.4 cfs.

Extremes.--Maximum discharge during year, 1,870 cfs Mar. 4 (gage height, 12.35 ft); no flow for many days.
1947-55: Maximum discharge, 2,920 cfs June 7, 1947 (gage height, 13.38 ft); no flow for many days.

Remarks.--Records good except those for periods of ice effect and those below 1 cfs, which are fair.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 10-14)

2.35	0	3.1	9.9	7.0	245
2.4	.1	3.5	23	9.0	508
2.5	.6	4.0	41	10.0	705
2.6	1.4	5.0	90	11.0	1,020
2.8	3.8	6.0	156	12.0	1,570

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	3.7	11	60	6	320	63	6.5	3.5	0.4	0	
2	.1	3.8	*9.9	102	6	130	41	5.9	2.1	.1	.3	
3	.9	3.7	8.9	66	5.0	69	28	5.3	1.3	.1	.1	
4	1.2	4.6	8.5	53	4.3	*1,240	19	5.0	.8	0	0	
5	17	11	7.1	209	5.2	351	16	4.6	.7	0	0	
6	26	15	5.5	862	5.7	142	*15	4.0	.5	0	0	
7	8.0	11	4.8	207	5.9	74	12	3.8	1.3	.2	.2	
8	3.8	8.2	4.6	96	5.5	45	9.9	3.8	8.7	2.2	13	
9	2.4	6.5	5.3	66	*10	45	8.2	3.3	8.7	1.0	10	
10	17	5.5	5.5	48	91	47	7.5	4.1	5.7	3.8	4.5	
11	33	4.6	4.6	37	155	556	8.0	4.6	3.5	8.9	2.2	
12	96	4.5	4.3	*30	45	220	9.9	3.5	2.4	4.3	.9	
13	*105	4.1	4.1	27	25	83	9.7	3.2	1.6	1.6	.5	
14	53	4.1	4.5	19	20	48	8.7	2.9	1.4	.8	.8	
15	245	3.8	5.2	16	18	39	8.9	2.3	1.0	.7	.6	
16	102	3.8	5.2	13	23	55	11	2.2	.8	.7	.6	(*)
17	74	3.7	5.0	12	100	51	8.2	1.8	.5	6.4	.4	
18	44	3.5	5.9	11	82	35	6.7	1.6	.2	5.9	.1	
19	28	4.0	6.5	9	76	26	36	1.6	.2	2.5	0	(*)
20	19	4.1	5.7	8	110	21	43	1.6	.1	1.1	0	
21	14	4.1	5.0	8	544	247	54	1.3	0	.5	0	
22	11	3.4	4.5	7	245	530	30	1.1	0	*.1	0	
23	8.2	3.4	4.8	7	180	129	18	1.2	0	.1	0	
24	6.7	4.6	5.5	6	111	69	17	1.6	0	.2	0	
25	5.9	5.5	5.3	6	79	44	24	1.8	0	.1	*0	
26	5.3	8.0	6.1	6	69	37	19	*1.2	0	0	0	
27	5.2	11	6.9	5	196	24	13	1.3	0	0	0	
28	4.8	22	141	5	146	23	9.9	1.6	0	0	0	
29	5.0	24	155	5	-	46	8.5	6.1	0	0	0	
30	4.8	15	180	5	------	108	7.3	10	.1	0	0	
31	4.1	--	93	5	------	102	--------	5.9	-- ----	0	0	- - -
Total	950.9	214.2	729.2	2,016	2,368.6	4,956	570.4	104.7	45.1	41.7	34.2	0
Mean	30.7	7.14	23.5	65.0	84.6	160	19.0	3.38	1.50	1.35	1.10	0
Cfsm	0.660	0.154	0.505	1.40	1.82	3.44	0.409	0.073	0.032	0.029	0.024	0
In.	0.76	0.17	0.58	1.61	1.90	3.97	0.46	0.08	0.04	0.03	0.03	0

Calendar year 1954: Max 440 Min 0 Mean 17.2 Cfsm 0.370 In. 5.03
Water year 1954-55: Max 1,240 Min 0 Mean 33.0 Cfsm 0.710 In. 9.63

Peak discharge (base, 800 cfs).--Jan. 6 (10 a.m.) 1,110 cfs (11.25 ft); Feb. 21 (11 a.m.) 840 cfs (10.52 ft); Mar. 4 (3:30 p.m.) 1,870 cfs (12.35 ft); Mar. 11 (4:30 p.m.) 1,020 cfs (10.98 ft); Mar. 22 (9:30 a.m.) 810 cfs (10.38 ft).

* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Jan. 14 to Feb. 2, Feb. 9, 12, 13.

Blanchard River near Findlay, Ohio

Location.--Lat 41°03'21", long 83°41'17", on east line sec. 10, T. 1 N., R. 10 E., on left bank on upstream side of highway bridge, 2 miles west of Findlay, Hancock County, and 3 miles downstream from Eagle Creek.
Drainage area.--343 sq mi.
Records available.--November 1923 to December 1935, October 1940 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 754.55 ft above mean sea level. Prior to July 24, 1930, chain gage at same site and datum.
Average discharge.--26 years (1924-35, 1940-55), 233 cfs.
Extremes.--Maximum discharge during year, 5,100 cfs Mar. 4 (gage height, 11.46 ft); minimum, 3.5 cfs Sept. 21, 22; minimum gage height, 0.94 ft Oct. 2.
1923-35, 1940-55: Maximum discharge 11,800 cfs (revised) Dec. 1, 1927 (gage height 15.4 ft, from graph based on gage readings); minimum, 0.4 cfs Aug. 26, 27, Sept. 3, 1934.
Flood in March 1913 reached a stage of 18.5 ft (discharge, 22,000 cfs, from rating curve extended above 9,500 cfs).
Revisions.--Figures of maximum discharge for the water years 1928 and 1930 have been revised to 11,800 cfs Dec. 1, 1927 (gage height, 15.4 ft, from graph based on gage readings) and 8,580 cfs Jan. 15, 1930 (gage height, 14.0 ft, from graph based on gage readings), superseding those published in WSP 1054.
Remarks.--Records good except those for periods of ice effect or those below 10 cfs, which are fair.
Revisions (water years).--WSP 974: 1942. WSP 1054: 1927-30, 1933(M), 1945. Revised figures of discharge, in cubic feet per second, for the water year 1926, superseding those published in WSP 624, are given herewith. Mean, cubic feet per second per square mile, and runoff in inches for April 1952 were erroneously computed and published in WSP 1237; corrected monthly and yearly figures are given herewith:

Oct. 12, 1925..... 16
May 16-25, 1926..... †85

† Average for period indicated.

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1925.....	-	327	8	48.5	0.141	0.16
Calendar year 1925....	-	2,180	4	129	.376	5.12
May 1926.....	-	174	40	86.7	.253	.29
Water year 1925-26....	-	3,890	6	292	.851	11.56
Calendar year 1926....	-	3,890	6	326	.950	12.90
April 1952.....	20,438	2,180	121	681	1.99	2.22
Water year 1951-52....	-	6,040	3.0	333	.971	13.20
Calendar year 1952....	-	6,040	3.1	301	.878	11.95

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.0	33	66	387	36	1,380	498	70	35	19	9.1	8.1
2	6.6	33	*61	462	39	1,260	333	67	28	25	9.1	8.1
3	22	35	55	449	35	788	234	64	24	16	9.7	8.6
4	11	42	59	329	30	*3,400	170	61	25	13	11	9.7
5	36	63	56	703	30	4,030	108	59	27	13	11	8.6
6	70	82	42	2,970	34	2,140	*89	58	30	12	13	9.1
7	56	74	39	2,220	39	840	86	52	23	29	26	8.6
8	32	63	34	1,120	38	466	63	51	22	40	10	8.1
9	18	52	42	542	*47	358	48	47	26	55	34	8.1
10	54	44	44	362	224	337	52	58	29	34	54	9.1
11	135	39	35	268	511	2,060	54	39	23	14	26	13
12	331	36	33	*192	b370	2,570	64	34	22	14	12	5.9
13	*524	34	33	150	b250	1,160	80	32	23	11	12	5.5
14	313	33	34	114	181	552	80	30	22	13	29	5.1
15	858	32	39	106	132	379	77	24	23	18	12	5.1
16	516	30	41	80	118	362	75	27	22	13	12	*5.1
17	379	30	39	89	279	400	72	20	20	12	8.6	4.8
18	254	30	42	70	440	317	61	16	17	19	8.6	4.2
19	168	35	45	74	511	225	149	16	15	27	9.1	4.2
20	122	36	35	49	650	186	228	15	16	19	8.6	4.0
21	89	39	36	49	1,940	781	286	15	17	14	7.4	3.7
22	75	41	30	55	2,100	2,220	192	14	16	*11	9.1	3.7
23	59	38	33	40	1,780	1,980	137	17	15	9.7	7.7	11
24	48	42	38	40	945	1,020	152	18	16	10	6.8	7.4
25	42	61	38	40	610	493	234	19	15	12	*7.0	4.4
26	48	84	38	40	493	353	183	*16	16	12	7.0	4.8
27	47	87	47	b35	910	206	135	17	19	12	6.6	8.1
28	42	128	468	b35	1,080	189	108	29	19	11	5.9	7.4
29	42	139	788	b35	-	313	91	49	19	11	6.2	5.1
30	39	98	945	b30	------	630	79	67	40	9.7	12	6.6
31	34	----	630	b35	------	690	----	33	----	9.1	8.6	----
Total	4,477.6	1,613	3,965	11,170	13,852	32,085	4,218	1,134	664	535.5	408.9	205.2
Mean	144	53.8	128	360	495	1,035	141	36.6	22.1	17.3	13.2	6.84
Cfsm	0.420	0.157	0.373	1.05	1.44	3.02	0.411	0.107	0.064	0.050	0.038	0.020
In.	0.48	0.18	0.43	1.21	1.50	3.48	0.46	0.12	0.07	0.06	0.04	0.02

Calendar year 1954: Max 2,270 Min 3.5 Mean 98.2 Cfsm 0.286 In. 3.90
Water year 1954-55: Max 4,030 Min 3.7 Mean 204 Cfsm 0.595 In. 8.05

Peak discharge (base, 2,400 cfs).--Jan. 6 (6 p.m.) 3,250 cfs (9.34 ft); Mar. 4 (12 p.m.) 5,100 cfs (11.46 ft); Mar. 12 (1 a.m.) 3,310 cfs (9.42 ft); Mar. 22 (3 p.m.) 2,520 cfs (7.92 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

Auglaize River near Defiance, Ohio

Location.--Lat 41°14'15", long 84°24'02", in NE¼ sec. 9, T. 3 N., R. 4 E., on right bank 125 ft downstream from dam and powerplant of Toledo Edison Co., a quarter of a mile upstream from Jackson ditch, and 3 miles south of Defiance, Defiance County.
Drainage area.--2,329 sq mi.
Records available.--May to August 1903 (gage heights only), April 1915 to December 1935, October 1940 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 660.00 ft above mean sea level, adjustment of 1912. May 20 to Aug. 8, 1903, staff gage at site 1½ miles downstream at different datum. Apr. 13, 1915, to Dec. 6, 1933, staff gage near right bank on upstream side of dam at datum 6.00 ft higher. Auxiliary tailwater staff gage near right bank on downstream side of dam at present datum.
Average discharge.--35 years (1915-35, 1940-55), 1,684 cfs.
Extremes.--Maximum discharge during year, 27,000 cfs Mar. 6 (gage height, 19.27 ft); minimum daily, 37 cfs June 23.
1915-35, 1940-55: Maximum discharge, 52,500 cfs Feb. 16, 1950 (gage height, 26.4 ft, from graph based on hourly powerplant tailwater gage readings); minimum daily, 0.5 cfs Oct. 13, 14, 1952 (during repairs to powerplant dam).
Flood in March 1913 reached a stage of 38.8 ft, from reading on powerplant tailwater gage at present datum (discharge, 120,000 cfs, from rating curve extended above 51,000 cfs).
Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by powerplant above station (capacity of reservoir, 9,800 acre-ft). Some diversions by Miami & Erie Canal from Lake St. Marys into Jennings Creek, tributary to Auglaize River above station.
Revisions (water years).--WSP 759: Drainage area. WSP 954: 1941.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 6				Mar. 7 to Sept. 30			
4.7	37	7.0	1,520	4.8	37	5.2	140
4.9	74	9.0	4,080	4.9	52	5.5	284
5.2	158	12.0	9,060	5.0	73	6.0	605
5.5	290	15.0	15,800	Note.--Same as preceding table above 6.0 ft.			
6.0	605	19.0	26,200				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46	415	3,070	6,450	302	12,500	3,860	59	42	40	386	50
2	46	*56	2,310	5,950	246	14,200	3,420	434	45	40	150	52
3	46	564	1,300	5,310	182	*11,000	2,610	579	45	44	326	52
4	701	52	726	4,380	a280	15,000	1,580	762	270	47	147	53
5	1,740	338	452	4,380	a70	*22,300	965	351	41	45	335	53
6	3,490	51	736	10,800	364	25,700	1,050	449	156	381	44	55
7	4,380	51	58	16,100	338	17,600	824	48	309	52	50	57
8	3,930	1,210	335	15,500	246	9,420	722	48	*226	47	784	57
9	3,140	396	*1,210	9,780	501	5,790	596	533	677	44	790	55
10	3,280	353	460	6,110	532	3,560	326	1,050	63	44	172	50
11	3,490	627	68	4,230	1,010	5,920	823	61	354	146	290	50
12	4,230	44	415	3,070	a2,000	13,300	804	82	274	1,100	345	48
13	8,520	42	68	2,190	a1,800	12,100	*528	59	417	242	45	48
14	9,600	543	361	1,580	a1,500	8,880	45	59	55	362	45	48
15	13,300	42	230	626	a1,300	5,630	1,420	132	218	1,590	342	47
16	13,500	42	490	236	a1,200	3,780	602	52	50	2,250	364	45
17	10,800	368	480	706	a1,100	3,350	642	494	50	2,180	329	45
18	7,300	42	513	771	a2,100	3,000	1,020	582	170	862	52	44
19	4,830	920	66	*779	2,810	1,850	1,910	516	637	1,090	52	44
20	3,350	1,410	320	416	3,070	1,630	2,430	364	48	484	52	45
21	2,310	1,450	378	446	3,930	2,430	2,130	47	44	52	52	*45
22	1,580	849	362	448	9,060	5,310	1,720	45	38	250	278	47
23	381	666	460	779	9,060	9,420	1,280	292	37	52	52	45
24	54	1,160	325	408	7,130	8,340	2,790	52	41	52	52	42
25	588	426	288	478	5,950	5,950	6,960	274	44	52	52	44
26	466	1,790	414	536	4,530	3,930	6,110	218	45	52	55	44
27	374	1,440	1,510	305	5,310	2,680	4,380	307	47	50	55	44
28	538	3,000	3,420	60	8,700	1,250	3,000	44	53	*543	117	44
29	384	3,350	7,640	140	-	1,460	1,750	44	53	48	136	44
30	348	3,420	9,060	62	------	2,940	900	162	42	347	148	44
31	51	-----	7,980	356	-------	3,490	-------	326	-------	52	48	----- --
Total	106,793	25,117	45,505	103,382	74,621	243,710	57,197	8,525	4,591	12,640	6,145	1,441
Mean	3,445	837	1,468	3,335	2,665	7,862	1,907	275	153	408	198	48.0
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 13,500 Min 11 Mean 1,038 Cfsm - In. -
Water year 1954-55: Max 25,700 Min 37 Mean 1,889 Cfsm - In. -

Peak discharge (base, 13,000 cfs).--Oct. 16 (10 a.m.) 13,700 cfs (14.20 ft); Jan. 7 (12 p.m.) 16,600 cfs (15.32 ft); Mar. 2 (3 p.m.) 16,600 cfs (15.33 ft); Mar. 6 (5 a.m.) 27,000 cfs (19.27 ft); Mar. 12 (9 p.m.) 14,200 cfs (14.35 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of Toledo Edison powerplant records.

Miami & Erie Canal near Defiance, Ohio

Location.--Lat 41°17'30", long 84°16'50", in NW¼ sec. 22, T. 4 N., R. 5 E., on right bank adjacent to Independence Dam, 275 ft downstream from point of diversion from Maumee River and 4½ miles east of Defiance, Defiance County.

Records available.--November 1924 to July 1929, May to December 1935, October 1952 to September 1955. Published as "near Florida" May to December 1935.

Gage.--Water-stage recorder. Datum of gage is 656.12 ft above mean sea level. Prior to July 23, 1929, water-stage recorder at same site at datum 2.69 ft higher. May to December 1935 staff gage at site 5½ miles downstream at different datum. Oct. 1, 1952, to Mar. 25, 1953, staff gage at present site and datum.

Extremes.--1924-29, 1935, 1952-55: Maximum daily discharge, 301 cfs Dec. 9, 1927; no flow at times.

Remarks.--Records good. Flow is diverted from Maumee River into canal at headgates 275 ft upstream and returned to river above station at Waterville.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	*11	9.6	17	6.9	30	5.1	5.3	70	66	72	69
2	24	8.2	7.9	21	6.9	13	4.6	4.9	68	66	71	70
3	23	6.9	7.5	14	6.6	*13	4.9	4.6	68	66	72	69
4	21	6.9	6.9	13	11	30	4.6	29	70	68	71	69
5	27	7.2	7.5	18	24	16	3.7	65	68	68	71	68
6	34	7.2	6.9	37	24	10	2.4	68	66	72	72	66
7	36	6.9	6.3	21	20	8.3	2.7	68	70	71	71	66
8	35	7.2	*6.3	17	15	7.9	2.4	67	*71	72	77	66
9	32	7.9	5.6	13	14	6.2	2.2	69	74	70	83	66
10	36	7.9	5.3	12	12	6.0	2.6	74	72	70	79	66
11	36	7.2	5.1	11	7.9	11	3.4	70	74	70	76	67
12	36	7.5	5.1	10	6.3	8.3	4.2	68	73	75	75	66
13	39	6.9	5.1	7.9	6.7	6.9	*3.9	68	73	70	72	66
14	44	6.3	4.8	7.9	6.7	6.3	3.5	69	72	68	70	65
15	49	6.9	4.6	6.3	6.3	6.2	3.2	68	72	74	70	65
16	41	6.9	4.3	6.9	8.5	7.3	3.7	68	71	85	70	65
17	37	6.9	4.6	6.6	9.2	6.2	4.0	70	70	96	70	65
18	35	7.2	4.3	*6.6	7.9	4.9	3.9	70	69	86	69	64
19	32	7.9	4.6	6.3	7.5	5.1	4.4	70	72	84	68	64
20	30	8.9	4.6	6.3	10	5.3	4.6	70	68	80	67	64
21	28	9.2	4.6	6.3	18	8.7	5.9	67	66	73	66	*64
22	26	8.5	4.6	5.9	11	7.7	9.2	66	66	72	70	64
23	25	8.5	4.6	5.9	8.7	5.1	9.9	67	67	70	70	65
24	24	8.5	4.8	5.9	8.7	4.6	35	68	67	71	53	64
25	23	10	4.8	5.6	7.9	5.3	25	72	67	69	49	65
26	23	11	4.6	5.9	7.9	4.1	11	72	66	69	53	67
27	22	11	7.2	6.3	28	3.5	8.1	72	66	70	72	68
28	22	11	26	6.6	17	4.2	6.7	72	67	*72	71	68
29	21	11	23	6.6	-	5.3	6.0	69	67	73	72	68
30	15	9.2	18	6.6	------	6.3	5.6	69	67	74	72	68
31	12	-- ---	15	6.9	------	6.0	------	72	--- --	72	72	- -
Total	916	247.8	236.1	327.3	324.6	268.7	196.4	1,911.8	2,077	2,262	2,166	1,987
Mean	29.5	8.26	7.62	10.6	11.6	8.67	6.55	61.7	69.2	73.0	69.9	66.2
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 97 Min 4.3 Mean 46.5 Cfsm - In. -
Water year 1954-55: Max 96 Min 2.2 Mean 35.4 Cfsm - In. -

* Discharge measurement made on this day.

Maumee River near Defiance, Ohio

Location.--Lat 41°17'30", long 84°16'50", in NW¼ sec. 22, T. 4 N., R. 5 E., on left bank 40 ft upstream from Independence Dam, 275 ft downstream from point of diversion to Miami & Erie Canal, 4 miles downstream from Auglaize River, and 4½ miles east of Defiance, Defiance County.

Drainage area.--5,530 sq mi.

Records available.--October 1924 to December 1935, March 1939 to September 1955.

Gage.--Water-stage recorder above concrete dam. Datum of gage is 659.12 ft above mean sea level. Prior to Nov. 13, 1924, staff gage at same site and datum.

Average discharge.--27 years, 4,009 cfs (not including flow in Miami & Erie Canal).

Extremes.--Maximum discharge during year, 44,000 cfs Mar. 6 (gage height, 8.13 ft); minimum, 46 cfs Sept. 21 (gage height, 1.38 ft).
1924-35, 1939-55: Maximum discharge, 87,100 cfs Feb. 16, 1950 (gage height, 13.70 ft); minimum (corrected), 2 cfs Sept. 3, 1925 (gage height, 1.14 ft).

Remarks.--Records good. Flow affected by regulation of Auglaize River at hydroelectric plant of Toledo Edison Co., 3 miles south of Defiance. Water diverted into Miami & Erie Canal, 275 ft upstream, bypasses station. These records do not include flow in canal; record of diversion published as Miami & Erie Canal near Defiance (see preceding page).

Revisions (water years).--WSP 974: 1926-27, 1930. Revised figures of discharge, in cubic feet per second, for the water years 1925, 1926, 1927, 1928, and 1946, superseding those published in WSP 604, 624, 644, 664, and 1054, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1925		1925-Con.		1926-Con.		1945		1945-Con.	
Mar. 15	46,300	May 2	445	May 1	1,700	Dec. 1	1,760	Dec. 25	2,180
16	43,200	3	478	2	1,500	2	1,530	26	3,900
Apr. 1	1,910	4	496	3	1,400	3	1,560	27	6,690
2	1,390	5	496	4	1,500	4	1,460	28	10,900
3	1,200	6	514	Oct. 1	18,000	5	1,380	29	10,600
4	1,050	7	550	2	17,000	6	1,230	30	13,400
5	912	8	496	3	16,000	7	1,230	31	18,200
6	890	9	460	4	17,000	8	994		
7	890	10	430	5	22,000	9	1,080	1946	
8	824	11	445	6	21,000	10	1,040	Jan. 1	22,800
9	824	12	445	7	19,700	11	754	2	20,200
10	824	13	400	8	15,200	12	690	3	13,800
11	1,230	14	370	9	11,200	13	668	4	11,200
12	722	15	325	10	7,790	14	606	11	10,300
22	660	16	325	11	5,580	15	547	12	9,130
23	702	17	274	12	4,490	16	646	13	7,980
24	586	18	286	13	3,480	17	646	14	7,410
25	400	19	355	30	4,300	18	586	15	5,840
26	385	20	400	31	5,000	19	646		
27	496					20	586		
28	514	1926		1928		21	528		
29	514	Apr. 28	1,760	Jan. 25	5,200	22	528		
30	496	29	1,700	26	4,800	23	488		
May 1	496	30	1,600	27	4,500	24	547		

Month	Cfs-days	Maximum	Minimum	Mean
October 1924	-	-	-	†187
March 1925	-	46,300	1,880	12,600
April	-	1,910	385	789
May	-	568	142	359
Water year 1924-25	-	46,300	3	2,370
Calendar year 1925	-	46,300	3	2,660
April 1926	-	54,700	1,580	13,700
May	-	1,700	370	868
Water year 1925-26	-	54,700	69	4,640
October 1926	-	22,000	845	7,190
Calendar year 1926	-	54,700	69	5,060
Water year 1926-27	-	51,800	82	5,330
Calendar year 1927	-	51,800	50	5,730
January 1928	-	15,200	1,820	5,890
Water year 1927-28	-	39,500	6	4,450
Calendar year 1928	-	28,700	6	3,100
December 1945	87,600	18,200	488	2,826
Calendar year 1945	1,575,254	45,000	140	4,316
January 1946	198,882	22,800	972	6,416
Water year 1945-46	1,164,353	28,200	130	3,190
Calendar year 1946	998,203	28,200	100	2,735

† Revised; supersedes figure published in WSP 974.

Maumee River near Defiance, Ohio--Continued

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.4	54	2.5	2,440
1.5	115	3.0	4,400
1.6	240	4.0	9,380
1.8	605	6.0	25,100
2.1	1,260	8.0	43,200

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	167	*1,170	8,260	15,400	832	27,800	8,260	2,200	529	182	637	108
2	136	1,010	6,460	13,800	854	*30,500	7,470	2,270	415	168	453	115
3	230	1,290	4,710	13,800	708	26,000	6,220	1,920	362	182	585	115
4	867	898	3,420	11,600	942	30,500	4,240	1,770	626	197	453	115
5	3,300	1,030	3,020	11,600	605	39,000	3,540	1,420	398	226	476	108
6	6,700	1,050	2,200	23,300	626	43,200	2,870	1,340	345	602	292	126
7	8,820	854	1,860	30,500	832	36,100	2,270	1,150	548	415	362	108
8	6,960	1,820	*1,490	30,500	748	25,100	2,040	920	*491	548	1,440	100
9	5,060	1,320	1,830	23,300	876	17,400	1,860	1,080	1,460	453	2,240	100
10	5,240	1,260	1,600	17,400	964	10,900	1,440	1,880	920	398	1,490	100
11	9,380	1,440	1,190	13,400	1,580	10,900	1,550	986	1,150	548	1,120	100
12	12,600	964	1,190	10,600	2,910	23,300	1,870	876	1,290	1,340	854	78
13	20,300	810	1,080	8,000	3,140	20,300	2,300	876	1,320	567	567	78
14	21,600	1,250	1,080	5,560	2,440	13,800	*1,720	769	1,150	517	415	78
15	28,700	769	876	4,320	2,070	9,380	3,060	666	1,170	1,570	548	73
16	29,600	708	1,150	2,010	2,100	7,210	3,460	666	986	4,620	535	73
17	25,100	964	986	2,800	2,440	6,700	3,740	964	876	6,220	380	78
18	18,600	708	1,180	*2,010	3,700	6,220	3,460	1,030	708	3,580	298	73
19	13,000	1,470	876	1,520	5,280	4,840	3,860	920	1,270	2,870	168	68
20	9,680	2,870	1,170	1,440	6,460	3,900	4,660	708	605	1,920	168	64
21	7,470	3,860	1,320	1,490	9,680	4,970	5,150	345	472	876	147	*54
22	5,690	2,910	1,080	1,440	17,800	9,380	4,150	310	434	728	314	59
23	4,280	2,690	1,190	1,720	18,200	16,600	3,380	491	380	529	180	73
24	2,510	3,060	1,100	1,340	13,400	15,000	6,140	328	310	453	147	78
25	2,510	2,690	1,010	1,080	11,300	10,900	15,800	748	258	345	240	78
26	1,920	4,110	1,060	1,320	9,980	8,260	15,400	769	211	310	453	73
27	1,720	4,580	2,150	1,030	13,400	6,700	11,300	790	226	310	275	93
28	1,690	6,120	8,260	646	21,200	4,580	8,260	646	211	*664	168	93
29	1,470	8,260	17,000	748	-	4,530	5,840	453	211	586	292	85
30	1,390	9,380	20,300	666	------	6,220	3,860	548	197	748	258	100
31	1,050	------	18,600	920	------	7,730	------	810	------	491	157	------
Total	257,740	71,315	118,698	255,260	155,067	487,920	149,170	30,649	19,529	33,163	16,112	2,644
Mean	8,314	2,377	3,829	8,234	5,538	15,740	4,972	989	651	1,070	520	88.1
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 29,600 Min 64 Mean 3,075 Cfsm - In. -
Water year 1954-55: Max 43,200 Min 54 Mean 4,376 Cfsm - In. -

Peak discharge (base, 25,000 cfs).--Oct. 16 (11 a.m.) 30,500 cfs (6.58 ft); Jan. 7 (9 p.m.) 31,400 cfs (6.74 ft); Mar. 2 (6 p.m.) 32,300 cfs (6.84 ft); Mar. 6 (9 a.m.) 44,000 cfs (8.13 ft).
* Discharge measurement made on this day.

Maumee River at Waterville, Ohio

Location.--Lat 40°30'00", long 83°42'46", on downstream side of second pier from left end of bridge on State Highway 64 at Waterville, Lucas County, 3 miles downstream from Tontogany Creek.
Drainage area.--6,314 sq mi.
Records available.--November 1898 to December 1901, August 1921 to December 1935, March 1939 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 596.33 ft above mean sea level, adjustment of 1912. Nov. 19, 1898, to Dec. 31, 1901, wire-weight gage, Aug. 26, 1921, to July 31, 1930, chain gage, Aug. 1, 1930, to Dec. 31, 1935, water-stage recorder, and Mar. 14, 1939, to Mar. 12, 1940, chain gage, all at same site and datum.
Average discharge.--30 years (1921-35, 1939-55), 4,734 cfs (includes flow in Miami & Erie Canal at Waterville 1922-29; canal was abandoned in 1929 and was filled in prior to March 1939).
Extremes.--Maximum discharge during year, 46,800 cfs Mar. 6 (gage height, 10.56 ft); minimum, 53 cfs Sept. 22 (gage height, 1.48 ft).
1921-35, 1939-55: Maximum discharge, 94,000 cfs Feb. 16, 1950 (gage height, 14.52 ft); minimum, 32 cfs Sept. 29, 1941.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated:

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
(a)	1900	Mar. 11, 1900	58,000	11.8
544	1922	Apr. 2, 1922	48,000	10.8
564	1923	Mar. 18, 1923	45,100	10.4
744	1933	May 14, 1933	45,900	10.48

a 22d Annual Report, Pt. 4.

Remarks.--Records good except those for periods of ice effect, which are fair. Low flow slightly regulated by powerplants above station. Records include flow of Miami & Erie Canal near Defiance (see p. 254), which returns to river above this station. Records of water temperatures and sediment loads for the water year 1955 are given in WSP 1400.
Revisions (water years).--WSP 759: Drainage area. WSP 894: 1930(M). WSP 1084: 1946. Revised figures of discharge, in cubic feet per second, for the water years 1922, 1923, and 1933, superseding those published in WSP 544, 564, and 744, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1922		1922-Con.		1923-Con.		1933	
Apr. 1	45,900	Apr. 17	37,100	Mar. 15	28,300	May 9	33,900
2	48,600	18	38,700	16	41,100	10	40,300
3	43,500	19	35,500	17	43,500	11	39,500
4	33,200	20	34,700	18	45,100	12	41,100
5	24,800	21	31,100	19	37,900	13	42,700
12	36,300			20	32,500	14	45,100
13	36,300	1923		May 16	35,500	15	40,300
14	31,100	Mar. 12	24,100	17	41,900	16	35,500
15	34,700	13	33,900	18	38,700		
16	37,100	14	34,700	19	28,300		

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
April 1922	48,600	2,780	23,800	-	-
Water year 1921-22	48,600	33	6,160	-	-
Calendar year 1922	48,600	42	5,140	-	-
March 1923	45,100	2,290	16,500	-	-
May	41,900	134	8,320	-	-
Water year 1922-23	45,100	50	3,750	-	-
Calendar year 1923	45,100	49	4,760	-	-
May 1933	45,100	1,200	18,400	2.91	3.36
Water year 1932-33	45,100	104	6,420	1.02	13.82
Calendar year 1933	45,100	104	5,240	.83	11.29

Maumee River at Waterville, Ohio--Continued

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 11-30)

1.3	55	3.0	2,420
1.4	80	4.0	5,550
1.6	150	6.0	13,900
1.8	285	8.0	26,900
2.1	625	11.0	50,400
2.5	1,270		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	294	920	9,550	17,400	b950	31,800	9,350	3,470	858	612	612	225
2	304	1,310	7,770	16,800	b900	35,500	8,750	2,200	573	332	737	168
3	285	889	5,550	16,200	b850	31,100	7,390	2,200	460	285	599	162
4	370	1,220	3,990	13,400	b800	32,500	5,380	1,810	472	270	709	198
5	1,280	796	3,440	12,400	b900	41,900	4,530	2,010	709	278	534	204
6	5,730	1,070	2,590	24,800	b650	45,900	3,440	1,110	460	371	653	192
7	9,150	988	2,200	*33,900	b700	40,300	2,640	1,420	508	547	534	180
8	8,750	904	1,610	33,200	b850	28,300	2,450	988	1,180	723	534	146
9	6,460	1,830	1,480	28,300	b800	*19,900	2,150	709	2,060	737	2,240	138
10	5,380	1,230	2,050	19,900	b950	13,400	1,760	1,250	1,640	534	2,500	210
11	8,350	1,270	1,380	15,000	b1,200	11,400	1,360	1,810	1,500	521	1,400	210
12	*12,900	1,310	954	11,900	b2,500	22,000	2,020	904	1,950	723	1,090	168
13	19,200	874	1,160	9,750	b4,000	24,100	2,530	812	1,740	1,390	1,060	134
14	23,400	954	920	6,270	b3,100	16,200	2,480	695	1,740	695	751	129
15	31,100	971	971	5,730	b2,500	11,700	2,930	765	1,310	981	495	136
16	32,500	751	812	3,140	2,230	9,150	4,370	737	1,310	4,140	625	92
17	29,700	681	971	2,370	2,930	7,580	3,930	508	1,060	7,960	*586	95
18	21,300	920	1,060	3,470	3,900	7,200	3,870	1,110	842	5,730	495	95
19	15,600	780	1,060	2,370	5,380	5,730	3,900	1,070	971	3,870	380	107
20	11,400	2,400	*904	1,850	6,270	4,530	5,200	858	1,060	3,380	285	107
21	8,950	3,560	1,350	1,610	11,400	5,550	5,730	667	*653	1,570	270	78
22	6,640	3,620	1,330	1,520	b15,000	10,800	5,200	449	472	904	270	*63
23	5,380	2,930	1,130	1,670	b21,000	15,600	3,710	460	342	874	352	122
24	3,200	3,080	1,110	1,810	16,800	16,800	6,090	586	352	874	*304	186
25	2,420	3,230	1,000	1,130	12,600	12,900	16,200	709	278	599	255	130
26	2,390	3,810	937	1,200	11,200	10,200	*18,600	1,040	270	472	361	95
27	1,900	5,910	1,160	1,180	14,400	7,770	13,900	1,110	262	460	495	110
28	1,610	5,380	7,590	954	24,100	5,550	10,400	971	278	380	380	162
29	1,720	8,750	17,400	560	-	5,030	7,200	889	278	786	352	130
30	1,400	10,200	23,400	b750	------	6,820	4,860	534	495	737	460	146
31	1,220	----	21,300	b700	------	9,350	----	723	----	937	313	----
Total	280,283	72,538	128,129	291,234	168,860	546,560	172,320	34,574	26,083	42,672	20,631	4,318
Mean	9,041	2,418	4,133	9,395	6,031	17,630	5,744	1,115	869	1,377	666	144
Cfsm	1.43	0.383	0.655	1.49	0.955	2.79	0.910	0.177	0.138	0.218	0.105	0.023
In.	1.65	0.43	0.76	1.72	0.99	3.22	1.02	0.20	0.15	0.25	0.12	0.03

Calendar year 1954: Max 32,500 Min 118 Mean 3,533 Cfsm 0.560 In. 7.60
Water year 1954-55: Max 45,900 Min 63 Mean 4,899 Cfsm 0.776 In. 10.54

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

Portage River at Woodville, Ohio

Location.--Lat 41°26'55", long 83°21'41", in sec. 28, T. 6 N., R. 13 E., on left bank at upstream side of bridge on U. S. Highway 20 in Woodville, Sandusky County.

Drainage area.--433 sq mi.

Records available.--July 1928 to December 1935, October 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 615.14 ft above mean sea level, adjustment of 1912. Prior to Mar. 24, 1933, chain gage, Apr. 7 to Oct. 8, 1933, staff gage, Oct. 9, 1933, to Dec. 31, 1935, water-stage recorder, and Oct. 17 to Nov. 29, 1939, wire-weight gage, all at same site and datum.

Average discharge.--23 years, 301 cfs.

Extremes.--Maximum discharge during year, 6,150 cfs Mar. 5 (gage height, 10.78 ft); minimum, 1.8 cfs Sept. 22 (gage height, 1.87 ft).
1928-35, 1939-55: Maximum discharge, 11,500 cfs Feb. 15, 1950 (gage height, 14.51 ft); minimum, 0.3 cfs Aug. 28, 1931; minimum gage height, 1.60 ft July 25, 26, 1934.
Flood in March 1913 reached a stage of 17 ft, from information by local residents (discharge, 17,000 cfs, from rating curve extended above 11,500 cfs).

Remarks.--Records good except those for periods of ice effect or those below 10 cfs, which are fair. Records of water temperatures and sediment loads for the water year 1955 are given in WSP 1400.

Revisions (water years).--WSP 894: 1929-30. WSP 1207: 1933. Revised figures of discharge, in cubic feet per second, for the water years 1931 and 1933, superseding those published in WSP 714 and 744, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1931		1931-Con.		1931-Con.		1932-Con.	
May 1	160	June 5	50	July 3	130	Oct. 20	12
2	130	6	100	4	90	24	9
3	100	7	500	5	70	25	20
4	75	8	1,000			26	23
5	65	28	20	1932		27	90
6	70	29	50	Oct. 6	10	28	130
7	60	30	180	7	7	29	90
8	65	July 1	160	8	5	30	50
9	70	2	150	9	4	31	35

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 1931	160	16.2	65.6	0.152	0.18
June	1,000	11.6	135	.312	.35
July	179	5.2	58.5	.135	.16
Water year 1930-31	1,710	.4	81.4	.188	2.56
Calendar year 1931	4,036	.4	116	.268	3.64
October 1932	130	3.7	22.5	.052	.06
Calendar year 1932	4,000	1.6	243	.561	7.63
Water year 1932-33	7,540	.9	432	.998	13.54

Portage River at Woodville, Ohio--Continued

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 20-29)

Oct. 1 to Jan. 7				Jan. 8 to Sept. 30			
2.1	14	4.0	405	1.7	1.1	3.5	264
2.2	22	5.0	900	1.8	2.4	4.0	428
2.5	58	7.0	2,200	2.0	9.4	5.0	900
3.0	130	10.0	5,170	2.1	15	7.0	2,200
3.5	240			2.3	34	9.0	4,030
				2.5	58	11.0	6,410
				3.0	141		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	39	262	900	*35	2,950	960	127	26	429	8.1	8.5
2	23	35	202	1,200	35	3,130	604	103	21	146	7.7	8.5
3	28	35	166	1,140	40	1,440	407	92	17	62	7.2	9.0
4	21	40	143	690	35	2,980	270	82	14	31	6.0	8.5
5	19	50	120	780	35	5,650	*198	75	14	19	5.1	8.1
6	34	112	96	3,490	35	3,360	184	71	12	24	12	7.7
7	61	122	77	*4,250	35	1,380	163	61	12	19	45	7.2
8	40	98	67	1,880	40	665	133	53	13	59	66	7.2
9	31	77	70	990	50	528	108	44	16	135	36	7.2
10	48	63	72	690	80	550	98	43	16	168	21	7.2
11	197	53	71	481	407	1,530	97	45	22	205	15	8.5
12	*369	45	57	359	715	3,810	110	52	21	101	14	7.2
13	715	43	49	304	346	1,720	131	42	20	53	12	5.1
14	790	41	46	247	236	740	123	35	16	30	15	6.8
15	2,360	40	50	198	177	514	207	29	15	25	14	6.4
16	2,200	37	54	150	172	790	336	25	14	57	18	5.5
17	1,290	35	57	130	223	930	218	21	12	69	14	5.1
18	815	35	54	110	469	510	165	19	11	49	11	5.1
19	504	34	55	95	665	373	181	18	11	40	10	4.8
20	298	34	44	85	750	270	370	18	9.0	29	9.4	3.8
21	209	43	45	80	2,500	834	586	19	7.7	23	9.0	2.4
22	158	63	40	75	2,680	2,770	439	19	6.4	17	8.1	*1.8
23	119	*63	37	65	1,850	2,120	264	19	5.1	14	6.8	7.0
24	93	58	44	60	1,260	900	505	*21	5.1	77	*5.1	8.5
25	75	68	57	55	960	564	1,780	28	5.5	95	5.1	12
26	63	274	54	50	790	400	1,050	52	6.0	*52	7.2	10
27	61	334	57	45	1,540	250	528	38	6.0	30	9.0	6.4
28	55	324	696	45	2,680	168	329	28	6.0	22	10	4.8
29	52	550	2,280	40	-	329	228	35	5.1	14	10	5.1
30	48	459	1,990	40	------	1,000	168	49	34	12	10	8.5
31	44	---	1,680	35	------	1,380	--------	35	-------	11	8.1	-
Total	10,834	3,304	8,792	18,759	18,840	44,535	10,940	1,398	398.9	2,117	434.9	203.9
Mean	349	110	284	605	673	1,437	365	45.1	13.3	68.3	14.0	6.80
Cfsm	0.806	0.254	0.656	1.40	1.55	3.32	0.843	0.104	0.031	0.158	0.032	0.016
In.	0.93	0.28	0.76	1.61	1.61	3.83	0.94	0.12	0.03	0.18	0.04	0.02

Calendar year 1954: Max 3,220 Min 4.8 Mean 193 Cfsm 0.446 In. 6.03
Water year 1954-55: Max 5,650 Min 1.8 Mean 330 Cfsm 0.762 In. 10.35

Peak discharge (base, 3,500 cfs).--Jan. 7 (10 a.m.) 4,810 cfs (9.69 ft); Mar. 2 (4 a.m.) 3,920 cfs (8.88 ft); Mar. 5 (3 p.m.) 6,150 cfs (10.78 ft); Mar. 12 (3 p.m.) 4,250 cfs (9.24 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relstion affected by ice Dec. 21, 22, Jan. 16 to Feb. 9, Feb. 20, 21.

Sandusky River near Upper Sandusky, Ohio

Location.--Lat 40°51'02", long 83°15'23", in sec. 21, T. 2 S., R. 14 E., on left bank at downstream side of highway bridge, three-quarters of a mile upstream from Rock Run and 2 miles northeast of Upper Sandusky, Wyandot County.

Drainage area.--299 sq mi.

Records available.--October 1921 to December 1935, January 1938 to September 1955. Gage-height records (fragmentary) collected at site 3 miles upstream since 1912 are contained in reports of U. S. Weather Bureau.

Gage.--Water-stage recorder. Datum of gage is 792.8 ft above mean sea level, adjustment of 1912. Prior to Sept. 14, 1924, chain gage at same site and datum.

Average discharge.--31 years, 238 cfs.

Extremes.--Maximum discharge during year, 3,630 cfs Mar. 5 (gage height, 7.38 ft); minimum, 0.6 cfs Sept. 13, 14; minimum gage height, 0.75 ft Sept. 5, 8.
1921-35, 1938-55: Maximum discharge, 8,900 cfs Dec. 15, 1927 (gage height, 10.5 ft); minimum, that of Sept. 13, 14, 1955; minimum gage height, 0.67 ft Sept. 6, 7, 1934.
Flood in June 1937 reached a stage of 14.3 ft, from high-water marks in gage well.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
544	1922	Apr. 18, 1922	4,500	8.4
564	1923	Jan. 15, 1923	3,100	6.9
584	1924	Mar. 30, 1924	4,600	8.5

Remarks.--Records good except those below 5 cfs or those for periods of ice effect, which are fair.

Revisions (water years).--WSP 874: 1927-30, 1933. Revised figures of discharge, in cubic feet per second, for the water years 1923-29, 1944, superseding those published in WSP 584, 604, 624, 644, 664, 684, and 1004, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1923		1925-Con.		1926-Con.		1928-Con.	
July 10	257	Jan. 8	b50	Jan. 13	b45	Jan. 25	b620
		9	b45	14	b40	26	925
1924		10	b40	15	b40	27	629
Feb. 8	b250	11	b40	16	b40	28	452
9	b210	12	b35	23	b220	29	370
10	b190	13	b35	24	b150	30	350
11	b160	14	b35	25	b130	31	293
12	b140	15	b30	26	b110		
13	b120	16	b30	27	b95	1929	
14	b100	17	b30	28	b85	Feb. 1	b90
15	b100	18	b30	29	b75	2	b80
16	b100	19	b30	30	b70	3	b70
17	b100	20	b30	31	b66	4	b65
18	b110	21	b30			5	b60
19	b120	22	b30	1927		6	b55
20	b130	23	b30	Jan. 26	b640	7	b55
21	b150	24	b30	27	b550	8	b50
22	b150	25	b30	28	b500	9	b55
23	b150	26	b30	29	b750	10	b55
24	b140	27	b30			11	b50
25	b120	28	b30	1928		12	b50
Dec. 22	792	29	b30	Jan. 1	b1,500	13	b45
23	742	30	b30	2	b900	14	b45
24	718	31	b30	3	b500	15	b45
25	552	Feb. 1	b30	4	b400	16	b40
26	455	2	b30	5	b300	17	b40
27	369	3	b30	6	b200	18	b40
28	251	4	b30	7	b190	19	b40
29	166	5	b35	8	b800	20	b40
30	118	6	b100	9	b1,500	21	b35
31	106	7	b800	10	b1,400	22	b35
		8	b2,380	11	b1,000	23	b35
1925				12	b850	24	b35
Jan. 1	96	1926		13	b660		
2	89	Jan. 7	b120	14	b540	1944	
3	76	8	b90	15	b480	Feb. 23	b300
4	72	9	b70	21	b600	24	b500
5	66	10	b55	22	b450		
6	b60	11	b50	23	b450		
7	b55	12	b45	24	b500		

b. Stage-discharge relation affected by ice.

Sandusky River near Upper Sandusky, Ohio--Continued

Revised figures of monthly discharge, in cubic feet per second, 1923-29, 1944

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
July 1923	-	528	12	70.4	0.235	0.27
Water year 1922-1923	-	2,850	7.5	225	.753	10.25
Calendar year 1923	-	2,850	11	294	.985	13.36
February 1924	-	1,480	-	292	.977	1.05
Water year 1923-24	-	4,240	5	323	1.08	14.70
December 1924	-	1,260	6.0	256	.856	.99
Calendar year 1924	-	4,240	5	267	.893	12.18
January 1925	-	96	30	42.1	.142	.16
February	-	3,180	30	743	2.48	2.58
Water year 1924-1925	-	3,180	3.8	167	.559	7.59
Calendar year 1925	-	3,180	3.8	204	.682	9.27
January 1926	-	-	-	183	.612	.71
Water year 1925-1926	-	3,800	6.3	290	.970	13.18
Calendar year 1926	-	4,470	6.3	336	1.12	15.29
January 1927	-	-	-	784	2.62	3.02
Water year 1926-1927	-	7,370	-	381	1.27	17.30
Calendar year 1927	-	7,370	-	389	1.30	17.64
January 1928	-	1,500	190	627	2.10	2.42
Water year 1927-1928	-	6,380	3.7	352	1.18	16.02
Calendar year 1928	-	2,310	3.7	259	.867	11.77
February 1929	-	7,260	-	528	1.77	1.84
Water year 1928-1929	-	7,260	5.3	287	.960	13.04
Calendar year 1929	-	7,260	8.4	383	1.28	17.38
February 1944	2,343	500	14	80.8	.270	.29
Water year 1943-1944	42,060.3	4,020	2.8	115	.385	5.24
Calendar year 1944	41,923.9	4,020	2.8	115	.384	5.22

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second) (Shifting-control method used Nov. 26 to Dec. 6, Dec. 29 to Jan. 5, Sept. 11-30)

Oct. 1 to Mar. 5

0.8	1.2	1.7	116
.9	3.5	2.1	220
1.0	7.2	2.5	366
1.1	14	3.0	610
1.2	24	5.0	1,880
1.4	55	8.0	4,130

Mar. 6 to Sept. 30

0.6	0.2	1.0	8.5
.7	.9	1.1	15
.8	2.0	1.2	24
.9	4.5		

Note.--Same as preceding table above 1.2 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	9.9	50	341	30	1,420	552	68	13	7.3	5.3	1.6
2	1.7	11	37	246	30	1,530	379	55	12	30	3.5	1.4
3	8.8	9.2	31	220	35	648	262	50	12	16	3.0	1.4
4	6.8	*11	24	176	30	2,090	193	46	12	9.1	2.8	1.2
5	16	17	27	*223	30	*3,390	156	40	9.8	14	2.2	1.0
6	20	17	17	1,460	30	1,460	*139	35	9.1	30	2.0	1.0
7	17	25	6.6	2,020	*25	692	125	31	8.1	11	32	1.0
8	14	27	63	780	35	415	112	34	9.8	16	35	.8
9	8.6	22	17	397	60	298	98	34	12	13	20	.8
10	20	19	15	310	250	280	88	35	14	30	26	.7
11	18	15	13	266	1,200	1,090	84	37	12	24	25	.8
12	67	13	13	208	1,560	2,720	94	31	10	17	28	.7
13	105	9.2	13	174	709	1,200	94	27	12	19	26	.6
14	230	9.2	16	144	350	516	90	27	12	22	22	.6
15	262	9.2	17	130	210	346	90	24	10	34	14	.9
16	166	7.9	17	103	*163	337	90	22	10	29	19	*.9
17	123	9.9	18	95	211	410	90	19	8.5	23	14	.9
18	101	9.9	21	80	400	298	74	22	7.3	16	10	.9
19	94	14	28	70	550	236	78	20	6.1	9.8	9.1	.9
20	70	18	28	60	870	190	132	20	6.5	7.3	7.3	.8
21	57	18	25	55	1,950	492	199	18	4.5	5.3	5.7	1.1
22	38	19	25	45	2,930	2,160	259	18	4.0	4.5	5.7	1.0
23	27	21	25	40	2,160	2,440	168	17	4.9	4.0	4.9	3.3
24	21	21	30	40	900	870	134	17	5.7	3.5	3.8	3.6
25	16	24	34	40	578	491	132	*18	6.5	*3.5	3.2	1.2
26	13	43	40	35	434	337	179	16	5.7	3.2	3.2	1.1
27	13	59	45	35	610	242	149	15	5.7	2.8	2.8	.9
28	11	52	108	35	960	208	116	18	4.5	3.2	2.2	1.1
29	11	61	495	30	-	280	94	20	4.2	5.3	2.0	2.0
30	8.6	64	810	30	-----	448	78	18	5.6	4.5	1.9	2.5
31	8.6		780	30	-----	648	-------	16	- - - -	5.7	1.7	
Total	1,574.8	665.4	2,888.6	7,918	17,300	28,182	4,528	868	257.5	423.0	343.3	36.7
Mean	50.8	22.2	93.2	255	618	909	151	28.0	8.58	13.6	11.1	1.22
Cfsm	0.170	0.074	0.312	0.853	2.07	3.04	0.505	0.094	0.029	0.045	0.037	0.0041
In.	0.20	0.08	0.36	0.98	2.16	3.50	0.56	0.11	0.03	0.05	0.04	0.005

Calendar year 1954: Max 2,790 Min 1.7 Mean 113 Cfsm 0.378 In. 5.14
Water year 1954-55: Max 3,390 Min 0.6 Mean 178 Cfsm 0.595 In. 8.08

Peak discharge (base, 2,500 cfs).--Feb. 22 (3 p.m.) 3,390 cfs (7.08 ft); Mar. 5 (6 p.m.) 3,630 cfs (7.38 ft); Mar. 12 (6 p.m.) 2,860 cfs (6.44 ft); Mar. 23 (11 a.m.) 2,720 cfs (6.20 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 21-23, Jan. 17 to Feb. 11, Feb. 14, 15, 18, 19.

Sandusky River near Mexico, Ohio

Location.--Lat 41°02'39", long 83°11'42", in sec. 13, T. 1 N., R. 14 E., on right bank at downstream side of highway bridge, 3 miles upstream from Honey Creek and 4¼ miles north of Mexico, Seneca County.

Drainage area.--776 sq mi.

Records available.--March 1923 to December 1935, July 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 733.1 ft above mean sea level, adjustment of 1912. Prior to Aug. 15, 1929, chain gage at same site and datum.

Average discharge.--29 years, 556 cfs.

Extremes.--Maximum discharge during year, 6,270 cfs Mar. 5 (gage height, 13.01 ft); minimum, 5.8 cfs Sept. 22, 23 (gage height, 1.53 ft).

1923-35, 1938-55: Maximum discharge observed, 15,200 cfs Mar. 22, 1927 (gage height, 19.9 ft); minimum, 1.8 cfs Oct. 31, 1942 (during repairs to small dam above station).

Flood in June 1937 reached a stage of 22.5 ft, from information by local residents (discharge, 19,000 cfs, from rating curve extended above 13,000 cfs).

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated:

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
664	1928	Dec. 16, 1927	11,900	17.8
684	1929	Feb. 28, 1929	14,300	19.5
699	1930	Jan. 15, 1930	14,600	19.7

Remarks.--Records good except those below 10 cfs or those for periods of ice effect, which are fair.

Revisions (water years).--WSP 714: 1929-30. WSP 874: 1927(M). Revised figures of discharge, in cubic feet per second, for the water years 1925, 1928-29, and 1931, superseding those published in WSP 604, 664, 684, and 714, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1924		1925-Con.		1928-Con.		1930-Con.	
Oct. 24	30	Jan. 17	75	Mar. 2	630	Nov. 12	27
25	30	18	75	3	595	13	30
26	30	19	70	4	525	14	32
27	30	20	70	5	490	15	33
28	30	21	70	Oct. 28	45	16	33
29	35	22	70	29	40	17	35
30	35	23	70	30	35	18	37
31	30	24	70	31	40	19	36
Nov. 1	30	25	70	Nov. 1	45	20	37
2	25	26	70	2	50	21	33
3	25	27	70	3	55	22	27
4	30	28	70	4	65	23	27
5	40	29	70			24	27
6	35	30	70	1930		25	27
7	30	31	70	Oct. 7	19	26	27
8	25	Feb. 1	70	8	19	27	30
9	25	2	75	9	19	28	33
11	20	3	80	10	21	29	31
12	20	4	90	11	46	30	41
13	20	5	100	12	77	Dec. 1	77
14	20	6	298	13	60	2	65
15	20	7	1,680	14	47	3	63
16	25	8	2,520	15	37	4	65
Dec. 23	760			16	35	5	70
24	865	1928		17	29	6	79
25	830	Jan. 1	845	18	25	7	75
26	795	2	1,040	19	22	8	72
27	795	3	1,000	20	22	9	63
28	620	4	1,040	21	23	10	58
29	550	5	845	22	24	11	56
30	352	26	845	23	25	12	56
31	324	27	885	24	25	13	54
		28	805	25	25	14	51
1925		29	700	26	25	15	47
Jan. 1	272	30	630	27	25	16	40
2	260	31	595	28	26	17	40
3	222	Feb. 1	490	29	29	18	43
4	199	2	363	30	37	19	38
5	155	3	292	31	38	20	36
6	155	4	278	Nov. 1	37	21	36
7	135	21	490	2	38	22	33
8	120	22	595	3	38	23	32
9	110	23	845	4	35	24	32
10	100	24	1,480	5	33	25	30
11	95	25	1,930	6	35	26	31
12	90	26	1,430	7	35	27	32
13	85	27	845	8	33	28	33
14	80	28	490	9	33	29	33
15	80	29	595	10	33	30	35
16	75	Mar. 1	665	11	31	31	35

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Sandusky River near Mexico, Ohio--Continued

Revised figures of monthly discharge, in cubic feet per second, 1925, 1928-29, 1931

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1924	59	23	38.7	0.050	0.06
November	51	20	32.9	.042	.05
December	3,160	19	518	.668	.77
Calendar year 1924	8,200	10	687	.885	12.06
January 1925	272	-	106	.137	.16
February	5,000	-	1,580	2.04	2.12
Water year 1924-25	5,000	6	342	.441	5.98
Calendar year 1925	5,000	6	415	.535	7.25
January 1928	2,040	456	895	1.15	1.33
February	3,880	278	1,330	1.71	1.84
March	5,770	252	1,010	1.30	1.50
Water year 1927-28	11,100	4	739	.952	12.95
October 1928	52	14	23.8	.031	.04
November	181	22	72.4	.093	.10
Calendar year 1928	5,770	4	529	.682	9.25
Water year 1928-29	13,400	9.7	688	.887	12.00
October 1930	77	19	30.2	.039	.04
November	41	27	32.8	.042	.05
December	79	30	48.7	.063	.07
Calendar year 1930	12,800	13	621	.800	10.85
Water year 1930-31	3,230	12	241	.311	4.22

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.4	2.6	3.0	252
1.5	6.2	4.0	526
1.6	12	5.0	895
1.7	19	8.0	2,450
2.0	54	13.0	6,270
2.5	142		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13	37	152	1,030	65	2,960	1,260	170	44	54	13	15
2	12	36	132	872	70	3,590	940	152	41	62	13	15
3	18	37	114	750	75	2,690	642	134	36	41	12	15
4	23	*42	103	558	70	4,480	480	120	36	41	12	15
5	44	66	92	*697	65	*6,090	*381	109	35	30	11	13
6	142	142	82	3,600	60	5,910	328	99	34	30	13	11
7	109	112	68	3,940	*60	3,840	287	92	30	60	46	11
8	60	94	59	2,890	65	1,460	260	85	31	46	87	10
9	42	82	74	1,310	120	895	230	83	33	52	69	10
10	49	68	90	810	277	730	205	83	33	50	343	11
11	99	63	71	625	1,180	2,990	187	89	40	49	1,480	12
12	222	59	59	510	1,940	4,730	201	85	45	57	642	12
13	730	56	57	422	1,820	4,250	203	79	46	41	394	11
14	510	50	57	354	1,120	2,060	201	74	39	35	240	9.5
15	770	46	57	305	695	985	198	68	39	73	181	8.4
16	770	42	65	254	558	790	187	62	35	158	116	6.8
17	510	41	65	223	660	850	183	54	33	128	87	7.8
18	354	39	63	190	872	790	175	50	29	89	69	9.5
19	254	35	66	160	1,310	591	221	52	28	66	53	*7.3
20	196	44	70	140	2,040	830	328	52	25	41	42	6.2
21	152	57	70	120	3,400	946	558	50	23	29	35	6.2
22	124	63	70	100	5,000	3,730	558	48	20	23	29	5.8
23	98	59	75	95	5,370	4,730	510	45	19	24	27	9.9
24	75	59	79	90	4,490	4,410	450	45	18	46	26	18
25	66	72	89	85	2,100	2,060	660	*46	18	*29	23	24
26	56	107	94	80	1,260	1,030	465	48	19	20	21	21
27	50	140	103	80	1,510	695	394	46	19	16	25	16
28	49	164	268	75	2,270	526	312	45	19	15	22	14
29	48	214	1,210	75	-	574	250	50	18	17	19	11
30	44	187	1,660	70	------	940	203	54	21	18	18	11
31	41	-- -	1,610	60	-------	1,310	--------	50	--- ----	15	16	- -
Total	5,730	2,313	6,924	20,570	38,522	72,462	11,457	2,319	906	1,455	4,184	353.4
Mean	185	77.1	223	664	1,376	2,337	382	74.8	30.2	46.9	135	11.8
Cfsm	0.238	0.099	0.287	0.856	1.77	3.01	0.492	0.096	0.039	0.060	0.174	0.015
In.	0.27	0.11	0.33	0.99	1.84	3.47	0.55	0.11	0.04	0.07	0.20	0.02

Calendar year 1954: Max 4,810 Min 8.4 Mean 243 Cfsm 0.313 In. 4.26
Water year 1954-55: Max 6,090 Min 5.8 Mean 458 Cfsm 0.590 In. 8.00

Peak discharge (base, 4,200 cfs).--Jan. 6 (8 p.m.) 4,330 cfs (10.66 ft); Feb. 23 (11 a.m.) 5,460 cfs (12.12 ft); Mar. 5 (4 a.m.) 6,270 cfs (13.01 ft); Mar. 11 (11 p.m.) 5,050 cfs (11.60 ft); Mar. 24 (4 a.m.) 4,730 cfs (11.25 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 20-23, Jan. 18 to Feb. 9, Feb. 21, 22.

Sandusky River near Fremont, Ohio

Location.--Lat 41°18'28", long 83°09'32", in sec. 17, T. 4 N., R. 15 E., on left bank at downstream side of highway bridge, 2.3 miles upstream from Ballville power dam, 2½ miles downstream from Wolf Creek, and 3½ miles southwest of Fremont, Sandusky County.
Drainage area.--1,248 sq mi.
Records available.--November 1898 to March 1901 (published as "at Fremont"), November 1923 to December 1935, July 1938 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 626.3 ft above mean sea level, adjustment of 1912. Nov. 18, 1898, to Mar. 10, 1901, staff gage at site 4 miles downstream at different datum. Nov. 8, 1923, to Sept. 5, 1930, chain gage at same site and datum.
Average discharge.--29 years (1923-35, 1938-55), 911 cfs.
Extremes.--Maximum discharge during year, 13,600 cfs Mar. 5 (gage height, 7.07 ft); minimum, 9.4 cfs Sept. 20, 21 (gage height, 0.84 ft).
1923-35, 1938-55: Maximum discharge, 27,300 cfs Jan. 15, 1930 (gage height, 11.1 ft); maximum gage height, 12.12 ft Dec. 30, 1951 (ice jam); minimum discharge, 5.0 cfs Sept. 27, 28, 1941 (gage height, 0.80 ft).
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in water-supply papers indicated:

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
744	1931	Apr. 4, 1931	5,400	4.02
744	1932	Jan. 18, 1932	10,200	5.56
744	1933	Mar. 14, 1933	22,600	9.73
759	1934	Mar. 5, 1934	8,700	5.13
784	1935	May 4, 1935	5,850	4.16

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures and sediment loads for the water year 1955 are given in WSP 1400.
Revisions (water years).--WSP 744: 1931-32. WSP 759: Drainage area. WSP 874: 1938. WSP 1144: 1924-30. Revised figures of discharge, in cubic feet per second, for the water years 1925, 1928-29, 1931-35, superseding those published in WSP 744, 759, 784 and 1144, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1924		1928-Con.		1930-Con.		1931-Con.		1933-Con.	
Dec. 24	b1,300	Jan. 4	b1,600	Oct. 22	32	Dec. 25	3,430	Jan. 2	8,400
25	b1,300	5	b1,400	23	24			3	7,050
26	b1,200	6	b1,100	24	24	1932		4	2,800
27	b1,100	8	b1,100	25	28	Jan. 2	3,430	Feb. 9	b460
28	b1,000	9	b1,300	26	32	3	5,400	10	b2,800
29	b800	10	b1,800	27	28	4	4,500	11	b1,900
30	b600	11	b2,500	28	30	5	2,940	12	b1,500
31	b500	12	3,060	29	28	6	3,410	13	b1,000
		13	1,840	30	32	7	4,350	14	b700
1925		14	1,770	31	39	8	3,320	15	b500
Jan. 1	b450	15	1,620	Nov. 3	37	16	5,700	16	b400
2	b400	22	2,890	4	42	17	7,800	17	b350
3	b370	23	1,180	5	44	18	9,600	18	b300
5	b290	24	995	6	37	19	7,200	Apr. 12	2,960
6	b250	25	1,120	7	37	20	5,250	13	3,630
7	b230	26	b1,200	8	44	21	2,990	14	2,560
8	b210	27	b1,400	10	28	22	3,630	17	4,650
9	b180	28	b1,300	11	30	23	5,850	18	5,550
10	b160	29	b1,200	13	32	24	6,150	19	5,850
11	b150			14	30	25	4,800	20	4,650
12	b145	1929		16	32	26	2,800	21	3,240
13	b140	Aug. 9	d110	17	32	27	2,990	May 9	4,200
14	b135			18	34	28	4,200	10	7,200
15	b135	1930		21	39	29	3,460	11	6,150
16	b130	Oct. 1	66	22	37	30	3,290	12	6,750
17	b130	3	47	23	37	31	3,460	13	6,000
18	b130	4	59	29	b45	Feb. 1	2,500	14	9,600
19	b130	5	37	30	b50	11	2,400	15	6,300
20	b130	6	30			12	5,400	16	6,300
21	b130	7	24	1931		13	4,600	17	4,200
22	b130	8	24	Apr. 3	3,280	14	2,610		
23	b130	9	26	4	5,250	Mar. 23	5,700	1934	
24	b130	10	24	5	4,650	24	5,700	Mar. 4	7,200
25	b130	11	24	6	3,130	25	4,200	5	7,500
26	b130	12	30	24	2,400	26	2,800	6	4,060
27	b130	13	50	27	3,490	Apr. 1	4,350	28	2,500
28	b130	14	78	28	3,490	2	3,550	29	3,410
29	b130	15	59	Dec. 12	2,800	27	2,530	30	2,770
31	b130	16	39	13	3,770	Dec. 25	5,850		
		17	42	14	3,910	26	4,650	1935	
1928		18	39	15	4,210	27	2,880	May 3	3,630
Jan. 1	b1,400	19	39	16	3,240	31	8,700	4	5,400
2	b1,700	20	32	23	4,060	1933		5	2,560
3	b1,700	21	32	24	4,500	Jan. 1	9,900	7	2,850

b Stage-discharge relation affected by ice.
d Doubtful gage-height record; discharge estimated on basis of records for other stations.

Revised figures of monthly discharge, in cubic feet per second, 1925, 1928-29, 1931-35

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
December 1924	6,500	-	918	0.736	0.85
Calendar year 1924	13,400	21	1,108	.888	12.08
January 1925	450	130	182	.146	.17
Water year 1924-25	9,530	15	566	.454	6.18
Calendar year 1925	9,530	15	682	.546	7.43
January 1928	5,140	995	1,635	1.31	1.51
Water year 1927-28	13,800	23	1,184	.949	12.91
Calendar year 1928	10,800	22	910	.729	9.93

Sandusky River near Fremont, Ohio--Continued

Revised figures of monthly discharge, in cubic feet per second, 1925, 1928-29, 1931-35--Continued

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
August 1929	-	363	37	128	.103	.12
Water year 1928-29	-	17,200	22	1,102	.883	12.02
Calendar year 1929	-	17,200	27	1,460	1.17	15.92
October 1930	-	78	24	36.5	.029	.03
November	-	50	28	35.9	.029	.03
Calendar year 1930	-	25,400	19	1,136	.910	12.37
April 1931	-	5,250	173	1,460	1.17	1.30
Water year 1930-31	-	5,250	24	342	.274	3.69
December 1931	-	4,500	352	1,640	1.31	1.51
Calendar year 1931	-	5,250	26	531	.425	5.74
January 1932	-	9,600	632	3,750	3.00	3.46
February	-	5,400	317	1,250	1.00	1.08
March	-	5,700	178	1,100	.881	1.02
April	-	4,350	317	1,130	.905	1.01
Water year 1931-32	-	9,600	16	861	.690	9.39
December 1932	-	8,700	140	1,140	.913	1.05
Calendar year 1932	-	9,600	16	818	.655	8.92
January 1933	-	9,900	280	1,680	1.35	1.56
February	-	2,800	270	830	.665	.69
April	-	5,850	345	1,910	1.53	1.71
May	-	9,600	247	2,490	2.00	2.31
Water year 1932-33	-	18,100	17	1,100	.881	11.96
Calendar year 1933	-	18,100	17	969	.776	10.55
March 1934	-	7,500	37	1,373	1.10	1.27
Water year 1933-34	-	7,500	11	275	.220	3.00
Calendar year 1934	-	7,500	11	257	.206	2.80
May 1935	29,965	5,400	90	967	.775	.89
Water year 1934-35	116,931	5,400	11	320	.256	3.48
Calendar year 1935	130,864	5,400	11	359	.298	3.89

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	7.0	1.1	64	2.1	790	5.0	7,420
.9	15	1.4	201	2.5	1,390	7.0	13,200
1.0	34	1.7	401	3.0	2,370		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	64	254	2,020	110	4,250	2,290	357	80	95	24	23
2	32	64	219	1,460	120	5,150	1,800	300	68	76	23	19
3	28	61	191	1,430	130	4,000	1,250	267	58	84	23	15
4	24	*61	165	1,020	120	8,260	881	242	55	61	17	15
5	43	72	140	1,050	120	*11,400	686	219	52	55	13	15
6	80	117	135	7,060	110	8,540	574	196	49	68	14	15
7	154	196	117	7,420	110	6,200	492	175	46	72	88	*15
8	131	159	100	4,760	120	2,770	434	165	61	122	126	15
9	84	131	91	2,660	200	1,700	386	149	61	180	112	13
10	95	112	84	1,630	450	1,340	349	159	58	140	111	13
11	144	95	99	1,190	1,500	4,430	327	159	64	103	1,660	14
12	242	87	95	934	3,500	9,380	349	154	76	84	996	14
13	752	84	*87	778	3,000	6,480	349	144	80	76	635	14
14	978	80	80	645	2,000	3,880	349	135	76	68	409	14
15	1,100	76	80	556	1,400	2,040	401	135	68	58	294	13
16	1,480	68	72	501	1,000	1,780	386	117	61	87	201	13
17	1,010	76	76	467	1,200	1,520	342	108	55	191	140	13
18	732	61	87	350	1,500	1,370	342	95	49	144	108	11
19	501	58	91	290	2,500	1,060	364	91	43	103	87	11
20	357	58	100	250	3,700	829	882	91	43	84	68	10
21	273	64	110	220	7,000	1,610	1,530	87	40	61	55	10
22	207	87	110	190	8,500	6,340	1,250	84	37	46	49	11
23	175	95	110	170	7,980	7,150	992	80	32	37	43	13
24	140	87	110	*160	6,480	5,940	1,050	*80	28	195	37	14
25	108	99	120	150	3,510	*3,630	2,160	84	26	149	32	21
26	95	170	130	150	2,120	2,000	1,390	84	26	*80	30	32
27	84	207	140	140	2,370	1,270	964	72	26	49	28	32
28	76	260	264	140	3,630	943	710	72	26	37	24	30
29	72	334	1,810	130	-	992	538	95	26	30	28	28
30	68	320	2,720	120	------	1,630	426	91	34	28	28	26
31	64	--	2,920	110	------	2,330	--------	95	-- -- -	26	24	-
Total	9,348	3,503	10,907	38,151	64,480	120,220	24,243	4,382	1,504	2,689	5,527	502
Mean	302	117	352	1,231	2,303	3,878	808	141	50.1	86.7	178	16.7
Cfsm	0.242	0.094	0.282	0.986	1.85	3.11	0.647	0.113	0.040	0.069	0.143	0.013
In.	0.28	0.10	0.33	1.14	1.93	3.58	0.72	0.13	0.04	0.08	0.16	0.01

Calendar year 1954: Max 9,660 Min 10 Mean 423 Cfsm 0.339 In. 4.60
Water year 1954-55: Max 11,400 Min 10 Mean 782 Cfsm 0.627 In. 8.50

Peak discharge (base, 7,000 cfs).--Jan. 6 (9 p.m.) 9,380 cfs (5.72 ft); Feb. 22 or 23 (time unknown) about 9,000 cfs; Mar. 5 (3 a.m.) 13,600 cfs (7.07 ft); Mar. 12 (4 a.m.) 10,800 cfs (6.24 ft); Mar. 22 (10 p.m.) 8,540 cfs (5.36 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8, 20-26, Jan. 18 to Feb. 22.

Huron River at Milan, Ohio

Location.--Lat 41°18'00", long 82°36'30", in SE¼ sec. 4, T. 5 N., R. 22 W., on right bank 45 ft downstream from bridge on U. S. Highway 250, a quarter of a mile northwest of Milan, Erie County, and 2 miles downstream from confluence of East and West Branches.

Drainage area.--363 sq mi.

Records available.--March 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 573.43 ft above mean sea level, adjustment of 1912. Prior to July 29, 1953, wire-weight gage at site 45 ft upstream at same datum.

Average discharge.--5 years, 272 cfs.

Extremes.--Maximum discharge during year, 6,260 cfs Mar. 4 (gage height, 16.13 ft); minimum, 2.2 cfs Sept. 10, 15, 19, 20, 21 (gage height, 5.26 ft).
1950-55: Maximum discharge, 13,200 cfs Mar. 11, 1952 (gage height, 19.8 ft, from graph based on gage readings); minimum, that of Sept. 10, 15, 19, 20, 21, 1955.

Remarks.--Records good except those for periods of ice effect, which are fair. Records of water temperatures for the water year 1955 are given in WSP 1400.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

5.2	0.8	6.5	154
5.3	3.2	7.0	268
5.4	7.4	8.0	540
5.6	19	10.0	1,420
5.8	37	13.0	3,250
6.1	77	16.0	6,130

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	22	44	275	35	1,470	558	100	29	190	11	6.6
2	13	22	41	246	*40	811	378	86	25	92	9.6	6.1
3	8.5	22	36	*214	35	408	273	74	22	37	7.9	6.1
4	7.4	24	36	167	35	*5,010	*210	66	21	22	6.6	5.3
5	24	*26	33	488	35	2,910	176	68	19	17	6.1	4.9
6	47	26	36	3,550	35	985	154	54	18	15	7.4	5.3
7	37	26	28	1,450	40	575	133	49	19	28	64	4.9
8	31	26	25	490	40	365	115	49	31	*91	106	4.5
9	22	23	33	340	60	328	98	47	31	117	45	3.6
10	44	23	31	287	200	352	89	52	30	298	29	3.0
11	52	22	25	237	600	3,190	89	49	36	118	22	4.5
12	92	22	29	191	350	2,800	119	47	29	45	24	3.8
13	258	21	27	169	200	710	119	42	28	26	22	4.5
14	290	20	28	139	160	430	111	37	26	19	58	4.5
15	200	20	29	110	*130	340	125	34	24	25	61	3.6
16	198	20	30	95	130	750	125	31	21	42	42	3.6
17	167	21	33	85	170	490	109	28	19	52	28	4.5
18	129	28	41	80	220	328	91	26	16	49	22	3.6
19	89	29	35	70	350	261	125	*26	14	25	*17	3.0
20	68	28	28	65	600	214	637	30	13	15	15	3.2
21	56	26	30	60	1,500	1,140	630	27	13	11	11	3.0
22	45	27	30	55	2,400	3,680	328	27	12	8.5	11	*3.2
23	38	29	30	50	1,290	1,310	205	34	10	8.7	11	6.4
24	33	32	30	45	558	558	273	228	8.5	296	10	10
25	29	36	34	40	390	378	490	129	7.9	161	8.5	9.3
26	26	36	40	40	328	316	430	77	7.9	61	7.9	14
27	24	44	45	40	637	235	328	53	9.0	30	7.9	11
28	23	49	97	40	770	212	223	45	8.5	22	7.0	10
29	22	50	365	35	-	328	163	44	7.9	17	7.9	8.5
30	22	48	1,050	35	------	750	125	38	22	15	8.5	8.5
31	22	-- ---	505	35	------	895	--------	33	------ -	13	7.0	.
Total	2,148.9	848	2,902	9,223	11,338	32,529	7,029	1,730	577.7	1,966.2	701.3	172.8
Mean	69.3	28.3	93.6	298	405	1,049	234	55.8	19.3	63.4	22.6	5.76
Cfsm	0.191	0.078	0.258	0.821	1.12	2.89	0.645	0.154	0.053	0.175	0.062	0.016
In.	0.22	0.09	0.30	0.95	1.17	3.33	0.72	0.18	0.06	0.20	0.07	0.02

Calendar year 1954: Max 5,440 Min 5.7 Mean 209 Cfsm 0.576 In. 7.82
Water year 1954-55: Max 5,010 Min 3.0 Mean 195 Cfsm 0.537 In. 7.31

Peak discharge (base, 3,000 cfs).--Jan. 6 (11:30 a.m.) 4,210 cfs (14.20 ft); Mar. 4 (1:30 p.m.) 6,260 cfs (16.13 ft); Mar. 11 (7:30 p.m.) 5,520 cfs (15.52 ft); Mar. 22 (11 a.m.) 4,480 cfs (14.47 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 21-24, Jan. 15 to Feb. 22.

Vermilion River near Vermilion, Ohio

Location.--Lat 41°22'55", long 82°19'00", T. 6 N., R. 19 W., on right bank 40 ft downstream from bridge on North Ridge Road, 3½ miles southeast of Vermilion, Erie County, and 4½ miles upstream from mouth.

Drainage area.--260 sq mi.

Records available.--March 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 592.58 ft above mean sea level (Lorain County benchmark). Prior to Aug. 3, 1953, wire-weight gage at site 40 ft upstream at same datum.

Average discharge.--5 years, 230 cfs.

Extremes.--Maximum discharge during year, 3,950 cfs Mar. 12 (gage height, 8.16 ft); maximum gage height, 9.44 ft Feb. 21 (ice jam); no flow for part of Sept. 21.
1950-55: Maximum discharge, 9,820 cfs Jan. 26, 1952 (gage height, 11.5 ft, from graph based on gage readings); no flow for many days.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 30				Dec. 31 to Sept. 30			
2.9	1.2	4.5	238	2.75	0.1	3.7	77
3.0	5.0	5.0	417	2.80	.3	4.1	146
3.2	17	5.5	720	2.85	.9	4.5	246
3.5	43	6.0	1,200	2.90	2.2	5.0	410
3.8	82	7.0	2,350	3.0	6.5	5.5	690
4.1	136			3.1	12	6.0	1,110
				3.4	38	8.0	3,670

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	16	53	338	20	1,000	510	73	14	21	5.1	0.8
2	5.0	15	51	221	*20	840	329	59	12	9.9	3.3	.5
3	4.2	14	42	*173	20	456	226	51	10	7.6	2.6	.5
4	37	14	39	161	20	*2,780	*161	43	9.9	5.5	1.4	.4
5	48	*14	36	373	20	3,180	124	38	8.8	4.1	.9	.3
6	30	13	30	2,200	25	992	105	34	7.6	3.3	1.4	.3
7	12	12	30	2,140	25	516	90	30	7.1	8.3	13	.2
8	56	12	25	588	30	326	78	30	11	*41	13	.1
9	31	13	25	311	40	281	70	27	10	55	76	.1
10	30	14	25	243	250	290	60	27	8.8	42	92	.1
11	30	15	25	202	2,000	1,390	55	28	15	42	34	.2
12	52	14	25	161	1,600	3,530	55	26	17	36	14	.2
13	99	13	24	136	1,350	914	54	25	105	20	29	.1
14	404	12	24	113	1,200	412	60	22	41	13	149	.1
15	226	12	26	100	1,150	290	122	19	21	9.9	56	.1
16	432	11	27	90	1,050	443	121	17	14	8.8	36	.1
17	856	11	31	80	1,000	394	124	15	10	9.4	24	.1
18	272	11	44	70	1,100	275	89	14	8.2	7.1	21	.1
19	158	16	45	60	1,300	195	203	*13	6.5	5.5	*14	.1
20	112	24	45	50	1,900	159	426	14	5.1	4.1	9.9	.1
21	79	25	45	45	2,600	620	495	12	4.6	3.3	7.6	.1
22	59	24	45	45	2,780	3,040	329	12	3.7	2.2	5.1	*.1
23	47	33	45	40	1,940	2,260	197	14	3.3	1.7	4.1	.1
24	38	33	45	35	675	676	208	218	4.1	27	3.0	.8
25	33	36	45	35	410	382	258	94	3.0	46	2.2	1.2
26	30	37	50	30	314	290	370	55	1.9	32	*1.9	1.2
27	24	53	50	30	503	221	275	36	1.7	20	1.7	1.4
28	21	57	134	25	725	173	185	27	1.4	14	1.4	1.7
29	20	53	514	25	-	229	126	24	1.2	9.4	1.4	1.7
30	19	52	1,350	25	-------	528	94	19	5.6	6.5	1.4	1.2
31	18	--- ---	989	20	-------	760	-------	16	-------	5.5	1.2	- ---
Total	3,292.2	679	3,964	8,165	24,067	27,842	5,599	1,132	372.5	521.1	626.6	14.0
Mean	106	22.6	128	263	860	898	187	36.5	12.4	16.8	20.2	0.47
Cfsm	0.408	0.087	0.492	1.01	3.31	3.45	0.719	0.140	0.048	0.065	0.078	0.0018
In.	0.47	0.10	0.57	1.16	3.45	3.98	0.80	0.16	0.05	0.07	0.09	0.002

Calendar year 1954: Max 3,950 Min 0.3 Mean 173 Cfsm 0.665 In. 9.03
Water year 1954-55: Max 3,530 Min 0.1 Mean 209 Cfsm 0.804 In. 10.90

Peak discharge (base, 3,200 cfs).--Feb. 21 (time and discharge unknown); Mar. 5 (3 a.m.) 3,810 cfs (8.09 ft); Mar. 12 (2 p.m.) 3,950 cfs (8.16 ft); Mar. 22 (1 p.m.) 3,390 cfs (7.79 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 6-12, 19-26, Jan. 15 to Feb. 21.

Black River at Elyria, Ohio

Location.--Lat 41°22'50", long 82°06'15", in T. 6 N., R. 17 W., on left bank in Cascade Park at Elyria, Lorain County, three-quarters of a mile downstream from confluence of East and West Branches.

Drainage area.--392 sq mi.

Records available.--May 1903 to July 1906 (published as "near Elyria"), October 1944 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 621.6 ft above mean sea level (city of Elyria benchmark). May 20, 1903, to July 21, 1906, staff or chain gage at site 5½ miles downstream at different datum.

Average discharge.--11 years (1944-55), 310 cfs.

Extremes.--Maximum discharge during year, 6,240 cfs Mar. 23 (gage height, 12.02 ft); minimum, 3.0 cfs Oct. 2, Sept. 25, 26; minimum gage height, 0.67 ft Sept. 25, 26.
1944-55: Maximum discharge, 12,300 cfs Jan. 27, 1952 (gage height, 16.39 ft); minimum, 0.3 cfs Oct. 13, 1952.

Remarks.--Records fair. Some regulation at low flow for industrial use.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-5, 7, 8, 12-24, Dec. 24-26, Dec. 28 to Jan. 12, Feb. 10-20, Feb. 23 to May 13)

0.6	2.7	2.0	150
.7	5.7	3.0	367
.8	9.9	4.0	680
1.0	22	6.0	1,640
1.3	50	9.0	3,770
1.6	89	11.0	5,540

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	27	66	422	28	1,640	760	164	30	41	9.1	7.0
2	3.9	26	66	280	28	1,350	422	139	24	33	9.9	6.5
3	6.7	24	68	232	26	577	274	120	21	24	9.5	5.7
4	65	28	56	226	26	*4,000	199	104	19	21	9.1	5.7
5	98	*27	46	506	26	4,340	155	95	16	21	9.1	5.1
6	27	27	41	2,770	28	1,620	134	83	15	22	10	6.1
7	54	27	34	2,350	33	645	121	75	20	17	22	7.4
8	82	28	29	768	37	408	114	66	27	46	81	7.8
9	39	29	28	367	75	341	108	60	20	87	82	7.4
10	42	26	30	316	448	466	106	67	19	47	98	5.7
11	33	24	28	280	*1,940	1,970	99	54	25	*72	770	8.6
12	131	23	24	226	1,460	3,610	100	43	39	50	313	6.5
13	316	21	26	b190	594	1,410	108	37	318	30	150	7.4
14	216	21	29	b170	408	451	121	31	326	21	437	6.5
15	651	21	44	b150	260	302	243	25	129	20	500	6.5
16	2,630	24	62	b130	236	451	251	*24	70	19	178	7.0
17	1,760	23	54	b110	245	466	220	24	42	15	86	6.1
18	645	31	b50	b95	297	341	178	22	28	14	50	4.5
19	512	22	b45	b80	394	236	322	23	19	15	34	4.8
20	309	25	b45	b70	1,110	230	1,040	21	17	19	24	6.5
21	153	26	b45	b60	b2,400	891	948	19	17	15	17	7.0
22	110	27	b45	b55	b3,600	4,720	611	17	15	13	17	7.0
23	96	24	46	b50	3,370	4,790	328	28	35	9.5	15	*12
24	74	28	146	b45	1,190	1,360	380	403	24	26	13	7.9
25	52	32	189	b40	560	496	662	530	47	22	12	3.9
26	44	49	98	b40	408	341	1,130	222	65	41	*12	3.9
27	37	48	70	b35	855	260	700	116	33	28	9.9	5.4
28	32	47	245	b35	1,200	*211	422	72	24	19	9.1	6.5
29	31	79	*560	b30	-	316	271	61	19	15	9.5	6.1
30	29	130	1,300	30	-------	997	207	58	43	12	11	6.5
31	28	-------	880	*28	-------	1,300	-------	41	-------	8.2	8.2	-------
Total	8,311.8	994	4,495	10,186	21,282	40,536	10,734	2,844	1,546	842.7	3,015.4	195 0
Mean	268	33.1	145	329	760	1,308	358	91.7	51.5	27.2	97.3	6.50
Cfsm	0.684	0.084	0.370	0.839	1.94	3.34	0.913	0.234	0.131	0.069	0.249	0.017
In.	0.79	0.09	0.43	0.97	2.02	3.85	1.02	0.27	0.15	0.08	0.29	0.02

Calendar year 1954: Max 4,970 Min 3.9 Mean 240 Cfsm 0.612 In. 8.32
Water year 1954-55: Max 4,790 Min 3.9 Mean 288 Cfsm 0.735 In. 9.98

Peak discharge (base, 3,200 cfs).--Jan. 6 (2:30 p.m.) 3,210 cfs (8.92 ft); Feb. 23 (1 a.m.) 4,090 cfs (10.00 ft); Mar. 4 (4:30 p.m.) 4,970 cfs (10.92 ft); Mar. 12 (11 a.m.) 3,930 cfs (9.93 ft); Mar. 23 (4 a.m.) 6,240 cfs (12.02 ft).

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

Rocky River near Berea, Ohio

Location.--Lat 41°24'22", long 81°53'13", in T. 6 N., R. 15 W., on right bank at downstream side of highway bridge just downstream from confluence of East and West Branches, 3 miles northwest of Berea, Cuyahoga County.

Drainage area.--269 sq mi.

Records available.--November 1923 to September 1935, September 1943 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 649.9 ft above mean sea level, datum of 1929 (Cuyahoga County benchmark). Prior to Aug. 31, 1929, chain gage and Aug. 31, 1929, to Sept. 30, 1935, staff gage, at same site and datum.

Average discharge.--24 years, 251 cfs.

Extremes.--Maximum discharge during year, 9,660 cfs Oct. 16 (gage height, 8.24 ft); minimum, 1.4 cfs Sept. 22; minimum gage height, 1.07 ft Sept. 5, 6, 10.
1923-35, 1943-55: Maximum discharge observed, 17,000 cfs Aug. 7, 1935 (gage height, 10.50 ft), from rating curve extended above 8,000 cfs; maximum gage height observed, 18.6 ft June 29, 1924 (backwater caused by tornado); minimum discharge, 0.2 cfs Sept. 2, 1932, Aug. 18, 19, 22, 27, 28, 30, 31, 1933.
Maximum stage known, 20.9 ft in March 1913.

Remarks.--Records good except those for periods of ice effect, which are fair. Some regulation by small reservoirs on East Branch at low flow.

Revisions (water years).--WSP 1054: 1935(M).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 13-30)

Oct. 1-16				Oct. 17 to Sept. 30			
1.1	10	2.5	502	1.0	1.5	2.0	185
1.2	20	3.0	950	1.1	5.0	2.5	425
1.4	52	4.0	2,210	1.2	10	3.0	750
1.7	122	6.0	5,530	1.4	31	4.0	1,810
2.1	270	8.0	9,260	1.6	67	6.0	5,270

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	44	113	300	45	1,260	680	119	47	119	7.2	4.6
2	18	44	99	275	45	652	381	97	41	134	7.8	4.3
3	14	41	97	252	*45	374	248	81	34	65	6.1	4.3
4	120	*44	86	238	45	3,980	178	67	31	55	5.6	3.6
5	152	63	81	572	45	1,680	141	57	26	69	5.0	3.2
6	131	74	67	3,270	50	610	122	47	23	36	6.1	3.2
7	60	65	57	1,040	50	398	105	42	25	27	27	3.2
8	30	53	51	360	65	248	91	45	47	49	10	3.2
9	18	45	51	248	130	302	84	53	53	82	16	3.2
10	30	39	57	261	600	515	72	45	55	51	15	2.9
11	64	34	59	217	1,750	2,450	67	41	65	*29	18	4.6
12	219	31	55	164	572	1,330	61	39	57	18	36	3.6
13	706	29	63	138	270	398	57	36	929	13	48	4.3
14	242	27	91	125	171	234	84	31	511	6.6	178	4.3
15	3,390	27	185	119	131	182	386	29	217	8.8	144	4.3
16	*8,470	26	225	102	125	409	340	*26	128	7.8	61	4.6
17	1,690	25	174	91	168	371	238	21	79	7.2	34	4.3
18	552	25	160	80	182	209	270	19	55	12	21	3.6
19	902	25	150	75	217	157	287	17	39	17	15	3.2
20	440	29	140	70	844	128	2,270	17	31	7.8	12	2.6
21	238	27	128	60	2,510	816	1,130	18	25	7.8	9.4	2.6
22	157	30	125	55	3,100	4,160	497	19	19	6.6	14	1.5
23	116	30	116	55	1,140	1,570	266	46	16	5.6	10	*4.2
24	86	36	234	50	461	578	347	1,490	16	40	8.3	7.5
25	72	63	270	45	330	340	1,520	660	19	36	6.6	3.6
26	61	84	185	45	256	270	2,040	300	26	34	*6.1	2.6
27	51	77	134	45	519	234	744	174	17	21	6.6	2.2
28	47	79	246	40	708	*225	355	131	13	17	6.6	3.2
29	45	131	*806	40	-	369	217	125	11	10	6.6	4.6
30	47	144	1,570	40	------	806	157	94	28	8.8	6.1	3.6
31	44	---	599	40	-------	1,150	-------	69	-------	8.3	4.6	---
Total	18,241	1,491	6,474	8,512	14,574	26,405	13,435	4,055	2,683	1,009.3	757.7	110.7
Mean	588	49.7	209	275	520	852	448	131	89.4	32.6	24.4	3.69
Cfsm	2.19	0.185	0.777	1.02	1.93	3.17	1.67	0.487	0.332	0.121	0.091	0.014
In.	2.52	0.21	0.90	1.18	2.01	3.66	1.86	0.56	0.37	0.14	0.10	0.02

Calendar year 1954: Max 8,470 Min 1.7 Mean 272 Cfsm 1.01 In. 13.75
Water year 1954-55: Max 8,470 Min 1.5 Mean 268 Cfsm 0.996 In. 13.53

Peak discharge (base, 4,000 cfs).--Oct. 16 (10 a.m.) 9,660 cfs (8.24 ft); Mar. 4 (11 a.m.) 4,890 cfs (5.81 ft); Mar. 22 (2 p.m.) 5,270 cfs (6.04 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 18-20, Jan. 18 to Feb. 10.

Cuyahoga River at Hiram Rapids, Ohio

Location.--Lat 41°20'27", long 81°10'01", in T. 5 N., R. 7 W., on left bank at downstream side of highway bridge at Hiram Rapids, Portage County, 0.6 mile downstream from Black Brook.
Drainage area.--147 sq mi.
Records available.--August 1927 to December 1935, October 1944 to September 1955. Published as "near Hiram" 1927-35.
Gage.--Water-stage recorder. Datum of gage is 1,087.46 ft above mean sea level, unadjusted. Prior to Aug. 26, 1927, staff gage and Aug. 26, 1927, to Dec. 31, 1935, water-stage recorder, at site 2½ miles downstream at different datum. Oct. 20, 1944, to Oct. 22, 1946, wire-weight gage at present site and datum.
Average discharge.--19 years, 187 cfs (unadjusted).
Extremes.--Maximum discharge during year, 1,980 cfs Oct. 17 (gage height, 6.35 ft); minimum, 18 cfs Aug. 5, 6 (gage height, 1.11 ft).
1927-35, 1944-55: Maximum discharge, 2,760 cfs Mar. 23, 1948 (gage height, 7.00 ft); minimum, 5.1 cfs Sept. 2, 1933.
Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by East Branch Reservoir (usable capacity, 4,140 acre-ft).
Revisions (water years).--WSP 1054: 1945.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-26, July 14 to Sept. 30)

0.9	17	2.0	117
1.0	20	2.5	251
1.2	29	3.0	437
1.4	42	4.0	925
1.7	70	6.0	2,100

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	121	271	870	73	898	365	416	89	39	21	45
2	54	123	302	765	71	1,010	369	302	78	54	19	46
3	56	*125	292	612	b70	952	342	222	66	68	19	46
4	75	130	258	505	b70	1,120	296	167	57	76	19	45
5	86	140	225	433	b70	1,120	248	132	51	76	18	46
6	106	155	192	551	b70	1,040	207	108	48	73	19	46
7	119	165	165	642	b75	842	173	89	48	*68	20	46
8	119	170	148	715	89	642	145	79	80	60	31	45
9	108	165	128	642	99	510	128	*73	99	56	43	45
10	96	155	123	514	136	450	112	68	117	52	46	45
11	91	143	123	392	b200	505	101	64	132	47	41	50
12	103	130	123	310	b280	612	93	61	134	41	34	54
13	152	117	128	251	b330	690	88	58	143	38	31	56
14	176	106	130	198	421	612	117	56	148	34	37	55
15	284	93	*140	173	380	488	207	53	145	32	48	55
16	1,230	78	150	b150	342	429	296	51	143	30	51	56
17	*1,980	68	165	140	288	376	396	48	134	28	47	56
18	1,740	63	225	130	248	346	429	46	121	28	38	56
19	1,260	61	278	119	222	302	392	44	104	*27	31	55
20	898	62	302	b110	213	254	361	44	88	26	27	56
21	666	66	310	b100	365	*271	320	42	73	23	22	55
22	483	69	b280	96	612	471	302	42	61	24	*22	56
23	373	71	261	94	898	690	296	47	52	23	25	57
24	285	75	251	91	1,120	925	302	83	44	26	28	63
25	232	88	241	*89	1,010	815	365	128	40	27	30	67
26	192	103	225	b85	815	617	666	155	37	27	33	68
27	167	125	229	b80	740	492	1,010	160	35	27	37	66
28	150	155	268	b80	740	384	1,010	155	33	26	41	*66
29	136	189	388	b75	-	331	790	140	32	25	42	66
30	130	225	690	b75	--------	327	574	123	32	23	43	66
31	123	--------	898	b75	--------	346	--------	106	--------	22	45	--------
Total	11,719	3,536	7,909	9,162	10,047	18,867	10,500	3,362	2,464	1,226	1,008	1,635
Mean	378	118	255	296	359	609	350	108	82.1	39.5	32.5	54.5
(†)	+20.7	+14.3	+27.4	-3.1	+2.2	-1.4	-0.3	-0.3	+2.1	-2.5	-8.2	-43.6
Adjusted for change in contents in East Branch Reservoir												
Mean	399	132	282	293	361	608	350	108	84.2	37.0	24.3	10.9
Cfsm	2.71	0.898	1.92	1.99	2.46	4.14	2.38	0.735	0.573	0.252	0.165	0.074
In.	3.12	1.00	2.21	2.29	2.56	4.77	2.66	0.85	0.64	0.29	0.19	0.08

	Observed				Adjusted			
Calendar year 1954:	Max 1,980	Min 18	Mean 217		Mean 223	Cfsm 1.52	In. 20.59	
Water year 1954-55:	Max 1,980	Min 18	Mean 223		Mean 224	Cfsm 1.52	In. 20.66	

* Discharge measurement made on this day.
† Change in contents in East Branch Reservoir, equivalent in cubic feet per second.
b Stage-discharge relation affected by ice.

Little Cuyahoga River at Mogadore, Ohio

Location.--Lat 41°03'45", long 81°23'40", in T. 1 N., R. 10 W., on left bank at upstream side of bridge on State Highway 532, three-quarters of a mile upstream from Fritch Lake Outlet and 0.8 mile north of Mogadore, Summit County.

Drainage area.--12.3 sq mi.

Records available.--February 1946 to September 1955.

Gage.--Water-stage recorder and concrete control.

Average discharge.--9 years, 12.7 cfs.

Extremes.--Maximum discharge during year, 132 cfs Mar. 11 (gage height, 2.87 ft); minimum, 0.2 cfs Nov. 20; minimum gage height, 0.24 ft Nov. 18, 19.
1946-55: Maximum discharge, 143 cfs June 7, 1947 (gage height, 3.15 ft); minimum, that of Nov. 20, 1954; minimum gage height, that of Nov. 18, 19, 1954.

Remarks.--Records fair. Flow regulated by Mogadore Reservoir.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.2	1.0	15
.3	.7	1.2	25
.4	1.4	1.3	34
.5	2.5	1.5	67
.6	4.1	1.9	93
.8	8.8		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	1.0	0.3	0.4	3.1	29	30	20	5.1	4.7	0.9	1.2
2	1.6	.9	.3	.5	3.1	27	28	18	4.5	3.9	1.2	1.0
3	1.8	.9	.3	.5	3.1	27	27	13	4.1	4.3	1.2	.9
4	4.4	.9	.3	.6	3.1	53	26	12	3.9	4.3	1.4	.9
5	3.4	.9	.3	.5	3.1	32	24	11	3.9	3.9	1.5	.9
6	2.4	.8	.3	1.1	3.1	38	22	9.9	3.9	3.9	1.5	.8
7	1.7	.9	.3	1.2	3.6	32	21	10	4.5	3.6	1.2	.7
8	1.5	.8	.4	1.1	4.3	27	20	11	6.7	4.1	.9	.7
9	1.5	.8	.4	1.1	4.5	38	19	10	6.4	5.8	.7	.5
10	1.8	.7	.4	1.1	6.7	36	18	10	6.4	3.6	1.0	.5
11	1.9	*.7	.4	1.2	9.6	90	16	*9.6	6.7	3.6	.9	.5
12	2.4	.8	.4	1.3	10	60	17	8.8	5.3	*2.5	.7	.5
13	2.4	.8	*.4	1.6	9.9	55	18	8.0	7.0	*2.5	.8	.5
14	2.4	.8	.4	1.7	9.9	*50	20	5.5	6.4	2.4	.7	.5
15	27	.7	.4	1.8	9.9	45	21	4.9	6.4	2.1	.7	.6
16	25	.7	.4	1.8	10	45	21	4.5	6.4	2.4	1.0	.8
17	3.9	.7	.4	1.9	10	41	21	4.5	6.4	2.5	.8	.9
18	3.0	.4	.5	1.9	10	40	20	4.1	6.7	3.1	.9	1.2
19	2.4	.3	.5	2.0	10	35	21	4.3	7.0	2.6	1.2	1.5
20	1.5	.3	.5	2.0	10	30	23	4.5	6.7	2.0	1.8	1.6
21	1.1	.3	.5	2.1	12	46	24	4.1	6.2	1.6	1.8	1.2
22	1.1	.3	.5	2.4	18	66	23	4.7	4.7	1.4	1.6	.9
23	1.1	.3	.5	2.5	19	48	23	6.4	3.9	1.6	*1.6	.7
24	1.2	.3	.5	2.4	18	45	27	5.3	3.6	2.4	1.0	.7
25	1.1	.3	.5	*2.5	18	43	27	4.5	3.8	2.1	.7	.8
26	1.2	.3	.5	2.6	18	40	28	4.9	3.6	1.9	.8	.7
27	1.2	.3	.5	2.8	20	37	23	4.9	3.4	1.9	1.0	.7
28	1.2	.3	.6	3.0	19	37	24	5.1	3.2	2.0	1.2	1.2
29	1.1	.3	.6	3.1	-	34	23	5.5	3.1	1.8	1.4	1.3
30	1.1	.3	.4	3.1	------	33	21	5.5	3.4	1.4	1.3	1.4
31	1.1	-- ---	.4	3.1	------	32	-------	5.5	-------	1.2	1.3	------
Total	106.1	17.8	13.1	54.9	279.0	1,291	676	240.0	153.3	87.1	34.7	26.3
Mean	3.42	0.59	0.42	1.77	9.96	41.6	22.5	7.74	5.11	2.81	1.12	0.88
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 2.7 Min 0.3 Mean 5.38 Cfsm - In. -
Water year 1954-55: Max 90 Min 0.3 Mean 8.16 Cfsm - In. -

* Discharge measurement made on this day.

Little Cuyahoga River at Massillon Road, Akron, Ohio

Location.--Lat 41°03'35", long 81°27'45", in T. 1 N., R. 10 W., on left bank 50 ft downstream from bridge on Massillon Road in Akron, Summit County, and 250 ft upstream from Springfield Lake Outlet.

Drainage area.--31.0 sq mi.

Records available.--February 1946 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,005.20 ft above mean sea level (city of Akron benchmark).

Average discharge.--9 years, 29.0 cfs.

Extremes.--Maximum discharge during year, 641 cfs Mar. 11 (gage height, 3.21 ft); minimum, 2.9 cfs May 10 (gage height, 0.22 ft).
1946-55: Maximum discharge, that of Mar. 11, 1955; minimum, that of May 10, 1955.

Remarks.--Records good. Flow regulated by Fritch Lake and Mogadore Reservoir.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

0.3	4.5	1.1	50
.5	10	1.4	102
.7	19	1.7	188
.9	31	2.1	312

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	9.0	8.1	13	10	120	53	39	14	21	6.3	6.3
2	11	9.3	8.1	16	10	60	50	36	13	12	6.6	6.0
3	13	9.0	7.8	13	9.3	50	48	29	12	13	7.2	5.7
4	57	9.3	7.5	16	9.3	151	45	27	12	12	7.2	5.7
5	37	9.0	7.5	22	9.6	73	43	24	11	11	7.5	5.7
6	23	8.4	6.6	64	18	58	40	23	11	11	9.0	5.4
7	16	7.5	6.3	26	19	54	37	37	12	11	12	5.4
8	13	7.5	6.3	17	16	46	35	40	29	13	7.5	5.2
9	12	7.5	6.9	16	23	54	34	26	18	13	6.3	4.9
10	13	7.2	7.2	16	44	58	32	22	16	11	6.4	9.5
11	13	*7.2	6.9	15	48	301	30	*23	19	9.6	9.0	9.8
12	23	7.2	6.6	13	26	107	29	21	21	*8.7	6.3	6.6
13	23	7.2	6.9	13	23	81	33	19	52	8.1	13	5.7
14	23	8.1	*7.5	13	21	72	58	16	24	7.8	16	5.7
15	152	7.8	9.0	13	21	*67	58	15	19	8.1	9.0	5.7
16	185	7.8	7.8	12	23	77	45	13	16	9.3	6.9	5.7
17	34	7.8	7.8	11	26	65	43	13	16	19	6.3	5.7
18	24	7.5	16	11	24	61	38	12	15	15	5.7	5.4
19	19	6.6	12	11	30	55	61	12	15	9.6	5.7	6.3
20	14	7.5	9.0	10	42	51	83	12	14	8.4	6.3	6.3
21	12	7.8	8.1	11	54	105	62	12	14	7.8	6.3	6.0
22	11	7.2	7.5	11	84	182	53	13	13	7.2	8.8	5.7
23	9.6	7.5	8.1	11	49	91	49	19	12	13	*6.6	10
24	9.0	9.0	11	11	39	77	68	37	11	25	6.0	9.8
25	8.7	8.4	9.3	*11	35	67	85	19	11	10	5.2	7.2
26	8.7	7.5	8.1	10	34	65	91	17	11	8.4	5.2	6.6
27	8.7	7.8	9.0	10	43	61	58	16	11	9.0	5.2	9.6
28	9.6	8.7	19	10	42	62	53	17	11	9.0	6.6	11
29	10	12	25	10	-	67	49	18	10	7.8	6.9	7.8
30	9.6	8.7	32	10	-------	64	45	16	14	7.5	7.2	7.5
31	9.3	---	16	9.6	-------	58	-------	15	-------	6.6	6.6	-----
Total	822.2	243.0	314.9	455.6	832.2	2,560	1,508	658	477	342.9	230.8	203.9
Mean	26.5	8.10	10.2	14.7	29.7	82.6	50.3	21.2	15.9	11.1	7.45	6.80
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 185 Min 5.4 Mean 16.6 Cfsm - In. -
Water year 1954-55: Max 301 Min 4.9 Mean 23.7 Cfsm - In. -

* Discharge measurement made on this day.

Springfield Lake Outlet at Akron, Ohio

Location.--Lat 41°03'20", long 81°27'50", in T. 1 N., R. 10 W., on right bank in Akron, Summit County, 0.3 mile upstream from mouth and 3 miles downstream from Springfield Lake.

Drainage area.--8.40 sq mi.

Records available.--May 1946 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,015.34 ft above mean sea level (city of Akron benchmark).

Average discharge.--9 years, 6.67 cfs.

Extremes.--Maximum discharge during year, 172 cfs Mar. 11 (gage height, 2.53 ft); no flow Oct. 1, 2.
1946-55: Maximum discharge, 172 cfs Jan. 27, 1952, and Mar. 11, 1955 (gage height, 2.53 ft); maximum gage height, 2.72 ft Feb. 14, 1948 (backwater from ice); no flow at times 1953-54.

Remarks.--Records poor. Flow regulated by Springfield Lake.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 9-15, Apr. 13, 14, June 21-23, July 17-20, Aug. 19; stage-discharge relation affected by ice Feb. 3, 4, 12)

Oct. 1 to Mar. 11				Mar. 12 to Sept. 30			
0.2	0	1.4	10	0.6	0.7	1.5	13
.4	.2	1.6	19	.7	1.0	1.7	24
.6	.6	1.8	33	.9	1.9	1.9	43
.8	1.5	2.0	58	1.1	3.2	2.1	76
1.0	2.9	2.2	96	1.3	6.4		
1.2	5.2						

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	1.0	1.7	6.8	0.4	32	11	7.7	2.4	5.8	2.2	1.8
2	0	1.2	1.9	7.0	.6	19	9.9	6.7	2.1	2.7	2.1	1.8
3	.2	1.1	1.6	6.3	.5	15	8.9	6.2	1.9	3.7	2.1	1.7
4	15	1.2	1.4	6.8	.3	42	8.3	5.4	1.8	2.8	2.4	1.6
5	8.6	1.3	1.2	8.3	.2	25	8.0	4.8	1.6	2.0	3.1	1.6
6	3.2	1.2	.9	20	6.8	18	7.2	4.1	1.6	1.7	3.6	1.6
7	.7	1.0	.8	13	9.2	14	6.2	7.4	1.7	1.5	6.6	1.6
8	.3	.9	.8	8.9	14	14	5.6	7.3	5.0	2.2	3.3	1.5
9	.2	.9	.9	8.6	16	14	5.4	5.0	2.6	2.6	2.3	1.5
10	.4	.8	1.0	10	16	13	5.2	4.5	2.0	1.5	2.4	3.1
11	.3	*.9	1.0	9.2	11	81	4.7	*4.2	3.2	1.2	3.3	3.1
12	2.7	.8	.9	8.6	9	33	5.0	3.8	5.5	*.9	2.3	1.6
13	2.5	.8	1.0	8.6	a8	21	5.2	3.5	22	.8	4.6	1.5
14	3.6	.8	*1.3	8.0	a7	18	14	3.2	11	.8	4.0	1.5
15	38	.8	1.8	6.5	a6	*16	22	2.7	7.7	.8	2.5	1.5
16	60	.8	1.7	5.9	a6	23	16	2.6	5.6	1.7	2.3	1.5
17	17	.8	1.6	4.1	a5	19	13	2.4	4.5	2.1	2.3	1.5
18	9.9	.7	4.8	3.7	a5	16	11	2.3	3.8	1.6	2.1	1.4
19	7.0	.7	4.2	3.8	a10	14	24	2.2	3.2	1.2	2.1	1.4
20	5.0	1.0	2.5	3.2	26	13	31	2.0	2.9	1.0	2.1	1.3
21	4.1	1.0	2.0	2.7	21	31	20	1.9	2.5	.9	2.0	1.4
22	3.4	.9	1.7	3.3	26	62	15	2.0	2.4	.7	2.8	1.4
23	2.6	1.1	1.8	2.9	*17	30	12	4.4	2.2	.9	*3.5	3.1
24	2.2	1.5	2.9	2.5	12	21	19	11	1.6	2.4	3.1	2.4
25	2.0	1.4	2.3	*2.3	10	18	24	5.6	1.4	.8	3.1	1.7
26	1.8	1.3	2.1	2.2	9.2	17	28	5.0	1.2	.7	2.6	1.6
27	1.7	1.2	2.1	1.7	11	15	19	4.1	1.2	1.3	1.8	2.8
28	1.5	1.4	5.5	.9	11	16	14	4.2	1.0	1.3	1.8	2.4
29	1.4	2.9	9.2	.6	-	16	11	4.5	.9	.7	1.8	1.8
30	1.3	2.0	13	.3	------	15	9.2	3.5	2.1	1.5	2.0	1.7
31	1.2	--	8.6	.2	-------	12	-------	2.9	------	2.1	1.8	--
Total	197.8	33.4	84.2	176.9	274.2	713	392.8	137.1	108.6	51.9	84.0	54.4
Mean	6.38	1.11	2.72	5.71	9.79	23.0	13.1	4.42	3.62	1.67	2.71	1.81
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 60 Min 0 Mean 3.29 Cfsm - In. -
Water year 1954-55: Max 81 Min 0 Mean 6.32 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Little Cuyahoga River at Massillon Rd., Akron.

Cuyahoga River at Old Portage, Ohio

Location.--Lat 41°08'04", long 81°32'49", on right bank 230 ft upstream from highway bridge at Old Portage, Summit County, 1¼ miles downstream from Little Cuyahoga River, and 4 miles northwest of Akron.

Drainage area.--405 sq mi.

Records available.--September 1921 to December 1935, March 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 740.11 ft above mean sea level, unadjusted. Prior to Dec. 21, 1923, chain gage at same site and datum.

Average discharge.--30 years, 411 cfs.

Extremes.--Maximum discharge during year, 2,940 cfs Mar. 11 (gage height, 8.35 ft); minimum, 33 cfs Nov. 19-24, Dec. 11-13 (gage height, 0.33 ft).
1921-35, 1939-55: Maximum discharge, 4,540 cfs Jan. 26, 1952; maximum gage height, 10.8 ft June 28, 1924; minimum discharge, 14 cfs Aug. 27, 1944; minimum gage height, 0.33 ft Nov. 19-24, Dec. 11-13, 1954.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by powerplants above station. Flow regulated by reservoirs and lakes above station. At Lake Rockwell, about 16 miles above gage, an average of 62 cfs was diverted for municipal supply of city of Akron. Sewage from city enters river below station.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-11, Aug. 8 to Sept. 30)

0.4	41	2.0	400
.7	91	5.0	1,410
1.1	172	8.0	2,700
1.5	268		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	58	238	298	1,060	168	1,520	750	868	207	421	82	56
2	48	212	325	1,150	137	1,560	718	686	179	313	86	54
3	89	201	358	1,040	129	1,560	670	561	144	290	91	52
4	458	221	345	902	131	2,450	591	471	124	220	84	44
5	283	230	325	817	123	2,500	531	386	116	185	89	41
6	179	185	281	1,260	216	1,960	486	320	115	164	89	47
7	131	230	249	1,180	218	1,920	442	400	123	187	154	54
8	171	261	212	970	204	1,370	386	386	368	210	104	58
9	181	216	201	970	240	1,110	359	333	414	195	77	59
10	187	230	200	936	386	970	333	386	320	150	77	139
11	196	*218	187	766	783	1,890	304	*186	346	108	108	151
12	317	199	173	606	718	1,920	307	156	333	*100	77	75
13	367	181	*169	516	622	1,560	281	164	624	98	124	59
14	438	183	186	428	b550	*1,410	486	135	442	97	146	52
15	1,220	167	210	372	b500	1,150	622	109	372	95	87	54
16	2,000	158	235	320	b470	1,110	670	108	333	103	82	54
17	*2,040	144	237	302	b460	902	718	110	312	205	86	53
18	2,090	134	332	278	b460	817	734	123	255	217	73	54
19	2,140	123	424	265	486	734	1,070	112	216	118	70	56
20	2,040	117	422	233	531	670	1,560	104	188	92	68	58
21	1,520	114	376	213	817	902	1,260	100	188	73	53	56
22	1,090	115	366	220	1,330	1,600	970	118	173	69	110	61
23	797	128	360	204	1,490	1,560	817	254	148	212	*93	136
24	600	144	414	*194	1,450	1,410	902	453	161	350	58	121
25	470	161	391	195	1,560	1,410	1,080	228	146	171	56	68
26	403	152	368	185	1,490	1,300	1,330	170	110	113	56	56
27	335	188	356	163	1,300	1,110	1,260	158	113	112	56	99
28	288	159	440	161	1,220	936	1,300	211	116	123	53	127
29	263	247	624	159	-	834	1,330	279	109	101	56	75
30	237	274	914	154	------	817	1,150	260	209	82	92	66
31	212	----	938	133	------	783	------	234	------	91	73	----
Total	20,848	5,530	10,918	16,352	18,189	41,745	23,417	8,569	7,004	5,065	2,610	2,135
Mean	673	184	352	527	650	1,347	781	276	233	163	84.2	71.2
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 2,140 Min 26 Mean 351 Cfsm - In. -
Water year 1954-55: Max 2,500 Min 41 Mean 445 Cfsm - In. -

Peak discharge (base, 2,000 cfs).--Oct. 20 (3 a.m.) 2,180 cfs (6.94 ft); Mar. 5 (4 a.m.) 2,700 cfs (8.00 ft); Mar. 11 (7:30 a.m.) 2,940 cfs (8.35 ft); Apr. 19 (7:30 p.m.) 2,400 cfs (7.35 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.

Ohio Canal at Independence, Ohio

Location.--Lat 41°23'25", long 81°37'35", in T. 6 N., R. 12 W., on right bank at upstream side of dam, 0.4 mile upstream from Rockside Road and 1 mile northeast of Independence, Cuyahoga County.

Records available.--September 1921 to May 1923, August 1927 to December 1935, October 1950 to September 1955.

Gage.--Water-stage recorder above dam. Datum of gage is 605.31 ft above mean sea level. Prior to Nov. 4, 1950, staff or chain gages or water-stage recorder at site 0.4 mile downstream at various datums.

Extremes.--1921-23, 1927-35, 1950-55: Maximum daily discharge, 146 cfs Nov. 26, 1952; minimum daily, 3.4 cfs Jan. 28, 1952.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Water is diverted from Cuyahoga River into canal at headgates at Brecksville, 6 miles upstream. Some diurnal fluctuation caused by small mill above station.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	63	74	82	61	67	58	61	60	71	62	68
2	76	61	75	74	61	65	54	a60	60	70	63	68
3	78	61	75	75	60	60	56	a60	60	68	64	68
4	68	61	75	74	*60	61	64	a60	59	68	63	68
5	63	63	75	66	60	44	a60	a55	59	65	63	68
6	63	63	74	73	63	35	a60	a55	59	65	64	68
7	58	63	74	74	66	40	a60	a55	60	66	69	69
8	58	*63	73	70	65	51	a60	58	61	68	65	69
9	58	64	73	69	67	53	a60	a60	61	69	63	69
10	62	66	71	69	78	51	a60	a60	65	65	59	70
11	63	69	70	68	80	60	a60	a60	65	64	53	72
12	67	69	69	68	63	53	a60	*57	68	65	52	71
13	54	69	69	68	59	46	a60	58	62	*65	55	70
14	58	69	71	68	58	51	a70	58	63	64	56	69
15	87	69	73	67	57	64	a65	58	72	64	*53	70
16	145	73	72	66	57	*64	a60	57	70	64	53	70
17	55	73	71	65	59	63	57	58	70	64	53	70
18	52	73	75	65	60	61	a60	58	70	68	53	70
19	54	74	75	65	61	67	a75	59	69	66	53	71
20	52	73	74	64	66	65	a60	60	69	63	53	71
21	53	74	73	63	58	68	a65	60	69	62	53	72
22	63	74	73	63	69	63	a60	60	69	59	52	71
23	62	74	73	63	58	48	a65	62	68	61	52	73
24	59	75	76	63	51	a50	69	61	69	68	52	73
25	58	76	a75	63	48	a55	68	56	69	63	60	72
26	57	76	a75	62	57	55	a60	63	68	62	71	*72
27	58	76	74	62	64	53	a60	60	66	61	76	72
28	56	76	78	62	68	54	a65	61	66	61	61	72
29	54	78	74	60	-	58	a65	61	66	61	63	72
30	62	74	*71	59	------	57	a65	60	68	61	66	71
31	62	------	67	58	------	58	------	60	------	61	66	------
Total	1,987	2,092	2,267	2,068	1,734	1,740	1,861	1,831	1,960	2,002	1,841	2,109
Mean	64.1	69.7	73.1	66.7	61.9	56.1	62.0	59.1	65.3	64.6	59.4	70.3
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 145 Min 42 Mean 66.4 Cfsm - In. -
Water year 1954-55: Max 145 Min 35 Mean 64.4 Cfsm - In. -

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage and fragmentary record.

Cuyahoga River at Independence, Ohio

Location.--Lat 41°23'44", long 81°37'54", in T. 6 N., R. 12 W., on right bank 140 ft downstream from highway bridge on Rockside Road, 1 mile northeast of Independence, Cuyahoga County, and 3 miles downstream from Tinkers Creek.

Drainage area.--709 sq mi.

Records available.--September 1903 to July 1906, September 1921 to May 1923, September 1927 to December 1935, March 1940 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 584.14 ft above mean sea level (levels by city of Cleveland). Sept. 21, 1903, to July 21, 1906, chain gage at bridge 140 ft upstream at same datum. Sept. 28, 1921, to May 30, 1923, chain gage at bridge 140 ft upstream at datum 2.42 ft higher. Sept. 5 to Oct. 8, 1927, staff gage at present site and datum.

Average discharge.--24 years (1921-22, 1927-35, 1940-55), 719 cfs (not including flow in Ohio Canal).

Extremes.--Maximum discharge during year, 14,200 cfs Oct. 16 (gage height, 20.04 ft); minimum, 72 cfs Sept. 6.
1921-23, 1927-35, 1940-55: Maximum discharge, that of Oct. 16, 1954; minimum, 14 cfs Nov. 30, 1930; minimum combined discharge of river and canal, 48 cfs Aug. 29, 1933.

Remarks.--Records good. Diurnal fluctuations caused by powerplants above station. Flow slightly regulated by reservoirs and lakes above station. Some diversion from Tuscarawas River into this basin at Portage Lakes. Water diverted into Ohio Canal at Brecksville, 6 miles above station, bypasses station. These records do not include flow in canal; record of diversion published as Ohio Canal at Independence (see preceding page). Records of water temperatures and sediment loads for the water year 1955 are given in WSP 1400.

Revisions (water years).--WSP 894: 1929(M).

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

2.1	68	11.0	4,110
2.2	78	14.0	6,410
2.5	129	17.0	9,540
3.0	278	19.0	12,400
6.0	1,380		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	271	358	443	1,700	275	2,820	1,520	1,300	301	862	108	105
2	123	354	498	1,750	248	2,380	1,260	1,070	265	587	123	100
3	106	331	516	1,600	248	2,100	1,110	881	235	412	125	101
4	1,060	354	516	1,520	*219	6,170	995	733	216	412	123	93
5	826	398	498	1,600	210	5,020	900	623	198	288	127	78
6	714	371	429	3,990	301	3,630	807	498	171	248	134	76
7	328	358	378	2,600	464	2,700	733	464	204	258	291	90
8	255	*358	318	1,900	422	2,050	641	696	419	275	258	90
9	278	337	318	1,560	436	1,900	587	498	605	385	160	93
10	337	328	422	1,470	1,570	1,800	534	516	464	245	142	110
11	429	314	375	1,300	2,760	3,920	481	426	443	176	176	253
12	912	301	314	1,030	1,560	3,630	481	*298	498	162	160	154
13	1,700	271	311	900	1,300	2,600	443	285	1,420	*144	188	129
14	881	265	361	752	1,070	2,050	770	278	862	142	516	105
15	7,070	239	587	659	995	1,800	1,560	239	623	136	*210	101
16	*12,100	239	551	569	919	*2,000	1,380	207	481	160	168	103
17	6,320	219	498	516	957	1,560	1,470	216	412	149	160	98
18	4,110	207	957	481	826	1,340	1,340	207	364	331	160	90
19	3,630	194	938	446	826	1,180	1,460	213	301	198	139	79
20	2,980	185	788	409	1,480	1,070	4,390	207	245	157	142	88
21	2,210	194	714	354	3,390	2,310	3,210	194	252	134	125	84
22	1,600	174	641	381	4,390	5,480	2,050	182	252	123	116	84
23	1,260	204	659	375	3,150	3,390	1,470	255	204	121	207	102
24	957	229	957	341	2,540	2,700	1,860	1,780	248	570	139	255
25	770	321	900	358	2,260	2,210	3,810	714	213	278	121	127
26	659	294	752	314	2,100	2,000	4,250	446	182	182	106	*93
27	551	281	938	285	2,260	1,700	2,820	314	144	157	101	94
28	498	324	1,340	275	2,160	1,520	2,210	301	185	204	108	190
29	443	481	*1,700	288	-	1,560	1,950	422	149	154	96	123
30	398	481	3,150	275	------	1,750	1,650	368	185	146	112	106
31	378	----	1,950	252	-------	1,800	-------	321	-------	125	139	----
Total	54,154	8,964	23,717	30,250	39,336	78,140	48,142	15,152	10,721	7,921	4,980	3,394
Mean	1,747	299	765	976	1,405	2,521	1,605	489	357	256	161	113
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 12,100 Min 60 Mean 771 Cfsm - In. -
Water year 1954-55: Max 12,100 Min 76 Mean 890 Cfsm - In. -

Peak discharge (base, 4,400 cfs).--Oct. 16 (4 a.m.) 14,200 cfs (20.04 ft); Jan. 6 (12:30 p.m.) 4,530 cfs (11.62 ft); Feb. 22 (1 p.m.) 5,180 cfs (12.54 ft); Mar. 4 (3 p.m.) 6,950 cfs (14.62 ft); Mar. 11 (6 p.m.) 5,420 cfs (12.80 ft); Mar. 22 (2.30 p.m.) 6,320 cfs (13.92 ft); Apr. 20 (10:30 a.m.) 5,340 cfs (12.68 ft); Apr. 26 (4 a.m.) 5,100 cfs (12.41 ft).
* Discharge measurement made on this day.

Chagrin River at Willoughby, Ohio

Location.--Lat 41°37'51", long 81°24'31", on left bank at city waterworks, 150 ft downstream from waterworks dam, 800 ft downstream from East Branch, 1 mile southeast of Willoughby, Lake County, and 5 miles upstream from mouth.
Drainage area.--251 sq mi.
Records available.--July 1925 to November 1935, October 1939 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 594.24 ft above mean sea level, datum of 1929. Prior to Dec. 20, 1939, staff gage on left concrete abutment on upstream side of waterworks dam, 150 ft upstream at datum 7 ft higher.
Average discharge.--26 years, 305 cfs (not including diversion).
Extremes.--Maximum discharge during year, 18,600 cfs Oct. 15 (gage height, 15.22 ft); minimum daily, 14 cfs Aug. 5, 6.
1925-35, 1939-55: Maximum discharge, 28,000 cfs Mar. 22, 1948 (gage height, 17.95 ft, from high-water mark in well), from rating curve extended above 9,600 cfs on basis of contracted-opening determination of peak flow; minimum daily, 3.0 cfs July 25, 26, 1934.
Remarks.--Records good except those for periods of ice effect, which are fair. Water diverted at dam just above station for municipal supply of city of Willoughby.
Revisions (water years).--WSP 1084: 1929(M), 1931(M).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 19 to Nov. 25, Nov. 30 to Dec. 27)

1.6	7.6	3.5	585
1.7	16	4.0	865
1.8	26	6.0	2,530
1.9	40	10.0	6,800
2.2	98	12.0	10,200
2.5	184	13.0	12,500
3.0	368		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	121	234	455	590	90	2,010	650	256	72	308	22	25
2	80	356	409	645	90	928	438	210	60	194	19	23
3	50	768	380	508	*90	540	328	181	53	124	19	21
4	487	718	340	558	90	2,690	267	*156	52	78	16	21
5	344	746	308	745	90	1,350	220	133	54	54	*14	22
6	278	554	252	3,030	100	746	194	119	50	48	14	21
7	136	401	224	1,120	130	526	168	109	61	45	162	20
8	87	285	178	567	180	393	153	124	532	43	106	19
9	66	*214	228	455	270	510	141	116	510	111	68	17
10	91	172	360	434	800	660	130	106	245	80	37	16
11	234	141	305	372	2,170	2,370	119	106	245	45	36	20
12	424	121	245	301	758	1,120	119	94	238	36	30	28
13	1,070	111	259	274	650	554	111	83	575	30	83	25
14	393	103	267	240	550	393	297	76	*531	28	458	22
15	6,770	98	558	210	500	332	1,580	70	336	30	165	22
16	*11,100	89	486	190	470	809	820	62	184	30	80	20
17	1,680	87	368	170	440	531	562	58	119	40	53	18
18	970	85	1,310	150	410	372	473	53	87	32	43	16
19	567	83	846	140	400	297	482	51	72	29	34	18
20	401	89	482	130	900	245	660	50	60	28	30	17
21	320	109	356	120	2,830	948	788	45	54	26	30	17
22	270	127	*324	110	3,330	2,530	504	43	53	23	34	16
23	220	156	308	110	1,380	1,190	344	118	48	23	45	18
24	181	165	482	100	764	*764	887	558	43	37	36	45
25	162	379	443	100	660	491	2,420	356	38	41	30	43
26	127	1,470	340	95	522	422	3,030	259	36	33	29	36
27	114	886	544	90	1,150	376	1,120	144	36	30	25	*30
28	103	776	1,390	90	1,190	348	610	142	34	30	26	34
29	96	1,390	1,590	90	-	469	438	194	32	26	26	33
30	98	680	2,530	90	--------	758	336	109	37	25	29	30
31	172	--------	928	90	--------	914	--------	85	--------	24	29	--------
Total	27,214	11,593	17,495	11,914	21,004	26,586	18,389	4,266	4,547	1,731	1,828	713
Mean	878	386	564	384	750	858	613	138	152	55.8	59.0	23.8
(†)	3.08	3.06	2.97	3.00	3.17	3.24	3.48	3.44	3.28	3.47	3.41	3.42

Adjusted for diversion for municipal supply of city of Willoughby

Mean	881	389	567	387	753	861	616	141	155	59.3	62.4	27.2
Cfsm	3.51	1.55	2.26	1.54	3.00	3.43	2.45	0.562	0.618	0.236	0.249	0.108
In.	4.05	1.73	2.61	1.78	3.12	3.95	2.73	0.65	0.69	0.27	0.29	0.12

	Observed			Adjusted			
Calendar year 1954:	Max 11,100	Min 13	Mean 425	Mean 428	Cfsm 1.71	In. 23.16
Water year 1954-55:	Max 11,100	Min 14	Mean 404	Mean 407	Cfsm 1.62	In. 21.99

Peak discharge (base 4,000 cfs).--Oct. 15 (12 p.m.) 18,600 cfs (15.22 ft); Feb. 22 (8:30 a.m.) 4,360 cfs (7.75 ft); Mar. 11 (11 a.m.) 4,250 cfs (7.73 ft); Apr. 26 (1 a.m.) 4,140 cfs (7.59 ft).
* Discharge measurement made on this day.
† Diversion for municipal supply of city of Willoughby, equivalent in cubic feet per second.
Note.--Stage-discharge relation affected by ice Jan. 14 to Feb. 10, Feb. 13-20.

Phelps Creek near Windsor, Ohio

Location.--Lat 41°30'55", long 80°56'05", in T. 8 N., R. 5 W., on left bank at upstream side of bridge on State Highway 534, 1.4 miles south of Windsor, Ashtabula County, and 1½ miles upstream from mouth.

Drainage area.--26.4 sq mi.

Records available.--March 1942 to September 1955.

Gage.--Water-stage recorder. Prior to June 11, 1942, wire-weight gage at same site and datum.

Average discharge.--13 years, 34.5 cfs.

Extremes.--Maximum discharge during year, 2,220 cfs Oct. 15 (gage height, 8.29 ft), from rating curve extended above 1,600 cfs; minimum, 0.2 cfs Sept. 13, 14 (gage height, 0.21 ft).

1942-55: Maximum discharge, 2,700 cfs (revised) Mar. 22, 1948 (gage height, 8.97 ft), from rating curve extended above 1,600 cfs; no flow Aug. 20, 21, 1943, Oct. 24, 25, 1946.

Revisions.--The maximum discharge for the water year 1948 has been revised to 2,700 cfs Mar. 22, 1948 (gage height, 8.97 ft), superseding figure published in WSP 1114.

Remarks.--Records good except those below 2 cfs and those for periods of no gage-height record, which are fair.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-14, Oct. 19 to Nov. 26, Dec. 1-17, Aug. 22 to Sept. 30; stage-discharge relation affected by ice Feb. 12, 23-25)

0.05	0.2	0.4	5.0	2.0	138
.1	.4	.6	12	4.0	518
.2	1.3	1.0	32	6.0	1,030
.3	2.8	1.5	72		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	10	47	40	3.6	341	39	9.1	1.7	51	3.6	0.6
2	1.4	16	48	94	3.6	88	23	7.0	1.4	23	2.2	.6
3	1.7	*22	44	45	3.2	42	17	5.3	1.2	7.6	2.2	.6
4	36	39	42	54	2.6	313	13	4.5	1.1	3.4	2.0	.6
5	29	41	35	98	2.3	146	11	3.6	1.0	*2.2	2.3	.5
6	5.3	26	16	408	3.2	67	10	2.8	.9	1.9	2.4	.5
7	2.8	15	9.5	80	5.0	35	8.8	2.6	1.6	1.6	1.1	.5
8	1.6	9.9	7.0	30	10	22	7.4	2.6	23	1.6	.7	.4
9	1.1	7.7	13	23	15	62	6.4	2.6	36	1.4	.8	.4
10	2.3	6.1	42	23	38	98	5.6	*2.3	13	1.3	.9	.4
11	25	5.0	24	19	225	317	5.0	2.3	8.4	1.1	1.1	.4
12	80	4.5	24	16	110	89	4.8	2.2	27	1.1	1.3	.3
13	147	4.0	19	12	a60	37	4.5	2.0	74	1.0	1.8	.3
14	19	3.4	17	11	a40	23	21	1.9	38	1.1	4.5	.3
15	762	3.2	61	11	a30	18	127	1.6	23	1.2	4.0	.4
16	925	3.2	*62	12	a25	91	54	1.4	11	1.6	2.2	.6
17	124	2.8	39	11	a25	43	46	1.3	5.6	1.7	1.4	.6
18	71	2.8	341	10	a25	28	33	1.2	3.0	1.7	1.1	.5
19	51	2.6	94	9.5	a25	20	29	1.1	2.5	2.0	1.1	.6
20	20	3.4	48	7.6	43	15	55	1.1	2.3	1.9	1.3	.7
21	12	5.0	34	5.8	542	*179	125	1.0	1.9	2.0	1.4	.8
22	8.4	5.8	31	6.7	929	504	42	1.0	1.6	2.5	*2.4	.8
23	6.4	7.7	32	6.7	306	104	21	2.8	1.3	3.0	1.9	.9
24	5.0	9.5	81	6.4	*90	83	93	13	1.2	3.6	1.1	.8
25	4.3	16	53	5.6	85	33	294	20	1.1	3.6	.7	.8
26	3.6	83	31	*5.3	76	26	312	7.9	1.0	4.3	.6	.7
27	3.4	118	69	4.5	326	23	74	3.8	.9	4.5	.6	.6
28	3.4	118	294	4.5	218	24	31	2.8	.9	4.8	.6	.6
29	3.6	256	198	4.3	-	50	18	3.0	.9	4.8	.6	*.6
30	3.2	89	341	3.8	-------	85	12	2.8	1.0	4.8	.6	.6
31	4.5	---	72	3.6	-------	68	-------	2.3	-------	4.5	.6	-----
Total	2,364.6	935.6	2,268.5	1,071.3	3,258.5	3,074	1,542.5	118.9	287.5	151.8	49.1	17.0
Mean	76.3	31.2	73.2	34.6	116	99.2	51.4	3.84	9.58	4.90	1.58	0.57
Cfsm	2.89	1.18	2.77	1.31	4.39	3.76	1.95	0.145	0.363	0.186	0.060	0.022
In.	3.33	1.32	3.19	1.51	4.57	4.34	2.18	0.17	0.40	0.21	0.07	0.02

Calendar year 1954: Max 925 Min 0.4 Mean 43.2 Cfsm 1.64 In. 22.25
Water year 1954-55: Max 929 Min 0.3 Mean 41.5 Cfsm 1.57 In. 21.31

Peak discharge (base, 900 cfs).--Oct. 15 (10:30 p.m.) 2,220 cfs (8.29 ft); Feb. 22 (5 p.m.) 1,110 cfs (6.18 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.

Rock Creek near Rock Creek, Ohio

Location.--Lat 41°39'05", long 80°50'10", in T. 10 N., R. 4 W., on left bank at downstream side of highway bridge, 0.4 mile downstream from Plum Creek, 1.4 miles southeast of village of Rock Creek, Ashtabula County, 1½ miles downstream from Sugar Creek, and 3 miles upstream from mouth.

Drainage area.--56.6 sq mi.

Records available.--March 1942 to September 1955.

Gage.--Water-stage recorder. Prior to June 10, 1942, chain gage at same site and datum.

Average discharge.--13 years, 81.7 cfs.

Extremes.--Maximum discharge during year, 3,300 cfs Oct. 15 (gage height, 7.99 ft); no flow for many days.
1942-55: Maximum discharge, 5,730 cfs Mar. 22, 1948 (gage height, 8.82 ft), from rating curve extended above 2,300 cfs on basis of velocity-area studies; no flow at times.

Remarks.--Records good except those below 2 cfs and those for periods of ice effect or no gage-height record, which are fair.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.25	0	1.5	65
.3	.1	2.0	114
.4	1.2	2.5	189
.5	3.1	3.0	342
.6	5.5	4.0	735
.8	12	6.0	1,650
1.0	22	7.0	2,340
1.2	37		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	12	148	123	8	496	63	20	4.3	1.1	0	
2	0	15	148	227	7	223	37	16	3.3	1.6	0	
3	a0	18	145	129	7	102	26	11	2.7	1.4	0	
4	a6	*26	125	115	6	590	19	8.5	2.1	3.3	*0	
5	a25	36	110	179	6	445	15	7.0	1.9	2.3	0	
6	a15	33	80	855	7	239	12	5.5	1.6	1.9	0	
7	a10	22	52	340	10	114	10	4.5	1.1	*1.4	0	
8	a7	16	39	111	25	69	8.9	4.8	3.5	.9	0	
9	a6	12	36	75	50	152	7.9	5.5	7.0	.6	0	
10	5.3	9.9	120	71	250	258	7.0	*6.1	16	.4	.4	
11	5.2	8.5	87	60	635	474	5.8	5.8	11	.3	2.2	
12	18	7.9	74	44	342	340	5.8	5.0	9.6	.1	.1	
13	54	7.3	65	35	176	117	5.5	4.8	35	.1	1.0	
14	43	7.0	65	33	101	70	17	4.1	45	0	6.4	
15	736	6.7	184	30	70	51	120	3.6	34	0	7.3	
16	*1,860	6.4	*176	27	65	132	104	3.1	18	0	8.8	
17	701	6.1	131	28	65	119	72	2.7	11	0	4.6	
18	252	5.8	792	31	76	68	59	2.5	7.0	0	2.1	
19	124	5.8	366	20	88	46	44	2.5	5.0	0	1.1	
20	76	8.0	125	23	348	34	118	2.3	3.6	0	.4	
21	45	46	90	18	855	257	243	2.1	2.7	0	.5	
22	28	41	81	14	990	*858	94	2.1	2.1	0	2.6	
23	20	39	75	116	449	407	45	3.6	1.6	0	3.4	
24	15	41	122	14	235	198	85	5.3	1.4	0	2.7	
25	12	76	153	13	144	97	402	6.7	1.1	.1	1.6	
26	11	150	97	*11	106	68	735	7.3	.8	0	.9	
27	9.9	357	161	10	283	49	285	8.9	.6	0	.4	
28	9.2	445	401	10	304	42	107	7.6	.5	0	.1	
29	8.9	795	535	9	-	92	58	6.1	.4	0	0	(*)
30	7.9	318	735	9	-------	144	35	5.5	.3	0	0	
31	8.9	------	273	8	-------	105	-------	5.5	-------	0	0	------
Total	4,119.3	2,577.4	5,811	2,688	5,708	6,456	2,823.9	186.0	234.2	15.5	46.6	0
Mean	133	85.9	187	86.7	204	208	94.1	6.00	7.81	0.50	1.50	0
Cfsm	2.35	1.52	3.30	1.53	3.60	3.67	1.66	0.106	0.138	0.0088	0.027	0
In.	2.71	1.70	3.80	1.76	3.75	4.23	1.85	0.12	0.15	0.01	0.03	0

Calendar year 1954: Max 2,010 Min 0 Mean 103 Cfsm 1.82 In. 24.57
Water year 1954-55: Max 1,860 Min 0 Mean 84.0 Cfsm 1.48 In. 20.11

Peak discharge (base, 1,200 cfs).--Oct. 15 (11 p.m.) 3,300 cfs (7.99 ft).
* Discharge measurement or observation of no flow made on this day.
a No gage-height record; discharge estimated on basis of weather records and records for Phelps Creek near Windsor.
Note.--Stage-discharge relation affected by ice Jan. 27 to Feb. 10.

Mill Creek near Jefferson, Ohio

Location.--Lat 41°45'10", long 80°48'00", in T. 11 N., R. 3 W., on right bank at downstream side of bridge on State Highway 307, 1¾ miles northwest of Jefferson, Ashtabula County, and 3½ miles downstream from Griggs Creek.

Drainage area.--78.3 sq mi.

Records available.--March 1942 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 822.59 ft above mean sea level (Ashtabula County benchmark). Prior to June 10, 1942, wire-weight gage at same site and datum.

Average discharge.--13 years, 107 cfs.

Extremes.--Maximum discharge during year, 3,930 cfs Oct. 16 (gage height, 9.60 ft); no flow for many days.
1942-55: Maximum discharge, 7,010 cfs Mar. 22, 1948 (gage height, 9.95 ft); maximum gage height, 10.28 ft Dec. 4, 1950 (backwater from ice); no flow for many days.

Remarks.--Records fair above 150 cfs and poor below. Small amount of diversion above station for municipal supply for village of Jefferson.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 4, 10-13, 15, 18, 19, Oct. 22 to Nov. 29, Dec. 1-15, 17-27, May 25 to June 21, Aug. 7, 10, 11, 13, 14, 16, 17, 22-26)

Oct. 1 to Apr. 25

0.7	0.2	1.2	6.0	3.0	211
.8	.6	1.3	9.6	4.0	454
.9	1.2	1.5	21	6.0	1,080
1.0	2.2	2.0	65	8.0	2,180
1.1	3.8	2.5	126	9.0	3,090

Apr. 26 to Sept. 30

0.75	0	1.2	4.8	2.5	114
.8	.2	1.3	7.7	3.0	196
.9	.9	1.4	12	4.0	436
1.0	1.8	1.7	32	6.0	1,080
1.1	2.9	2.0	58		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	68	224	179	6.7	732	99	20	2.4	0.6	0	0.4
2	.4	64	205	304	6.0	495	64	12	2.0	.6	0	.2
3	.3	70	215	260	5.6	157	40	*9.1	1.4	.4	0	.2
4	1.6	*118	213	179	5.3	383	26	7.1	.9	.3	*0	.1
5	.6	138	196	194	5.1	362	17	5.3	.6	.3	0	.1
6	.5	116	126	992	6.4	183	12	4.2	.3	.4	0	0
7	.4	74	89	590	10	109	8.5	3.3	.2	.4	2.0	0
8	.3	45	68	156	17	65	6.7	3.3	1.0	.3	.4	0
9	.3	28	105	100	27	99	5.6	2.7	.8	.4	.1	0
10	.7	20	325	83	206	401	4.6	2.2	1.3	.2	1.1	0
11	.8	14	209	68	772	610	4.0	2.0	2.0	.2	1.3	.1
12	1.2	11	129	56	440	552	3.6	1.7	40	.2	.2	0
13	1.3	8.9	119	46	313	165	3.4	1.9	41	.2	1.9	0
14	.5	7.8	104	33	215	85	6.7	6.6	29	.2	2.3	0
15	439	5.6	229	34	138	57	88	4.6	19	.3	.6	0
16	*2,890	5.8	350	29	108	208	109	3.5	*14	.3	3.3	0
17	667	5.3	241	28	108	226	83	3.3	9.5	.3	2.3	0
18	200	5.1	1,120	24	118	100	68	3.3	7.1	.3	1.7	0
19	92	4.9	797	22	125	61	54	2.8	5.0	.2	1.2	0
20	60	5.1	211	18	313	45	56	2.4	2.9	.2	.8	0
21	35	16	149	14	1,160	178	226	1.9	2.4	.2	.5	0
22	22	56	*113	15	1,340	965	193	2.1	1.9	.2	2.8	0
23	14	76	89	15	781	*572	83	2.4	1.7	.2	7.4	0
24	9.6	82	115	14	338	350	78	2.2	1.2	.6	7.1	.2
25	7.4	108	154	13	219	154	626	3.1	1.0	.3	3.3	0
26	6.0	123	115	*11	149	87	935	3.3	.9	.2	2.1	0
27	6.0	147	276	8.9	330	62	386	2.7	.7	.2	1.7	*0
28	5.8	192	725	8.2	564	46	134	2.3	.6	.2	1.2	.1
29	5.3	338	868	8.5	-	79	61	2.9	.4	.1	1.2	0
30	5.6	440	935	7.4	-------	167	34	3.6	.4	.1	1.0	0
31	21	-------	467	6.7	-------	166	-------	2.9	-------	0	.8	-------
Total	4,495.2	2,392.5	9,281	3,516.7	7,826.1	7,921	3,515.1	130.7	191.6	8.6	48.3	1.4
Mean	145	79.8	299	113	280	256	117	4.22	6.39	0.28	1.56	0.05
Cfsm	1.85	1.02	3.82	1.44	3.58	3.27	1.49	0.054	0.082	0.0036	0.020	0.00064
In.	2.13	1.14	4.40	1.66	3.73	3.77	1.66	0.06	0.09	0.004	0.02	0.0007

Calendar year 1954: Max 2,890 Min 0.2 Mean 146 Cfsm 1.86 In. 25.32
Water year 1954-55: Max 2,890 Min 0 Mean 108 Cfsm 1.38 In. 18.66

Peak discharge (base, 1,500 cfs).--Oct. 16 (10 a.m.) 3,930 cfs (9.60 ft); Dec. 18 (9 p.m.) 1,650 cfs (7.24 ft).

* Discharge measurement or observation of no flow made on this day.

Grand River near Madison, Ohio

Location.--Lat 41°44'26", long 81°02'48", on downstream end of center pier of bridge on State Highway 528, half a mile upstream from Griswold Creek and 2 miles south of Madison, Lake County.

Drainage area.--587 sq mi.

Records available.--July 1922 to December 1935, February 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 674.47 ft above mean sea level, adjustment of 1912. Prior to Jan. 20, 1939, chain gage at same site and datum.

Average discharge.--30 years, 647 cfs.

Extremes.--Maximum discharge during year, 10,100 cfs Oct. 16 (gage height, 10.98 ft); minimum, 2.6 cfs Aug. 9 (gage height, 0.64 ft).
1922-35, 1938-55: Maximum discharge, 16,600 cfs Mar. 22, 1948 (gage height, 12.48 ft); no flow July 31, Aug. 1, 2, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 7, 13-23)

Oct. 1 to Feb. 22

0.7	5.6	2.0	149	6.0	2,640
.8	8.5	2.5	271	7.0	3,940
1.0	15	3.0	453	10.0	9,460
1.3	34	4.0	1,000		
1.6	75	5.0	1,720		

Feb. 23 to Sept. 30

0.6	2.4	1.7	97
.8	7.7	2.0	165
1.0	15	2.5	290
1.2	28	3.0	461
1.4	47	4.0	1,000

Note.--Same as preceding table above 4.0 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.6	343	1,720	2,060	50	3,720	1,000	576	66	17	7.7	9.3
2	7.9	489	1,340	1,970	50	3,640	728	334	54	17	7.7	8.3
3	7.0	560	1,300	1,880	50	2,100	519	224	45	119	6.8	7.1
4	24	585	1,160	1,340	50	2,340	380	*175	37	206	5.4	6.2
5	34	684	1,060	1,270	55	2,980	287	146	31	105	*4.8	5.6
6	100	630	815	3,600	70	2,640	229	103	27	57	4.5	4.8
7	199	453	590	4,190	100	2,540	194	88	26	39	6.8	5.1
8	157	312	445	1,970	160	1,880	165	78	40	28	4.8	5.4
9	110	234	445	1,380	250	1,240	146	70	53	24	11	5.1
10	85	*181	935	1,160	700	1,680	132	66	165	23	14	4.3
11	72	149	935	815	2,200	2,540	110	71	262	20	41	4.5
12	82	127	650	580	2,440	3,300	105	64	236	18	33	5.6
13	166	108	656	453	1,920	2,060	99	61	337	17	42	4.0
14	329	97	575	347	900	1,680	130	64	492	16	82	4.0
15	1,670	89	845	305	600	1,300	983	54	492	15	73	3.8
16	*9,060	84	1,380	270	550	1,160	1,270	50	*340	14	38	3.8
17	7,710	78	1,270	240	550	1,270	1,060	44	232	12	36	4.0
18	5,130	77	2,810	200	550	935	1,060	39	153	12	30	4.3
19	3,860	73	4,260	170	610	728	935	38	99	11	23	4.8
20	2,490	69	1,940	150	1,030	546	815	31	66	11	17	3.5
21	1,480	75	*1,000	130	3,390	822	1,240	31	47	10	18	4.3
22	785	139	900	120	6,030	3,830	1,340	30	36	10	22	4.3
23	419	214	815	110	*5,490	5,310	815	33	28	10	47	5.1
24	259	262	905	95	3,720	*3,360	755	43	24	12	50	8.7
25	190	329	1,100	85	3,160	2,590	2,210	66	23	9.3	34	7.1
26	157	869	968	75	2,700	2,020	4,260	214	22	9.0	26	6.2
27	135	1,480	1,160	*70	2,490	1,030	3,500	254	19	8.0	20	*5.9
28	121	1,680	2,240	60	3,230	650	2,240	192	18	8.3	17	6.2
29	112	2,540	3,640	55	-	650	1,720	136	16	10	14	7.4
30	110	2,920	4,770	55	-------	1,130	1,130	95	16	9.3	12	8.3
31	174	-------	3,620	50	-------	1,270	-------	75	-------	8.0	11	------
Total	35,242.5	15,928	46,249	25,255	43,095	62,941	29,557	3,545	3,502	884.9	759.5	167.0
Mean	1,137	531	1,492	815	1,539	2,030	985	114	117	28.5	24.5	5.57
Cfsm	1.94	0.905	2.54	1.39	2.62	3.46	1.68	0.194	0.199	0.049	0.042	0.0095
In.	2.24	1.01	2.93	1.60	2.73	3.99	1.87	0.22	0.22	0.06	0.05	0.01

Calendar year 1954: Max 9,060 Min 0.2 Mean 857 Cfsm 1.46 In. 19.82
Water year 1954-55: Max 9,060 Min 3.5 Mean 732 Cfsm 1.25 In. 16.93

Peak discharge (base, 5,500 cfs).--Oct. 16 (8 p.m.) 10,100 cfs (10.98 ft); Feb. 22 (9 p.m.) 6,390 cfs (8.36 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 21, 22, Jan. 16 to Feb. 11, Feb. 14-18.

Ashtabula River near Ashtabula, Ohio

Location.--Lat 41°51'19", long 80°45'43", on left bank at downstream side of highway bridge, 1 mile upstream from Hubbard Run, 1¼ miles southeast of Ashtabula, Ashtabula County, and 5½ miles upstream from mouth.

Drainage area.--118 sq mi.

Records available.--July 1924 to December 1935, March 1939 to November 1947, March 1950 to September 1955.

Gage.--Water-stage recorder. Prior to Aug. 27, 1924, staff gage at same site and datum.

Average discharge.--24 years, 147 cfs.

Extremes.--Maximum discharge during year, 8,880 cfs Oct. 16 (gage height, 9.32 ft); no flow for several days.
1924-35, 1939-47, 1950-55: Maximum discharge, 10,800 cfs May 16, 1942 (gage height, 9.67 ft); no flow at times in most years.

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

Revisions (water years).--WSP 954: 1929(M). WSP 974: 1942.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 10-21)

Oct. 1 to Dec. 30				Dec. 31 to Sept. 30			
0.2	0.2	1.4	170	-0.15	0	0.5	30
.3	1.4	1.7	304	-.05	.2	.7	59
.4	4.4	2.0	485	0.0	.3	1.0	123
.5	9.5	3.0	1,240	.05	.7	1.5	317
.6	17	6.0	4,340	.10	1.4	2.0	575
.8	40	8.0	6,950	.15	2.6	3.0	1,270
1.1	91			.20	4.5	4.0	2,160
				.3	11		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	360	446	351	19	958	147	53	7.2	0.2	0	0.4
2	.5	332	396	526	18	598	96	34	5.0	.3	0	.3
3	.4	440	372	432	17	230	68	27	3.0	.4	0	.3
4	9.9	613	396	346	16	604	51	*22	2.1	.5	*0	.2
5	4.8	420	378	338	20	480	42	18	1.4	.4	0	.2
6	4.1	278	289	1,500	25	245	37	13	1.1	.3	0	.1
7	3.7	151	235	782	40	150	36	11	.8	.3	0	.1
8	2.2	98	197	281	70	94	30	11	2.6	.4	.1	.1
9	1.1	70	250	188	120	212	24	8.6	3.0	.4	.1	.1
10	1.7	*50	655	167	300	641	20	9.3	4.1	.3	.2	.1
11	4.4	42	446	150	1,150	842	18	10	10	.3	1.0	.1
12	12	35	315	147	499	661	17	7.9	30	.2	.7	.1
13	71	30	294	106	400	230	16	6.7	32	.2	3.2	.4
14	57	24	240	92	320	116	21	5.6	27	.2	12	.2
15	1,030	23	484	108	280	83	69	15	*21	.2	4.5	.2
16	6,120	19	641	85	250	293	123	12	15	.1	1.9	.1
17	1,080	18	440	75	220	308	116	6.7	9.3	.1	1.3	.1
18	564	16	1,750	65	210	129	118	4.1	6.1	.1	.8	.1
19	299	16	1,110	55	200	90	90	3.0	3.4	.1	.3	.1
20	148	19	338	50	470	68	94	2.4	2.1	.1	.1	.1
21	95	70	*258	45	1,470	202	207	1.9	1.4	.1	.1	.1
22	72	91	222	35	1,640	1,150	191	1.6	1.1	.2	.2	.2
23	55	102	204	30	896	*623	92	3.0	.7	.4	9.5	.2
24	44	102	235	30	375	470	97	4.5	.5	.6	4.4	.2
25	38	136	321	25	258	211	914	5.9	.4	.3	2.6	.2
26	32	235	240	*25	181	120	1,350	27	.4	.2	1.6	.1
27	30	289	524	20	382	92	529	25	.3	.1	1.1	.1
28	29	304	1,420	20	665	79	198	18	.3	.1	.6	*.1
29	29	472	1,460	20	-	123	98	12	.2	.1	.3	.1
30	38	613	1,510	20	------	241	68	13	.2	0	.6	.1
31	148	--	704	20	------	245	------	12	------	0	.5	------
Total	10,024.1	5,468	16,770	6,134	10,511	10,588	4,977	404.2	191.7	7.2	47.7	4.8
Mean	323	182	541	198	375	342	166	13.0	6.39	0.23	1.54	0.16
Cfsm	2.74	1.54	4.58	1.68	3.18	2.90	1.41	0.110	0.054	0.0019	0.013	0.0014
In.	3.16	1.72	5.28	1.94	3.31	3.34	1.57	0.13	0.06	0.002	0.02	0.002

Calendar year 1954: Max 6,120 Min 0 Mean 239 Cfsm 2.03 In. 27.52
Water year 1954-55: Max 6,120 Min 0 Mean 178 Cfsm 1.51 In. 20.53

Peak discharge (base, 2,600 cfs).--Oct. 16 (7 a.m.) 8,880 cfs (9.32 ft); Dec. 18 (6 p.m.) 2,710 cfs (4.53 ft).

* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record June 25 to Aug. 3, Aug. 5-12, 18-22, Aug. 29 to Sept. 27, Sept. 29, 30; discharge estimated on basis of weather records and records for Conneaut Creek at Amboy. Stage-discharge relation affected by ice Jan. 17 to Feb. 10, Feb. 13-18.

Conneaut Creek at Amboy, Ohio

Location.--Lat 41°55'34", long 80°36'18", on right bank at downstream side of highway bridge, half a mile east of Amboy, Ashtabula County, 3 miles southwest of Conneaut, and 6½ miles upstream from mouth.

Drainage area.--178 sq mi.

Records available.--July 1922 to December 1935, March 1950 to September 1955.

Gage.--Water-stage recorder. Prior to Aug. 17, 1924, chain gage at same site and datum.

Average discharge.--18 years, 231 cfs.

Extremes.--Maximum discharge during year, 12,900 cfs Oct. 16 (gage height, 10.74 ft); minimum, 1.6 cfs Aug. 6 (gage height, 1.08 ft).
1922-35, 1950-55: Maximum discharge, that of Oct. 16, 1954; maximum gage height, 12.94 ft Mar. 4, 1934 (ice jam); minimum discharge, 0.2 cfs July 31, Aug. 1, 1933, Aug. 1, 2, 1934.

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

Revisions (water years).--WSP 714: 1926. WSP 784: 1933.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 13-15, Oct. 17 to Dec. 19)

1.1	2.0	2.6	229
1.2	4.5	3.0	369
1.3	8.8	3.5	630
1.4	16	4.0	1,000
1.6	38	5.0	1,960
1.9	77	7.0	4,960
2.2	126	9.0	8,830

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	437	552	600	40	1,270	315	122	28	7.4	3.4	4.2
2	7.8	442	461	581	40	1,440	232	99	24	13	2.9	3.9
3	8.1	606	442	795	40	492	168	84	19	20	2.7	3.7
4	53	1,220	437	482	35	790	130	*76	16	22	2.4	3.7
5	97	643	409	524	40	928	111	65	14	14	*2.0	3.7
6	70	519	387	931	50	456	96	55	13	11	2.0	3.1
7	36	329	315	2,020	60	318	87	47	14	8.8	6.3	2.9
8	23	214	276	576	80	238	80	48	19	9.8	5.3	2.9
9	18	158	304	315	130	323	74	46	22	20	3.7	3.1
10	17	*122	547	251	250	840	69	54	41	12	5.0	2.7
11	22	104	593	220	1,530	840	64	46	42	10	9.4	3.7
12	31	91	432	184	1,420	1,320	61	42	33	7.4	6.4	3.9
13	206	83	373	146	a1,000	516	59	39	32	5.3	17	16
14	178	76	329	139	a700	283	87	36	37	5.3	34	11
15	1,380	70	487	116	a500	212	222	33	*42	3.9	24	7.4
16	*8,330	65	*772	101	a350	369	492	31	36	3.9	26	5.3
17	5,170	60	587	90	290	612	300	26	26	3.9	14	3.9
18	682	58	1,370	80	230	297	300	24	19	3.7	8.3	3.7
19	373	56	2,990	70	350	212	223	22	14	3.1	6.4	3.1
20	229	64	1,026	65	600	170	197	21	12	3.9	5.3	3.1
21	144	93	492	60	1,470	172	238	19	10	3.7	4.5	2.9
22	109	113	423	60	2,580	*1,190	293	20	8.8	3.1	4.9	2.9
23	87	115	369	55	2,090	1,320	203	32	7.8	3.7	9.2	4.7
24	73	122	387	50	676	676	178	38	7.4	11	18	7.8
25	63	139	409	50	427	437	658	52	7.4	7.4	11	6.4
26	55	248	373	45	349	263	2,040	51	6.9	10	8.8	4.9
27	59	357	510	*45	424	217	1,230	47	6.4	14	6.9	7.4
28	76	373	1,580	45	1,090	184	420	47	6.4	7.8	6.0	*8.8
29	65	497	3,000	45	-	206	238	44	6.0	6.0	5.3	7.8
30	69	723	2,390	40	-------	280	160	38	6.0	4.5	5.6	6.0
31	229	------	1,800	40	-------	349	-------	38	-------	3.7	5.3	-------
Total	17,967.7	8,197	24,822	8,821	16,841	17,220	9,005	1,442	576.1	263.3	272.0	154.6
Mean	580	273	801	285	601	555	300	46.5	19.2	8.49	8.77	5.15
Cfsm	3.26	1.53	4.50	1.60	3.38	3.12	1.69	0.261	0.108	0.048	0.049	0.029
In.	3.76	1.71	5.19	1.84	3.52	3.60	1.89	0.30	0.12	0.06	0.06	0.03

Calendar year 1954: Max 8,330 Min 2.2 Mean 365 Cfsm 2.05 In. 27.79
Water year 1954-55: Max 8,330 Min 2.0 Mean 289 Cfsm 1.62 In. 22.08

Peak discharge (base, 2,900 cfs).--Oct. 16 (6 p.m.) 12,900 cfs (10.74 ft); Dec. 19 (11:30 a.m.) 3,520 cfs (6.14 ft); Dec. 29 (5:30 p.m.) 3,360 cfs (6.03 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for stations on nearby streams.

Note.--Stage-discharge relation affected by ice Jan. 17 to Feb. 10, Feb. 17-20.

Cattaraugus Creek at Gowanda, N. Y.

Location.--Lat 42°27'50", long 78°56'10", on right bank at Gowanda, Erie County, 380 ft downstream from highway bridge, 600 ft downstream from powerhouse of Niagara Mohawk Power Co., and 4.2 miles downstream from South Branch.

Drainage area.--428 sq mi.

Records available.--November 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 738.74 ft above mean sea level (village of Gowanda benchmark).

Average discharge.--15 years (1940-55), 704 cfs.

Extremes.--Maximum discharge during year, 19,400 cfs Mar. 1 (gage height, 10.78 ft); minimum, 17 cfs Aug. 3 (gage height, 1.04 ft); minimum daily, 52 cfs Aug. 1.
1939-55: Maximum discharge, 35,900 cfs Mar. 17, 1942 (gage height, 13.73 ft), from rating curve extended above 6,500 cfs by logarithmic plotting; minimum, about 6 cfs Aug. 21, 1941; minimum gage height, 0.90 ft Oct. 26, 1951; minimum daily discharge, 52 cfs Sept. 13, 1945, Aug. 1, 1955.

Remarks.--Records good except those for periods of ice effect or partly obstructed intake, which are fair. Diurnal fluctuation at low and medium flow caused by several industrial plants above station.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-15		Oct. 16 to Mar. 1				Mar. 2 to Sept. 30			
1.5	88	1.7	144	5.0	3,390	1.3	48	3.0	820
1.7	141	2.0	250	6.0	5,170	1.5	86	4.0	1,850
2.0	243	2.5	515	7.0	7,290	1.7	137	5.0	3,230
2.5	490	3.0	885	8.0	9,840	2.0	241	6.0	5,050
3.0	845	4.0	1,930	9.0	12,800	2.5	480		
4.0	1,870								

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	318	458	1,210	b260	12,100	1,580	510	250	90	52	104
2	104	270	*437	2,060	b250	4,140	*1,320	450	*220	86	58	98
3	109	550	368	1,720	b230	*1,900	1,070	420	185	84	56	92
4	177	921	368	1,460	b220	3,410	900	*380	165	82	198	85
5	196	884	332	1,120	b210	2,430	766	350	150	80	188	80
6	170	776	266	*2,960	b220	1,680	685	320	145	78	140	67
7	142	613	b250	1,500	b230	b1,120	685	310	140	84	151	75
8	124	607	b260	970	b240	b860	663	370	130	84	104	90
9	117	*580	390	b760	b245	1,290	677	340	140	98	90	77
10	119	443	712	b660	b400	2,200	596	320	135	140	*93	70
11	159	363	528	560	b1,550	4,610	533	300	130	96	130	92
12	172	342	467	455	790	3,080	510	280	165	88	114	107
13	453	290	438	b500	555	1,660	492	260	215	84	189	*91
14	267	268	426	467	b620	1,140	492	250	200	80	403	82
15	1,200	252	1,200	455	b580	1,030	871	225	170	76	202	139
16	3,080	215	977	b410	534	2,640	1,150	245	155	80	136	116
17	790	211	705	b400	509	1,470	1,150	220	140	96	112	88
18	515	207	1,060	b380	461	1,070	965	205	130	72	101	86
19	359	208	981	b370	443	908	782	200	124	*62	85	80
20	*285	252	673	b350	590	892	699	210	118	58	84	73
21	251	450	b450	b310	1,920	2,060	685	185	118	56	86	67
22	228	328	b400	b350	3,320	2,730	589	180	135	54	203	67
23	191	298	b460	b340	2,020	1,800	515	300	125	54	270	86
24	177	302	b480	b300	1,210	1,420	510	357	118	88	129	164
25	167	287	b420	b280	b960	1,190	1,050	422	112	56	116	132
26	155	253	b400	b270	b740	1,060	2,380	491	106	56	96	101
27	193	237	573	b260	1,620	b840	1,210	335	100	78	94	82
28	267	238	3,610	b225	3,000	b700	844	369	96	86	96	93
29	222	383	5,580	b280	-	b840	663	702	92	76	91	102
30	207	505	4,390	b280	------	924	570	420	90	68	97	100
31	262	----	1,890	*b270	-------	1,300	--------	310	--------	56	125	--------
Total	10,958	11,851	29,949	21,932	23,927	64,494	25,602	10,236	4,299	2,426	4,089	2,786
Mean	353	395	966	707	855	2,080	853	330	143	78.3	132	92.9
Cfsm	0.825	0.923	2.26	1.65	2.00	4.86	1.99	0.771	0.334	0.183	0.308	0.217
In.	0.95	1.03	2.60	1.91	2.08	5.60	2.22	0.89	0.37	0.21	0.36	0.24

Calendar year 1954: Max 6,090 Min 56 Mean 669 Cfsm 1.56 In. 21.21
Water year 1954-55: Max 12,100 Min 52 Mean 582 Cfsm 1.36 In. 18.46

Peak discharge (base, 15,000 cfs).--Mar. 1 (10:15 a.m.) 19,400 cfs (10.78 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Intake partly obstructed May 2-23, May 30 to Aug. 2; discharge computed on basis of discharge measurements, pattern of gage-height record, and records for nearby stations.

Buffalo Creek at Gardenville, N. Y.

Location.--Lat 42°51'15", long 78°45'30", on left bank in Gardenville, Erie County, 700 ft downstream from bridge on Union Road and 2 miles upstream from Cayuga Creek.

Drainage area.--145 sq mi.

Records available.--October 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 604.04 ft above mean sea level, unadjusted.

Average discharge.--17 years, 186 cfs.

Extremes.--Maximum discharge during year, 13,000 cfs Mar. 1 (gage height, 9.43 ft), from rating curve extended above 3,200 cfs on basis of slope-area determination at gage height 7.07 ft; minimum, 1.6 cfs July 22, 23; minimum gage height, 0.995 ft Aug. 4. 1938-55: Maximum discharge, that of Mar. 1, 1955; maximum gage height, 11.90 ft Mar. 9, 1942 (ice jam); minimum discharge, 0.7 cfs Aug. 22, 24, 25, 1941; minimum gage height observed, 0.695 ft Aug. 28, 31, Sept. 3, 1939 (backwater from leaves and debris).

Remarks.--Records good except those for periods of ice effect, backwater from aquatic vegetation or debris, or shifting control, which are fair. Diurnal fluctuation at low flow caused by mill 3.2 miles above station.

Revisions (water years).--WSP 1337: 1939-52.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	127	293	324	b18	7,160	351	96	39	7.4	3.8	6.2
2	47	90	238	891	b15	*980	243	86	*34	8.0	3.4	8.2
3	567	369	b160	490	b14	401	244	79	28	e6.8	2.8	7.6
4	375	654	b145	369	b18	1,050	231	72	24	e5.0	9.8	6.4
5	142	539	b124	263	b25	557	156	67	21	e3.6	7.4	5.6
6	77	315	b80	763	b54	362	127	58	20	e3.2	15	4.9
7	57	206	b90	352	b92	b185	127	56	19	e4.8	12	9.8
8	40	160	b108	b175	b80	b145	160	65	17	e4.2	11	6.6
9	33	123	b165	b135	*b84	311	186	65	16	e4.8	7.3	4.1
10	31	99	b300	b140	b190	681	134	58	15	e3.6	*20	3.3
11	48	82	b180	*b102	b720	1,480	104	54	15	e3.2	41	9.1
12	129	76	b165	b80	b380	691	93	51	19	e3.6	14	13
13	1,100	68	b140	b74	b250	340	93	47	20	e2.4	32	8.5
14	168	66	*b130	b80	b230	221	102	43	22	e2.2	93	7.6
15	211	63	b540	b80	b170	198	193	41	20	e2.4	43	*7.6
16	1,530	*60	b370	b68	128	951	433	39	17	e2.6	19	6.2
17	303	57	b210	b62	128	350	628	*35	14	e5.4	11	5.4
18	212	60	b940	b60	118	*229	312	35	12	e4.5	8.4	4.9
19	121	73	596	b52	125	184	173	33	12	3.6	7.2	5.2
20	87	87	b220	b47	256	213	153	32	12	*2.4	6.0	4.3
21	76	202	b145	b44	b780	1,220	*177	31	11	2.0	5.2	3.9
22	*66	120	b135	b52	b1,180	1,070	134	30	8.8	1.8	4.5	3.7
23	60	153	b165	b40	594	488	102	29	6.8	3.0	4.5	4.3
24	53	138	b185	b34	298	330	99	39	7.4	34	4.3	5.2
25	50	113	b175	b32	283	250	635	54	6.4	18	5.2	9.9
26	46	99	b155	b26	b180	213	1,020	78	6.4	10	4.9	15
27	245	82	b260	b22	1,150	b155	298	56	6.8	24	6.4	13
28	272	92	b1,950	b18	1,140	b135	180	50	6.6	18	7.0	16
29	123	512	1,820	b16	-	b185	134	49	6.6	8.2	6.4	12
30	202	492	*2,130	b15	-------	232	110	68	6.4	5.8	6.6	13
31	119	--	542	b17	-------	358	-------	45	-------	5.0	6.8	--
Total	6,614	5,377	12,856	4,923	8,700	21,325	7,133	1,641	469.2	213.5	428.9	230.5
Mean	213	179	415	159	311	688	238	52.9	15.6	6.89	13.8	7.68
Cfsm	1.47	1.23	2.86	1.10	2.14	4.74	1.64	0.365	0.108	0.048	0.095	0.053
In.	1.70	1.38	3.30	1.26	2.23	5.47	1.83	0.42	0.12	0.05	0.11	0.06

Calendar year 1954: Max 3,740 Min 5.6 Mean 227 Cfsm 1.57 In. 21.22
Water year 1954-55: Max 7,160 Min 1.8 Mean 192 Cfsm 1.32 In. 17.93

Peak discharge (base, 6,000 cfs).--Mar. 1 (2 p.m.) 13,000 cfs (9.43 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
e Shifting-control method used.
Note.--Backwater from aquatic vegetation and/or debris May 19 to Aug. 5.

Cayuga Creek near Lancaster, N. Y.

Location.--Lat 42°53'20", long 78°38'40", on right bank just upstream from low flat-crested dam in Como Lake Park, 700 ft downstream from bridge on Bowen Road, 800 ft downstream from Little Buffalo Creek, and 2 miles southeast of Lancaster, Erie County.

Drainage area.--93.3 sq mi.

Records available.--September 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 672.80 ft above mean sea level, unadjusted.

Average discharge.--17 years, 123 cfs.

Extremes.--Maximum discharge during year, 7,900 cfs Mar. 1 (gage height, 9.59 ft); minimum, 0.04 cfs July 23 (gage height, 2.67 ft).
1938-55: Maximum discharge, that of Mar. 1, 1955; maximum gage height, 12.36 ft Mar. 9, 1942 (ice jam); practically no flow part of Aug. 8, 9, 1939, when permanent stoplogs were installed in dam.

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

Rating tables, water year 1954-55, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 1

3.1	5.5	4.6	210
3.5	14	5.0	430
3.9	27	5.5	840
4.0	34	6.0	1,430
4.1	48	7.0	3,120
4.3	102	8.0	5,050

Mar. 2 to Sept. 30

2.7	0.1	3.7	22
2.8	.6	3.9	30
2.9	1.8	4.0	38
3.0	3.4	4.1	54
3.3	10	4.3	102

Note.--Same as preceding table above 4.3 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a13	99	145	188	12	3,640	217	64	14	1.6	0.3	1.2
2	29	70	124	613	10	*499	148	58	12	1.8	.2	1.0
3	671	432	93	258	9.0	215	259	54	*11	1.5	.2	.8
4	344	617	86	219	12	642	215	47	9.4	.9	.2	.7
5	118	350	76	141	15	299	121	38	8.6	.7	.9	.6
6	63	198	44	451	27	195	94	32	8.1	.9	.8	.6
7	42	134	66	175	35	114	98	29	7.2	1.1	1.2	.5
8	27	105	84	124	31	106	108	43	6.3	.8	1.8	.4
9	21	82	140	102	32	260	114	45	6.1	.7	.8	.7
10	20	68	226	96	*135	412	84	34	5.8	.8	4.3	c1.1
11	38	58	134	*76	470	1,180	69	30	5.6	.4	*14	c4.0
12	65	53	121	60	280	418	64	27	8.4	.2	7.1	c5.0
13	1,010	46	108	56	185	199	64	24	9.8	c.1	12	c1.5
14	128	42	*90	62	130	134	76	19	8.8	c.1	41	c1.3
15	158	39	330	62	94	128	285	18	7.8	c.1	13	*c1.6
16	943	*34	233	52	60	627	447	17	6.5	c.1	6.5	1.3
17	195	33	175	42	60	206	628	16	5.3	c.3	3.7	1.0
18	183	34	1,200	40	44	149	234	*15	4.5	c.4	3.2	.8
19	105	48	510	35	50	130	138	14	4.3	c.2	2.5	.6
20	76	59	215	31	90	151	115	13	4.2	*.1	1.9	.5
21	63	168	155	28	340	803	*164	12	3.0	.1	1.4	.4
22	*53	85	118	36	1,040	737	108	12	2.8	.1	1.2	.2
23	40	114	140	26	470	305	81	12	2.5	.2	1.5	.4
24	34	128	155	21	360	221	71	15	2.3	11	1.2	1.5
25	30	102	145	20	170	160	480	30	2.2	2.7	.9	2.1
26	28	93	130	17	127	134	598	50	2.4	1.2	.7	1.5
27	323	73	260	14	827	108	194	30	2.2	1.0	1.4	1.3
28	247	85	1,400	12	712	96	121	23	2.2	1.9	1.6	6.6
29	108	446	1,060	11	-	140	92	20	1.7	1.0	1.2	16
30	142	288	1,690	10	-------	271	76	18	1.5	.5	1.0	17
31	117	--	321	11	-------	289	-------	16	-------	.3	1.5	-------
Total	5,434	4,183	9,774	3,089	5,827.0	12,968	5,563	875	176.5	32.8	129.2	72.2
Mean	175	139	315	99.6	208	418	185	28.2	5.88	1.06	4.17	2.41
Cfsm	1.88	1.49	3.38	1.07	2.23	4.48	1.98	0.302	0.063	0.011	0.045	0.026
In.	2.17	1.67	3.90	1.23	2.32	5.17	2.22	0.35	0.07	0.01	0.05	0.03

Calendar year 1954: Max 3,000 Min 1.5 Mean 154 Cfsm 1.65 In. 22.46
Water year 1954-55: Max 3,640 Min 0.1 Mean 132 Cfsm 1.41 In. 19.19

Peak discharge (base, 3,300 cfs).--Mar. 1 (10:30 a.m.) 7,900 cfs (9.59 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated from reconstructed gage-height graph based on record for adjacent days.
c Backwater from debris.
Note.--Stage-discharge relation affected by ice Dec. 5-7, 9, 13-15, 17, 18, 20-28, Jan. 8 to Feb. 24, Mar. 6-9, 27-29.

Cazenovia Creek at Ebenezer, N. Y.

Location.--Lat 42°49'45", long 78°46'40", on right bank 40 ft upstream from highway bridge on Ridge Road in Ebenezer, Erie County, 4.4 miles upstream from mouth, and 5 miles southeast of Buffalo.

Drainage area.--136 sq mi.

Records available.--June 1940 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 606.86 ft above mean sea level, unadjusted.

Average discharge.--15 years, 213 cfs.

Extremes.--Maximum discharge during year, 13,500 cfs Mar. 1 (gage height, 13.82 ft), from rating curve extended above 7,700 cfs by logarithmic plotting; minimum, 2.8 cfs July 23 (gage height, 0.50 ft, from graph based on gage readings; backwater from weeds).
1940-55: Maximum discharge, that of Mar. 1, 1955; minimum, 2.6 cfs Nov. 7, 1953; minimum gage height, 0.42 ft Aug. 25, 1941, Aug. 17, 1950.

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

Rating tables, water year 1954-55, except periods of ice effect or backwater from debris or weeds (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 1				Mar. 1 to Apr. 3		Apr. 4 to Sept. 30			
1.0	15	2.5	535	1.5	132	0.4	1.8	1.2	67
1.1	26	3.0	830	1.7	197	.5	3.1	1.5	157
1.2	40	4.0	1,530	2.0	314	.6	5.1	1.7	245
1.4	83	6.0	3,310	2.5	564	.7	8.2	2.0	428
1.7	170	8.0	5,550	3.0	874	.8	13	2.5	890
2.0	280	10.0	8,070	4.0	1,600	.9	20	3.0	1,500
				5.0	2,430	1.0	31		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	c210	264	379	21	7,310	422	a101	44	7.9	4.3	7.2
2	52	c145	219	1,030	18	*1,270	317	77	*37	7.9	3.7	8.6
3	396	603	150	565	17	522	310	74	30	a7.9	4.7	9.2
4	294	722	135	513	23	1,370	a287	74	28	a7.6	18	9.2
5	174	629	102	355	29	713	186	72	a24	7.0	44	8.6
6	83	400	70	1,140	58	445	146	67	22	5.7	24	8.2
7	58	307	80	430	74	210	154	65	21	4.9	16	5.8
8	39	296	104	235	64	160	173	a74	21	4.1	14	5.2
9	34	236	160	180	*66	432	169	70	18	4.3	9.6	5.2
10	34	161	310	208	220	888	a140	61	17	a4.3	*39	11
11	58	c122	195	*130	960	2,350	120	59	16	4.3	104	16
12	241	c104	174	100	580	884	107	53	a20	4.3	30	14
13	1,520	c92	150	92	400	457	110	44	21	4.1	36	9.6
14	212	c82	*145	102	260	265	122	45	24	3.9	145	8.2
15	608	c76	420	100	190	242	286	a44	23	3.5	62	*8.2
16	2,030	*c72	395	86	140	1,430	515	39	19	3.5	19	7.2
17	405	c66	250	74	140	452	a905	*37	17	a4.5	13	6.4
18	284	c64	1,230	70	130	*273	389	39	14	3.5	10	5.8
19	167	c76	602	64	140	200	222	36	a13	3.5	8.2	5.8
20	c122	c100	245	58	260	223	194	34	11	*3.1	8.2	5.2
21	c100	c220	160	54	860	1,490	*245	33	12	3.3	7.2	4.9
22	*c82	c145	150	64	1,500	1,320	165	a29	10	3.3	5.8	4.7
23	c68	c200	185	50	750	627	132	27	9.1	3.1	5.4	4.9
24	c58	c175	210	42	390	410	a129	37	7.9	21	5.4	7.6
25	c54	c140	190	39	300	298	706	47	8.2	10	6.0	9.6
26	c50	c112	175	32	210	254	1,140	89	a8.2	7.8	5.8	12
27	358	c96	300	27	1,300	170	304	57	8.2	14	8.6	12
28	349	c110	2,350	22	1,450	150	186	47	7.9	10	8.6	17
29	c165	529	2,020	20	-	185	140	a45	7.3	6.4	6.6	11
30	c200	443	2,590	18	-------	213	113	a49	7.3	6.0	6.0	10
31	c165	---	672	20	-------	334	--------	51	--------	4.8	8.6	---
Total	8,480	6,733	14,402	6,299	10,550	25,547	8,534	1,676	526.1	189.5	686.7	258.3
Mean	274	224	465	203	377	824	284	54.1	17.5	6.11	22.2	8.61
Cfsm	2.01	1.65	3.42	1.49	2.77	6.06	2.09	0.398	0.129	0.045	0.163	0.063
In.	2.32	1.84	3.94	1.72	2.89	6.99	2.33	0.46	0.14	0.05	0.19	0.07

Calendar year 1954: Max 3,600 Min 7.3 Mean 262 Cfsm 1.93 In. 26.16
Water year 1954-55: Max 7,310 Min 3.1 Mean 230 Cfsm 1.69 In. 22.94

Peak discharge (base, 5,300 cfs).--Mar. 1 (9:30 a.m.) 13,500 cfs (13.82 ft).
* Discharge measurement made on this day.
a No gage-height record; discharge estimated from reconstructed gage-height graph based on adjacent record, weather records, and records for nearby stations.
c Backwater from debris.
Note.--Stage-discharge relation affected by ice Dec. 3-11, 13-15, 17, 20-28, Jan. 7-9, Jan. 11 to Feb. 22, Feb. 24-27, Mar. 7, 8, 19, 27-29. Backwater from weeds July 21 to Sept. 30 (no gage-height record July 24, 31, Aug. 7, 14, 15, 21, 28, Sept. 3-5, 11, 18, 25). Discharge Apr. 4 to Sept. 30 computed from once- or twice-daily wire-weight-gage readings.

Niagara River at Buffalo, N. Y.

Location.--Lat 42°52'40", long 78°53'25", at head of Niagara River at Buffalo.

Drainage area.--260,400 sq mi.

Records available.--January 1860 to September 1955. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Flow computed by means of several U. S. Lake Survey gages on river.

Average discharge.--95 years (January 1860 to September 1955), 203,000 cfs.

Extremes.--Maximum daily discharge during year, 272,000 cfs Mar. 22; minimum daily, 189,000 cfs Dec. 29.
1935-55: Maximum daily discharge, 272,000 cfs Mar. 22, 1955; minimum daily, 100,000 cfs Feb. 6, 7, 1936.
1860-1955: Maximum monthly discharge, 254,000 cfs July 1862; minimum monthly, 117,000 cfs February 1936.

Remarks.--Records do not include water diverted from Lake Michigan by Illinois and Michigan Canal during period of its operation prior to 1910, and by Chicago Sanitary and Ship Canal, operation of which began in 1900, and from Lake Erie by Welland and Black Rock Canals. They include water diverted into Lake Superior from Hudson Bay drainage by the Long Lake project, operation of which began in July 1939, and by the Ogoki project, operation of which began in July 1943. The diversions into Lake Superior have averaged about 5,000 cfs since July 1943.

Cooperation.--Records of daily discharge furnished by Corps of Engineers.

Discharge, in thousands of cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	204	212	212	212	209	222	229	234	232	230	225	217
2	203	218	215	222	198	221	228	231	229	229	222	214
3	212	225	218	218	208	201	227	233	228	226	222	211
4	210	235	219	210	205	212	227	233	229	227	221	214
5	200	215	207	212	208	215	227	239	228	227	224	214
6	201	215	204	222	207	230	234	236	226	226	223	216
7	199	216	219	220	211	234	237	232	227	223	228	209
8	206	215	225	219	207	222	233	238	225	225	205	204
9	208	209	228	228	211	222	234	232	227	228	216	208
10	205	211	222	218	212	220	231	229	227	223	222	217
11	209	219	216	214	219	227	223	231	227	219	217	208
12	210	209	213	220	221	226	224	230	235	215	206	210
13	206	213	205	221	206	223	226	229	237	221	198	206
14	204	220	209	223	209	217	227	223	233	223	225	215
15	227	208	218	257	212	224	236	228	233	227	220	206
16	231	212	215	232	210	241	227	224	224	227	219	206
17	231	210	209	226	210	221	229	228	225	226	217	208
18	213	210	226	218	207	230	225	235	228	226	217	208
19	212	211	214	214	204	220	230	233	232	219	219	209
20	216	213	211	217	206	222	223	227	236	221	220	207
21	215	212	212	215	210	219	229	225	235	223	222	200
22	216	218	222	230	210	272	235	226	227	224	221	194
23	224	212	231	237	215	245	229	229	230	229	214	203
24	216	212	218	221	209	227	224	229	231	219	214	210
25	214	216	209	235	210	212	228	235	229	223	216	204
26	215	217	213	231	210	227	231	229	229	223	218	202
27	226	217	209	238	210	248	234	229	227	224	218	212
28	218	231	214	217	210	234	232	231	228	216	215	209
29	228	246	189	224	-	222	234	234	226	218	215	205
30	229	226	244	219	------	225	235	234	229	220	227	211
31	216	---	216	213	------	227	--------	232	--	223	227	---
Total	6,624	6,503	6,682	6,903	5,864	7,008	6,888	7,158	6,879	6,930	6,773	6,257
Mean	214	217	216	223	209	226	230	231	229	224	218	209
Cfsm	0.822	0.833	0.829	0.856	0.803	0.868	0.883	0.887	0.879	0.860	0.837	0.803
In.	0.95	0.93	0.96	0.99	0.84	1.00	0.99	1.02	0.98	0.99	0.96	0.90

Calendar year 1954: Max 246 Min 174 Mean 212 Cfsm 0.814 In. 11.08
Water year 1954-55: Max 272 Min 189 Mean 220 Cfsm 0.845 In. 11.51

Note.--All figures of discharge are expressed in thousands of cubic feet per second.

Little Tonawanda Creek at Linden, N. Y.

Location.--Lat 42°52'35", long 78°09'45", on right bank at upstream side of highway bridge in Linden, Genesee County, 7 miles upstream from mouth.

Drainage area.--22.0 sq mi.

Records available.--July 1912 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 1,081.62 ft above mean sea level, datum of 1929. Prior to Aug. 26, 1943, staff gage at same site and datum.

Average discharge.--42 years (1912-19, 1920-55), 27.3 cfs.

Extremes.--Maximum discharge during year, 2,460 cfs Mar. 1 (gage height, 14.83 ft); minimum, 0.08 cfs Aug. 3, 4 (gage height, 0.145 ft, backwater from aquatic vegetation and debris).
1912-55: Maximum discharge, that of Mar. 1, 1955; minimum, that of Aug. 3, 4, 1955.

Remarks.--Records excellent except those for periods of backwater from aquatic vegetation or debris, no gage-height record, or those for discharges below 2 cfs, which are good, and those for periods of ice effect, which are fair.

Revisions (water years).--WSP 564: 1919(M). WSP 729: 1931.

Rating tables, water year 1954-55, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 1

0.3	0.8	1.1	19	4.0	287
.4	1.7	1.5	38	5.0	437
.5	2.8	2.0	70	6.0	617
.7	6.5	3.0	160	8.0	1,040

Mar. 2 to Sept. 30

0.15	0.1	0.5	2.5
.2	.2	.7	6.2
.3	.6	1.1	19
.4	1.4		

Note.--Same as preceding table above 1.1 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.9	11	22	58	b12	*1,030	97	22	6.2	1.0	0.1	0.3
2	4.4	9.7	21	135	b12	164	69	20	5.3	1.0	.1	.2
3	30	27	b16	79	b11	75	88	19	4.3	.8	.1	.2
4	24	73	b16	74	b11	154	80	16	3.9	.8	.1	.3
5	11	59	b15	46	b11	84	56	14	3.6	.8	.1	.3
6	7.0	44	b14	96	b11	60	46	12	3.2	.7	.1	.2
7	4.8	32	b13	52	b12	b35	55	11	2.8	.7	.1	.2
8	3.6	28	b15	38	*12	b32	47	16	2.7	.7	.1	.2
9	3.3	22	b20	31	12	90	42	17	*2.6	.7	.1	.2
10	3.0	17	34	32	24	133	32	12	2.2	.6	.1	.2
11	3.5	16	26	b24	67	280	27	11	2.2	.5	*.2	.4
12	4.2	14	24	*b23	38	123	27	10	2.6	.5	.2	.4
13	57	13	24	b22	b28	72	27	9.0	2.4	.5	1.5	.3
14	16	12	*23	21	b22	48	*26	8.2	2.5	.5	2.4	.3
15	16	11	61	22	21	46	52	7.4	2.2	.5	.9	.4
16	114	11	45	b20	19	121	80	7.0	2.1	.6	.5	.3
17	29	*9.7	b32	b19	18	*60	96	6.2	1.8	.5	.3	.3
18	19	9.4	59	b18	16	48	59	6.0	1.6	.4	.3	.3
19	14	9.7	58	b17	16	42	44	5.4	1.4	.4	.4	.2
20	11	10	b32	b14	23	45	36	*5.0	1.5	.3	.4	*.2
21	*9.4	14	b26	b17	90	221	40	4.5	1.5	.3	.2	a.1
22	8.3	12	b24	b19	150	183	31	4.2	1.4	.3	.2	a.1
23	7.5	11	b24	b15	75	87	25	5.4	1.4	.3	.3	a.1
24	6.5	12	24	b14	50	68	24	5.7	1.1	.3	.3	.3
25	6.2	12	21	b14	43	53	92	8.8	1.2	.3	.3	.2
26	6.0	11	b20	b13	33	50	138	11	1.3	*.3	.3	.2
27	24	11	29	b12	143	b34	67	7.2	1.1	.2	.4	.2
28	24	11	239	b13	166	b41	42	5.5	1.0	.2	.4	.3
29	15	22	254	b13	-	b46	32	12	1.0	.2	.3	.2
30	12	27	218	b13	-------	71	26	8.0	1.0	.2	.3	.3
31	12	--- ---	89	b12	-------	99	--------	6.7	--------	.1	.3	--------
Total	506.6	581.5	1,538	996	1,146	3,695	1,603	313.2	69.1	15.2	11.4	7.4
Mean	16.3	19.4	49.6	32.1	40.9	119	53.4	10.1	2.30	0.49	0.37	0.25
Cfsm	0.741	0.882	2.25	1.46	1.86	5.41	2.43	0.459	0.105	0.022	0.017	0.011
In.	0.86	0.98	2.60	1.68	1.94	6.25	2.71	0.53	0.12	0.03	0.02	0.01

Calendar year 1954: Max 561 Min 0.4 Mean 29.4 Cfsm 1.34 In. 18.12
Water year 1954-55: Max 1,030 Min 0.1 Mean 28.7 Cfsm 1.30 In. 17.73

Peak discharge (base, 530 cfs).--Dec. 28 (11 p.m.) 651 cfs (6.17 ft); Mar. 1 (8:15 a.m.) 2,460 cfs (14.83 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for adjacent days.
b Stage-discharge relation affected by ice.
Note.--Backwater from aquatic vegetation and/or debris May 10-20, Aug. 2-11.

Tonawanda Creek at Batavia, N. Y.

Location.--Lat 42°59'55", long 78°11'20", on right bank 150 ft downstream from municipal dam, 500 ft upstream from Walnut Street Bridge in Batavia, Genesee County, and 3½ miles downstream from Little Tonawanda Creek.

Drainage area.--172 sq mi.

Records available.--July 1944 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 876.01 ft above mean sea level (city of Batavia benchmark).

Average discharge.--11 years, 193 cfs.

Extremes.--Maximum discharge during year, 5,240 cfs Mar. 2 (gage height, 13.44 ft); minimum, 0.4 cfs Aug. 5, 6, 7 (gage height, 0.955 ft).
1944-55: Maximum discharge, 5,530 cfs Mar. 29, 1950; maximum gage height, 13.85 ft Apr. 6, 1947; minimum discharge, that of Aug. 5, 6, 7, 1955; minimum gage height, 0.59 ft July 26, 27, 1948.
Maximum stage known, 14.5 ft in March 1942, from records of city of Batavia.

Remarks.--Records good except those for periods of no gage-height record or backwater from aquatic vegetation or debris, which are fair. Slight regulation at low flow by plants above station.

Rating tables, water year 1954-55, except periods of backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-16

1.3	8.6	2.0	98
1.4	14	3.0	425
1.6	31	4.0	691
1.8	58		

Oct. 17 to Sept. 30

0.98	0.6	1.4	12	6.0	1,250
1.0	.8	1.6	30	9.0	2,340
1.1	2.2	1.8	57	12.0	4,020
1.2	4.4	2.0	100		
1.3	7.7	3.0	388		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.6	103	195	522	72	2,820	628	176	48	8.8	1.0	a6.0
2	23	88	176	614	72	3,940	462	147	44	22	.6	a6.6
3	117	184	140	743	68	*1,020	425	140	*38	24	.6	a5.8
4	532	584	128	438	65	796	581	125	34	12	.7	a4.8
5	184	491	125	326	63	930	366	108	31	8.6	1.5	a4.4
6	88	318	90	477	65	490	263	95	29	8.1	.9	a3.8
7	63	240	103	491	68	283	266	90	27	8.1	3.5	a4.1
8	46	217	98	269	*74	246	272	103	26	7.3	3.3	4.2
9	39	179	125	220	74	275	263	120	25	8.1	6.4	4.2
10	34	137	280	223	98	833	220	c98	c22	9.4	c7.8	c4.1
11	37	111	232	169	424	997	182	c88	c20	7.3	*c6.6	c5.2
12	56	100	201	*134	405	1,580	166	c80	21	5.9	5.3	c5.0
13	462	88	189	153	238	738	169	c70	24	4.7	21	c6.8
14	266	81	159	144	195	356	162	c60	24	3.7	97	c7.0
15	110	74	*412	137	176	291	207	c56	c25	4.0	47	c5.0
16	636	*68	438	120	144	629	665	c52	c21	4.8	19	*c4.8
17	528	66	244	120	144	*623	540	c48	c16	5.8	12	4.2
18	211	66	482	125	128	334	600	*c44	14	4.8	9.0	4.4
19	140	68	733	117	122	269	294	40	14	3.6	7.0	5.6
20	106	74	325	95	150	294	255	37	14	3.2	5.4	2.6
21	*88	108	204	86	460	581	269	34	12	2.5	a4.4	2.0
22	76	103	166	108	832	1,530	*232	35	12	1.2	a8.6	3.2
23	65	90	176	106	1,030	1,030	185	38	12	1.0	a27	4.7
24	59	106	185	93	549	523	159	46	11	4.5	a16	5.4
25	54	100	169	90	350	391	284	54	12	2.5	a12	9.4
26	52	90	150	88	255	310	964	93	10	*2.8	a10	11
27	124	78	192	78	371	243	677	68	9.9	3.6	a6.8	9.2
28	334	83	510	72	1,250	208	318	51	9.4	2.6	a5.8	8.1
29	153	156	*2,100	78	-	280	232	54	8.8	2.4	a3.8	9.0
30	117	291	*1,660	76	------	337	204	78	8.3	1.8	a4.3	8.3
31	100	-- --	1,350	74	-------	592	-------	52	--------	2.3	a6.6	-- ----
Total	4,909.6	4,542	11,737	6,586	7,942	23,769	10,510	2,380	622.4	191.4	360.9	168.9
Mean	158	151	379	212	284	767	350	76.8	20.7	6.17	11.6	5.63
Cfsm	0.919	0.878	2.20	1.23	1.65	4.46	2.03	0.447	0.120	0.036	0.067	0.033
In.	1.06	0.98	2.54	1.42	1.72	5.14	2.27	0.51	0.13	0.04	0.08	0.04

Calendar year 1954: Max 3,840 Min 6.4 Mean 213 Cfsm 1.24 In. 16.77
Water year 1954-55: Max 3,940 Min 0.6 Mean 202 Cfsm 1.17 In. 15.93

Peak discharge (base, 1,800 cfs).--Dec. 29 (2:15 p.m.) 2,780 cfs (9.97 ft); Mar. 2 (2 a.m.) 5,240 cfs (13.44 ft); Mar. 12 (6:30 a.m.) 1,930 cfs (7.99 ft); Mar. 22 (6:30 a.m.) 1,810 cfs (7.68 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of recorded range in stage, observer's inspections, weather records, and records for Little Tonawanda Creek at Linden.

c Backwater from aquatic vegetation or debris.

Barge Canal at lock 30, Macedon, N. Y.

Location.--Lat 43°04'20", long 77°17'45", on left bank at lock 30, in Macedon, Wayne County, 500 ft downstream from headgate in old Erie Canal.

Records available.--November 1919 to December 1920, October 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 448.80 ft above mean sea level (New York State Barge Canal benchmark). Nov. 1, 1919, to Dec. 28, 1920, staff gage at same site at different datum.

Extremes.--1919-20, 1950-55: Maximum daily discharge, 762 cfs Dec. 9, 1954; minimum daily, 1.1 cfs Mar. 20, 21, 1953.

Remarks.--Records excellent above 50 cfs and good below except those for periods of backwater from aquatic vegetation or no record of head on needle sill, which are fair. This record represents net diversion from Niagara River basin into Oswego River basin through Erie division of Barge Canal. During period of no navigation, Dec. 11 to Apr. 4, discharge consists chiefly of leakage through guard gates and runoff from small areas tributary to canal above station.

Cooperation.--Records of gate openings, lockages, and elevations of water surface in Barge Canal above and below lock 30 furnished by New York State Department of Public Works.

Revisions (water years).--WSP 1237: 1951.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	332	366	369	a49	4.0	222	24	139	380	400	400	402
2	323	381	366	a49	4.0	208	a27	142	380	410	400	414
3	331	394	246	37	4.0	49	a29	136	370	410	400	411
4	328	388	108	27	4.0	49	a26	135	380	390	400	405
5	347	400	108	16	a4.7	a29	123	135	370	400	400	395
6	342	373	106	27	a4.7	a29	75	130	380	400	390	404
7	339	386	104	24	5.4	15	69	130	390	390	404	399
8	345	373	351	a17	5.4	12	102	130	380	390	392	418
9	341	373	*762	a16	4.7	11	103	130	380	390	401	399
10	332	375	480	11	4.7	15	118	130	390	380	417	403
11	344	384	116	11	7.9	44	130	125	380	380	409	403
12	333	378	a78	11	a6.2	a26	142	130	370	410	*415	406
13	342	372	66	8.9	a5.4	a26	130	130	380	390	406	406
14	341	378	57	*8.9	4.0	12	127	130	380	380	415	399
15	*368	*381	69	a8.9	5.4	11	*127	130	380	390	399	399
16	383	375	54	a7.9	4.7	14	129	120	370	400	404	399
17	388	375	26	7.9	*6.2	15	130	140	*380	390	401	412
18	385	372	a63	6.2	5.4	10	127	140	380	390	395	415
19	376	375	a40	7.0	a6.2	a9.0	130	*135	380	390	401	*399
20	382	366	29	7.9	a7.0	a9.0	129	135	390	380	407	402
21	373	372	25	6.2	8.2	*14	132	130	400	390	398	399
22	379	381	22	a6.2	a18	63	144	124	390	410	413	408
23	385	372	16	a7.0	31	75	135	135	390	390	402	406
24	378	366	a15	7.0	25	41	135	125	390	390	405	403
25	372	375	a12	7.0	22	22	132	116	390	*380	401	406
26	381	378	a 11	7.0	a37	a22	138	118	390	390	410	402
27	386	372	9.9	7.0	a39	a24	136	124	390	390	390	408
28	383	381	15	5.4	60	24	127	125	390	410	417	415
29	385	378	49	a4.7	-	13	136	125	390	400	405	406
30	379	363	82	a4.0	-----	19	136	145	400	400	405	415
31	376	----	a63	4.0	-------	24	--------	260	----	400	411	----
Total	11,179	11,302	3,917.9	424.1	344.2	1,156.0	3,348	4,179	11,510	12,210	12,513	12,174
Mean	361	377	126	13.7	12.3	37.3	112	135	384	394	404	406
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 762 Min 3.0 Mean 205 Cfsm - In. -
Water year 1954-55: Max 762 Min 4.0 Mean 231 Cfsm - In. -

* Discharge measurement made on this day.
a No record of head on needle sill; discharge estimated on basis of records of lock operation, weather records, and notes by observer and engineer.
Note.--Backwater from aquatic vegetation May 4 to Aug. 6.

Genesee River at Scio, N. Y.

Location.--Lat 42°09'50", long 77°58'50", on left bank 0.4 mile upstream from Vandermark Creek and three-quarters of a mile upstream from Scio, Allegany County.

Drainage area.--309 sq mi.

Records available.--June 1916 to September 1955.

Gage.--Water-stage recorder. Prior to Aug. 11, 1938, staff gage and Aug. 11 to Oct. 11, 1938, water-stage recorder, at same site at datum 1.0 ft higher.

Average discharge.--39 years, 384 cfs.

Extremes.--Maximum discharge during year, 6,080 cfs Mar. 1 (gage height, 8.76 ft); minimum, 14 cfs Aug. 10; minimum gage height, 0.60 ft Oct. 9, July 23.
1916-55: Maximum discharge, 12,200 cfs Nov. 25, 1950 (gage height, 11.22 ft); minimum, 5.8 cfs Sept. 4, 1939; minimum gage height, 0.18 ft Aug. 28, 1949, Aug. 16, 18, 1950.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation, which are fair. Records of chemical analyses and water temperatures for the water year 1955 are given in WSP 1400.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55, except periods of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-16				Oct. 16 to Sept. 30					
0.5	19	1.4	159	0.4	12	1.5	182	6.0	2,750
.7	37	2.0	332	.5	18	2.0	313	8.0	4,950
.9	63	3.0	746	.7	34	3.0	711		
				1.0	78	4.0	1,240		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	36	82	735	b68	4,300	461	192	70	37	24	37
2	39	37	80	1,330	b64	2,540	411	*177	63	37	22	33
3	30	42	*68	921	b54	1,360	383	168	57	35	20	31
4	28	50	b64	*769	b52	2,860	*359	157	51	34	22	29
5	27	56	b60	628	b50	3,480	313	148	46	32	26	29
6	26	56	b44	1,010	b56	2,420	293	135	45	34	21	28
7	25	54	b56	711	b62	b1,450	287	131	43	37	18	26
8	24	*51	60	521	b66	b1,060	268	184	43	33	*18	*26
9	23	52	63	426	68	*1,090	247	155	50	39	17	25
10	23	52	78	404	80	1,170	218	135	51	50	15	25
11	23	48	73	319	172	2,900	201	131	46	38	20	25
12	23	48	68	249	b145	2,270	221	120	192	29	33	28
13	27	46	68	b225	b130	1,490	244	110	106	27	270	26
14	36	45	95	b205	b125	1,090	224	106	84	26	760	23
15	*54	44	406	206	108	907	228	96	72	26	145	23
16	515	43	278	b185	*100	981	221	91	60	25	90	24
17	136	43	b165	173	96	784	218	86	52	28	114	23
18	88	48	221	b150	91	669	224	82	50	29	76	23
19	70	46	199	b135	89	601	196	78	46	26	70	22
20	60	48	b124	b118	100	529	187	75	45	25	52	22
21	54	65	b100	b100	218	888	189	70	45	24	43	20
22	48	80	b86	129	772	2,030	182	65	48	23	40	19
23	44	67	b110	b118	931	1,390	168	68	44	25	52	22
24	42	62	137	b104	b620	1,050	177	80	43	37	44	44
25	40	63	b114	b96	b490	840	228	72	40	38	37	50
26	39	63	b96	b92	405	829	301	82	39	26	34	32
27	40	62	112	b80	572	697	273	75	39	26	33	26
28	44	60	601	b82	1,440	b580	239	67	39	*34	33	28
29	42	77	1,980	b74	-	533	216	82	38	30	31	32
30	39	93	1,530	b72	------	512	206	75	37	25	32	29
31	37		968	b70	------	508	------	*72	------	22	45	-
Total	1,779	1,637	8,186	10,437	7,224	43,808	7,583	3,365	1,684	957	2,257	830
Mean	57.4	54.6	264	337	258	1,413	253	109	56.1	30.9	72.8	27.7
Cfsm	0.186	0.177	0.854	1.09	0.835	4.57	0.819	0.353	0.182	0.100	0.236	0.090
In.	0.21	0.20	0.99	1.26	0.87	5.27	0.91	0.41	0.20	0.12	0.27	0.10

Calendar year 1954: Max 3,280 Min 16 Mean 314 Cfsm 1.02 In. 13.80
Water year 1954-55: Max 4,300 Min 15 Mean 246 Cfsm 0.796 In. 10.81

Peak discharge (base, 3,800 cfs).--Mar. 1 (3:15 p.m.) 6,080 cfs (8.76 ft); Mar. 5 (11:30 a.m.) 4,320 cfs (7.49 ft); Mar. 11 (5:15 p.m.) 4,950 cfs (8.00 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from aquatic vegetation Oct. 1-15, June 26 to Sept. 30.

Caneadea Creek at Caneadea, N. Y.

Location.--Lat 42°23'10", long 78°09'45", on left bank at Caneadea, Allegany County, 800 ft upstream from small tributary and 0.6 mile upstream from mouth.

Drainage area.--61.5 sq mi.

Records available.--July 1949 to September 1955.

Gage.--Water-stage recorder.

Average discharge.--6 years, 82.5 cfs (adjusted for storage).

Extremes.--Maximum discharge during year, 548 cfs Dec. 17 (gage height, 3.97 ft); minimum, 0.7 cfs Nov. 11, 13 (gage height, 2.085 ft); minimum daily, 0.9 cfs Nov. 13, 14. 1949-55: Maximum discharge, 1,600 cfs Apr. 28, 1954 (gage height, 5.17 ft); maximum gage height, 5.73 ft Feb. 28, 1952 (ice jam); minimum discharge, that of Nov. 11, 13, 1954; minimum daily, that of Nov. 13, 14, 1954; minimum gage height, 1.63 ft Oct. 21, 1949.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair. Considerable regulation by Rushford Lake (capacity, 1,106,000,000 cu ft) about 2 miles above station.

Rating tables, water year 1954-55, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 17				Dec. 18 to Sept. 30			
2.09	0.7	2.5	27	2.1	1.2	2.7	62
2.1	1.0	2.7	58	2.2	4.6	3.0	133
2.2	4.4	3.0	129	2.3	11	3.5	302
2.3	9.0	3.5	301	2.4	20	4.0	566
2.4	16	4.0	566	2.5	31		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	301	2.0	3.2	b3.8	b2.3	b29	*101	61	12	3.5	3.7	6.3
2	301	2.0	2.9	4.0	b2.1	8.5	145	52	11	3.8	3.5	5.5
3	297	2.0	*b2.7	b3.7	b2.0	5.5	130	46	8.8	3.2	3.5	5.0
4	293	1.6	b2.5	3.5	b1.8	6.6	109	40	8.4	3.0	4.2	5.0
5	289	1.6	b2.4	b3.5	b1.7	4.6	92	*38	7.8	3.2	4.0	5.0
6	289	1.5	b2.2	b3.8	b1.6	4.4	80	31	7.4	2.5	3.8	4.6
7	289	1.3	b2.0	*b4.0	b1.7	b3.8	76	27	7.2	2.4	4.2	4.6
8	285	*1.1	b2.4	b3.3	b1.8	b3.8	70	29	6.4	2.8	3.7	4.2
9	285	1.0	b2.9	b3.0	b2.1	*4.6	64	27	6.0	4.8	3.7	4.4
10	280	1.0	b2.7	b2.8	b2.5	4.0	57	24	5.6	19	3.7	4.8
11	276	1.1	b2.9	b130	b2.8	7.2	52	22	5.2	17	3.8	5.0
12	272	1.0	b2.9	251	b2.5	5.0	51	21	6.0	14	3.8	5.0
13	206	.9	b2.7	248	b2.3	4.4	47	19	6.2	11	7.8	*4.4
14	53	.9	b160	244	b2.1	4.0	46	17	5.6	9.6	16	4.2
15	54	1.0	328	240	*b2.0	3.8	47	16	5.0	8.2	18	4.6
16	53	1.0	319	237	b1.9	4.6	51	16	5.0	7.2	16	4.4
17	53	1.0	391	237	b1.8	b4.0	54	15	4.2	6.6	14	4.4
18	53	1.0	494	230	b1.7	3.8	56	15	4.0	5.8	*12	4.4
19	53	1.0	476	226	b1.7	b3.8	56	12	4.0	4.6	11	4.4
20	53	1.3	386	223	b2.4	4.6	54	10	3.9	4.0	9.6	c4.4
21	*53	1.3	278	216	4.4	6.0	52	9.2	4.4	3.8	8.2	c4.2
22	53	1.1	220	210	6.0	7.2	51	8.6	5.6	3.8	9.2	c4.2
23	54	1.1	114	206	4.4	5.8	45	8.4	5.2	4.2	11	c4.6
24	54	97	b3.7	b106	b3.8	4.6	43	8.6	5.0	4.2	8.8	c4.6
25	54	332	b3.3	b3.2	b3.7	4.6	64	11	4.2	3.7	7.5	c4.4
26	54	332	b4.0	b3.0	b3.5	4.4	153	13	4.2	3.7	6.3	c4.4
27	55	328	4.6	b2.8	b6.6	b4.2	150	12	3.7	3.8	6.3	c4.6
28	41	319	5.0	b2.6	b9.2	b3.8	114	12	3.5	*3.7	6.0	c5.0
29	3.4	153	4.6	b2.4	-	b4.2	92	14	3.5	3.5	5.8	c4.2
30	2.5	3.6	b4.0	b2.3	--------	4.4	74	13	3.5	3.5	7.2	c4.4
31	2.2	--------	b3.7	b2.3	--------	23	--------	*13	--------	3.8	7.2	--------
Total	4,461.1	1,593.4	3,233.3	3,058.0	82.4	192.2	2,276	660.8	172.5	177.9	233.5	139.2
Mean	144	53.1	104	98.6	2.94	6.20	75.9	21.3	5.75	5.74	7.53	4.64

Adjusted for change in contents in Rushford Lake

Mean	16.8	17.6	57.6	69.5	94.0	299	75.9	15.9	4.82	4.84	7.53	3.71
Cfsm	0.273	0.286	0.937	1.13	1.53	4.86	1.23	0.259	0.078	0.079	0.122	0.060
In.	0.32	0.32	1.08	1.30	1.59	5.61	1.38	0.30	0.09	0.09	0.14	0.07

	Observed			Adjusted			
Calendar year 1954:	Max 1,110	Min 0.9	Mean 69.2	Mean 68.3	Cfsm 1.11	In. 15.08
Water year 1954-55:	Max 494	Min 0.9	Mean 44.6	Mean 55.7	Cfsm 0.906	In. 12.29

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
c Backwater from debris.

Note.--Backwater from aquatic vegetation May 20 to July 9. Records of change in contents in Rushford Lake furnished by Rochester Gas and Electric Corp.

Genesee River at Portageville, N. Y.

Location.--Lat 42°34'10", long 78°02'45", on left bank at Portageville, Wyoming County, 300 ft downstream from small tributary, 350 ft downstream from Pennsylvania Railroad bridge, and 0.7 mile upstream from Upper Falls.

Drainage area.--982 sq mi.

Records available.--August 1908 to September 1955. Published as "at St. Helena" August 1908 to September 1950. Records published for both sites December 1945 to September 1950.

Gage.--Water-stage recorder at present site and datum since Dec. 16, 1945. Datum of gage is 1,082.60 ft above mean sea level (levels by Corps of Engineers). Prior to Aug. 24, 1911, chain gage and Aug. 24, 1911, to Sept. 30, 1950, water-stage recorder, at site 8 miles downstream at different datum.

Average discharge.--47 years, 1,217 cfs (unadjusted).

Extremes.--Maximum discharge during year, 20,700 cfs Mar. 1 (gage height, 13.99 ft, from floodmark); minimum, 41 cfs July 23, 26 (gage height, 2.10 ft).

1908-55: Maximum discharge, 44,400 cfs May 17, 1916 (gage height, 12.81 ft, site and datum then in use); maximum gage height, 19.28 ft Mar. 29, 1950; minimum discharge, 18 cfs Oct. 5, 17, 1913 (gage height, 1.70 ft, site and datum then in use).

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are fair. Diurnal fluctuation at low flow caused by powerplants. Some seascnal regulation by Rushford Lake (capacity, 1,106,000,000 cu ft).

Revisions (water years).--WSP 264: 1908. WSP 564: 1916(M). WSP 759: Drainage area.

Correction.--The daily mean discharge for Dec. 1, 1927, has been corrected to 32,400 cfs, superseding erroneous figure published in WSP 664.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 1

2.7	113	5.0	1,440
3.0	179	6.0	2,740
3.5	344	7.0	4,320
4.0	591	9.0	8,420
4.5	954	12.0	15,700

Mar. 2 to Sept. 30

2.2	48	3.5	345
2.5	83	4.0	591
3.0	184		

Note.--Same as preceding table above 4.0 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	362	135	303	2,010	190	d15,500	*2,230	686	227	89	52	100
2	364	136	310	2,790	185	d11,700	1,910	641	224	88	53	109
3	401	159	*253	3,080	170	4,200	1,580	585	203	82	48	100
4	466	166	235	2,030	160	6,290	1,420	515	185	80	55	84
5	452	*216	220	1,710	155	7,290	1,290	*486	169	82	74	75
6	432	249	185	2,890	160	5,730	1,130	404	165	66	75	89
7	379	256	185	*2,700	175	3,520	1,070	358	153	60	59	77
8	377	232	190	1,540	190	2,300	1,050	417	143	64	55	65
9	372	226	237	1,190	205	2,240	1,020	507	*139	79	59	69
10	364	198	305	1,070	230	*3,520	895	390	139	107	63	65
11	388	193	313	889	500	7,610	785	385	140	92	54	63
12	365	172	306	980	680	8,080	734	368	144	87	55	74
13	388	162	281	960	640	3,960	778	316	231	92	205	*72
14	275	155	300	860	620	2,730	700	317	225	72	1,240	69
15	192	138	1,140	835	*540	2,160	749	299	189	74	782	77
16	695	150	1,450	800	430	2,790	929	253	168	60	355	76
17	824	145	1,050	740	390	2,420	862	257	155	71	256	68
18	445	128	1,210	680	350	1,840	870	242	144	56	*234	70
19	319	142	1,220	640	320	1,600	800	240	116	56	207	70
20	286	142	988	600	340	1,500	749	217	126	55	179	59
21	*264	150	560	536	700	3,610	713	215	117	53	160	55
22	217	197	500	640	3,000	6,240	693	197	128	51	147	52
23	209	203	640	600	3,730	4,550	616	211	114	52	158	52
24	190	195	486	440	1,950	3,020	562	198	112	55	146	94
25	194	443	390	300	1,550	2,340	1,010	252	101	51	138	97
26	186	530	360	280	1,250	1,960	2,410	269	102	54	123	58
27	188	535	405	225	1,590	1,830	1,740	212	98	64	108	88
28	206	508	1,230	235	5,290	1,480	1,260	255	98	*57	109	88
29	207	538	7,630	210	-	1,440	981	301	92	72	105	89
30	150	316	5,040	200	-------	1,500	839	278	83	72	108	77
31	147	-------	3,310	190	-------	2,110	-------	249	-------	72	109	-------
Total	10,304	7,115	31,232	32,850	25,690	127,060	32,375	10,520	4,430	2,165	5,571	2,281
Mean	332	237	1,007	1,060	918	4,099	1,079	339	148	69.8	180	76.0
Adjusted for change in contents in Rushford Lake												
Mean	205	202	961	1,031	1,009	4,392	1,079	334	147	68.9	180	75.1
Cfsm	0.209	0.206	0.979	1.05	1.03	4.47	1.10	0.340	0.150	0.070	0.183	0.076
In.	0.24	0.23	1.13	1.21	1.07	5.16	1.23	0.39	0.17	0.08	0.21	0.09

		Observed				Adjusted				
Calendar year 1954:	Max	11,100	Min	63	Mean	1,019	Mean	1,019	Cfsm	1.04 In. 14.07
Water year 1954-55:	Max	15,500	Min	48	Mean	799	Mean	810	Cfsm	0.825 In. 11.21

Peak discharge (base, 15,000 cfs).--Mar. 1 (10 p.m.) 20,700 cfs (13.99 ft).

* Discharge measurement made on this day.

d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on high-water mark and partial record of rise and recession.

Note.--Stage-discharge relation affected by ice Dec. 5-8, 14, 15, 21-23, 25, 26, Jan. 12-14, 16-20, Jan. 22 to Feb. 22, Feb. 25, 26. Records of change in contents in Rushford Lake furnished by Rochester Gas & Electric Corp.

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Mount Morris Reservoir near Mount Morris, N. Y.

Location.--Lat 42°44'00", long 77°54'40", at Mount Morris Dam on Genesee River, 2½ miles northwest of Mount Morris, Livingston County, 5 miles upstream from Canaseraga Creek, and 40 miles upstream from mouth.

Drainage area.--1,077 sq mi (measured by Corps of Engineers).

Records available.--January 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers). Prior to Apr. 8, 1952, reference point at same site and datum.

Extremes.--Maximum elevation during year, 650.88 ft Mar. 2; minimum, 585.78 ft Dec. 8. 1952-55: Maximum elevation, that of Mar. 2, 1955; minimum, 585.17 ft Sept. 14, 1952.

Remarks.--Reservoir is formed by a concrete gravity-type dam with overflow spillway, completed by Corps of Engineers in 1951 for flood control; first used for flood regulation on Nov. 24, 1951. Usable capacity, 337,000 acre-ft between elevations 585.0 ft (sill of conduits) and 760.0 ft (crest of spillway). Dead storage, 609 acre-ft. Floods are controlled by the operation of nine gates. Water is stored during high flows and released when downstream conditions warrant.

Cooperation.--Capacity table furnished by Corps of Engineers.

Elevation at 12 p.m., in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	596.4	594.1	586.4	590.9	586.7	639.2	591.7	588.3	596.4	597.7	597.7	598.1
2	596.3	591.3	586.5	594.8	586.8	650.8	591.0	588.2	596.6	597.8	597.8	598.2
3	596.6	588.0	586.3	592.6	586.7	645.7	590.5	588.0	596.6	597.8	597.7	598.2
4	597.1	586.3	586.2	591.6	586.3	644.3	590.2	587.9	596.5	597.8	597.8	598.0
5	597.5	586.6	585.8	590.6	586.5	640.9	589.6	587.7	596.7	597.8	597.8	597.7
6	597.7	586.8	585.9	595.0	586.9	634.8	589.4	587.5	596.8	597.8	597.6	597.4
7	598.0	586.8	586.0	591.9	586.7	d623.6	589.4	587.1	596.7	597.8	597.1	597.3
8	597.6	586.4	586.0	590.3	586.5	604.2	589.2	587.3	596.9	597.8	597.0	597.1
9	597.2	586.6	586.2	589.4	586.5	591.8	589.1	587.8	597.2	598.1	596.9	597.0
10	596.9	586.4	586.4	589.2	587.0	593.8	588.8	587.4	597.4	598.3	596.9	596.9
11	597.4	586.3	586.5	588.2	587.1	608.8	588.5	587.4	597.6	598.2	596.9	596.7
12	597.2	586.1	586.4	589.0	588.2	611.5	588.4	587.1	597.8	597.9	596.9	596.6
13	596.9	586.1	586.5	588.8	587.4	597.4	588.6	586.9	598.3	597.9	597.1	596.6
14	597.0	586.2	586.6	588.3	587.6	592.3	588.5	586.8	598.2	597.9	597.8	596.4
15	597.0	586.0	589.7	588.7	587.5	591.6	588.7	586.8	597.9	597.9	597.7	596.4
16	598.4	586.0	589.6	588.5	587.1	593.5	589.1	587.0	597.9	597.8	597.9	596.4
17	598.1	586.0	588.6	588.0	587.1	591.8	588.8	587.8	598.1	597.8	598.0	596.3
18	598.0	585.9	589.4	588.0	587.0	590.8	588.8	589.8	598.2	597.6	597.7	596.2
19	597.7	586.0	589.1	587.8	586.9	590.4	588.8	590.8	598.0	597.5	597.6	596.1
20	597.1	586.0	588.3	587.4	587.1	590.1	588.5	590.7	597.9	597.4	597.6	595.9
21	597.2	586.0	587.2	587.2	588.1	598.1	588.4	590.6	598.0	597.2	597.6	595.6
22	597.4	586.5	587.0	588.3	594.5	602.3	588.3	590.6	598.1	597.0	597.7	595.4
23	597.3	586.3	587.6	587.8	593.9	594.7	588.1	590.5	598.1	597.0	597.9	595.4
24	597.2	586.3	587.0	587.3	591.4	593.1	588.0	591.9	598.1	597.0	597.7	595.5
25	597.0	587.7	586.7	586.7	590.5	591.6	590.2	593.5	598.1	597.0	597.4	596.2
26	596.8	587.3	586.5	586.9	589.7	591.4	592.9	594.7	598.0	597.0	597.2	596.2
27	596.7	587.3	586.9	586.4	592.0	590.7	591.0	595.2	597.9	597.0	597.1	596.4
28	596.6	587.3	587.5	586.8	598.6	590.2	589.9	595.8	597.8	597.2	597.2	596.8
29	596.8	587.6	605.5	586.5	-	590.3	589.2	596.0	597.8	597.3	597.4	597.0
30	596.4	586.4	599.4	586.6	------	590.6	588.8	596.1	597.8	597.5	597.6	596.3
31	596.1	------	592.6	586.5	------	591.7	------	596.0	------	597.7	597.9	------

d Doubtful gage-height record; elevation at 12 p.m. from reconstructed gage-height graph based on record for adjacent days.

Monthly elevation and contents, water year October 1954 to September 1955

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	596.7	4,101	-
Oct. 31	596.1	3,843	-258
Nov. 30	586.4	868	-2,975
Dec. 31	592.6	2,544	+1,676
Calendar year 1954	-	-	+1,482
Jan. 31	586.5	890	-1,654
Feb. 28	598.6	4,948	+4,058
Mar. 31	591.7	2,247	-2,701
Apr. 30	588.8	1,418	-829
May 31	596.0	3,800	+2,382
June 30	597.8	4,574	+774
July 31	597.7	4,531	-43
Aug. 31	597.9	4,617	+86
Sept. 30	596.3	3,929	-688
Water year 1954-55	-	-	-172

† Elevation at 12 p.m.

Canaseraga Creek near Dansville, N. Y.

Location.--Lat 42°33'40", long 77°42'55", on left bank just downstream from Ossian Street Bridge, half a mile downstream from Mill Creek and 1 mile west of Dansville, Livingston County.
Drainage area.--153 sq mi.
Records available.--July 1910 to December 1912, July 1915 to June 1917, October 1917 to September 1919 (published as "at Cumminsville"), March 1919 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 640.00 ft above mean sea level (levels by New York State Conservation Commission). Prior to Oct. 19, 1920, staff gage at or within 1 mile of present site at various datums. Oct. 19, 1920, to Sept. 30, 1938, water-stage recorder at present site and datum. Oct. 1, 1938, to Oct. 8, 1940, at site 0.9 mile downstream at datum 15.70 ft lower.
Average discharge.--35 years (1920-55), 147 cfs.
Extremes.--Maximum discharge during year, 3,990 cfs Mar. 1 (gage height, 10.66 ft), from rating curve extended above 1,700 cfs on basis of slope-area determination at gage height 12.16 ft and discharge measurement made by subsurface method at gage height 12.00 ft; maximum gage height, 11.46 ft Mar. 1 (backwater from ice); minimum discharge, 13.5 cfs Aug. 6 (gage height, 6.115 ft); minimum gage height, 5.95 ft Oct. 1.
1910-12, 1915-55: Maximum discharge at present site, 8,830 cfs July 23, 1940 (gage height, 13.1 ft, from floodmark), from rating curve extended above 900 cfs on basis of contracted-opening determination of peak flow; maximum at former site, 9,110 cfs July 23, 1940 (gage height, 9.93 ft), from rating curve extended above 2,100 cfs on basis of slope-area determination of peak flow; minimum, 10 cfs Aug. 9, 1934, Sept. 27, 28, 1941.
Revisions.--The maximum discharge for the water year 1919 has been revised to 6,100 cfs May 22, 1919 (gage height, 12.0 ft), superseding figure published in WSP 504.
Remarks.--Records good except those for periods of ice effect, backwater from debris, or fragmentary gage-height record, which are fair.
Revisions (water years).--WSP 604: 1923-24. WSP 759: Drainage area. WSP 894: 1935. Revised figures of discharge, in cubic feet per second, for the water year 1919, superseding those published in WSP 504, are given herewith:

May 22, 1919..... 3,500

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 1919.....	3,500	139	658	4.30	4.96

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	24	37	172	32	2,200	*253	143	41	27	17	19
2	25	26	36	265	*30	1,190	227	125	38	27	17	18
3	28	36	29	211	27	536	216	120	36	22	16	18
4	28	39	32	168	26	831	230	111	35	21	17	17
5	25	*37	29	136	25	663	227	*97	33	20	18	17
6	26	f36	25	287	29	501	189	c86	32	19	16	16
7	24	f33	26	193	31	333	183	c90	30	20	16	17
8	23	32	29	139	32	225	177	c116	30	28	16	16
9	22	32	33	112	33	240	170	c102	*31	30	14	17
10	c23	30	34	107	37	*355	152	c86	30	27	14	16
11	c25	29	*34	87	77	1,230	140	c84	30	22	18	25
12	c24	28	33	80	58	729	149	c78	36	21	17	*23
13	c26	28	33	*74	56	499	161	c72	32	20	88	18
14	*c23	28	41	64	58	332	146	64	f32	19	50	18
15	31	28	85	66	52	261	143	59	32	*19	25	29
16	45	27	73	62	43	401	149	57	28	20	20	21
17	33	27	56	58	38	303	143	53	26	18	19	20
18	28	27	67	54	33	249	134	51	25	18	*20	18
19	27	28	64	50	30	224	137	48	24	18	19	18
20	27	28	42	48	35	210	131	46	23	17	18	17
21	26	32	35	47	117	528	122	44	25	17	18	16
22	25	30	32	58	285	907	114	42	27	16	26	17
23	24	29	43	52	364	559	103	c42	26	16	25	18
24	23	29	48	45	300	402	109	41	24	19	20	26
25	24	29	41	45	246	313	234	43	24	17	18	20
26	24	28	38	41	203	305	439	47	24	17	17	19
27	30	28	45	37	227	272	297	42	24	20	21	18
28	28	28	286	36	487	f249	224	38	23	23	19	22
29	28	38	629	35	-	216	183	47	22	20	18	20
30	27	38	442	34	------	230	158	43	21	18	20	20
31	25	---	265	33	-------	264	-------	45	-------	18	22	---
Total	817	912	2,742	2,896	3,011	15,757	5,440	2,162	864	634	679	574
Mean	26.4	30.4	88.5	93.4	108	508	181	69.7	28.8	20.5	21.9	19.1
Cfsm	0.173	0.199	0.578	0.610	0.706	3.32	1.18	0.456	0.188	0.134	0.143	0.125
In.	0.20	0.22	0.67	0.70	0.73	3.83	1.32	0.53	0.21	0.15	0.17	0.14

Calendar year 1954: Max 1,580 Min 20 Mean 121 Cfsm 0.791 In. 10.77
Water year 1954-55: Max 2,200 Min 14 Mean 100 Cfsm 0.654 In. 8.87

Peak discharge (base, 2,000 cfs).--Mar. 1 (12 m.) 3,990 cfs (10.66 ft); Mar. 11 (11:45 a.m.) 2,430 cfs (9.61 ft). * Discharge measurement made on this day.
c Backwater from debris (fragmentary gage-height record May 10).
f Fragmentary gage-height record; discharge computed from partly estimated gage heights.
Note.--Stage-discharge relation affected by ice Dec. 3, 5-7, 17, 19-23, 25, 26, Jan. 12 to Feb. 9, Feb. 12-15, Mar. 1, 8 (fragmentary gage-height record Jan. 16).

Genesee River at Jones Bridge, near Mount Morris, N. Y.

Location.--Lat 42°45'55", long 77°50'25", on right bank at Jones Bridge, 1½ miles downstream from Canaseraga Creek and 3½ miles northeast of Mount Morris, Livingston County.
Drainage area.--1,419 sq mi.
Records available.--May 1903 to April 1906, August 1908 to April 1914, July 1915 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 540.00 ft above mean sea level (levels by New York State Conservation Commission). Prior to Sept. 11, 1915, chain gage on bridge at datum 2.73 ft lower.
Average discharge.--45 years (1908-13, 1915-55), 1,586 cfs (unadjusted).
Extremes.--Maximum discharge during year, 12,800 cfs Mar. 6 (gage height, 17.29 ft); minimum, 12 cfs July 23 (gage height, 0.22 ft); minimum daily, 43 cfs July 24.
1903-6, 1908-14, 1915-55: Maximum discharge, 55,100 cfs May 17, 1916 (gage height, 25.44 ft); minimum, that of July 23, 1955; minimum daily, 30 cfs Aug. 8, 1909.
Revisions.--The maximum discharge for the water year 1913 has been revised to 38,000 cfs Mar. 26, 1913 (gage height, 27.62 ft), superseding figure published in WSP 354.
Remarks.--Records good except those for periods of ice effect, backwater from aquatic vegetation, variable stage-discharge relation, or no gage-height record, which are fair. Diurnal fluctuation at low flow caused by powerplants. Flow regulated to some extent by Rushford Lake (capacity, 1,106,000,000 cu ft) since July 1928 and, at high flows, since November 1951 by Mount Morris Reservoir (see p. 296). Records of chemical analyses and water temperatures for the 1955 water year are given in WSP 1400.
Revisions (water years).--WSP 759: Drainage area. WSP 1277: 1952. Revised figures of discharge, in cubic feet per second, for the water year 1913, superseding those published in WSP 354, are given herewith:

1913	1913-Con.	1913-Con.
Mar. 25..... 15,000	Mar. 28..... 19,700	Mar. 30..... 8,500
26..... 34,700	29..... 13,300	31..... 5,400
27..... 30,500		

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1913.....	34,700	-	6,670	4.70	5.42
Water year 1912-13..	34,700	58	1,900	1.34	18.24
Calendar year 1913..	34,700	58	1,800	1.27	17 23

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	445	296	396	2,880	b250	*6,800	3,020	1,090	263	112	67	113
2	445	434	374	2,670	b245	*6,000	2,720	933	266	136	51	95
3	464	372	366	4,230	b230	10,400	2,320	c880	267	104	75	121
4	469	381	b290	2,730	b210	9,800	2,210	c780	263	116	57	130
5	464	260	301	2,400	b205	12,400	2,050	c700	209	96	58	157
6	469	319	227	2,620	b205	12,500	1,720	c620	215	94	102	134
7	427	316	225	4,000	b220	12,000	1,600	c560	210	88	189	134
8	455	320	240	2,280	b235	9,700	1,570	c560	215	92	82	86
9	479	288	292	b1,700	b250	5,490	1,450	c640	154	93	81	95
10	474	283	306	1,510	b280	4,360	1,310	c620	*158	70	73	105
11	371	242	385	b1,240	b540	5,890	1,150	c540	156	143	76	91
12	479	250	391	*b1,120	b780	9,610	1,060	c540	173	136	83	123
13	469	204	*349	b1,250	b800	8,290	1,100	c500	170	128	160	107
14	441	227	358	b1,120	b760	4,910	*a1,040	c430	267	95	1,010	99
15	247	176	793	b1,040	b720	3,380	a1,060	c440	320	92	1,130	101
16	317	169	1,790	b1,020	b660	3,750	1,240	*c420	216	80	480	119
17	1,100	*195	b1,450	b960	b560	3,900	1,240	c350	210	83	297	126
18	658	200	1,410	b860	b490	2,920	1,240	c310	153	95	274	86
19	441	162	1,520	b820	b440	2,480	1,150	c280	202	74	*261	106
20	*427	197	b1,160	b760	b460	2,290	1,130	c340	189	91	209	*102
21	404	190	b780	b680	b740	3,310	1,030	c330	148	73	180	87
22	240	203	b640	824	b3,100	*7,260	979	c320	157	84	170	98
23	263	270	716	b880	b5,200	7,270	911	c300	152	74	161	79
24	255	246	b800	b780	b3,300	4,740	818	c280	149	43	194	101
25	272	266	b600	b620	b2,400	3,630	1,200	c200	147	75	201	108
26	262	571	523	b450	b1,900	2,960	3,340	c260	150	65	198	72
27	262	577	533	b320	b2,000	2,820	3,020	c270	145	62	203	105
28	266	593	717	b280	b6,600	2,270	2,060	c260	142	*60	135	81
29	272	602	5,930	b280	-	2,140	1,570	c350	122	58	109	93
30	258	557	7,130	b260	--------	2,150	1,290	336	128	47	94	89
31	248	--------	5,420	b250	--------	2,760	--------	341	--------	57	123	--------
Total	12,543	9,366	36,412	42,834	33,780	178,180	47,598	14,780	5,716	2,716	6,583	3,143
Mean	405	312	1,175	1,382	1,206	5,749	1,587	477	191	87.6	212	105
Adjusted for change in contents in Rushford Lake and Mount Morris Reservoir†												
Mean	273	227	1,155	1,326	1,371	5,997	1,573	510	203	86.0	214	92.3
Cfsm	0.192	0.160	0.814	0.934	0.966	4.23	1.11	0.359	0.143	0.061	0.151	0.065
In.	0.22	0.18	0.94	1.08	1.01	4.87	1.24	0.41	0.16	0.07	0.17	0.07

	Observed			Adjusted			
Calendar year 1954:	Max 12,600	Min 61	Mean 1,398	Mean 1,399	Cfsm 0.986	In.	13.38
Water year 1954-55:	Max 12,500	Min 43	Mean 1,078	Mean 1,089	Cfsm 0.767	In.	10.42

* Discharge measurement made on this day.
† Adjusted for change in contents in Rushford Lake and Mount Morris Reservoir (records of change in contents in Rushford Lake furnished by Rochester Gas and Electric Corp.).
a No gage-height record; discharge estimated from reconstructed gage-height graph based on observer's inspections and recorded range in stage.
b Stage-discharge relation affected by ice. c Backwater from aquatic vetetation.
Note.--Variable stage-discharge relation Mar. 1, 2, 4; discharge computed on basis of discharge measurements and records for nearby stations.

Canadice Lake Outlet near Hemlock, N. Y.

Location.--Lat 42°44'25", long 77°34'15", upstream from weir at outlet of Canadice Lake, Ontario County, 4 miles southeast of Hemlock, Livingston County.

Drainage area.--12.6 sq mi.

Records available.--April 1903 to September 1955.

Gage.--Hook gage. Datum of gage is 1,093.00 ft above mean sea level (furnished by city of Rochester). Gage readings have been reduced to elevations above mean sea level.

Average discharge.--52 years, 11.7 cfs (unadjusted).

Cooperation.--Records furnished by Department of Public Works, city of Rochester.

Monthly discharge, water year October 1954 to September 1955

Month	Mean elevation of lake (feet)	Observed discharge, in cubic feet per second	Adjusted†		
			Discharge, in cubic feet per second		Runoff in inches
			Mean	Per square mile	
October	1,092.51	9.321	0.835	0.066	0.076
November	1,092.13	1.286	.853	.068	.076
December	1,092.35	7.875	20.748	1.647	1.898
Calendar year 1954	1,094.80	12.810	13.628	1.082	14.680
January	1,093.81	2.330	10.528	.836	.963
February	1,094.05	.297	25.528	2.026	2.110
March	1,098.24	10.240	44.468	3.529	4.069
April	1,098.84	18.093	18.514	1.469	1.639
May	1,098.68	9.459	2.810	.223	.257
June	1,097.57	16.203	-4.676	-.371	-.414
July	1,095.59	22.323	-4.485	-.356	-.410
August	1,093.53	20.394	1.940	.154	.178
September	1,092.30	5.464	-1.452	-.115	-.129
Water year 1954-55	1,094.97	10.356	9.573	.760	10.313

† Adjusted for change in contents in Canadice Lake. Negative figures indicate that natural losses from Canadice Lake exceeded inflow.

Note.--Elevations of Canadice Lake: 1,092.98 ft at 12 p.m. Sept. 30, 1954, and 1,092.10 ft at 12 p.m. Sept. 30, 1955; 1,092.44 ft at 12 p.m. Dec. 31, 1953, and 1,093.33 ft at 12 p.m. Dec. 31, 1954.

Honeoye Creek at Honeoye Falls, N. Y.

Location.--Lat 42°57'25", long 77°35'20", on right bank 25 ft downstream from highway bridge at Honeoye Falls, Monroe County, and 13 miles upstream from mouth.

Drainage area.--197 sq mi.

Records available.--October 1945 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 609.98 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--10 years, 168 cfs (adjusted for storage and diversion).

Extremes.--Maximum discharge during year, 3,790 cfs Mar. 1 (gage height, 5.99 ft); minimum, 0.3 cfs Aug. 4 (gage height, 0.45 ft).
1945-55: Maximum discharge, 4,630 cfs Mar. 28, 1950 (gage height, 6.42 ft), from rating curve extended above 2,100 cfs by logarithmic plotting; minimum, 0.06 cfs Aug. 28, 1949; minimum gage height, 0.35 ft Aug. 28, 1949, Sept. 14, 15, 1952.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or backwater from aquatic vegetation or debris, which are fair. Some diversion from and regulation by Hemlock and Canadice Lakes for water supply of city of Rochester. Diurnal fluctuation at low flow caused by mills above station.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	5.2	20	272	36	1,700	264	132	24	2.2	0.5	1.4
2	3.0	4.8	17	264	36	1,970	214	120	23	1.9	.6	1.3
3	4.8	7.8	14	271	33	651	202	118	21	2.1	.4	1.0
4	4.2	25	14	208	34	666	324	114	19	2.0	.3	a.8
5	3.5	34	11	167	34	695	348	105	18	1.6	1.0	a.7
6	5.8	25	11	223	34	438	242	94	15	1.3	.7	a.7
7	6.2	20	11	224	*37	290	205	89	13	.8	1.2	.6
8	4.6	17	10	155	40	240	197	91	12	.7	1.3	.6
9	3.8	14	11	124	44	260	178	90	10	.9	1.0	.6
10	3.8	12	13	135	56	339	158	86	9.6	1.0	.9	.7
11	4.2	10	23	100	135	580	144	80	9.2	1.0	1.5	.7
12	4.2	9.4	23	98	175	892	139	76	10	1.6	1.4	.6
13	4.6	8.6	*22	*104	165	532	148	68	9.2	2.0	5.9	.6
14	3.5	7.8	29	92	130	367	158	62	9.2	1.7	7.0	.7
15	4.0	*7.4	64	90	104	313	148	58	8.6	1.3	12	.7
16	4.7	6.8	98	86	88	372	180	52	8.0	1.2	19	.7
17	4.8	6.4	118	78	76	433	202	49	*7.2	1.1	15	.7
18	7.2	6.0	102	72	70	344	186	45	6.0	.9	9.9	.7
19	7.0	6.0	197	72	68	297	160	*42	5.2	.8	7.0	*.7
20	5.8	6.0	185	64	78	270	*150	38	4.4	.7	*5.6	.6
21	*4.6	7.0	145	54	185	*455	141	37	3.6	.6	4.5	.6
22	4.2	7.8	118	56	450	858	137	35	3.5	.5	3.2	.6
23	3.9	9.0	100	58	420	616	122	33	3.6	.4	2.7	.9
24	3.9	8.6	92	56	234	396	116	32	3.8	.5	2.1	1.1
25	6.4	8.2	86	54	169	309	165	31	3.6	.5	1.6	.9
26	5.6	8.0	76	50	146	282	386	31	3.4	.5	1.4	1.1
27	5.0	7.6	74	45	261	260	274	30	3.2	*.7	1.5	1.0
28	4.7	7.2	170	37	740	217	205	29	2.8	.4	1.0	1.1
29	5.2	10	880	37	-	242	162	30	2.4	.4	.8	1.0
30	5.6	14	796	38	--------	260	144	27	2.3	.5	1.5	1.0
31	5.6	--------	575	35	--------	317	--------	25	--------	.5	1.4	--------
Total	145.6	326.6	4,105	3,419	4,078	15,861	5,799	1,949	273.8	32.3	113.9	24.4
Mean	4.70	10.9	132	110	146	512	193	62.9	9.13	1.04	3.67	0.81
Adjusted †												
Mean	11.9	20.3	217	169	245	734	297	87.5	2.49	-9.41	10.7	-7.63
Cfsm	0.060	0.103	1.10	0.858	1.24	3.73	1.51	0.444	0.013	-0.048	0.054	-0.039
In.	0.07	0.11	1.27	0.99	1.29	4.29	1.68	0.51	0.01	-0.06	0.06	-0.04

	Observed			Adjusted		
Calendar year 1954:	Max 1,590	Min 0.4	Mean 114	Mean 182	Cfsm 0.924	In. 12.57
Water year 1954-55:	Max 1,970	Min 0.3	Mean 99.0	Mean 148	Cfsm 0.751	In. 10.18

* Discharge measurement made on this day.
† Adjusted for diversions from, and change in contents in, Hemlock and Canadice Lakes; outlet of Honeoye Lake is not controlled (records of diversion and change in contents furnished by Department of Public Works, city of Rochester). Negative figures of adjusted discharge or runoff indicate that losses from Hemlock, Canadice, and Honeoye Lakes exceeded inflow.
a No gage-height record; discharge estimated on basis of weather records and recorded range in stage.

Note.--Stage-discharge relation affected by ice Dec. 16, 17, 20-29, Jan. 8 to Feb. 23, Feb. 28, Mar. 1, 7, 8, 27. Backwater from ice and debris Dec. 3, 5-7, 13, 14. Backwater from debris Oct. 2 to Dec. 2, Dec. 4, 8-12, 15. Backwater from aquatic vegetation or debris May 9 to Aug. 10.

Oatka Creek at Garbutt, N. Y.

Location.--Lat 43°00'30", long 77°47'25", on right bank 40 ft downstream from highway bridge at Garbutt, Genesee County, 2 miles southwest of Scottsville, and 3½ miles upstream from mouth.

Drainage area.--208 sq mi.

Records available.--October 1945 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 560.89 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--10 years, 200 cfs.

Extremes.--Maximum discharge during year, 5,310 cfs Mar. 2 (gage height, 7.97 ft); minimum, 15 cfs July 7 (gage height, 2.065 ft).
1945-55: Maximum discharge, 6,080 cfs Mar. 29, 1950 (gage height, 8.52 ft); minimum, 8.8 cfs Nov. 13, 14, 1952.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 2)

Oct. 1 to Mar. 1

2.1	18	3.5	436
2.2	28	4.0	710
2.4	55	5.0	1,450
2.7	120	6.0	2,440
3.0	217		

Mar. 2 to Sept. 30

3.0	217	6.0	2,670
3.5	438	7.0	3,950
4.0	725	8.0	5,350
5.0	1,530		

Note.--Same as preceding table below 3.0 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	54	132	590	91	1,980	680	250	80	43	26	24
2	41	52	110	441	91	4,490	618	220	76	42	24	24
3	40	68	102	502	b86	*2,050	572	205	*70	40	26	26
4	44	150	88	466	b84	867	692	200	62	40	27	23
5	102	200	88	388	b84	881	606	185	58	39	28	23
6	50	165	71	351	84	714	480	170	56	40	30	23
7	38	130	71	426	84	485	418	160	56	31	30	22
8	31	108	b64	320	*84	333	394	160	56	36	28	21
9	30	92	77	248	86	366	370	160	56	36	27	21
10	30	84	91	248	91	572	342	155	54	36	27	21
11	31	78	123	199	145	795	307	145	54	36	31	22
12	31	72	126	165	221	1,110	273	140	54	35	27	23
13	40	68	118	*181	b205	1,030	290	130	52	35	38	22
14	64	64	105	168	b165	589	277	122	52	35	40	22
15	69	60	151	162	149	428	277	118	50	36	29	22
16	63	56	*256	149	132	508	402	110	49	38	35	22
17	204	56	b190	140	123	618	501	106	48	35	29	20
18	122	*54	234	137	120	512	490	*100	48	34	28	22
19	76	54	342	140	118	404	384	98	46	34	*27	21
20	60	54	b250	129	126	370	324	92	44	33	27	20
21	*52	56	b160	120	245	635	324	88	43	32	26	*19
22	48	56	b125	126	528	*1,390	*316	86	43	31	25	19
23	44	62	140	129	627	1,300	269	84	43	30	24	19
24	42	58	140	120	544	762	240	82	43	30	26	23
25	39	58	132	118	417	572	303	86	43	30	25	22
26	38	58	126	112	311	501	724	92	43	30	26	21
27	50	58	126	b108	318	459	732	88	43	*29	27	21
28	56	58	191	b92	838	324	531	86	42	30	25	23
29	82	62	652	b92	-	399	370	84	40	29	24	22
30	70	88	1,040	95	------	480	290	102	42	29	24	21
31	58	------	954	91	------	642	------	94	------	29	24	------
Total	1,769	2,333	6,575	6,753	6,197	26,566	12,796	3,998	1,546	1,063	860	654
Mean	57.1	77.8	212	218	221	857	427	129	51.5	34.3	27.7	21.8
Cfsm	0.275	0.374	1.02	1.05	1.06	4.12	2.05	0.620	0.248	0.165	0.133	0.105
In.	0.32	0.42	1.18	1.21	1.11	4.75	2.29	0.71	0.28	0.19	0.15	0.12

Calendar year 1954: Max 2,150 Min 24 Mean 189 Cfsm 0.909 In. 12.32
Water year 1954-55: Max 4,490 Min 19 Mean 195 Cfsm 0.938 In. 12.73

Peak discharge (base, 1,500 cfs).--Mar. 2 (7:30 a.m.) 5,310 cfs (7.97 ft); Mar. 23 (1 a.m.) 1,650 cfs (5.12 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from debris and/or aquatic vegetation Apr. 29 to Sept. 30.

STREAMS TRIBUTARY TO LAKE ONTARIO

Black Creek at Churchville, N. Y.

Location.--Lat 43°06'00", long 77°53'00", on right bank at east end of Carrol Street in Churchville, Monroe County, 60 ft downstream from main line tracks of New York Central Railroad and 1 mile upstream from small tributary.

Drainage area.--123 sq mi.

Records available.--October 1945 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 552.45 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--10 years, 103 cfs.

Extremes.--Maximum discharge during year, 1,780 cfs Mar. 2 (gage height, 6.19 ft); minimum, 1.1 cfs Sept. 21 (gage height, 1.01 ft).
1945-55: Maximum discharge, 4,750 cfs Mar. 28, 1950 (gage height, 8.83 ft); minimum, 0.7 cfs Sept. 29, Oct. 1-3, 6, 7, 1950; minimum gage height, 0.98 ft Sept. 29, 1950.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation, which are fair. Prior to May 1952, small diversion by New York Central Railroad Co. and slight regulation by pumping operations above station.

Rating tables, water year 1954-55, except periods of ice effect or backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 22				Mar. 23 to Sept. 30			
1.3	9.3	4.0	580	1.0	0.9	2.0	80
1.5	20	5.0	1,040	1.1	2.9	2.5	168
1.9	59	6.0	1,650	1.2	6.1	3.0	275
2.5	158	7.0	2,450	1.4	16	4.0	580
3.0	268			1.7	41	5.0	1,040

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	33	99	526	32	1,000	342	124	28	9.0	7.9	3.6
2	21	30	76	352	b31	1,660	273	114	24	10	4.9	3.1
3	35	70	59	301	b30	1,010	280	112	21	7.8	2.4	2.8
4	28	163	48	263	b31	426	513	112	20	6.7	2.1	3.1
5	22	217	46	197	b32	352	490	102	19	6.5	2.7	3.7
6	16	171	36	188	33	309	310	92	19	6.9	6.3	4.0
7	15	91	39	193	33	b205	243	88	18	6.5	6.7	2.7
8	12	60	32	156	b34	b150	213	94	16	6.3	4.7	2.2
9	11	47	39	135	35	172	194	100	15	7.4	3.7	1.9
10	10	41	69	114	45	244	164	92	14	6.5	5.2	3.2
11	13	36	94	91	*76	433	138	88	15	4.8	8.2	4.2
12	17	32	94	78	b98	627	131	80	21	4.2	8.7	4.3
13	34	31	88	*90	b98	478	149	72	19	4.2	23	4.5
14	42	32	73	79	88	280	*178	60	17	4.2	28	4.5
15	31	28	*125	73	79	208	203	54	16	5.6	23	4.7
16	48	28	193	69	70	214	222	49	*15	7.8	12	3.9
17	73	*29	186	59	59	235	299	45	13	8.0	8.7	4.3
18	55	27	268	58	55	221	372	*41	12	6.7	7.4	4.3
19	36	32	385	58	54	176	320	36	11	4.8	*6.7	4.0
20	27	39	439	b52	65	160	239	38	11	4.2	5.4	2.5
21	*22	42	266	b45	124	261	252	40	10	3.5	4.8	*1.4
22	19	41	b175	47	280	*670	261	34	9.2	2.8	4.3	1.5
23	18	37	123	51	357	838	217	30	8.5	2.1	4.0	2.2
24	15	37	116	48	357	445	172	30	6.5	1.9	3.5	5.7
25	14	39	112	46	296	299	168	30	6.5	1.6	3.5	5.9
26	14	40	93	43	217	252	213	* 37	7.6	1.8	3.7	5.0
27	37	36	91	b37	228	201	294	46	7.8	*2.7	6.2	4.3
28	99	36	143	b31	375	b130	264	45	7.6	4.2	6.1	5.4
29	97	62	258	32	-	182	196	41	7.8	4.3	4.7	4.8
30	55	107	524	32	------	260	151	35	8.0	3.5	4.5	5.2
31	41	--- -	669	31	------	353	--------	30	-- ----	2.9	4.2	- ---
Total	987	1,714	5,058	3,575	3,312	12,451	7,461	1,991	423.5	159.4	227.2	112.9
Mean	31.8	57.1	163	115	118	402	249	64.2	14.1	5.14	7.33	3.76
Cfsm	0.259	0.464	1.33	0.935	0.959	3.27	2.02	0.522	0.115	0.042	0.060	0.031
In.	0.30	0.52	1.53	1.08	1.00	3.76	2.26	0.60	0.13	0.05	0.07	0.03

Calendar year 1954: Max 1,420 Min 2.8 Mean 98.0 Cfsm 0.797 In. 10.82
Water year 1954-55: Max 1,660 Min 1.4 Mean 103 Cfsm 0.837 In. 11.33

Peak discharge (base, 1,000 cfs).--Mar. 2 (4:30 p.m.) 1,780 cfs (6.19 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from aquatic vegetation May 1 to June 15.

Genessee River at Driving Park Avenue, Rochester, N. Y.

Location.--Lat 43°10'50", long 77°37'40", on right bank at Rochester, Monroe County, 40 ft downstream from plant 5 of Rochester Gas & Electric Corp. and 100 ft upstream from Driving Park Avenue Bridge.

Drainage area.--2,467 sq mi.

Records available.--December 1919 to September 1955.

Gage.--Water-stage recorder.

Average discharge.--35 years (1920-55), 2,743 cfs.

Extremes.--Maximum discharge during year, 19,100 cfs Mar. 2 (gage height, 9.48 ft); minimum, 22 cfs July 21 (gage height, -0.86 ft); minimum daily, 340 cfs July 20.
1919-55: Maximum discharge, 33,500 cfs Apr. 2, 1940 (gage height, 14.08 ft); minimum, less than 10 cfs, occurred during low-water periods in some years when powerplant was shut down; minimum daily, 219 cfs Aug. 14, 1927.
Maximum discharge known, about 54,000 cfs Mar. 18, 1865.

Remarks.--Records good. Extensive diurnal fluctuation caused by powerplants above station. New York State Barge Canal crosses river 5.4 miles above station. Water diverted by the canal from Lake Erie is discharged into river from the west, the canal again diverting a smaller amount of water from river to the east. Additional regulation is provided by Rushford Lake and Mount Morris Reservoir. Chemical analyses and water temperatures for the 1955 water year are published in WSP 1400.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 27				Apr. 28 to Sept. 30	
1.0	528	3.0	2,390	0.5	309
1.5	844	5.0	7,080	1.0	528
2.0	1,270	7.0	12,000	Note.--Same as preceding table above 1.0 ft.	
2.5	1,750	10.0	20,800		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	900	720	1,440	7,690	608	14,900	4,200	2,780	973	*509	365	444
2	1,240	779	1,160	4,560	594	18,400	4,370	2,540	858	644	356	422
3	934	1,340	1,300	4,940	604	16,700	4,160	2,390	786	442	358	404
4	1,150	1,240	1,040	5,220	616	15,400	4,500	2,360	810	460	381	417
5	905	1,300	964	4,150	560	14,300	4,580	2,200	804	498	399	390
6	1,040	1,120	1,260	4,130	554	14,800	3,670	2,010	752	477	552	714
7	825	1,220	1,020	4,680	600	14,200	3,290	1,730	654	518	434	570
8	868	1,040	661	4,410	601	13,400	3,720	1,880	620	424	422	392
9	850	958	869	3,330	596	11,500	3,780	1,770	586	388	442	402
10	864	855	890	2,880	625	6,730	3,290	1,810	612	431	528	368
11	1,010	894	1,020	2,520	*1,040	7,420	2,800	1,840	562	447	426	404
12	932	894	1,180	2,010	1,350	11,700	2,680	1,720	812	407	*388	471
13	1,090	672	1,190	2,020	1,360	13,400	2,690	1,600	594	394	750	466
14	884	738	1,600	*2,170	1,470	10,800	2,990	1,560	658	444	874	425
15	*968	736	1,580	2,080	1,380	5,780	*3,030	1,440	708	580	1,420	454
16	844	685	*2,240	2,000	1,270	4,720	2,870	1,470	*852	479	1,530	*413
17	1,030	667	2,710	1,880	1,250	*5,950	3,790	1,410	660	460	966	421
18	1,660	*661	3,050	1,770	1,100	4,970	3,800	1,340	610	422	518	494
19	1,270	730	3,580	1,750	979	4,090	3,540	*1,300	594	430	696	496
20	969	677	3,080	1,620	1,030	3,970	3,210	1,120	538	340	716	542
21	930	696	2,110	1,470	1,630	4,300	3,160	1,180	535	342	574	414
22	811	692	1,790	1,460	2,900	10,200	2,970	1,110	529	360	754	405
23	704	710	1,600	1,370	4,340	12,800	2,790	1,260	558	390	624	412
24	654	712	1,610	1,420	5,970	10,700	2,330	1,150	548	375	526	462
25	667	702	1,680	1,290	4,360	6,710	2,460	1,240	530	363	559	492
26	648	881	1,450	1,160	3,640	4,600	4,410	1,100	534	372	525	462
27	950	978	1,420	920	3,550	4,220	5,960	1,090	540	*373	681	454
28	728	1,150	1,420	666	6,740	4,080	4,450	1,250	492	350	540	402
29	830	1,320	3,960	654	-	3,800	3,970	1,220	448	345	459	450
30	885	1,470	11,200	608	------	3,980	3,390	1,240	486	346	520	454
31	718	----	11,600	596	-------	4,100	-------	1,180	----	356	429	----
Total	28,758	27,237	71,674	77,424	51,317	282,620	106,850	49,290	19,243	13,166	18,712	13,516
Mean	928	908	2,312	2,498	1,833	9,117	3,562	1,590	641	425	604	451
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 16,200 Min 464 Mean 2,493 Cfsm 1.01 In. 13.70
Water year 1954-55: Max 18,400 Min 340 Mean 2,082 Cfsm 0.844 In. 11.44

* Discharge measurement made on this day.

Cayuga Inlet near Ithaca, N. Y.

Location.--Lat 42°23'35", long 76°32'40", on left bank half a mile upstream from Butternut Creek and 5 miles south of Ithaca, Tompkins County.

Drainage area.--36.7 sq mi.

Records available.--March 1937 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 437.16 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--18 years, 37.7 cfs.

Extremes.--Maximum discharge during year, 732 cfs Mar. 1 (gage height, 3.09 ft); minimum, 1.7 cfs July 22 (gage height, 0.42 ft).
1937-55: Maximum discharge, 4,110 cfs Aug. 13, 1942 (gage height, 7.58 ft), from rating curve extended above 650 cfs on basis of slope-area determinations at gage heights 5.5 and 7.58 ft; minimum, that of July 22, 1955; minimum gage height, 0.42 ft Aug. 30, 31, Sept. 1, 2, 1939, July 22, 1955.

Remarks.--Records good except those for periods of ice effect or backwater from debris or downstream submergence, which are fair.

Rating tables, water year 1954-55, except periods of ice effect or backwater from downstream submergence (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 1				Mar. 2 to Sept. 30	
0.5	3.3	1.5	105	0.4	1.3
.6	6.8	2.0	249	.5	3.6
.8	18	3.0	687	.6	7.1
1.1	44			.8	18

Note.--Same as preceding table above 0.8 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*c5.4	5.4	20	81	b13	469	43	31	9.9	3.6	2.4	*4.8
2	5.0	6.4	18	111	b12	200	41	27	8.4	3.8	3.8	4.5
3	5.2	16	b15	76	b10	118	40	26	7.1	3.4	3.0	4.2
4	5.6	26	14	67	b11	240	42	23	6.3	3.3	3.4	3.8
5	5.0	20	b13	54	b12	204	40	21	5.7	4.4	4.0	3.6
6	4.7	18	b11	73	b14	145	38	20	5.5	8.7	7.3	3.4
7	4.7	14	b12	52	b21	107	37	19	4.8	4.8	4.9	3.3
8	c4.5	13	b13	b42	b31	80	36	31	4.6	4.0	3.4	3.2
9	c3.9	13	13	41	b28	88	33	25	5.1	3.6	2.9	3.2
10	c4.0	12	*14	b38	b43	101	31	21	5.3	6.0	2.4	3.2
11	*c4.5	11	14	b28	80	187	29	*20	5.5	3.6	9.4	6.8
12	4.5	*12	13	b29	b56	137	31	18	6.7	3.0	7.4	7.4
13	4.9	11	13	30	b46	118	36	17	6.3	2.8	64	4.4
14	4.9	11	b44	b24	b45	97	31	16	6.1	2.7	30	3.6
15	6.0	10	127	b27	b39	83	31	16	*5.5	2.7	10	4.4
16	7.6	9.8	68	b25	b30	90	33	14	4.8	2.7	7.5	3.9
17	6.8	9.5	b42	b23	*b22	75	31	14	4.5	2.8	6.3	3.8
18	6.8	9.2	99	b21	b20	64	30	13	4.5	4.8	11	3.6
19	6.2	9.2	77	b22	b20	59	*26	12	4.5	3.6	9.0	3.4
20	5.6	9.2	b42	*b18	b28	52	24	12	4.4	2.8	6.1	3.3
21	5.6	17	b33	b17	42	79	24	12	5.2	*2.3	5.5	3.0
22	5.6	19	b29	21	177	219	23	11	5.9	1.9	7.3	3.2
23	5.6	17	35	19	143	*139	22	11	5.0	2.1	7.9	3.8
24	5.6	16	33	b15	b78	112	25	12	4.8	5.6	6.1	8.3
25	5.4	16	27	b16	b56	94	52	11	5.4	5.0	5.0	5.7
26	5.2	14	b24	b17	b48	84	51	10	5.9	3.3	4.5	5.0
27	6.0	13	24	b14	133	75	40	10	4.8	4.5	5.0	4.4
28	6.4	13	61	b12	182	59	36	9.2	4.2	6.1	4.6	5.1
29	5.8	24	105	b12	-	56	31	11	3.8	*3.4	4.2	*4.6
30	5.6	26	282	b12	------	52	29	15	3.6	2.9	5.5	4.5
31	5.6	----	122	b14	------	48	-------	11	-------	2.7	7.6	-------
Total	168.2	420.7	1,457	1,051	1,440	3,731	1,016	519.2	164.1	116.9	261.4	129.4
Mean	5.43	14.0	47.0	33.9	51.4	120	33.9	16.7	5.47	3.77	8.43	4.31
Cfsm	0.148	0.381	1.28	0.924	1.40	3.27	0.924	0.455	0.149	0.103	0.230	0.117
In.	0.17	0.43	1.48	1.07	1.46	3.78	1.03	0.53	0.17	0.12	0.26	0.13

Calendar year 1954: Max 404 Min 2.6 Mean 29.2 Cfsm 0.796 In. 10.82
Water year 1954-55: Max 469 Min 1.9 Mean 28.7 Cfsm 0.782 In. 10.63

Peak discharge (base, 1,100 cfs).--No peak above base.
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
c Backwater from debris.
Note.--Backwater from downstream submergence July 17-20, 23-27.

Fall Creek near Ithaca, N. Y.

Location.--Lat 42°27'20", long 76°28'30", on left bank in Forest Home, half a mile upstream from Cornell University Dam, 1½ miles northeast of Ithaca, Tompkins County, and 2 miles upstream from mouth.

Drainage area.--124 sq mi.

Records available.--July 1908 to June 1909 (gage heights only), February 1925 to September 1955.

Gage.--Water-stage recorder and concrete control. Datum of gage is 794.81 ft above mean sea level, adjustment of 1912 (levels by Corps of Engineers). July 1908 to June 1909 chain gage at bridge 1¼ miles downstream at different datum.

Average discharge.--30 years (1925-55), 183 cfs.

Extremes.--Maximum discharge during year, 2,940 cfs Mar. 1 (gage height, 4.41 ft, from outside-inside gage relation, 4.21 ft in gage well); maximum gage height, 8.84 ft Feb. 22 (ice jam); minimum discharge, 7.7 cfs Aug. 2, 10 (gage height, 0.22 ft).
1925-55: Maximum discharge, 15,500 cfs July 8, 1935 (gage height, 9.52 ft), from average of computed flow over each of four dams; minimum, about 3 cfs Aug. 25, 1927 (gage height, 0.18 ft).

Remarks.--Records excellent except those for periods of ice effect, backwater from debris, or drawdown, which are fair. Cornell University diverted 60,765,059 cu ft during year from point about 1 mile above station for water supply, equivalent to a mean discharge at station of 1.93 cfs.

Revisions (water years).--WSP 759: Drainage area. WSP 874: 1935-38.

Rating tables, water year 1954-55, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 22				Feb. 23 to Aug. 13				Aug. 14 to Sept. 30	
0.4	17	2.0	433	0.22	7.7	0.5	24	0.25	8.4
.6	31	2.5	765	.3	12	.9	60	.3	11
.9	60	3.0	1,210					.5	23
1.2	104	4.0	2,340	Note.--Same as preceding				.9	59
1.5	196			table above 0.9 ft.				1.1	85
								1.3	129

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*21	24	227	474	b78	2,150	270	160	51	17	9.2	19
2	24	28	185	698	b74	1,550	250	135	46	18	8.7	16
3	35	153	151	592	b60	691	260	145	41	17	9.7	14
4	33	484	128	445	b66	1,000	330	155	38	16	9.2	13
5	31	337	b130	315	b66	1,080	270	114	34	17	9.7	13
6	27	281	b94	507	b78	764	225	94	33	29	9.2	13
7	25	200	b118	364	b160	466	235	90	30	28	9.7	12
8	25	171	b114	244	b200	346	230	175	42	22	11	11
9	23	192	154	244	b170	387	195	205	39	18	12	11
10	23	138	*182	219	b165	640	170	135	34	17	8.2	9.7
11	*29	119	157	156	b380	1,550	155	*116	31	14	11	11
12	33	*122	151	168	b300	*1,750	140	100	34	13	20	18
13	29	112	141	b175	b270	1,120	150	88	57	12	55	17
14	29	100	b200	b135	b260	639	140	82	44	12	104	13
15	27	96	1,400	b145	b165	504	150	68	*36	11	37	12
16	33	87	631	b140	b114	627	240	64	30	13	27	12
17	31	84	374	b125	*b100	490	190	64	26	18	31	12
18	27	81	594	b114	b84	380	155	64	24	15	26	12
19	25	79	702	b130	b80	340	*155	56	23	13	37	11
20	23	81	b370	*b100	b84	330	155	52	22	11	24	9.7
21	22	302	b260	b86	b140	500	200	49	26	*11	21	9.2
22	22	394	b225	116	b740	940	180	46	29	*9.7	19	8.4
23	21	261	235	114	b880	*880	135	46	26	9.7	18	8.8
24	20	244	239	91	515	470	124	80	24	21	*16	19
25	20	227	200	98	327	370	225	60	22	18	14	35
26	20	200	170	114	244	350	320	85	27	14	13	20
27	21	160	196	b88	388	b280	210	63	24	13	14	16
28	31	148	398	b68	790	b195	165	49	21	15	21	*16
29	33	207	1,200	b68	-	b250	135	47	20	15	16	18
30	35	270	1,500	b66	-------	b230	118	64	18	13	14	19
31	25	---	820	b80	-------	280	-------	56	-------	11	20	-------
Total	823	5,382	11,646	6,479	6,978	21,549	5,877	2,807	952	481.4	654.6	428.8
Mean	26.5	179	376	209	249	695	196	90.5	31.7	15.5	21.1	14.3
Cfsm	0.214	1.44	3.03	1.69	2.01	5.60	1.58	0.730	0.256	0.125	0.170	0.115
In.	0.25	1.61	3.49	1.94	2.09	6.46	1.76	0.84	0.29	0.14	0.20	0.13

Calendar year 1954: Max 2,300 Min 9.7 Mean 166 Cfsm 1.34 In. 18.17
Water year 1954-55: Max 2,150 Min 8.2 Mean 176 Cfsm 1.42 In. 19.20

Peak discharge (base, 1,900 cfs).--Dec. 30 (12:30 p.m.) 1,950 cfs (3.69 ft); Mar. 1 (9 p.m.) 2,940 cfs (4.41 ft); Mar. 11 (10:30 p.m.) 2,900 cfs (4.39 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from debris Mar. 17 to May 21. Effect of drawdown Dec. 15, 29-31, Feb. 22, 23, Mar. 1, 2, 4, 5, 11-13, 22, 23; discharge computed on basis of outside-inside gage relationship, normal pattern of peaks, and records for nearby stations.

Canandaigua Lake at Canandaigua, N. Y.

Location.--Lat 42°52'20", long 77°16'20", at south end of city pier at northern end of Canandaigua Lake, 1 mile southeast of Canandaigua, Ontario County.
Drainage area.--189 sq mi.
Records available.--November 1939 to September 1955. December 1927 to November 1939, records collected by city of Canandaigua at site on west side of E. T. Waldorf's boathouse.
Gage.--Water-stage recorder. Datum of gage is 680.76 ft above mean sea level (levels by Corps of Engineers) Prior to June 26, 1946, staff gage at E. T. Waldorf's boathouse at same datum.
Extremes.--Maximum gage height during year, 8.03 ft Mar. 12; minimum, 5.32 ft Dec. 14. 1939-55: Maximum gage height observed, 9.09 ft Apr. 12, 13, 1940; minimum observed, 4.45 ft Jan. 30, 1942.
Remarks.--Elevation of lake surface regulated by gates on east outlet and stoplogs on west outlet. West outlet, which usually carries most of lake outflow, is an artificial canal 1¼ miles long which discharges into Canandaigua Lake Outlet; spillway consists of permanent stoplog 9.8 ft long with top at elevation 3.2 ft, gage datum, extending across a masonry arch opening under roadway. East outlet is at head of natural outlet channel from lake; flow regulated above about 4.6 ft, gage datum, by two gates at highway bridge half a mile downstream. The city engineer, Canandaigua, regulates storage in lake for Oswego River Watershed Corp., Fulton, by operation of gates and stoplogs on outlets. Water diverted for municipal supply of village of Newark, since about December 1951. Capacity of lake between 3.2 and 9.2 ft, gage datum, 63,629 acre-ft, on basis of water-surface area of 16.57 sq mi. Total capacity of lake not determined.

Mean gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.79	5.55	5.43	5.88	6.07	7.22	7.50	7.03	7.01	6.78	6.34	6.38
2	5.81	5.54	5.42	5.90	6.07	7.61	7.46	7.03	6.98	6.77	6.31	6.35
3	5.85	5.58	5.42	5.94	6.06	7.65	7.42	7.04	6.99	6.76	6.30	6.34
4	5.86	5.63	5.43	5.95	6.05	7.73	7.42	7.03	6.97	6.75	6.30	6.33
5	5.84	5.60	5.40	6.02	6.05	7.77	7.42	7.02	6.97	6.73	6.27	6.31
6	5.81	5.59	5.38	6.05	6.04	7.77	7.38	7.00	6.97	6.73	6.31	6.29
7	5.79	5.58	5.40	6.08	6.08	7.73	7.34	7.01	6.98	6.71	6.35	6.23
8	5.80	5.56	5.42	6.12	6.08	7.66	7.31	7.04	6.96	6.72	6.30	6.21
9	5.78	5.54	5.41	6.15	a6.08	7.61	7.28	7.03	6.94	6.72	6.30	6.23
10	5.75	5.53	5.39	6.16	a6.09	7.59	7.23	7.03	6.94	6.68	6.27	6.27
11	5.77	5.52	5.37	6.17	a6.09	7.68	7.18	7.03	6.95	6.63	6.25	6.15
12	5.76	5.49	5.38	6.18	a6.09	7.81	7.17	7.03	6.94	6.62	6.22	6.13
13	5.75	5.52	5.38	6.19	a6.09	7.83	7.18	7.04	6.96	6.62	6.36	6.12
14	5.77	5.49	5.39	6.19	a6.10	7.79	7.13	7.02	6.93	6.60	6.61	6.16
15	5.80	5.47	5.46	6.21	a6.10	7.77	7.07	7.03	6.92	6.61	6.60	6.09
16	5.83	5.47	5.49	6.20	6.10	7.74	7.06	7.03	6.91	6.60	6.60	6.07
17	5.75	5.45	5.57	6.18	6.10	7.71	7.06	7.01	6.90	6.57	6.60	6.07
18	5.70	5.47	5.56	6.18	6.10	7.65	7.02	7.01	6.90	6.55	6.58	6.06
19	5.69	5.46	5.53	6.17	6.09	7.61	7.00	7.00	6.90	6.52	6.55	6.05
20	5.67	5.46	5.52	6.17	6.09	7.56	6.95	6.98	6.89	6.52	6.55	6.00
21	5.66	5.45	5.51	6.18	6.11	7.62	6.96	6.98	6.91	6.49	6.55	5.98
22	5.65	5.45	5.51	6.17	6.20	7.81	6.93	7.00	6.90	6.47	6.53	5.97
23	5.65	5.45	5.52	6.16	6.30	7.83	6.89	6.99	6.88	6.47	6.49	5.99
24	5.63	5.46	5.50	6.15	6.34	7.80	6.89	6.99	6.86	6.42	6.47	5.99
25	5.62	5.44	5.51	6.15	6.37	7.76	6.90	6.99	6.85	6.40	6.47	5.95
26	5.61	5.44	5.52	6.15	6.39	7.78	6.95	6.99	6.82	6.39	6.44	5.94
27	5.62	5.47	5.50	6.13	6.46	7.70	6.99	7.02	6.81	6.41	6.44	5.99
28	5.62	5.44	5.53	6.11	6.66	7.65	7.00	7.04	6.80	6.39	6.43	5.94
29	5.64	5.44	5.64	6.10	-	7.61	7.02	7.05	6.80	6.39	6.43	5.95
30	5.58	5.43	5.77	6.09	-------	7.56	7.02	7.05	6.79	6.39	6.47	5.96
31	5.57	-------	5.83	6.07	-------	7.54	-------	7.02	-------	6.36	6.42	-------

a No gage-height record; gage heights estimated on basis of recorded range in stage and normal recession.

Monthly gage height, contents, and diversion, water year October 1954 to September 1955

Date	Gage height (feet)*	Contents (acre-feet)†	Change in contents (acre-feet)	Change in contents and diversion (equivalent, cubic feet per second)**
Sept. 30	5.81	27,679	-	-
Oct. 31	5.55	24,921	-2,758	-42.8
Nov. 30	5.43	23,649	-1,272	-19.4
Dec. 31	5.86	28,209	+4,560	+76.3
Calendar year 1954	-	-	+2,121	+4.91
Jan. 31	6.08	30,542	+2,333	+39.7
Feb. 28	6.77	37,859	+7,317	+133.4
Mar. 31	7.53	45,919	+8,060	+132.7
Apr. 30	7.04	40,722	-5,197	-85.5
May 31	7.02	40,510	-212	-1.05
June 30	6.79	38,071	-2,439	-38.2
July 31	6.34	33,299	-4,772	-74.8
Aug. 31	6.40	33,935	+636	+13.0
Sept. 30	5.91	28,739	-5,196	-84.7
Water year 1954-55	-	-	+1,060	+3.64

* Gage height at 12 p.m.
† Above 3.2 ft, gage datum; elevation of lowest outlet.
** Change in contents in Canandaigua Lake and diversion by village of Newark for water supply (records of diversion furnished by village of Newark).
Note.--Contents at 12 p.m. Dec. 31, 1953, 26,088 acre-ft.

Canandaigua Lake Outlet at Chapin, N. Y.

Location.--Lat 42°55'00", long 77°14'00", on left bank at Chapin, Ontario County, 500 ft upstream from highway bridge and 3 miles downstream from Canandaigua Lake.

Drainage area.--199 sq mi.

Records available.--November 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 673.6 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--15 years (1940-55), 145 cfs (unadjusted).

Extremes.--Maximum discharge during year, 820 cfs Mar. 1 (gage height, 4.10 ft); minimum daily, 7.0 cfs Jan. 9, 11-13; minimum gage height, 1.34 ft Jan. 11, 13.
1939-55: Maximum discharge, 1,100 cfs Mar. 17, 1942 (gage height, 4.64 ft); minimum, 4.6 cfs Sept. 17, 1948; minimum gage height, 1.15 ft Feb. 3, 1950.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation or debris, which are fair. Flow regulated by Canandaigua Lake (see preceding page), from which water is diverted for municipal supply by village of Newark.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	23	16	28	b40	590	494	145	30	22	34	38
2	25	23	16	37	b41	*550	477	145	29	21	34	37
3	25	28	16	27	b42	560	477	145	29	21	33	37
4	26	29	15	10	b43	611	391	145	29	21	33	36
5	29	25	15	8.6	b44	603	470	120	29	21	32	36
6	27	23	b15	13	42	596	453	52	29	21	33	35
7	29	23	b14	b9.6	*44	585	443	49	30	19	36	33
8	32	23	b15	b10	b45	564	430	50	29	19	32	32
9	31	22	15	b7.0	33	550	424	46	28	19	33	32
10	30	21	*15	b7.6	29	546	407	40	*20	18	32	35
11	32	21	16	b7.0	b31	*629	395	38	19	16	32	33
12	32	20	16	b7.0	b30	618	401	38	19	16	*31	29
13	33	19	16	b7.0	b30	614	407	38	18	15	49	27
14	*34	21	17	*b20	b30	600	401	38	18	14	52	27
15	35	*18	30	38	32	593	388	37	16	16	44	26
16	37	18	26	b37	b32	593	382	37	16	23	44	23
17	34	17	23	b36	30	582	379	40	16	22	44	23
18	31	17	34	b36	31	567	359	37	16	21	44	23
19	30	18	34	b35	30	553	320	36	16	21	42	*23
20	29	17	b25	b35	33	542	*305	*35	16	21	42	23
21	28	18	b23	b36	62	618	305	35	16	20	42	21
22	27	17	b23	35	94	647	299	35	16	20	42	21
23	27	17	b23	b35	b49	600	290	35	16	20	42	21
24	26	17	b23	b35	b50	571	290	34	15	20	40	23
25	26	17	22	b35	47	553	308	34	15	*19	40	20
26	26	16	21	b35	47	553	276	34	15	19	38	18
27	27	17	22	b38	124	539	175	33	15	24	41	19
28	26	17	42	b47	106	515	155	33	16	35	40	20
29	26	19	52	b42	-	518	150	33	23	35	38	18
30	24	18	84	b40	--------	522	150	33	23	35	41	19
31	23	--------	36	b38	--------	511	--------	32	--------	34	41	--------
Total	890	599	760	831.8	1,291	17,793	10,701	1,682	622	668	1,201	808
Mean	28.7	20.0	24.5	26.8	46.1	574	357	54.3	20.7	21.5	38.7	26.9

Adjusted for change in contents in Canadaigua Lake and diversion by village of Newark

Mean	-14.1	0.57	101	66.5	179	707	271	53.2	-17.4	-53.3	51.7	-57.8
Cfsm	-0.071	0.003	0.508	0.334	0.899	3.55	1.36	0.267	-0.087	-0.268	0.260	-0.290
In.	-0.08	0.003	0.58	0.39	0.94	4.09	1.52	0.31	-0.10	-0.31	0.30	-0.32

	Observed			Adjusted			
Calendar year 1954:	Max 569	Min 14	Mean 104	Mean 109	Cfsm 0.548	In. 7.43	
Water year 1954-55:	Max 647	Min 7.0	Mean 104	Mean 107	Cfsm 0.538	In. 7.32	

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from aquatic vegetation Oct. 1-5, Apr. 27 to Sept. 30. Backwater from aquatic vegetation and debris Oct. 6 to Feb. 28. Negative figures of adjusted discharge and runoff indicate that natural losses from Canandaigua Lake exceeded inflow. Records of diversion furnished by village of Newark.

Owasco Lake Outlet near Auburn, N. Y.

Location.--Lat 42°56'45", long 76°36'05", on left bank 2½ miles downstream from center of Auburn, Cayuga County, and 4 miles downstream from State dam at outlet of Owasco Lake.

Drainage area.--208 sq mi.

Records available.--November 1912 to September 1955.

Gage.--Water-stage recorder and concrete control.

Average discharge.--42 years (1913-55), 282 cfs.

Extremes.--Maximum discharge during year, 1,830 cfs Mar. 12 (gage height, 4.31 ft); minimum, 15 cfs Oct. 21 (gage height, 1.39 ft); minimum daily, 17 cfs Oct. 19, 20.
1912-55: Maximum discharge, 2,090 cfs Mar. 19, 1936, Apr. 9, 1940, Apr. 4, 1950; maximum gage height, 4.88 ft Mar. 19, 1936, Apr. 9, 1940; minimum discharge, about 2 cfs Dec. 5, 1936; minimum gage height, 1.825 ft Dec. 3, 1953; minimum daily discharge, 5 cfs Nov. 11, 1934.

Remarks.--Records good except those for periods of no gage-height record or backwater from aquatic vegetation, which are fair. Diurnal fluctuation caused by mills in Auburn; seasonal regulation at State dam. Water supply for Auburn taken from Owasco Lake, part of which returns as sewage to outlet above gaging station.

Revisions (water years).--WSP 759: Drainage area. WSP 824: 1913-14, 1916, 1920(M), 1922(M), 1928(M), 1929, 1932(M).

Rating tables, water year 1954-55, except periods of backwater from aquatic vegetation (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 11				Mar. 12 to Sept. 30			
1.4	16	2.5	360	1.6	42	2.6	402
1.5	28	3.0	740	1.8	80	3.0	700
1.8	81	4.0	1,590	2.0	131	4.0	1,590
2.1	162			2.3	240		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	81	96	892	320	590	708	228	c200	105	c84	70
2	79	90	99	900	327	736	659	228	*c198	104	c81	73
3	73	117	97	926	327	1,040	643	228	192	101	c79	74
4	71	90	97	985	334	1,050	634	224	192	104	c81	70
5	61	86	95	1,010	340	1,130	556	228	186	101	c81	70
6	62	81	*97	976	347	1,190	498	228	195	89	c79	74
7	73	81	104	934	252	1,170	498	228	195	87	c75	72
8	71	81	126	908	215	1,120	505	236	195	87	c91	70
9	71	79	128	876	207	1,080	498	*240	199	85	c54	70
10	69	79	128	844	215	1,060	491	232	199	85	c68	87
11	*75	87	128	756	215	*1,220	*483	232	199	85	c80	85
12	69	*88	128	708	207	1,610	491	228	195	*98	c70	73
13	45	88	131	638	207	1,600	491	224	*199	77	c85	77
14	47	88	143	600	*207	1,570	491	224	150	91	c70	75
15	39	92	162	585	207	1,510	491	c226	114	68	c70	79
16	21	88	146	532	207	1,460	491	c222	110	88	*c71	57
17	a18	81	115	*510	202	1,380	476	c226	108	73	70	94
18	a18	90	120	472	202	1,280	483	c226	109	58	70	74
19	a17	90	118	*472	202	1,220	347	c130	109	89	70	73
20	*a17	90	103	383	202	1,100	240	c180	136	75	70	74
21	a50	104	138	282	213	1,040	155	c218	119	77	68	71
22	*a86	92	338	315	246	1,140	192	c218	108	87	79	71
23	83	95	495	276	232	1,170	249	c226	109	92	72	58
24	77	90	472	314	287	1,150	240	c222	109	93	74	72
25	77	88	465	307	340	1,060	240	c236	109	86	82	66
26	83	90	472	278	332	996	236	c228	109	55	78	90
27	88	92	488	314	353	942	236	c224	112	98	118	68
28	86	92	518	314	439	924	224	c224	93	85	82	64
29	99	115	495	314	-	906	224	c228	106	80	82	64
30	86	102	654	314	-------	819	224	c224	106	84	94	*90
31	83	-------	684	314	-------	776	-------	c216	-------	71	69	-------
Total	1,971	2,707	7,780	18,249	7,384	35,039	12,394	6,882	4,460	2,658	2,397	2,205
Mean	63.6	90.2	251	589	264	1,130	413	222	149	85.7	77.3	73.5
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,090 Min 12 Mean 217 Cfsm 1.04 In. 14.13
Water year 1954-55: Max 1,610 Min 17 Mean 285 Cfsm 1.37 In. 18.61

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, engineers' inspections, and city of Auburn records of elevations of Owasco Lake.
c Backwater from aquatic vegetation.

Note.--Increase in contents in Owasco Lake during calendar year 1954, about 1,312,000,000 cu ft (equivalent mean discharge, 41.61 cfs; runoff, 2.72 in); increase in elevation, 4.57 ft. Decrease in contents during water year 1955, about 258,000,000 cu ft (equivalent mean discharge, 8.19 cfs; runoff, 0.53 in); decrease in elevation, 0.90 ft. Records of elevations of Owasco Lake furnished by city of Auburn.

Seneca River at Baldwinsville, N. Y.

Location.--Lat 43°09'25", long 76°19'55", on left bank 200 ft downstream from highway bridge in Baldwinsville, Onondaga County, and 400 ft downstream from navigation dam of New York State Barge Canal system.

Drainage area.--3,130 sq mi.

Records available.--November 1898 to December 1908 (these records, prior to construction of Barge Canal, not equivalent to later records at same site because of extensive development of Barge Canal system) and November 1949 to September 1955 in reports of Geological Survey. November 1898 to September 1925 in reports of State engineer and surveyor (subsequent to December 1908, gage heights only).

Gage.--Water-stage recorder. Datum of gage is 362.60 ft above mean sea level (New York State Barge Canal datum). November 1898 to Dec. 31, 1908, staff gages on dam at same site at different datum. Auxiliary water-stage recorder 1,500 ft downstream from base gage at same datum.

Average discharge.--5 years (1950-55), 3,141 cfs.

Extremes.--Maximum daily discharge during year, 11,900 cfs Mar. 18; maximum gage height, 6.84 ft Mar. 23; minimum daily discharge, 894 cfs Nov. 11; minimum gage height, 1.13 ft Aug. 19.
1949-55: Maximum discharge (river channel only), 15,700 cfs Apr. 1, 1950 (gage height, 8.50 ft); minimum daily, 373 cfs Feb. 14, 1954; minimum gage height, 0.81 ft Aug. 10, 1952.

Remarks.--Records good. This record represents total discharge at Baldwinsville and includes flow in Baldwin and Barge Canals. A large amount of natural storage and some artificial regulation is afforded by the many large lakes and the Barge Canal system in river basin. Large diurnal fluctuations at low and medium flow by powerplants above station. Seneca River basin receives water from Erie division of Barge Canal through lock 32 near Pittsford. During part of year, entire flow from 45 sq mi of Mud Creek drainage area may be diverted from Chemung River basin into Keuka Lake in Oswego River basin.

Cooperation.--Records of lockages at lock 24 furnished by New York State Department of Public Works.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,100	1,070	2,540	7,940	3,770	8,210	7,720	2,080	1,390	2,080	1,150	1,380
2	1,050	1,080	2,520	7,590	3,830	10,800	7,670	2,050	*1,420	1,850	1,130	1,430
3	1,010	1,120	2,110	7,130	3,780	11,500	7,340	1,910	1,460	1,490	1,130	1,170
4	1,130	1,700	1,340	6,500	3,940	11,700	7,350	1,520	1,500	1,400	1,120	1,130
5	1,230	1,630	1,020	5,900	3,580	11,400	7,270	1,550	1,480	1,420	1,120	1,180
6	1,280	1,180	940	5,520	3,430	10,600	7,310	1,580	1,460	1,520	1,110	1,440
7	1,250	1,090	*1,010	5,520	2,740	9,730	7,000	1,500	1,460	1,140	1,080	1,410
8	1,240	1,020	1,110	5,530	2,580	8,310	6,620	1,560	1,520	948	1,140	1,380
9	1,150	1,150	1,740	5,580	2,310	8,340	6,320	*1,570	1,560	1,000	1,140	921
10	1,060	1,030	2,130	5,450	2,080	8,250	5,980	1,580	1,540	1,030	1,090	979
11	1,110	*894	2,390	5,460	2,040	9,290	5,630	1,590	1,460	1,100	1,070	972
12	*1,180	1,070	2,400	5,400	1,270	10,800	4,720	1,530	1,520	1,370	1,110	1,580
13	1,210	1,110	2,390	5,400	1,080	11,500	*4,590	1,470	*1,550	*1,090	1,120	1,470
14	1,150	1,050	2,340	5,450	*1,190	*11,500	4,750	1,330	1,520	1,070	1,220	1,280
15	1,150	1,130	2,730	5,390	1,330	11,200	3,970	1,280	1,470	1,150	1,840	1,360
16	1,090	1,110	3,350	5,350	1,530	11,300	3,640	1,260	1,430	1,190	*1,760	1,440
17	1,080	1,210	3,520	*5,260	1,660	11,600	3,730	1,190	1,400	1,230	1,260	1,170
18	1,130	1,190	3,610	5,080	1,690	11,900	3,810	1,170	1,400	1,560	1,200	1,220
19	1,150	1,270	4,000	5,000	1,660	11,800	3,670	1,080	1,390	1,270	1,280	1,790
20	1,150	1,600	4,170	4,900	1,690	11,600	3,490	1,020	1,400	1,180	1,120	1,690
21	985	2,160	3,890	4,640	1,820	11,200	3,260	963	1,420	1,170	1,110	1,310
22	960	2,620	3,560	4,640	2,960	11,000	2,820	955	1,530	1,120	1,110	1,160
23	1,050	2,430	3,480	4,640	4,170	11,200	2,510	1,010	1,420	1,130	1,130	1,360
24	1,020	2,330	3,510	4,550	4,460	10,600	2,370	987	1,350	1,160	1,110	1,200
25	1,090	2,280	3,320	4,450	4,360	10,100	2,420	1,100	1,330	1,150	1,120	1,230
26	1,080	2,240	3,260	4,500	4,110	9,750	2,630	1,220	1,330	1,140	1,100	1,710
27	1,090	2,200	3,340	4,860	3,980	9,430	2,660	1,200	1,310	1,140	1,090	1,730
28	1,080	2,220	3,490	4,830	5,170	8,310	2,650	1,210	1,320	1,090	1,120	1,650
29	1,080	2,250	4,690	4,460	-	7,410	2,440	1,260	1,320	1,120	1,340	*1,580
30	1,040	2,640	6,330	4,240	------	6,980	2,080	1,350	1,410	1,110	1,310	1,430
31	988	------	7,760	4,090	------	7,210	------	1,340	------	1,130	1,390	------
Total	34,363	47,074	93,990	165,250	78,210	314,520	138,420	42,415	43,070	38,546	37,120	40,752
Mean	1,108	1,569	3,032	5,331	2,793	10,146	4,614	1,368	1,436	1,243	1,197	1,358
Cfsm	0.354	0.501	0.969	1.70	0.892	3.24	1.47	0.437	0.459	0.397	0.382	0.434
In.	0.41	0.56	1.12	1.96	0.93	3.74	1.64	0.50	0.51	0.46	0.44	0.48

Calendar year 1954: Max 9,090 Min 373 Mean 2,350 Cfsm 0.751 In. 10.20
Water year 1954-55: Max 11,900 Min 894 Mean 2,942 Cfsm 0.940 In. 12.75

* Discharge measurement made on this day.

Onondaga Reservoir near Nedrow, N. Y.

Location.--Lat 42°55'55", long 76°10'25", at Onondaga Dam on Onondaga Creek, 3½ miles southwest of Nedrow, Onondaga County, 4 miles south of Syracuse, and 10½ miles upstream from Onondaga Lake.

Drainage area.--68.1 sq mi (measured by Corps of Engineers).

Records available.--June 1949 to September 1952 (monthly elevations and contents), October 1952 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers).

Extremes.--Maximum elevation during year, 473.15 ft Mar. 2; minimum, 457.98 ft Sept. 21, 22.

1949-55: Maximum elevation, 484.51 ft Mar. 29, 1950; minimum, 457.98 ft Aug. 23, 1949, Sept. 5, 1953, Sept. 21, 22, 1955.

Remarks.--Reservoir is formed by a rolled earth-fill dam, completed by Corps of Engineers in August 1949 for flood control; first used for flood regulation about a year prior to completion. Usable capacity, 18,200 acre-ft between elevations 457.0 ft (conduit invert at intake) and 504.5 ft (crest of spillway). No dead storage. The flood-control works consist of a pressure conduit and a side-channel spillway and are not provided with gates. Water is stored during high flows and released gradually.

Cooperation.--Capacity curve furnished by Corps of Engineers.

Elevation in feet, at 12 p.m., water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	458.3	458.4	460.3	463.1	459.4	472.4	g463.3	460.1	459.0	458.3	458.1	458.2
2	459.0	458.4	460.0	464.0	459.2	471.9	g482.3	459.8	458.9	458.3	458.1	458.1
3	458.8	462.5	459.8	462.5	459.3	468.5	g483.0	460.0	458.8	458.3	458.1	458.1
4	458.6	461.9	459.7	462.1	459.2	465.6	483.1	459.8	458.8	458.2	458.1	458.1
5	458.5	460.5	459.5	461.5	459.2	464.3	482.2	459.6	458.8	458.2	458.0	458.1
6	458.5	459.8	459.5	462.3	459.4	463.2	481.8	459.5	458.7	458.6	458.1	458.1
7	458.4	459.4	459.5	461.0	459.6	461.6	481.9	460.2	460.8	458.3	458.2	458.0
8	458.4	459.3	459.6	461.0	459.4	461.6	481.5	461.2	459.5	458.2	458.1	458.0
9	458.4	459.2	460.5	460.8	459.5	463.2	481.3	460.2	459.0	458.2	458.1	458.0
10	458.4	459.1	460.4	460.6	460.7	464.5	481.0	459.9	458.8	458.2	458.0	458.0
11	458.5	459.0	460.0	460.3	461.0	471.6	480.9	459.7	458.8	458.2	458.2	458.1
12	458.5	459.0	459.9	460.6	460.2	471.2	480.8	459.6	458.8	458.2	458.2	458.1
13	458.4	459.0	459.8	460.3	460.2	468.7	480.7	459.5	458.9	458.1	459.2	458.1
14	458.4	458.9	463.3	460.2	460.3	464.7	480.7	459.4	458.8	458.1	458.4	458.1
15	458.4	g458.9	465.5	460.2	460.1	463.0	481.0	459.3	458.7	459.1	458.2	458.1
16	458.4	g458.8	462.2	460.1	460.0	463.3	480.8	459.2	458.6	458.7	458.2	458.1
17	458.4	g458.8	461.4	460.0	459.9	462.6	480.7	459.2	458.5	458.5	458.2	458.1
18	458.4	g458.8	464.3	460.0	459.8	462.4	480.5	459.1	458.5	458.3	458.2	458.1
19	458.4	g458.8	462.5	459.9	459.8	462.2	480.8	459.1	458.5	458.3	458.1	458.0
20	458.4	g458.8	461.2	459.3	460.2	462.3	480.4	459.0	458.4	458.2	458.1	458.0
21	458.3	g460.8	460.9	460.1	462.5	466.0	480.8	459.0	458.9	458.2	458.1	458.0
22	458.3	460.4	460.9	459.9	467.0	467.4	480.3	459.0	458.8	458.2	458.1	458.0
23	458.3	460.3	460.8	459.7	464.9	467.0	480.2	459.1	458.6	458.6	458.1	458.2
24	458.3	460.2	460.8	459.5	462.2	463.7	480.2	459.0	458.5	458.5	458.1	458.3
25	458.3	460.1	460.4	459.8	461.5	462.7	481.2	459.4	458.5	458.3	458.0	458.2
26	458.3	459.9	460.4	459.6	461.2	463.1	480.6	459.3	458.5	458.2	458.0	458.1
27	458.5	459.7	460.8	459.3	464.4	461.8	480.3	459.0	458.4	458.3	458.3	458.2
28	458.5	459.6	465.8	459.6	463.8	g461.8	480.1	458.9	458.4	458.3	458.1	458.3
29	458.4	461.4	468.1	459.5	-	g462.0	480.0	459.1	458.3	458.2	458.1	458.2
30	458.4	460.7	470.2	459.4	-------	g463.4	459.9	459.0	458.4	458.1	458.4	458.2
31	458.4	-------	467.9	459.4	-------	g463.6	-------	459.0	-------	458.1	458.2	-------

g Computed from once-daily gage readings.

Monthly elevation and contents, water year October 1954 to September 1955

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30	458.3	0	-
Oct. 31	458.4	0	0
Nov. 30	460.7	4	+4
Dec. 31	467.9	338	+334
Calendar year 1954	-	-	+338
Jan. 31	459.4	0	-338
Feb. 28	463.8	46	+46
Mar. 31	463.6	42	-4
Apr. 30	459.9	0	-42
May 31	459.0	0	0
June 30	458.4	0	0
July 31	458.1	0	0
Aug. 31	458.2	0	0
Sept. 30	458.2	0	0
Water year 1954-55	-	-	0

† Elevation at 12 p.m.

Onondaga Creek at Dorwin Avenue, Syracuse, N. Y.

Location.--Lat 42°59'00", long 76°09'05", on left bank 550 ft upstream from Dorwin Avenue Bridge at Syracuse, Onondaga County, and 4 miles downstream from Onondaga Reservoir.

Drainage area.--88.9 sq mi.

Records available.--May 1951 to September 1955.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 1,050 cfs Mar. 1 (gage height, 4.07 ft); minimum daily, 14 cfs Sept. 6-10, 20-22.
1951-55: Maximum discharge, 1,170 cfs Mar. 11, 1952 (gage height, 4.64 ft), from rating curve extended above 330 cfs by logarithmic plotting; minimum, 10 cfs Sept. 26, 1953; minimum gage height, 1.695 ft Sept. 7, 1954.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, or backwater from debris or aquatic vegetation, which are fair. High flow regulated by Onondaga Reservoir (see preceding page).

Rating tables, water year 1954-55, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 30				Dec. 31 to Mar. 1				Mar. 2 to Sept. 30			
1.7	14	3.0	330	1.8	43	3.0	336	1.6	12	3.0	337
1.9	35	3.5	610	2.2	111	3.5	610	1.8	33	3.5	610
2.2	83	4.0	990	2.6	203	4.0	990	2.1	79	4.0	990
2.6	181							2.5	168		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	26	129	522	b64	*895	337	92	44	23	19	21
2	26	29	105	336	b58	870	275	85	43	22	18	17
3	36	108	91	301	b52	750	251	85	39	22	17	16
4	36	309	79	240	b58	631	313	83	36	21	16	15
5	29	177	76	182	b60	b460	265	72	36	20	16	15
6	25	103	*b62	225	b66	b360	219	65	34	28	16	14
7	24	72	69	190	b68	b240	212	67	67	28	22	14
8	24	60	69	b135	b66	b180	194	145	104	21	20	14
9	23	*54	81	144	b66	220	177	*128	54	19	18	14
10	22	48	124	138	79	313	160	94	41	19	17	14
11	26	45	105	b102	170	661	150	81	36	18	19	15
12	*25	45	91	b114	b118	822	142	72	38	17	21	20
13	24	43	89	121	b104	750	*137	67	41	17	32	17
14	23	42	97	b104	b96	586	133	64	*39	*16	44	16
15	24	41	514	107	b92	*335	133	60	36	17	24	16
16	23	39	401	103	*b88	321	145	58	30	75	21	16
17	23	38	187	98	b86	272	130	56	27	33	20	16
18	23	38	242	*b90	85	241	124	54	26	25	20	15
19	22	36	380	96	83	228	119	52	24	21	21	15
20	22	38	220	b84	88	216	117	50	24	19	19	14
21	21	81	b145	b76	143	339	130	48	25	19	18	14
22	22	134	b130	96	431	597	119	47	38	18	17	14
23	22	110	131	88	527	659	100	46	34	20	*18	15
24	21	105	134	b74	301	489	96	48	29	47	18	22
25	21	105	112	b74	193	297	113	48	26	25	17	21
26	22	97	95	81	153	275	137	62	26	20	16	18
27	27	83	112	b74	226	254	117	53	26	19	17	17
28	34	78	318	b64	380	200	100	44	24	23	18	*23
29	28	130	694	b68	-	222	90	50	23	22	16	20
30	26	169	870	b66	--------	258	85	50	22	20	17	17
31	25	--------	729	b62	--------	329	--------	46	--------	19	29	--------
Total	767	2,483	6,681	4,255	4,001	13,270	4,820	2,072	1,092	733	621	495
Mean	24.7	82.8	216	137	143	428	161	66.8	36.4	23.6	20.0	16.5

Adjusted for change in contents in Onondaga Reservoir

Mean	24.7	82.8	221	132	144	428	160	66.8	36.4	23.6	20.0	16.5
Cfsm	0.278	0.931	2.49	1.48	1.62	4.81	1.80	0.751	0.409	0.265	0.225	0.186
In.	0.32	1.04	2.87	1.71	1.68	5.55	2.01	0.87	0.46	0.31	0.26	0.21

	Observed			Adjusted			
Calendar year 1954:	Max 870	Min 12	Mean 108	Mean 109	Cfsm 1.23	In. 16.59	
Water year 1954-55:	Max 895	Min 14	Mean 113	Mean 113	Cfsm 1.27	In. 17.29	

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Backwater from debris Oct. 1 to Nov. 3. Backwater from aquatic vegetation and/or debris Sept. 24-30. Doubtful gage-height record Dec. 7-10, Aug. 22 to Sept. 23; discharge computed on basis of outside-gage readings, weather records, and records for Onondaga Reservoir near Nedrow.

East Branch Fish Creek at Taberg, N. Y.

Location.--Lat 43°18'05", long 75°37'10", on left bank at downstream side of highway bridge at Taberg, Oneida County, just downstream from Furnace Creek, 2¾ miles upstream from confluence of East and West Branches near Blossvale.

Drainage area.--189 sq mi.

Records available.--April 1923 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 491.12 ft above mean sea level, datum of 1929. Prior to Oct. 6, 1923, staff gage at same site and datum.

Average discharge.--32 years, 546 cfs (unadjusted).

Extremes.--Maximum discharge during year, 6,600 cfs Apr. 15 (gage height, 6.57 ft); minimum, 16 cfs Aug. 4 (gage height, 0.15 ft).
1923-55: Maximum discharge, 13,600 cfs Oct. 2, 1945 (gage height, 10.90 ft); minimum, 4.9 cfs Aug. 15, 16, 1949.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversion above station for water supply by city of Rome as shown in monthly table. Additional diversion from a reservoir (capacity, 28,600,000 cu ft; drainage area, 16.4 sq mi) on Florence Creek above station for water supply for city of Oneida amounted to 127,109,000 cu ft during water year 1955, equivalent to a mean discharge of 4.0 cfs. Diurnal fluctuation at low flow caused by diversion and small power operations upstream.

Revisions (water years).--WSP 604: 1924. WSP 759: Drainage area. WSP 1034: 1944. WSP 1054: 1923-45.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 15				Apr. 16 to Sept. 30			
0.8	89	3.0	1,440	0.1	14	2.0	621
1.1	169	5.0	4,020	.4	35	3.0	1,440
1.5	342	7.0	7,330	.7	77	5.0	4,020
2.0	620			1.0	149	7.0	7,330
				1.5	346		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	220	691	942	170	674	926	416	370	72	25	99
2	170	238	496	870	165	1,130	1,440	375	361	63	20	67
3	245	690	320	886	155	942	2,030	351	291	59	18	50
4	245	1,200	340	711	155	832	1,910	314	229	53	21	42
5	207	*992	300	513	145	691	2,020	287	296	41	24	37
6	174	684	230	524	150	639	2,790	253	241	52	21	32
7	132	490	260	420	155	496	3,270	245	181	88	34	25
8	116	398	290	330	160	390	2,030	417	*328	68	70	22
9	114	383	280	280	160	425	1,700	400	245	53	46	22
10	129	318	280	270	165	468	2,890	328	171	45	*33	22
11	318	276	270	240	*195	1,440	4,220	283	238	36	64	32
12	347	280	260	210	210	*2,940	4,000	241	203	*31	90	41
13	308	267	260	225	180	2,820	*3,360	210	178	32	85	33
14	290	258	309	210	160	1,990	4,690	188	229	32	196	30
15	352	276	1,340	195	155	1,720	5,710	171	253	62	145	55
16	267	254	1,120	205	150	2,050	4,710	159	171	482	*129	*78
17	207	236	718	200	150	1,580	2,920	149	121	295	102	62
18	159	258	831	*190	145	1,200	2,220	138	99	141	68	47
19	140	357	1,150	185	145	878	3,260	127	81	83	53	38
20	127	383	870	175	150	752	3,010	*119	152	67	44	30
21	119	1,120	620	170	165	817	3,090	111	146	54	36	25
22	111	1,190	520	170	180	1,030	2,320	102	116	44	31	24
23	111	752	470	185	200	1,040	1,580	121	107	40	31	24
24	109	596	430	175	230	810	1,120	841	95	52	34	202
25	133	547	350	165	290	738	1,170	548	77	42	35	193
26	107	501	340	155	380	620	1,040	554	99	34	32	107
27	293	446	362	150	520	457	775	380	113	33	30	75
28	468	542	536	145	440	378	627	270	91	37	27	414
29	304	899	1,970	150	-	468	525	669	68	32	25	325
30	224	1,010	1,720	160	-------	530	458	726	68	29	42	205
31	199	-------	1,290	170	-------	646	-------	480	-------	27	137	-------
Total	6,347	16,061	19,223	9,576	5,625	31,591	71,811	9,973	5,418	2,279	1,748	2,458
Mean	205	535	620	309	201	1,019	2,394	322	181	73.5	56.4	81.9
(†)	17.3	17.1	17.4	17.0	18.6	18.2	17.3	18.9	21.7	17.0	17.0	16.7

	Observed			Adjusted for diversion			
Calendar year 1954:	Max 6,930	Min 28	Mean 591	Mean 609	Cfsm 3.22	In. 43.74	
Water year 1954-55:	Max 5,710	Min 18	Mean 499	Mean 517	Cfsm 2.74	In. 37.11	

Peak discharge (base, 4,900 cfs).--Apr. 11 (10:45 p.m.) 5,000 cfs (5.63 ft); Apr. 15 (10:45 p.m.) 6,600 cfs (6.57 ft).

* Discharge measurement made on this day.

† Diversion, equivalent in cubic feet per second, by city of Rome for water supply; for calendar year 1954, 18.0 cfs, for water year 1955, 17.8 cfs; records furnished by city of Rome. For diversion by city of Oneida, see "Remarks."

Note.--Stage-discharge relation affected by ice Dec. 3-13, 22-26, Jan. 8 to Feb. 28, Mar. 8.

Oneida Creek at Oneida, N. Y.

Location.--Lat 43°05'50", long 75°38'20", on right bank 70 ft upstream from highway bridge at Oneida, Madison County, and 500 ft downstream from Sconondoa Creek.

Drainage area.--112 sq mi.

Records available.--October 1949 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 409.33 ft above mean sea level (Corps of Engineers benchmark).

Average discharge.--6 years, 153 cfs.

Extremes.--Maximum discharge during year, 3,000 cfs Mar. 11 (gage height, 10.18 ft); minimum, 13 cfs Aug. 3, 6, Sept. 10; minimum gage height, 1.30 ft Aug. 3, 6.
1949-55: Maximum discharge, 7,440 cfs Mar. 28, 1950 (gage height, 13.78 ft); minimum, that of Aug. 3, 6, Sept. 10, 1955; minimum gage height, that of Aug. 3, 6, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, or backwater from debris, which are fair. Slight diurnal fluctuation at low flow caused by small mills above station.

Rating tables, water year 1954-55, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 14		Dec. 15 to Sept. 30			
1.5	22	1.3	13	3.0	262
1.7	41	1.5	26	5.0	783
2.2	102	1.9	67	7.0	1,400
3.0	250	2.5	160	9.0	2,250
5.0	783				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*c22	33	260	410	78	*1,960	612	97	55	29	18	25
2	70	35	174	630	72	1,090	528	93	54	26	19	21
3	67	271	130	481	82	520	554	93	48	25	18	19
4	42	603	102	398	66	428	534	88	45	22	15	18
5	34	*224	100	275	68	386	418	84	55	22	16	17
6	28	131	92	280	74	380	373	80	46	a48	16	16
7	27	98	92	220	78	280	420	79	40	a32	15	16
8	26	79	96	185	74	215	328	135	37	a26	*18	16
9	25	69	102	165	76	270	266	155	36	a22	16	15
10	27	61	142	155	90	549	240	112	34	a21	15	15
11	36	56	122	122	120	1,690	221	90	34	a19	24	15
12	c32	54	114	130	100	*1,200	199	79	40	*a18	34	20
13	*c29	47	108	140	92	753	*199	70	47	17	39	18
14	27	48	135	120	86	474	183	60	45	*18	50	16
15	24	48	*1,180	125	86	398	197	62	40	23	29	20
16	24	45	465	116	84	500	227	61	34	131	*34	*21
17	c26	44	296	102	82	371	187	60	31	43	26	18
18	c26	43	451	*96	86	312	171	56	29	30	23	16
19	c25	41	457	102	92	280	*160	53	28	27	25	16
20	*c24	42	280	96	90	273	149	*50	49	24	19	16
21	24	393	190	88	114	645	222	47	37	22	16	16
22	24	356	170	106	500	1,120	181	43	48	22	16	16
23	22	268	175	100	*860	888	142	45	39	19	23	18
24	22	237	165	86	480	484	127	55	33	28	20	46
25	24	252	150	88	320	398	152	84	30	25	18	30
26	24	193	150	90	230	376	171	139	29	22	17	22
27	32	152	155	84	390	300	146	78	30	25	19	20
28	41	140	510	74	*491	205	123	57	27	29	18	38
29	31	410	1,040	80	-	296	112	56	25	23	16	29
30	30	462	1,210	78	-------	391	103	74	25	19	18	24
31	29	----	619	72	-------	614	--------	59	--------	18	49	--------
Total	944	4,935	9,432	5,294	5,041	18,046	7,645	2,394	1,150	875	699	613
Mean	30.5	164	304	171	180	582	255	77.2	38.3	28.2	22.5	20.4
Cfsm	0.272	1.46	2.71	1.53	1.61	5.20	2.28	0.689	0.342	0.252	0.201	0.182
In.	0.31	1.64	3.13	1.76	1.67	5.99	2.54	0.79	0.38	0.29	0.23	0.20

Calendar year 1954: Max 1,540 Min 16 Mean 146 Cfsm 1.30 In. 17.65
Water year 1954-55: Max 1,960 Min 15 Mean 156 Cfsm 1.39 In. 18.93

Peak discharge (base, 1,780 cfs).--Mar. 1 (9 p.m.) 2,610 cfs (9.61 ft); Mar. 11 (8:30 p.m.) 3,000 cfs (10.18 ft); Mar. 22 (12 p.m.) 1,780 cfs (8.01 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of weather records and records for Chittenango Creek near Chittenango and East Branch of Fish Creek at Taberg.

c Backwater from debris.

Note.--Stage-discharge relation affected by ice Dec. 3-9, 13, 14, 20-26, Jan. 7 to Feb. 26, Mar. 7-9, 27, 28.

Chittenango Creek near Chittenango, N. Y.

Location.--Lat 43°01'25", long 75°51'30", on right bank at upstream side of highway bridge, 1.6 miles upstream from Chittenango, Madison County, 12 miles upstream from Butternut Creek, and 23 miles upstream from mouth.

Drainage area.--67.7 sq mi.

Records available.--August 1950 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 489.54 ft above mean sea level, datum of 1929.

Average discharge.--5 years, 109 cfs.

Extremes.--Maximum discharge during year, 1,770 cfs Mar. 11 (gage height, 5.53 ft); minimum, 11 cfs Sept. 6, 7; minimum gage height, 1.32 ft Oct. 23, 24, 25, 26.
1950-55: Maximum discharge, 2,600 cfs July 28, 1951 (gage height, 5.88 ft), from rating curve extended above 810 cfs by logarithmic plotting; minimum, 9.8 cfs Oct. 11, 1953; minimum gage height, 1.265 ft Oct. 15, 1952.
Flood of Mar. 29, 1950, reached a stage of 6.8 ft (backwater from debris present), from floodmarks (discharge, 2,760 cfs, by slope-area method).

Remarks.--Records excellent except those for periods of ice effect or shifting control, which are good. Slight regulation at low flow caused by mills upstream.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*16	18	142	302	72	*783	387	60	41	23	16	14
2	28	20	120	391	b64	513	362	58	41	22	16	13
3	28	207	b118	344	b56	b270	355	58	36	22	16	13
4	23	301	b118	292	b82	b290	348	56	34	20	16	13
5	21	*129	b116	225	b64	296	305	55	45	20	16	13
6	19	95	b100	256	69	256	289	52	36	30	16	12
7	18	81	b102	204	72	b180	305	49	52	28	16	15
8	17	73	108	b160	b70	b145	250	93	94	23	16	21
9	16	76	129	b150	72	165	222	88	48	21	*16	23
10	16	66	146	b140	76	273	211	69	39	20	16	21
11	20	61	129	b114	*98	*1,090	203	62	35	18	16	23
12	19	62	122	b120	b86	805	183	58	35	*18	16	24
13	*19	54	118	133	b82	544	*174	54	38	17	29	22
14	17	49	128	114	80	372	164	51	40	*19	31	20
15	17	49	*465	123	80	352	167	48	36	24	17	21
16	17	46	224	110	75	413	181	47	32	70	*28	*19
17	16	44	b140	b102	75	324	155	45	28	29	20	19
18	16	43	223	b92	80	271	144	44	27	23	17	18
19	16	43	263	*b100	85	247	*135	40	29	21	17	17
20	16	49	b150	b92	80	250	128	*39	34	19	16	17
21	15	344	b114	b84	97	422	158	39	30	19	16	18
22	15	247	b112	b102	280	684	131	38	43	18	16	18
23	14	146	118	93	302	*599	109	38	34	18	16	20
24	14	131	118	80	222	369	103	39	30	24	15	28
25	14	131	b102	b86	b155	331	122	51	27	19	14	21
26	14	122	b104	88	b135	292	135	72	26	17	14	20
27	20	103	114	80	190	b240	97	52	25	17	16	20
28	25	114	323	b70	236	b200	72	40	24	17	14	25
29	21	188	632	b76	-	227	66	44	23	17	13	14
30	19	186	700	b74	------	247	62	51	23	16	15	15
31	17	-- ---	443	b68	------	339	------	43	------	16	18	------
Total	563	3,278	6,041	4,465	3,115	11,793	5,723	1,633	1,085	685	534	557
Mean	18.2	109	195	144	111	380	191	52.7	36.2	22.1	17.2	18.6
Cfsm	0.269	1.61	2.88	2.13	1.64	5.61	2.82	0.778	0.535	0.326	0.254	0.275
In.	0.31	1.80	3.32	2.45	1.71	6.48	3.14	0.90	0.60	0.38	0.29	0.31

Calendar year 1954: Max 796 Min 12 Mean 100 Cfsm 1.48 In. 20.13
Water year 1954-55: Max 1,090 Min 12 Mean 108 Cfsm 1.60 In. 21.69

Peak discharge (base, 1,000 cfs).--Mar. 1 (4 p.m.) 1,030 cfs (4.47 ft); Mar. 11 (3:30 p.m.) 1,770 cfs (5.53 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Shifting-control method used Dec. 14, Dec. 28 to Feb. 9, Mar. 1-11, July 16.

Limestone Creek at Fayetteville, N. Y.

Location.--Lat 43°01'45", long 76°00'50", on left bank 100 ft downstream from Genesee Street Bridge at Fayetteville, Onondaga County, and 8 miles upstream from mouth.

Drainage area.--85.7 sq mi, not including 15.7 sq mi of Middle Branch Tioughnioga Creek basin, flow from which may be completely diverted into Limestone Creek basin through DeRuyter Reservoir.

Records available.--November 1939 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 427.62 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--15 years (1940-55), 139 cfs.

Extremes.--Maximum discharge during year, 2,190 cfs Mar. 1 (gage height, 5.89 ft); minimum, 14 cfs Oct. 10; minimum gage height, 1.29 ft Sept. 6.
1939-55: Maximum discharge, 7,010 cfs Mar. 28, 1950 (gage height, 7.78 ft), from rating curve extended above 3,500 cfs by logarithmic plotting; minimum, 12 cfs Oct. 4, 1953; minimum gage height, 1.23 ft Aug. 20, 1949.

Remarks.--Records good except those for periods of ice effect, shifting control, or backwater from aquatic vegetation or debris, which are fair. Canal diverts from Limestone Creek about 3 miles above station and returns water to creek about 400 ft above station. Flow regulated by DeRuyter Reservoir.

Revisions (water years).--WSP 954: 1941.

Rating tables, water year 1954-55, except periods of ice effect, shifting control, or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 30				Dec. 31 to Apr. 20				Apr. 20 to Sept. 30	
1.4	24	3.0	388	1.5	37	3.5	600	1.3	14
1.6	50	3.5	579	1.8	88	4.0	825	1.6	48
2.0	121	4.0	842	2.0	132	5.0	1,390	2.0	118
2.5	238	5.0	1,610	2.5	265	5.9	2,200	2.5	239
				3.0	416				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	30	142	338	b60	*1,420	410	86	50	32	24	e33
2	33	33	115	433	b54	973	329	82	47	31	24	e30
3	31	96	101	370	b49	396	329	84	46	29	23	e30
4	34	226	90	308	b56	469	378	80	45	27	22	e30
5	31	110	88	215	b58	474	306	75	46	27	22	e27
6	28	70	b66	265	64	381	259	e70	47	34	22	e25
7	27	56	*b72	201	62	264	262	e72	47	37	23	e27
8	26	48	72	b135	b64	b210	231	e116	236	29	23	e25
9	26	*45	86	b155	b64	255	204	116	74	26	22	e25
10	26	43	127	b140	73	402	185	90	58	25	21	e25
11	27	39	107	b96	b122	1,200	169	*79	50	24	22	e25
12	*28	39	97	b96	b104	966	*159	74	50	23	24	e29
13	28	37	95	b108	b92	566	159	67	53	23	29	e27
14	27	37	b100	b96	b90	*381	*156	64	*53	*23	36	e26
15	26	37	626	b98	b90	338	146	60	50	32	29	e25
16	26	36	310	b98	*b82	390	161	58	45	123	33	e26
17	27	36	b195	b92	80	308	151	56	42	45	32	e25
18	28	35	310	*86	78	274	144	56	39	33	26	e24
19	28	35	374	90	78	257	137	54	38	31	29	e24
20	27	36	b195	b82	80	259	123	52	41	29	27	e24
21	26	162	b135	b70	129	476	145	50	41	27	25	e24
22	26	214	b125	88	503	846	125	48	49	26	25	e24
23	26	138	b145	b82	554	710	104	50	46	27	*25	24
24	24	129	b140	b72	352	403	102	53	39	32	25	29
25	26	132	b112	b66	240	338	129	54	37	31	25	32
26	26	132	b110	77	185	326	152	73	36	29	25	27
27	29	107	b125	b66	316	281	125	59	34	27	26	27
28	31	103	394	b56	456	b205	106	52	33	26	29	*31
29	31	174	758	b62	-	b250	95	54	32	25	26	30
30	31	194	1,070	b60	------	314	90	53	31	24	e29	27
31	30	---	608	b58	------	434	------	52	------	24	e33	-----
Total	866	2,609	7,090	4,259	4,235	14,766	5,571	2,089	1,535	981	806	807
Mean	27.9	87.0	229	137	151	476	186	67.4	51.2	31.6	26.0	26.9
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,270 Min 18 Mean 121 Cfsm 1.41 In. 19.22
Water year 1954-55: Max 1,420 Min 21 Mean 125 Cfsm 1.46 In. 19.82

Peak discharge (base, 2,000 cfs).--Mar. 1 (7:30 p.m.) 2,190 cfs (5.89 ft).
* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
e Shifting-control method used.
Note.--Backwater from aquatic vegetation and/or debris Oct. 5 to Nov. 2, June 24 to July 15, July 17 to Sept. 22.

Oneida Lake at Brewerton, N. Y.

Location.--Lat 43°14'20", long 76°08'30", at west end of Oneida Lake, 100 ft west of bridge on U. S. Highway 11 at Brewerton, Onondaga County.

Drainage area.--1,353 sq mi.

Records available.--November 1951 to September 1955. April 1904 to September 1925 in reports of State engineer and surveyor, published as Oneida River at Brewerton.

Gage.--Water-stage recorder. Datum of gage is 362.00 ft above mean sea level, Barge Canal datum.

Extremes.--Maximum gage height during year, 10.21 ft Apr. 12; minimum recorded, 6.19 ft Feb. 11.
1951-55: Maximum gage height, that of Apr. 12, 1955; minimum, 5.93 ft Jan. 20, 1954.

Remarks.--Elevation of lake surface regulated by taintor-gate dam on Oneida River at Caughdenoy and gates on Oneida Canal and Barge Canal. Capacity of lake not determined. Area of water surface is 79.8 sq mi. Figures of change in contents computed from surface area multiplied by change in stage.

Mean gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.54	8.15	8.65	8.42	6.60	6.98	9.38	9.05	9.20	8.40	8.28	8.18
2	8.56	8.34	8.66	8.42	6.55	7.37	9.39	9.09	9.22	8.37	8.27	8.18
3	8.59	8.24	8.60	8.52	6.51	7.71	9.53	9.11	9.19	8.36	8.28	8.18
4	8.58	8.29	8.46	8.53	6.46	7.91	9.61	9.11	9.12	8.36	8.26	8.18
5	8.58	8.49	8.31	8.55	6.43	7.97	9.73	9.06	9.14	8.33	8.21	8.14
6	8.51	8.57	8.18	8.43	6.40	8.02	9.71	8.96	9.16	8.33	8.24	8.15
7	8.54	8.53	8.03	8.31	6.38	8.04	9.69	9.09	9.19	8.33	8.17	8.07
8	8.57	8.40	7.85	8.30	6.36	8.03	9.82	9.03	9.30	8.33	8.17	8.09
9	8.55	8.31	7.90	8.22	6.33	8.00	9.87	9.08	9.08	8.31	8.25	8.14
10	8.54	8.23	7.75	8.12	6.30	8.00	9.81	9.17	9.02	8.24	8.19	8.11
11	8.55	8.13	7.65	8.02	6.29	8.17	9.84	9.15	9.08	8.22	8.16	8.03
12	8.55	8.00	7.63	7.92	6.32	8.62	10.00	9.18	8.98	8.21	8.20	7.99
13	8.55	8.09	7.62	7.83	6.33	9.02	9.94	9.18	8.78	8.20	8.42	8.06
14	8.65	7.94	7.64	7.73	6.32	9.30	9.83	9.11	8.78	8.16	8.27	8.08
15	9.00	8.10	7.58	7.65	a6.32	9.42	9.78	9.13	8.77	8.24	8.23	8.03
16	8.56	8.11	7.72	7.56	a6.34	9.49	9.87	9.11	8.73	8.35	8.27	8.06
17	8.54	8.10	7.97	7.50	a6.32	9.55	9.90	9.06	8.72	8.37	8.28	8.08
18	8.50	8.19	7.94	7.43	a6.28	9.57	9.81	8.99	8.69	8.40	8.33	8.05
19	8.47	8.16	7.90	7.36	a6.27	9.51	9.71	9.00	8.66	8.40	8.24	8.06
20	8.44	8.14	7.96	7.27	a6.26	9.42	9.71	9.03	8.60	8.39	8.26	7.94
21	8.41	8.16	7.95	7.21	a6.25	9.43	9.66	9.02	8.56	8.38	8.24	7.97
22	8.36	8.41	7.90	7.15	a6.26	9.59	9.57	9.03	8.53	8.38	8.22	7.98
23	8.29	8.50	7.86	7.09	a6.37	9.58	9.49	8.99	8.52	8.36	8.19	8.12
24	8.28	8.66	7.81	7.03	6.48	9.74	9.52	8.98	8.49	8.34	8.20	8.11
25	8.27	8.60	7.76	6.97	6.55	9.79	9.54	9.02	8.49	8.36	8.22	8.03
26	8.24	8.55	7.70	6.91	6.61	9.84	9.18	9.09	8.43	8.35	8.17	8.06
27	8.14	8.56	7.62	6.84	6.66	9.26	9.09	9.20	8.42	8.33	8.14	8.13
28	8.22	8.45	7.59	6.81	6.74	9.34	9.02	9.22	8.39	8.35	8.15	8.10
29	8.27	8.37	7.72	6.75	-	9.48	8.96	9.21	8.38	8.39	8.21	8.21
30	8.14	8.37	7.99	6.69	----	9.36	9.01	9.23	8.38	8.38	8.18	8.24
31	8.15	----	8.24	6.64	---	9.34	-----	9.24	-----	8.32	8.18	-----
Mean	8.46	8.30	7.94	7.62	6.40	8.87	9.60	9.09	8.80	8.33	8.23	8.09
(†)	-282	+352	-199	-1,412	+147	+2,135	-730	+581	-669	-99.7	-99.7	+8.58

Calendar year 1954: Max 9.52 Min 5.98 Mean 8.09 (†) +111
Water year 1954-55: Max 10.00 Min 6.25 Mean 8.32 (†) -21.2

† Change in contents in Oneida Lake, equivalent in cubic feet per second.
a No gage-height record; gage heights estimated on basis of records for Oneida River at Caughdenoy.

Oneida River at Caughdenoy, N. Y.

Location.--Lat 43°14'45", long 76°10'15", on left bank at point of diversion to New York State Barge Canal, 1.6 miles downstream from Oneida Lake and 2.6 miles upstream from Caughdenoy, Oswego County.

Drainage area.--1,377 sq mi.

Records available.--September 1902 to December 1909 (published as "near Euclid"), January 1910 to December 1913, and October 1947 to September 1955 in reports of Geological Survey. September 1902 to December 1909 and January 1910 to September 1925 in reports of State engineer and surveyor.

Gage.--Water-stage recorder. Datum of gage is 362.00 ft above mean sea level (New York State Barge Canal benchmark). Prior to June 4, 1907, headwater readings and June 5, 1907, to Dec. 31, 1909, staff-gage readings at Oak Orchard State Dam, at different datum. Jan. 1, 1910, to Dec. 31, 1913, staff gage at site 2.5 miles downstream at different datum. Oct. 9, 1947, to Nov. 7, 1951, water-stage recorder at site 2.5 miles downstream at present datum; since Nov. 7, 1951, used as auxiliary gage. Since Nov. 9, 1951, auxiliary water-stage recorder 2.6 miles downstream and 180 ft downstream from navigation dam of New York State Barge Canal.

Average discharge.--8 years (1947-55), 2,396 cfs.

Extremes.--Maximum daily discharge during year, 7,800 cfs Mar. 26; minimum daily, 198 cfs Sept. 29.

1947-55: Maximum daily discharge, 9,160 cfs Apr. 7, 1950; minimum daily, 62 cfs July 29, 1950.

Remarks.--Records excellent above and good below 1,500 cfs except those for periods of backwater from submergence or no gage-height record, which are fair. Discharge below 1,500 cfs computed by using gage-height record for auxiliary water-stage recorder 2.6 miles downstream. This record represents total discharge at Caughdenoy and includes flow in Oneida and Barge Canals. A large amount of natural storage by Oneida Lake. Considerable seasonal regulation by operation of gates in Oneida Canal and at navigation dam. Occasional large diurnal fluctuations presumably caused by seiche in Oneida Lake. Water may be diverted into or received from Mohawk River basin through summit level of Barge Canal between New London and Utica. Nearly all of flow from 16 sq mi of the Tioughnioga River basin may be diverted into DeRuyter Reservoir, in Oswego River basin.

Cooperation.--Records of gate openings for navigation dam and gate openings, lockages, and elevations of water surface in Barge Canal above and below lock 23 furnished by New York State Department of Public Works.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	608	1,580	3,780	4,680	2,120	2,600	6,380	1,200	1,540	662	369	244
2	598	1,630	4,420	4,630	2,040	3,100	6,400	1,190	1,530	641	365	241
3	600	1,570	5,240	4,820	1,980	3,590	6,690	1,180	1,530	640	369	251
4	603	1,580	5,070	4,840	1,940	3,900	6,860	1,200	1,460	644	356	261
5	614	2,010	4,860	4,890	1,900	3,960	7,150	1,160	1,470	647	312	259
6	607	2,800	4,700	4,650	1,870	4,010	7,080	1,160	1,420	535	279	253
7	623	3,760	4,430	4,460	1,850	4,050	7,000	1,200	1,420	486	280	258
8	610	4,270	*4,150	4,460	1,830	4,040	7,300	1,200	1,590	491	280	249
9	612	4,340	4,230	4,310	1,800	4,020	7,430	1,180	1,740	492	277	238
10	604	*4,340	3,950	4,190	1,750	4,000	7,280	*1,250	1,620	489	278	234
11	612	4,280	3,490	4,050	1,730	4,260	7,390	1,260	1,540	482	268	225
12	606	2,290	3,480	3,910	1,740	4,990	*7,770	1,270	1,590	417	272	245
13	*667	678	3,470	3,750	1,770	5,690	7,630	1,320	1,750	*375	283	241
14	607	663	3,510	3,600	1,770	6,240	7,400	1,310	1,680	382	257	245
15	854	683	3,400	3,500	*1,770	6,510	7,270	1,360	*1,590	383	259	226
16	1,060	675	3,590	3,350	1,800	*6,590	7,500	1,350	1,650	387	255	230
17	1,080	679	3,970	3,280	1,770	6,660	7,550	1,370	1,560	389	254	239
18	1,080	679	3,960	*3,200	1,740	6,760	7,380	1,350	1,560	393	256	230
19	*1,090	657	3,860	3,090	1,720	6,650	7,140	1,380	1,540	389	253	233
20	1,090	655	3,920	2,980	1,710	6,860	7,160	1,370	1,660	390	260	226
21	1,280	652	3,910	2,900	1,700	6,910	7,090	1,360	1,490	387	262	226
22	1,580	1,630	3,870	2,820	1,720	7,260	6,380	1,350	1,280	384	*271	215
23	1,580	2,670	3,820	2,740	1,820	7,180	6,640	1,330	951	392	256	217
24	1,590	2,740	3,710	2,660	1,950	7,490	6,710	1,340	934	377	250	213
25	1,590	2,740	3,650	2,580	2,040	7,640	6,840	1,340	933	387	252	216
26	1,580	3,170	3,580	2,500	2,140	7,800	5,340	1,340	942	369	247	205
27	1,570	3,820	3,470	2,390	2,180	6,500	4,450	1,370	914	372	253	213
28	1,630	3,790	3,430	2,350	2,290	6,630	4,370	1,430	896	368	251	204
29	1,620	3,850	3,630	2,290	-	7,000	3,010	1,380	762	378	265	*198
30	1,570	3,810	3,990	2,220	-------	6,750	1,160	1,380	647	382	250	208
31	1,570	------	4,370	2,160	-------	6,460	-------	1,490	-------	382	240	------
Total	31,985	68,691	122,910	108,250	52,440	176,100	196,200	40,370	41,189	13,892	8,579	6,943
Mean	1,032	2,290	3,965	3,492	1,873	5,681	6,540	1,302	1,373	448	277	231
Cfsm	0.749	1.66	2.88	2.54	1.36	4.13	4.75	0.946	0.997	0.325	0.201	0.168
In.	0.86	1.86	3.32	2.92	1.42	4.76	5.30	1.09	1.11	0.38	0.23	0.19

Calendar year 1954: Max 6,750 Min 184 Mean 2,409 Cfsm 1.75 In. 23.75
Water year 1954-55: Max 7,800 Min 198 Mean 2,377 Cfsm 1.73 In. 23.44

* Discharge measurement made on this day.

Note.--Backwater from submergence at auxiliary gage Oct. 1-21, 24-26, Nov. 4, 5, Apr. 29 to June 8, July 2-7, 18, 19, Aug. 15-17, Aug. 30 to Sept. 9, Sept. 19-30. No gage-height record at main gage Jan. 14, 15; discharge estimated from reconstructed gage-height graph based on records for Oneida Lake at Brewerton. No tailwater staff-gage readings on Oneida Canal May 24 to June 4, July 1, 2, 10-19; discharge estimated on basis of gage-height record at auxiliary gage and tailwater staff-gage readings on Barge Canal.

Oswego River at lock 7, Oswego, N. Y.

Location.--Lat 43°27'00", long 76°30'25", on right bank at lock 7 in Oswego, Oswego County, three-quarters of a mile upstream from mouth.
Drainage area.--5,121 sq mi.
Records available.--April 1897 to December 1901, October 1927 to September 1928, November 1933 to September 1955. Records for 1927-28 of doubtful accuracy.
Gage.--Water-stage recorder. Datum of gage is 246.00 ft above mean sea level (New York State Barge Canal datum). April 1897 to December 1901, headwater gage readings and Oct. 1, 1927, to Sept. 30, 1928, water-stage recorder at High Dam three-quarters of a mile upstream at different datum.
Average discharge.--21 years (1934-55), 6,420 cfs.
Extremes.--Maximum discharge during year, 23,600 cfs Mar. 23 (gage height, 10.55 ft), includes mean daily discharge of canals; minimum daily, 440 cfs Aug. 28; minimum gage height, 1.35 ft Oct. 11, Nov. 14.
1933-55: Maximum discharge, 37,500 cfs Mar. 28, 1936, includes mean daily discharge of canals; maximum gage height, 13.46 ft Apr. 10, 1940; minimum discharge (river only), 30 cfs Nov. 6, 1944; minimum daily, 353 cfs Aug. 14, 1949; minimum gage height, 0.97 ft Aug. 24, 1934.
Remarks.--Records excellent except those for periods of backwater from Lake Ontario, which are good. This record represents total discharge at Oswego and includes flow in Hydraulic and Barge Canals. A large amount of natural storage and some artificial regulation is afforded by the many large lakes and the Barge Canal system in river basin. Large diurnal fluctuations at low and medium flow by powerplants above station. Oswego River basin receives water from Erie division of Barge Canal through lock 32 near Pittsford. Water may be diverted into or received from Mohawk River basin through summit level of Barge Canal between New London and Utica. During part of year entire flow from 45 sq mi of Mud Creek drainage area may be diverted from Chemung River basin into Lake Keuka in Oswego River basin. Nearly all of flow from 16 sq mi of Tioughnioga River basin may be diverted into DeRuyter Reservoir, in Oswego River basin.
Cooperation.--Records of lockages at lock 7 furnished by New York State Department of Public Works, record of elevations of Lake Ontario by Corps of Engineers, daily discharge records for High Dam by Niagara Mohawk Power Corp., and those at Fulton by Oswego River Watershed Corp.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,850	2,700	7,860	15,300	6,130	13,200	16,400	3,200	3,200	2,350	1,900	1,750
2	1,650	2,100	7,750	15,000	6,660	18,800	16,800	3,900	3,100	2,700	1,650	1,450
3	1,140	2,700	9,040	14,800	6,790	19,600	16,800	3,600	3,200	1,450	1,400	1,600
4	2,300	4,610	8,650	13,900	6,640	19,400	16,600	3,200	3,200	1,600	1,600	760
5	2,050	4,480	7,400	13,100	6,310	18,800	16,200	2,700	2,200	2,450	1,500	1,300
6	1,900	4,450	6,960	12,100	5,360	18,200	16,300	2,900	3,500	2,350	1,500	1,600
7	1,900	4,580	5,760	11,400	6,080	17,200	16,200	2,900	3,000	1,950	780	1,650
8	2,000	5,600	6,100	11,600	5,320	15,600	15,700	2,700	3,300	1,800	1,700	1,650
9	1,750	6,960	*6,190	11,000	4,840	14,500	15,500	3,500	3,500	1,650	1,700	1,690
10	840	5,640	6,710	10,600	4,620	14,800	14,800	*3,200	3,000	840	1,400	1,020
11	2,250	*4,390	6,830	10,100	3,970	18,300	*13,700	3,100	3,500	2,300	1,500	880
12	1,900	5,400	6,560	10,100	3,490	20,900	13,100	3,000	2,350	*1,700	1,600	1,550
13	1,950	3,070	7,530	9,580	3,370	21,300	13,100	3,200	3,700	2,000	1,550	1,650
14	*2,000	840	7,220	9,420	3,520	21,100	12,900	2,700	*3,300	1,900	920	1,750
15	2,300	2,900	8,030	9,320	3,620	*20,800	12,700	2,000	3,300	1,550	2,000	1,750
16	1,950	1,950	10,000	9,200	*3,760	20,400	12,200	3,000	3,200	1,950	2,250	1,600
17	1,140	2,000	9,760	8,920	3,930	20,200	12,200	2,600	3,200	1,160	19900	1,600
18	2,600	2,050	9,920	8,980	4,080	20,400	11,500	2,500	2,700	2,100	1,650	620
19	2,250	2,250	9,770	*9,250	4,050	20,200	11,100	2,600	2,200	2,000	1,500	2,050
20	2,300	2,150	9,760	8,800	3,930	20,000	11,300	2,450	3,500	1,800	1,550	1,900
21	2,300	2,350	9,820	8,960	4,680	20,000	11,600	2,050	3,100	1,800	580	1,950
22	2,150	4,180	9,150	8,360	5,280	21,800	11,400	2,100	3,000	1,550	*1,850	1,550
23	2,050	5,360	8,830	8,000	7,770	23,200	10,800	2,700	3,000	1,700	1,500	1,450
24	1,750	5,840	8,260	8,080	7,690	22,900	10,600	2,200	2,200	560	1,500	1,850
25	3,050	6,670	8,290	7,740	7,940	21,900	10,200	2,450	2,600	2,150	1,450	1,100
26	2,800	5,990	8,010	7,580	7,840	20,800	9,970	2,900	1,300	1,750	1,400	1,850
27	3,000	6,420	7,910	7,280	7,700	18,900	8,800	2,900	2,700	1,500	1,350	2,020
28	2,700	6,220	8,050	7,130	8,450	17,400	8,010	2,700	2,100	1,500	440	1,950
29	2,450	7,100	9,410	7,670	-	16,800	7,570	1,700	2,300	1,350	1,950	1,910
30	1,850	7,500	12,500	6,690	-------	16,300	3,100	2,450	2,100	1,550	1,600	*1,990
31	1,450	-------	14,800	6,840	-------	16,000	-------	3,500	-------	720	1,650	-------
Total	63,570	128,450	262,830	306,800	153,820	589,700	377,150	86,600	86,550	53,730	46,820	47,350
Mean	2,051	4,282	8,478	9,897	5,494	19,020	12,794	2,794	2,885	1,733	1,510	1,578
Cfsm	0.401	0.836	1.66	1.93	1.07	3.71	2.45	0.546	0.563	0.338	0.295	0.308
In.	0.46	0.93	1.91	2.23	1.12	4.28	2.74	0.63	0.63	0.39	0.34	0.34

Calendar year 1954: Max 17,900 Min 360 Mean 5,566 Cfsm 1.09 In. 14.76
Water year 1954-55: Max 23,200 Min 440 Mean 6,037 Cfsm 1.18 In. 16.00

* Discharge measurement made on this day.
Note.--Backwater from Lake Ontario Oct. 1-24, Oct. 26 to Nov. 3, Nov. 14-21, Apr. 30 to Sept. 26, Sept. 28 (no river gage-height record Oct. 14-19).

Black River Canal (flowing south) near Boonville, N. Y.

Location.--Lat 43°27'20", long 75°19'25", gage 1 on left bank at lock 69, 2 miles south of Boonville, Oneida County, and gage 2 on right bank of Lansingkill spillway, 100 ft downstream from spillway headgates, 600 ft upstream from lock 70, and half a mile upstream from lock 69.

Records available.--September 1915 to September 1942 (canal seasons only), October 1942 to September 1955.

Gage.--Two water-stage recorders and concrete controls. Datum of gage 1 is 1,105.56 ft above mean sea level, datum of 1929. Prior to June 7, 1929, station was operated as a slope station on summit level of canal.

Extremes.--1915-55: Maximum daily discharge recorded, 323 cfs Nov. 30, 1915; practically no flow at times when no water is being diverted.

Remarks.--Records good. Record shows combined flow at gages 1 and 2 and represents total diversion from Black River at Forestport, through Forestport feeder, into Mohawk River basin. Discharge during period Nov. 16 to May 9, when no water was diverted, made up of leakage through headgates and runoff from area draining into canal above station.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	50	0.9	1.5	0.5	2.1	2.0	0.7	81	61	41	36
2	75	50	.8	1.3	.5	2.9	2.3	.8	86	63	37	51
3	77	62	.7	1.3	.5	2.8	2.3	.8	82	62	32	49
4	75	*76	.8	1.0	.5	2.6	1.7	.7	78	62	29	48
5	73	58	.8	.7	.5	2.3	1.8	.7	78	60	27	46
6	72	40	.8	.6	.5	2.3	2.4	.8	75	60	25	40
7	72	31	*.7	.6	*.5	2.3	2.5	.8	76	*60	23	32
8	73	27	.7	.6	.5	2.1	1.7	.8	77	64	25	29
9	73	24	.7	.6	.5	*2.1	1.4	.8	72	67	28	29
10	71	23	.7	.6	.5	2.3	2.0	9.7	71	66	28	30
11	59	22	.7	.6	.4	3.2	1.9	17	70	65	30	28
12	56	22	.7	.6	.4	3.4	1.5	20	70	65	31	*37
13	55	22	.7	.6	.4	3.2	1.2	24	70	66	32	60
14	54	21	.8	.6	.5	2.9	1.4	25	69	66	40	65
15	51	9.2	1.4	.6	.5	2.9	1.5	24	*69	68	40	65
16	48	2.0	1.1	.6	.5	3.1	1.3	34	69	82	44	67
17	48	1.8	.8	.6	.5	2.6	.9	36	67	48	44	67
18	47	1.7	1.2	.6	.5	2.6	.7	*36	65	59	43	63
19	47	1.6	2.3	.5	.5	2.3	.9	42	61	76	*42	54
20	47	1.5	1.7	*.5	.5	2.3	*.8	54	62	67	43	44
21	46	1.8	1.1	.5	.5	2.3	.9	58	61	63	42	35
22	46	1.5	.8	.5	1.2	2.5	.8	55	61	58	43	27
23	46	1.2	.8	.5	1.8	2.6	.7	56	62	58	42	23
24	46	1.1	.8	.5	1.9	2.3	.7	65	61	58	42	33
25	46	1.1	.7	.5	1.6	2.3	.7	76	62	52	42	64
26	46	1.1	.7	.5	1.3	2.2	.8	98	60	44	34	71
27	50	1.0	.7	.5	1.3	1.9	.7	90	41	44	28	70
28	54	.9	1.1	.5	1.2	1.7	.7	82	31	41	25	75
29	52	1.0	3.1	.5	-	1.9	.7	81	40	41	19	82
30	50	1.0	2.7	.5	-------	2.0	.7	86	57	43	17	82
31	50	------	2.0	.5	-------	2.0	-------	79	-------	43	23	------
Total	1,778	557.5	33.5	20.1	20.5	76.0	39.6	1,154.6	1,984	1,832	1,041	1,502
Mean	57.4	18.6	1.08	0.65	0.73	2.45	1.32	37.2	66.1	59.1	33.6	50.1
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 82 Min 0.3 Mean 19.4 Cfsm - In. -
Water year 1954-55: Max 98 Min 0.4 Mean 27.5 Cfsm - In. -

* Discharge measurement made on this day.

Black River near Boonville, N. Y.

Location.--Lat 43°30'35", long 75°18'25", on left bank at downstream side of highway bridge, three-quarters of a mile upstream from Sugar River and 2 miles northeast of Boonville, Oneida County.

Drainage area.--295 sq mi.

Records available.--February 1911 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 935.50 ft above mean sea level, datum of 1929, supplementary adjustment of 1943. Prior to Sept. 27, 1933, chain and staff gages at same site and datum.

Average discharge.--44 years, 684 cfs.

Extremes.--Maximum discharge during year, 5,940 cfs Apr. 16 (gage height, 9.62 ft); minimum, 98 cfs Aug. 29, Sept. 6 (gage height, 3.69 ft); minimum daily, 115 cfs Aug. 28. 1911-55: Maximum discharge, 12,400 cfs Mar. 28, 1913 (gage height, about 12.5 ft, from floodmarks); minimum observed, about 5 cfs Aug. 26, 1918 (gage height, 2.40 ft); minimum daily, 7 cfs Aug. 26, 1918.

Remarks.--Records excellent except those for periods of ice effect, which are good. Flow slightly regulated by several headwater reservoirs. Forestport feeder diverts water from State Pond at Forestport. That portion of diverted water which does not pass down Black River Canal (flowing south) returns to Black River below station through Mill Creek sluiceway.

Revisions (water years).--WSP 759: Drainage area. WSP 784: 1934. WSP 1084: 1912(M), 1913, 1917-19(M), 1922(M), 1924(M), 1926(M), 1928(M), 1930(M), 1933(M).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 12				Mar. 13 to Sept. 30			
4.1	178	6.0	1,060	3.7	100	6.0	1,070
4.5	286	7.0	1,950	4.0	157	7.0	1,950
5.0	471	8.0	3,200	4.5	295	8.0	3,200
				5.0	501	9.6	5,900

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	245	277	726	1,020	300	680	916	986	848	278	125	212
2	262	280	600	920	280	1,140	1,270	867	1,270	288	125	154
3	328	405	450	869	270	1,200	1,810	755	1,020	275	126	128
4	325	*778	400	692	260	1,100	1,990	722	849	259	125	123
5	289	875	380	520	250	1,000	2,190	683	778	247	126	125
6	262	750	310	560	250	920	2,780	625	678	244	126	120
7	228	631	330	480	*260	760	*3,610	584	540	*241	138	126
8	215	554	360	450	260	580	2,800	689	625	202	151	128
9	202	463	370	400	260	560	2,100	790	549	175	154	127
10	207	397	390	430	250	540	2,430	673	451	155	133	128
11	287	363	370	400	280	1,000	3,580	559	374	138	146	139
12	397	349	350	370	300	3,000	4,110	511	354	128	162	*205
13	429	345	350	400	270	3,610	3,680	460	362	125	175	174
14	429	345	*360	380	250	2,720	4,240	424	370	119	195	135
15	367	367	800	380	245	2,140	*5,550	395	*374	134	180	146
16	295	352	920	410	240	2,000	5,780	374	339	584	168	156
17	253	342	680	400	240	1,770	4,850	354	292	567	154	138
18	248	352	740	390	235	1,490	3,640	*335	262	275	144	128
19	231	359	1,140	*370	240	1,260	3,230	306	241	195	*143	129
20	223	382	1,170	360	260	1,020	3,580	299	227	159	138	131
21	223	712	900	350	290	1,000	3,230	288	221	155	130	127
22	225	1,310	800	360	350	1,040	3,070	282	218	149	132	133
23	218	1,050	780	400	440	1,020	2,580	308	235	136	149	134
24	210	805	760	360	490	916	2,020	519	218	132	138	208
25	202	703	560	340	520	879	1,890	763	198	140	126	235
26	200	658	480	310	460	796	1,760	1,840	205	138	121	189
27	235	626	490	300	440	711	1,520	1,310	251	134	119	149
28	328	653	520	280	430	660	1,310	856	229	138	115	262
29	345	799	1,200	270	-	720	1,170	700	200	140	122	324
30	296	889	1,750	280	-------	716	1,050	843	227	134	143	244
31	277	-------	1,350	300	-------	778	-------	744	-------	126	247	-------
Total	8,481	17,171	20,786	13,751	8,620	37,726	83,736	19,838	13,005	6,310	4,476	4,857
Mean	274	572	671	444	308	1,217	2,791	640	434	204	144	162
Cfsm	0.929	1.94	2.27	1.51	1.04	4.13	9.46	2.17	1.47	0.692	0.488	0.549
In.	1.07	2.16	2.62	1.73	1.09	4.76	10.56	2.50	1.64	0.80	0.56	0.61

Calendar year 1954: Max 4,300 Min 110 Mean 725 Cfsm 2.46 In. 33.34
Water year 1954-55: Max 5,780 Min 115 Mean 654 Cfsm 2.22 In. 30.10

Peak discharge (base, 3,900 cfs).--Mar. 12 (11:15 a.m.) 4,920 cfs (9.01 ft); Apr. 12 (11 a.m.) 4,410 cfs (8.78 ft); Apr. 16 (1:15 p.m.) 5,940 cfs (9.62 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2-18, Dec. 21 to Jan. 2, Jan. 5 to Mar. 12, Mar. 21-23, 28, 29.

Middle Branch Moose River at Old Forge, N. Y.

Location.--Lat 43°42'50", long 74°58'10", on left bank in Old Forge, Herkimer County, 400 ft downstream from State dam and 1¼ miles upstream from North Branch Moose River.

Drainage area.--52 sq mi, approximately.

Records available.--November 1911 to September 1955.

Gage.--Staff gage read twice daily. Datum of gage is 1,690.63 ft above mean sea level, datum of 1929.

Average discharge.--43 years (1912-55), 105 cfs.

Extremes.--Maximum daily discharge during year, 403 cfs June 2; maximum gage height observed, 3.74 ft Apr. 17 (backwater from North Branch); minimum daily discharge, 11 cfs Apr. 3.

1911-55: Maximum daily discharge, 862 cfs Mar. 23, 1921, from rating curve extended above 450 cfs by logarithmic plotting; minimum daily, 0.1 cfs many times when gates in dam were closed.

Remarks.--Records good except those for periods of ice effect or backwater from North Branch, which are fair. On days when gate openings are changed, discharge is computed from gage readings and record of gate operations. Flow regulated by Fulton Chain of Lakes since about 1880.

Revisions.--WSP 664: Drainage area.

Rating tables, water year 1954-55, except periods of ice effect or backwater from North Branch (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Feb. 19				Feb. 19 to Sept. 30			
1.7	11	2.5	100	1.7	11	2.5	106
1.9	24	3.0	206	1.9	25	3.0	216
2.2	55	4.0	514	2.2	58	3.7	419

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	314	182	13	16	d140	b94	88	15	302	13	22	22
2	314	182	13	16	d140	b92	31	15	403	13	22	22
3	314	194	13	16	d130	b92	11	14	387	13	22	22
4	314	184	13	16	d120	b100	12	13	283	13	22	22
5	314	93	13	17	d116	b96	13	13	229	21	22	22
6	300	93	80	17	b110	b90	13	13	188	36	22	22
7	300	93	244	17	b108	b82	13	13	65	36	22	22
8	300	93	*231	17	b108	*b92	13	14	65	*36	22	22
9	285	*92	231	17	*b106	b100	13	34	65	35	22	22
10	285	90	218	143	b108	b100	13	69	65	34	22	22
11	285	88	218	285	108	93	c14	68	65	34	22	170
12	285	83	206	*285	100	114	c14	68	68	34	22	297
13	271	83	194	285	100	116	c14	68	68	34	22	*297
14	271	155	194	271	100	c122	c14	68	68	34	22	297
15	271	218	111	271	98	c130	c14	66	68	34	22	297
16	257	206	15	257	97	c122	c14	31	*68	34	*22	297
17	257	206	15	257	95	c110	c14	17	65	34	22	283
18	244	194	15	244	90	c120	c14	17	50	34	22	283
19	239	182	15	244	90	c122	c14	*17	13	34	22	283
20	244	182	15	231	95	c124	c14	17	13	34	22	283
21	231	182	15	218	95	126	*c14	17	13	34	22	269
22	231	151	15	206	d90	126	c14	17	13	34	22	266
23	218	12	15	206	d84	76	c14	56	13	34	22	266
24	218	12	15	194	d84	55	c20	186	13	34	22	266
25	206	12	15	194	86	122	c28	235	13	27	22	264
26	206	12	15	182	85	124	34	326	13	24	22	261
27	206	12	16	d175	85	122	71	226	13	24	22	261
28	194	13	16	d165	b90	122	130	153	13	24	22	261
29	194	13	16	d180	-	126	29	64	13	24	22	256
30	194	13	16	d155	-------	124	15	68	13	24	22	256
31	182	-------	16	d150	-------	122	-------	135	-------	23	22	-------
Total	7,944	3,325	2,237	4,927	2,858	3,356	729	2,133	2,728	896	682	5,633
Mean	256	111	72.2	159	102	108	24.3	68.8	90.9	28.9	22.0	188
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 350 Min 9.4 Mean 109 Cfsm 2.10 In. 28.51
Water year 1954-55: Max 403 Min 11 Mean 103 Cfsm 1.98 In. 26.78

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
c Backwater from North Branch.
d Doubtful gage-height record; discharge computed on basis of engineer's inspections, reservoir elevations, and records of gate operations at Old Forge Dam.

Note.--Increase in combined storage in Old Forge and Sixth Lake Reservoirs during calendar year 1954, about 91,000,000 cu ft (equivalent mean discharge, 2.9 cfs; runoff, 0.75 in); decrease during water year 1955, about 201,600,000 cu ft (equivalent mean discharge, 6.4 cfs; runoff, 1.67 in); furnished by Board of Black River Regulating District.

Middle Branch Moose River near McKeever, N. Y.

Location.--Lat 43°37'45", long 75°04'55", on right bank half a mile upstream from confluence with South Branch and 1½ miles northeast of McKeever, Herkimer County.

Drainage area.--148 sq mi.

Records available.--October 1925 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,530.29 ft above mean sea level, datum of 1929.

Average discharge.--30 years, 329 cfs.

Extremes.--Maximum discharge during year, 1,520 cfs Apr. 17 (gage height, 5.88 ft); maximum gage height, 7.35 ft Jan. 25 (ice jam); minimum discharge, 48 cfs Aug. 4 (gage height, 2.00 ft).
1925-55: Maximum discharge, 2,100 cfs Apr. 27, 1926 (gage height, 6.6 ft); maximum gage height, that of Jan. 25, 1955 (ice jam); minimum discharge, 27 cfs Aug. 18, 1946 (gage height, 1.73 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated to some extent by Fulton Chain of Lakes since about 1880.

Revisions.--WSP 664: Drainage area.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.0	48	3.5	318
2.3	79	4.5	704
2.8	150	6.0	1,600

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	372	286	207	270	195	200	372	521	402	79	64	62
2	379	318	204	250	195	290	359	425	596	72	63	59
3	382	312	195	230	180	400	356	334	658	70	61	58
4	372	340	185	215	170	380	346	362	672	66	56	57
5	362	298	175	200	160	340	379	334	587	64	54	56
6	359	253	185	210	160	310	475	301	521	65	56	55
7	352	238	270	195	165	290	579	278	402	70	65	55
8	349	230	*360	185	160	*270	*558	272	315	*66	68	55
9	349	*225	370	190	160	250	592	264	278	66	63	54
10	343	213	350	185	*155	230	686	272	251	67	61	53
11	343	152	330	320	160	400	828	281	233	68	72	54
12	346	198	310	*420	170	640	890	269	223	66	80	192
13	369	200	300	400	160	720	988	256	216	66	78	*337
14	402	198	310	400	155	660	1,170	243	221	66	79	312
15	352	272	320	410	150	640	*1,300	230	223	69	77	324
16	337	301	230	370	145	660	1,430	216	*225	96	75	321
17	330	298	195	360	150	*680	1,500	154	218	94	71	315
18	327	292	200	330	145	640	1,430	136	204	90	*70	312
19	318	286	290	320	140	600	1,330	*135	169	85	67	304
20	309	281	270	*310	145	560	1,260	133	133	80	64	301
21	304	334	250	290	155	529	1,240	138	114	77	61	295
22	295	362	230	280	170	498	1,180	135	108	80	61	292
23	283	297	210	290	*180	517	1,090	151	108	78	63	292
24	278	223	195	280	185	441	988	255	107	74	62	309
25	269	213	185	270	190	402	917	327	100	67	60	304
26	264	211	175	260	185	385	848	406	99	64	59	295
27	275	207	165	250	180	327	777	430	95	65	58	295
28	278	204	160	230	175	300	772	346	107	68	57	315
29	281	209	210	215	-	330	723	289	99	67	56	304
30	275	209	320	220	-------	370	596	258	89	66	61	301
31	267	-- ---	280	210	-------	390	-------	283	-------	65	70	-- ---
Total	10,121	7,660	7,636	8,565	4,640	13,849	25,959	8,434	7,773	2,236	2,012	6,338
Mean	326	255	246	276	166	447	865	272	259	72.1	64.9	211
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,300 Min 62 Mean 342 Cfsm 2.31 In. 31.36
Water year 1954-55: Max 1,500 Min 53 Mean 288 Cfsm 1.95 In. 26.43

Peak discharge (base, 1,200 cfs).--Apr. 17 (9:15 a.m.) 1,520 cfs (5.88 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3 to Mar. 20, Mar. 28-31 (doubtful gage-height record Dec. 23, 26, Jan. 31 to Feb. 5; no gage-height record Jan. 6-12, Feb. 6-9).

Moose River at McKeever, N. Y.

Location.--Lat 43°36'40", long 75°06'35", on left bank half a mile west of McKeever, Herkimer County, and 2 miles downstream from South Branch.

Drainage area.--365 sq mi.

Records available.--June 1900 to December 1922 (published as "at Moose River"), May 1922 to September 1955.

Gage.--Water-stage recorder at present site and datum since Nov. 3, 1922. Datum of gage is 1,479.92 ft above mean sea level, datum of 1929. June 5, 1900, to Dec. 31, 1922, staff gage at site 2½ miles downstream at various datums. May 28 to Nov. 2, 1922, staff gage at present site at datum 1 ft higher.

Average discharge.--47 years (1907-13, 1914-55), 839 cfs.

Extremes.--Maximum discharge during year, 7,120 cfs Apr. 15 (gage height, 10.47 ft); minimum, 99 cfs Aug. 5, Sept. 11 (gage height, 1.62 ft).
1900-1955: Maximum discharge, 18,700 cfs June 3, 1947 (gage height, 17.45 ft, from floodmark), result of failure of dam; minimum, about 42 cfs July 21, 23, 25-27, 1913.

Remarks.--Records excellent except those for period of ice effect, which are fair. Flow regulated to some extent by Fulton Chain of Lakes since about 1880.

Revisions (water years).--WSP 624: 1922(M). WSP 729: Drainage area. WSP 874: 1928.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 4		Nov. 5 to Sept. 30			
2.5	329	1.6	95	4.0	1,020
3.0	521	2.0	188	6.0	2,410
4.0	1,010	2.5	336	8.0	4,290
5.0	1,620	3.0	526	11.0	7,810

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	500	479	598	800	350	460	1,000	1,320	1,670	215	134	294
2	500	508	520	700	330	780	1,060	1,130	3,110	221	125	207
3	517	542	460	620	310	1,140	1,310	986	2,020	202	116	166
4	513	1,050	440	560	290	1,100	1,350	992	1,480	183	108	146
5	500	1,050	410	520	270	980	1,400	894	1,190	166	101	132
6	487	800	420	540	270	840	1,920	790	981	163	103	125
7	471	649	500	480	290	740	2,890	706	785	186	119	118
8	459	566	620	440	280	*620	*2,290	721	635	*204	161	110
9	455	*526	*600	450	*280	580	1,810	795	557	176	166	106
10	447	492	580	430	270	560	2,190	740	488	161	139	101
11	459	384	540	540	290	800	3,740	673	648	149	150	101
12	504	425	520	*680	310	2,200	4,340	607	668	139	188	241
13	586	425	500	640	300	2,400	3,640	552	640	134	204	*410
14	714	414	490	640	290	1,950	4,720	518	654	130	360	381
15	612	480	600	660	280	1,650	6,920	480	677	134	388	399
16	551	501	680	620	270	1,600	*6,360	448	*588	239	269	406
17	530	497	560	580	280	1,650	5,310	370	509	278	*215	402
18	504	484	580	540	270	1,600	4,080	343	444	237	180	388
19	471	583	820	520	260	1,500	4,170	*360	370	196	163	374
20	443	755	800	500	260	1,400	4,720	316	313	168	149	363
21	428	977	720	*480	280	1,300	3,800	310	278	153	137	353
22	409	1,990	640	480	310	1,250	3,540	297	269	151	130	350
23	394	1,390	600	500	340	1,300	3,160	342	266	144	132	343
24	379	920	560	470	*360	1,140	2,550	640	252	139	128	377
25	368	755	540	440	380	1,020	2,410	734	232	128	121	388
26	357	668	520	440	360	920	2,390	1,460	246	123	118	402
27	379	607	500	410	340	860	2,000	1,270	252	128	114	388
28	467	584	480	390	330	780	1,840	883	249	162	108	440
29	530	611	720	370	-	840	1,680	760	237	215	106	464
30	492	649	980	390	------	920	1,450	852	212	173	116	460
31	475	--- ---	900	370	-------	980	-------	810	-------	146	237	----- -
Total	14,901	20,761	18,398	16,200	8,450	35,860	90,040	22,099	20,920	5,343	4,985	8,935
Mean	481	692	593	523	302	1,157	3,001	713	697	172	161	298
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 6,030 Min 104 Mean 851 Cfsm 2.33 In. 31.66
Water year 1954-55: Max 6,920 Min 101 Mean 731 Cfsm 2.00 In. 27.18

Peak discharge (base, 5,500 cfs).--Apr. 15 (12 to 2 p.m.) 7,120 cfs (10.47 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 1.

Independence River at Donnattsburg, N. Y.

Location.--Lat 43°44'50", long 75°20'05", on right bank at downstream side of highway bridge at Donnattsburg, Lewis County, 1¼ miles downstream from Chase Lake Outlet, 4¼ miles northeast of Glenfield, and 5 miles upstream from mouth.

Drainage area.--91.7 sq mi.

Records available.--July 1942 to September 1955.

Gage.--Water-stage recorder. Prior to Sept. 16, 1949, wire-weight gage at same site and datum.

Average discharge.--13 years, 200 cfs.

Extremes.--Maximum discharge during year, 1,670 cfs Apr. 15 (gage height, 6.72 ft); minimum, 20 cfs Aug. 6, 7 (gage height, 2.90 ft).
1942-55: Maximum discharge, 3,410 cfs Oct. 2, 1945 (gage height, 8.8 ft, from graph based on gage readings); minimum observed, 18 cfs Sept. 17, 1948, Aug. 4, 5, 1949 (gage height, 2.85 ft).

Remarks.--Records good except those for periods of ice effect, which are fair.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 15				Apr. 16 to Sept. 30			
3.1	37	5.0	578	2.9	20	4.5	370
3.5	92	6.0	1,150	3.2	50	5.0	585
4.0	194	7.0	1,900	3.6	114	6.0	1,150
4.5	358			4.0	206	7.0	1,900

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	92	205	328	72	141	228	201	275	38	25	55
2	49	95	174	255	74	225	336	180	480	38	24	46
3	63	122	139	225	70	*250	525	166	348	38	23	38
4	76	*235	137	208	64	245	613	154	223	36	22	34
5	84	285	122	185	58	237	691	143	168	32	21	30
6	78	252	110	165	54	200	864	134	136	*34	20	27
7	72	197	116	160	56	160	1,200	130	127	36	25	26
8	65	167	124	150	50	140	860	145	156	34	34	24
9	59	151	*116	140	45	125	567	170	134	30	28	23
10	59	143	110	140	*42	131	631	163	105	30	25	23
11	68	125	104	124	50	321	1,160	145	84	28	40	25
12	107	118	100	104	60	795	1,290	126	81	28	57	28
13	149	114	98	112	74	1,100	965	114	82	27	68	26
14	174	109	110	*104	70	834	1,230	101	112	26	70	23
15	145	107	165	100	66	638	*1,580	94	163	31	73	*38
16	116	104	250	104	64	603	1,340	89	130	81	61	42
17	100	99	230	102	64	525	959	*84	100	97	49	38
18	87	95	210	98	62	444	718	81	79	66	41	34
19	76	100	300	92	62	347	660	76	67	49	36	30
20	68	113	320	88	65	275	839	73	65	38	*34	28
21	63	258	280	84	73	252	655	66	57	34	30	25
22	61	608	240	84	98	278	580	60	52	32	30	24
23	58	408	230	92	125	398	480	69	55	30	58	23
24	59	275	210	88	130	358	397	198	49	28	64	30
25	54	222	165	82	135	296	370	190	47	27	55	34
26	52	194	135	76	124	240	413	231	47	24	*42	38
27	53	174	140	70	106	202	370	191	48	25	36	36
28	86	169	145	64	107	167	305	149	47	32	32	46
29	106	197	312	64	-	184	256	226	42	30	28	63
30	95	240	525	66	-------	179	226	312	40	28	31	59
31	92	-------	458	68	-------	184	-------	231	-------	26	49	-------
Total	2,523	5,568	6,080	3,822	2,120	10,474	21,308	4,492	3,599	1,133	1,229	1,016
Mean	81.4	186	196	123	75.7	338	710	145	120	36.5	39.6	33.9
Cfsm	0.888	2.03	2.14	1.34	0.826	3.69	7.74	1.58	1.31	0.398	0.432	0.370
In.	1.02	2.26	2.47	1.55	0.86	4.25	8.64	1.82	1.46	0.46	0.50	0.41

Calendar year 1954: Max 1,450 Min 27 Mean 206 Cfsm 2.25 In. 30.56
Water year 1954-55: Max 1,580 Min 20 Mean 174 Cfsm 1.90 In. 25.70

Peak discharge (base, 1,200 cfs).--Apr. 7 (9:45 a.m.) 1,270 cfs (6.19 ft); Apr. 12 (9:30 a.m.) 1,370 cfs (6.33 ft); Apr. 15 (8:30 a.m.) 1,670 cfs (6.72 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 5-10, 13-27, Jan. 5 to Feb. 19, Feb. 22-26, Mar. 2-4, 7-9 (doubtful gage-height record Jan. 16-18, 21, 22, Feb. 3-7).

Stillwater Reservoir near Beaver River, N. Y.

Location.--Lat 43°53'50", long 75°03'05", in gatehouse at Stillwater Dam on Beaver River, 2¼ miles upstream from Moshier Creek and 7½ miles west of Beaver River Post Office, Herkimer County.

Drainage area.--172 sq mi.

Records available.--February 1925 to September 1955.

Gage.--Float-tape gage read once daily and prior to reservoir gate changes. Datum of gage is at mean sea level, adjustment of 1912.

Extremes.--Maximum elevation observed during year, 1,679.25 ft June 6, 7 (contents, 4,608,000,000 cu ft); minimum observed, 1,654.91 ft Mar. 11 (contents, 246,000,000 cu ft).

1925-55: Maximum elevation observed, 1,679.73 ft June 3, 1947 (contents, 4,748,000,000 cu ft); minimum observed since first filling, 1,644.80 ft Mar. 25-27, 1940 (reservoir empty).

Remarks.--Records good. Reservoir originally formed about 1885; enlarged at various times and in 1924 enlarged to a usable capacity of 4,623,000,000 cu ft between elevations 1,650.3 and 1,679.3 ft above mean sea level. Elevation of gate sill of lowest outlet, 1,642.3 ft. Capacity below elevation 1,650.3 ft, about 90,000,000 cu ft. Reservoir is used to regulate flow of Beaver and Black Rivers for control of floods, for power development, and for general welfare of the public. Record of contents herein represents those above elevation 1,650.3 ft.

Cooperation.--Records of gate opening and reservoir elevations furnished by Board of Black River Regulating District.

Elevation in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66.79	65.19	67.18	68.46	64.11	56.02	61.84	77.90	78.62	76.82	72.89	67.62
2	66.72	65.09	67.33	68.70	63.86	55.80	61.76	77.92	78.78	76.73	72.73	67.44
3	66.77	65.03	67.46	68.93	63.60	55.72	61.77	77.96	78.94	76.70	72.55	67.25
4	66.96	64.96	67.55	69.02	63.33	55.71	61.80	78.01	79.04	76.65	72.34	67.05
5	67.04	65.06	67.62	69.04	63.05	55.69	61.95	78.05	79.17	76.59	72.13	66.84
6	67.05	65.27	67.68	68.95	62.77	55.66	62.21	78.03	79.23	76.45	71.90	66.65
7	67.02	65.44	67.68	68.78	62.52	55.56	62.88	78.14	79.25	76.30	71.68	66.44
8	66.96	65.67	67.64	68.70	62.24	55.42	63.75	78.25	79.21	76.14	71.57	66.23
9	66.87	65.59	67.59	68.64	61.98	55.24	64.41	78.35	79.12	75.95	71.38	66.01
10	66.78	65.55	67.53	68.53	61.71	55.06	65.00	78.43	79.03	75.90	71.19	65.78
11	66.73	65.48	67.44	68.41	61.44	54.91	65.93	78.50	78.93	75.91	70.97	65.64
12	66.69	65.41	67.32	68.26	61.20	56.47	67.06	78.58	78.84	75.77	70.88	65.34
13	66.68	65.33	67.19	68.09	60.94	58.05	67.96	78.63	78.77	75.63	70.80	65.14
14	66.71	65.25	67.09	67.91	60.69	59.02	68.92	78.70	78.73	75.47	70.69	64.93
15	66.72	65.17	66.90	67.73	60.43	59.72	70.27	78.74	78.68	75.29	70.63	64.71
16	66.74	65.09	66.98	67.54	60.17	60.37	71.52	78.76	78.61	75.25	70.54	64.52
17	66.65	65.01	67.18	67.38	59.90	60.97	72.45	78.79	78.53	75.16	70.44	64.32
18	66.56	64.93	67.30	67.21	59.60	61.32	73.28	78.66	78.44	75.09	70.27	64.09
19	66.48	64.86	67.53	67.01	59.29	61.58	74.06	78.53	78.35	74.99	70.08	63.88
20	66.40	64.79	67.74	66.81	58.97	61.74	74.98	78.50	78.26	74.82	69.89	63.66
21	66.29	64.79	67.86	66.61	58.66	61.93	75.65	78.42	78.05	74.64	69.67	63.42
22	66.19	65.31	67.90	66.40	58.33	62.00	76.20	78.31	77.93	74.69	69.47	63.17
23	66.08	65.67	67.90	66.21	57.98	62.03	76.66	78.23	77.78	74.31	69.28	62.94
24	65.95	65.93	67.90	66.02	57.67	62.09	76.95	78.20	77.64	74.17	69.09	62.72
25	65.84	66.17	67.84	65.81	57.33	62.11	77.26	78.16	77.63	74.04	68.91	62.50
26	65.72	66.34	67.75	65.58	56.97	62.14	77.53	78.17	77.65	73.87	68.71	62.28
27	65.60	66.51	67.68	65.35	56.62	62.11	77.71	78.13	77.49	73.70	68.51	62.06
28	65.53	66.65	67.58	65.11	56.31	62.08	77.82	78.13	77.33	73.56	68.31	61.85
29	65.46	66.81	67.50	64.86	-	62.06	77.87	78.28	77.16	73.39	68.12	61.67
30	65.38	66.99	67.75	64.62	-------	62.01	77.88	78.43	77.00	73.21	67.92	61.49
31	65.27	-------	68.14	64.36	-------	61.94	-------	78.55	-------	73.04	67.77	-------

Note.--Add 1,600 ft to obtain elevations above mean sea level.

Monthly elevation and contents, water year October 1954 to September 1955

Date	Elevation (feet)†	Contents (millions of cubic feet)	Change in contents (equivalent in cubic feet per second)
Sept.30.....	1,666.83	1,738	-
Oct. 31.....	1,665.22	1,464	-102
Nov. 30.....	1,667.12	1,790	+126
Dec. 31.....	1,668.35	2,016	+84.4
Calendar year 1954	-	-	+30.8
Jan. 31.....	1,664.19	1,300	-267
Feb. 28.....	1,656.12	341	-396
Mar. 31.....	1,661.87	966	+233
Apr. 30.....	1,677.88	4,220	+1,255
May 31.....	1,678.57	4,413	+72.1
June 30.....	1,676.88	3,949	-179
July 31.....	1,672.94	2,976	-363
Aug. 31.....	1,667.67	1,890	-405
Sept.30.....	1,661.35	898	-383
Water year 1954-55	-	-	-26.6

† Reservoir elevations at 12 p.m. obtained by interpolation.

Beaver River below Stillwater Dam, near Beaver River, N. Y.

Location.--Lat 43°53'50", long 75°03'05", in gatehouse at Stillwater Dam, 2½ miles upstream from Moshier Creek and 7½ miles west of Beaver River Post Office, Herkimer County.

Drainage area.--172 sq mi.

Records available.--May 1908 to September 1955.

Gage.--Float-tape gage read once daily and prior to reservoir gate changes. Datum of gage is at mean sea level, adjustment of 1912. Prior to June 1, 1924, staff gage at present site and datum. June 1, 1924, to Nov. 14, 1929, staff gage at site 1,000 ft downstream at same datum.

Average discharge.--47 years, 368 cfs (unadjusted).

Extremes.--Maximum daily discharge during year, 766 cfs June 26; minimum daily, 11 cfs Mar. 12.
1908-55: Maximum discharge, about 3,700 cfs May 3, 1926; practically no flow at times when gates in dam are closed.

Remarks.--Records good. Flow completely regulated by Stillwater Reservoir (see preceding page). Discharge determined from ratings for gates and spillway of Stillwater Dam.

Cooperation.--Record of gate openings and reservoir elevations furnished by Board of Black River Regulating District.

Revisions.--WSP 714: Drainage area.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	282	378	14	14	624	534	558	475	256	296	500	532
2	14	376	137	15	622	500	556	441	211	228	540	532
3	266	376	198	209	617	460	556	353	43	228	606	529
4	394	233	198	636	614	460	556	249	45	87	604	526
5	394	14	198	636	608	459	560	263	49	311	602	524
6	394	14	342	636	603	459	564	238	92	591	599	523
7	394	257	474	633	602	457	264	53	350	*564	596	520
8	394	382	474	631	597	454	13	29	425	589	595	518
9	394	382	474	631	592	449	13	31	423	420	594	515
10	392	382	474	631	587	461	14	32	419	273	604	512
11	390	378	472	628	581	364	14	33	417	403	472	512
12	390	378	472	628	579	11	14	35	414	402	359	506
13	390	378	525	623	574	12	14	37	412	434	357	506
14	390	378	610	623	568	12	15	59	410	582	357	*489
15	390	378	381	618	563	12	15	83	409	548	357	500
16	390	376	196	618	587	12	15	375	408	425	413	497
17	390	376	196	615	605	182	15	501	405	110	565	494
18	390	376	198	613	597	342	16	439	404	184	563	490
19	388	376	198	610	590	344	16	*405	401	519	560	488
20	388	269	282	607	585	346	16	434	532	517	560	485
21	388	14	394	605	621	414	16	432	627	516	557	482
22	386	14	395	602	664	560	16	430	625	514	554	479
23	384	14	395	600	655	560	182	427	621	513	552	476
24	384	14	512	636	646	562	301	427	264	512	*509	473
25	384	14	593	651	638	562	302	426	206	510	549	470
26	382	14	593	650	588	562	430	426	766	508	546	466
27	382	14	591	645	550	562	620	314	688	508	544	463
28	382	14	589	640	542	562	622	27	600	506	541	460
29	378	14	589	639	-	560	623	30	599	505	538	457
30	378	14	273	634	--------	560	575	299	597	503	538	454
31	378	--------	14	629	--------	560	--------	397	--------	501	535	--------
Total	11,420	6,597	11,451	17,786	16,799	12,374	7,491	8,200	12,118	13,507	16,366	14,878
Mean	368	220	369	574	600	399	250	265	404	436	528	496

Adjusted for change in contents in Stillwater Reservoir

Mean	266	346	454	306	204	633	1,505	357	225	72.4	122	113
Cfsm	1.55	2.01	2.64	1.78	1.19	3.68	8.75	1.96	1.31	0.421	0.709	0.657
In.	1.78	2.24	3.04	2.05	1.23	4.24	9.76	2.26	1.46	0.49	0.82	0.73

	Observed			Adjusted			
Calendar year 1954:	Max 3,020	Min 12	Mean 417	Mean 448	Cfsm 2.60	In. 35.32	
Water year 1954-55:	Max 766	Min 11	Mean 408	Mean 382	Cfsm 2.22	In. 30.10	

* Discharge measurement made on this day.

Beaver River at Croghan, N. Y.

Location.--Lat 43°53'50", long 75°24'15", on left bank 1,000 ft upstream from Black Creek and half a mile west of Croghan, Lewis County.

Drainage area.--294 sq mi.

Records available.--September 1930 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 806.20 ft above mean sea level, datum of 1929.

Average discharge.--25 years, 580 cfs.

Extremes.--Maximum discharge during year, 1,550 cfs Mar. 11 (gage height, 4.17 ft); minimum, 12 cfs July 24 (gage height, 0.65 ft); minimum daily, 60 cfs July 24.
1930-55: Maximum discharge, 4,310 cfs May 13, 1943 (gage height, 6.47 ft); minimum, that of July 24, 1955; minimum daily, 35 cfs May 13, 1934.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Flow almost completely regulated by Stillwater Reservoir (see p. 325). Between Stillwater Dam and this station, flow is further regulated by nine powerplant ponds. Diurnal fluctuation at low and medium flow.

Revisions.--WSP 759: Drainage area.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.1	49	2.5	442
1.3	79	3.0	693
1.6	139	4.0	1,400
2.0	252		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	686	520	437	747	420	826	1,070	a700	485	838	524	691
2	237	513	465	829	420	875	1,080	a480	708	325	531	686
3	235	*579	414	803	720	816	1,260	*a760	587	92	517	594
4	606	878	282	771	880	717	1,220	636	561	278	515	346
5	728	853	101	721	540	697	1,110	668	413	410	610	276
6	604	542	477	840	185	772	1,080	a520	430	*485	591	384
7	695	241	509	803	370	746	*1,190	a420	499	431	519	526
8	696	494	449	700	*760	700	1,210	153	944	415	526	619
9	672	479	492	700	660	774	1,110	449	514	385	527	678
10	695	460	495	680	720	833	1,010	350	443	116	529	614
11	780	473	537	680	740	1,270	1,030	341	456	425	593	344
12	538	479	331	640	700	1,370	1,030	330	176	449	575	472
13	698	463	470	*600	260	1,270	1,010	322	391	472	587	545
14	486	249	578	660	577	1,080	1,020	299	464	526	460	*681
15	487	456	980	800	676	1,040	1,220	91	453	604	741	670
16	558	481	960	800	729	1,080	1,270	320	479	777	643	481
17	136	727	850	680	729	1,030	1,180	322	466	516	673	417
18	418	656	893	680	723	992	1,060	335	435	445	766	159
19	396	484	902	740	723	978	1,030	354	152	451	604	438
20	457	452	814	660	181	971	915	411	451	352	389	449
21	520	558	730	680	472	992	868	317	693	492	315	476
22	562	633	770	640	768	1,080	985	103	667	427	652	525
23	467	536	740	620	732	1,100	964	306	646	334	821	539
24	211	500	730	660	711	913	a840	343	673	60	771	451
25	439	196	687	660	786	849	a920	380	635	639	621	156
26	460	386	680	640	678	980	a980	334	679	616	695	476
27	469	378	692	640	660	800	a980	325	649	627	*476	484
28	433	108	818	700	774	818	a960	318	693	634	250	560
29	469	426	978	680	-	822	a920	114	676	667	489	599
30	432	649	975	680	-------	816	a760	138	652	665	583	535
31	391	-- --	830	460	-------	946	-------	465	-------	548	699	------
Total	15,661	14,849	20,066	21,594	17,294	28,953	31,282	11,404	16,170	14,501	17,792	14,871
Mean	505	495	647	697	618	934	1,043	368	539	468	574	496
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 2,960 Min 79 Mean 684 Cfsm 2.33 In. 31.57
Water year 1954-55: Max 1,370 Min 60 Mean 615 Cfsm 2.09 In. 28.39

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of powerplant records.
Note.--Stage-discharge relation affected by ice Jan. 8 to Feb. 13.

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Deer River at Copenhagen, N. Y.

Location.--Lat 43°53'55", long 75°39'40", on left bank at powerplant half a mile northeast of Copenhagen, Lewis County, 3¾ miles downstream from Cobb Creek, and 7 miles upstream from mouth.

Drainage area.--89 sq mi, approximately.

Records available.--September 1929 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 963.41 ft above mean sea level, datum of 1929.

Average discharge.--26 years, 222 cfs.

Extremes.--Maximum discharge during year, 5,980 cfs Mar. 11 (gage height, 8.26 ft), caused by release of upstream ice jam; minimum, 1.3 cfs Aug. 7 (gage height, 0.21 ft).

1929-55: Maximum discharge, 14,400 cfs Sept. 1, 1941 (gage height, 12.08 ft), from rating curve extended above 3,900 cfs on basis of computation of peak flow over dam; maximum gage height, 13.18 ft Jan. 31, 1947 (ice jam); minimum discharge, 0.7 cfs Aug. 12, 1940 (gage height, 0.17 ft); minimum daily, 0.8 cfs July 22 to Aug. 2, 1933.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede those published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
699	1930	Jan. 8, 1930	5,600	9.3
714	1931	Apr. 10, 1931	3,330	7.3
729	1932	Apr. 8, 1932	2,230	6.06
744	1933	Oct. 6, 1932	3,180	7.15

Remarks.--Records good except those for periods of ice effect, backwater from debris, or doubtful gage-height record, which are fair. Prior to September 1949, diurnal fluctuation at low and medium flow caused by powerplant.

Revisions (water years).--WSP 759: Drainage area. WSP 784: 1934. Revised figures of discharge, in cubic feet per second, for high-water periods in the water years 1930-33, superseding those published in WSP 699, 714, 729, and 744, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1930		1930-Con.		1931-Con.		1932-Con.		1933	
Jan. 3	744	Apr. 6	1,080	Apr. 6	1,100	Apr. 3	911	Apr. 1	498
4	720	7	2,040	7	1,200	4	911	2	980
5	522	8	1,080	8	1,300	5	862	3	1,360
7	1,190	9	666	9	1,810	6	1,040	4	1,340
8	3,870	10	494	10	2,670	7	1,150	5	1,200
9	1,960	11	857	11	2,100	8	1,740	6	1,300
10	1,060	12	1,560	12	1,170	9	1,650	7	1,720
11	552	13	1,350	13	1,360	10	1,450	8	940
14	658	14	1,170	14	1,420	11	1,820	9	658
15	1,330	15	833	15	921	12	1,370	10	702
16	675	16	501	16	675	13	843	11	867
Feb. 21	1,080	18	537	17	612	14	572	12	970
22	1,320	19	891	18	632	19	498	13	698
23	1,700	20	534	19	552	20	680	14	795
24	1,590	21	498	27	548	21	698	15	862
25	1,140	22	716	28	552	22	1,170	16	739
26	568			29	654	23	1,050	17	1,090
Apr. 1	591	1931		30	512	24	675	18	1,330
2	1,110	Apr. 2	800			25	654	19	1,030
3	908	3	800	1932		26	1,010	20	560
4	671	4	800	Apr. 1	838	27	819		
5	624	5	850	2	698	30	632		

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
January 1930	3,870	105	563	6.33	7.29
February	1,700	52	351	3.94	4.11
April	2,040	276	731	8.21	9.16
Water year 1929-30	3,870	10	262	2.94	40.02
Calendar year 1930	3,870	10	211	2.37	32.25
April 1931	2,670	219	869	9.76	10.89
Water year 1930-31	2,670	11	160	1.80	24.36
Calendar year 1931	2,670	11	200	2.25	30.44
April 1932	1,740	275	873	9.81	10.95
Water year 1931-32	1,740	10	222	2.49	34.01
Calendar year 1932	2,100	10	256	2.88	39.17
April 1933	1,720	162	727	8.17	9.12
Water year 1932-33	2,100	.8	208	2.34	31.74
Calendar year 1933	1,920	.8	165	1.85	25.23

Deer River at Copenhagen, N. Y.--Continued

Rating tables, water year 1954-55, except periods of ice effect or backwater from debris (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 28				Dec. 29 to Sept. 30					
0.9	30	2.5	344	0.2	1.1	1.1	54	4.0	1,160
1.2	57	3.0	544	.3	2.7	1.5	112	5.0	1,930
1.6	110	4.0	1,100	.4	5.1	2.0	222	6.0	2,900
2.0	194			.6	13	2.5	382		
				.8	24	3.0	592		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	110	236	511	62	260	499	107	140	d15	3.4	28
2	42	108	170	464	62	560	983	98	144	d14	2.7	17
3	216	*423	114	460	56	440	986	92	101	d14	2.4	12
4	154	581	108	330	52	410	716	82	71	d12	2.1	9.2
5	96	559	90	240	47	330	878	73	60	d10	1.7	8.1
6	68	348	80	210	47	270	1,760	66	48	*d11	1.6	c7.0
7	57	251	90	155	50	215	1,540	62	133	27	3.3	c5.8
8	49	260	76	114	*49	180	802	119	222	15	4.4	c4.1
9	43	297	82	106	46	*165	741	130	109	11	4.4	c3.2
10	50	164	106	104	43	245	1,700	101	67	8.8	4.1	c2.7
11	97	137	116	88	46	2,500	1,740	81	46	7.1	22	c2.9
12	124	226	124	86	60	2,010	1,290	66	41	5.8	28	c5.2
13	212	170	118	*86	82	1,600	1,180	57	55	4.9	32	c5.0
14	144	156	*118	80	72	1,000	*c1,950	49	149	4.1	60	c4.1
15	140	187	450	80	66	1,040	c1,600	42	148	7.8	51	*c26
16	99	140	458	78	60	1,350	*c1,200	39	83	64	32	35
17	74	136	355	76	58	680	716	*35	53	61	20	20
18	61	148	356	68	58	480	546	33	37	32	15	14
19	56	177	492	66	56	340	751	31	30	58	12	10
20	52	178	400	64	58	290	724	31	84	38	9.7	8.1
21	48	472	290	64	64	343	611	30	113	21	7.0	6.1
22	46	492	215	64	104	672	494	29	60	14	8.7	4.9
23	43	341	185	68	160	586	339	28	44	11	*27	4.5
24	42	272	155	68	170	416	262	33	39	10	22	11
25	41	237	135	66	165	350	271	46	30	8.4	16	19
26	39	226	130	62	140	260	262	78	27	7.4	11	18
27	76	197	135	58	125	170	214	71	25	6.4	8.8	15
28	156	265	470	56	130	155	170	68	22	6.1	7.1	58
29	105	438	1,790	56	-	185	142	677	20	5.4	6.1	68
30	78	353	1,170	58	-------	190	119	424	d17	4.6	9.2	41
31	88	---	758	62	-------	250	-------	211	---------	4.1	26	-----
Total	2,629	8,049	9,572	4,148	2,188	17,942	25,186	3,089	2,218	518.9	460.7	472.9
Mean	84.8	268	309	134	78.1	579	840	99.6	73.9	16.7	14.9	15.8
Cfsm	0.953	3.01	3.47	1.51	0.878	6.51	9.44	1.12	0.830	0.188	0.167	0.178
In.	1.10	3.36	4.00	1.73	0.91	7.50	10.52	1.29	0.93	0.22	0.19	0.20

Calendar year 1954: Max 2,530 Min 5.1 Mean 265 Cfsm 2.98 In. 40.45
Water year 1954-55: Max 2,500 Min 1.6 Mean 210 Cfsm 2.36 In. 31.95

Peak discharge (base, 2,500 cfs).--Dec. 28 (11:45 p.m.) 3,850 cfs (6.81 ft); Mar. 11 (5:30 p.m.) 5,980 cfs (8.26 ft); Apr. 6 (4:45 p.m.) 2,740 cfs (5.85 ft); Apr. 10 (7:45 p.m.) 2,630 cfs (5.74 ft).

* Discharge measurement made on this day.

c Backwater from debris.

d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on existing gage-height record and weather records.

Note.--Stage-discharge relation affected by ice Dec. 2-15, 20-28, Jan. 4 to Mar. 11, Mar. 17-20, 26-31 (doubtful gage-height record Feb. 1-6, 15-20).

Black River at Watertown, N. Y.

Location.--Lat 43°59'05", long 75°55'30", on downstream side of right abutment of Vanduzee Street Bridge at Watertown, Jefferson County, 3½ miles upstream from Philomel Creek.

Drainage area.--1,876 sq mi.

Records available.--July 1920 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 374.88 ft above mean sea level, datum of 1929, supplementary adjustment of 1943. Prior to Sept. 3, 1921, staff gage at same site and datum.

Average discharge.--35 years, 3,937 cfs.

Extremes.--Maximum discharge during year, 21,500 cfs Apr. 17 (gage height, 8.55 ft); minimum, 48 cfs June 26 (gage height, -0.03 ft); minimum daily, 491 cfs Sept. 25.
1920-55: Maximum discharge, 33,900 cfs Apr. 9, 1928 (gage height, 10.6 ft); minimum, 10 cfs Sept. 2, 1934 (gage height, -0.19 ft); minimum daily, 137 cfs Sept. 4, 1939.
Maximum discharge known, about 39,700 cfs in April 1869 (from New York State Museum Bulletin 85).

Remarks.--Records excellent except those for periods of ice effect, shifting control, or no gage-height record, which are good. Appreciable regulation by Stillwater Reservoir, Fulton Chain of Lakes, and other reservoirs. Extensive diurnal fluctuation at low and medium flow caused by mills and powerplants in and above Watertown. During canal season, water is diverted out of basin through Forestport feeder and Black River Canal (flowing south).

Revisions.--WSP 759: Drainage area.

Rating table, water year 1954-55, except periods of ice effect or shifting control (gage height, in feet, and discharge, in cubic feet per second)

0.8	469	4.0	5,720
1.3	918	5.0	8,390
2.0	1,800	7.0	15,000
3.0	3,510	9.0	23,600

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,070	1,970	5,290	8,420	b1,950	3,390	6,020	5,530	3,660	1,420	1,080	1,330
2	2,120	2,000	4,340	8,080	b1,900	5,140	7,860	4,960	3,850	1,470	1,120	1,560
3	1,030	*2,320	3,630	7,610	b1,850	5,720	9,570	4,400	5,380	1,180	1,020	1,430
4	2,360	3,860	2,540	6,770	b2,150	5,740	10,300	4,010	5,300	947	1,010	1,140
5	2,360	5,510	2,260	5,650	b2,000	5,620	11,300	3,550	4,790	*1,210	973	1,020
6	2,170	5,390	2,180	4,800	b1,650	5,480	*11,700	3,390	4,020	1,190	1,050	976
7	a1,950	4,400	2,240	4,090	b1,500	5,080	13,400	2,990	3,340	1,160	1,080	904
8	a2,050	3,610	2,210	3,510	*b1,750	b4,600	14,600	2,530	3,790	1,150	929	1,080
9	a1,750	3,410	2,160	3,270	b2,000	b4,200	14,800	3,060	3,880	1,190	1,110	1,140
10	a1,750	2,900	*2,570	2,890	b2,000	4,100	13,400	3,130	2,770	1,060	1,090	1,200
11	a2,000	2,610	2,620	2,890	2,080	8,660	13,300	2,940	2,240	1,060	1,290	1,090
12	2,100	2,310	2,590	b2,600	b2,100	13,000	14,600	2,680	1,940	1,040	1,230	883
13	2,390	2,210	2,450	b2,350	b2,150	13,800	16,400	2,320	1,960	1,010	1,300	936
14	2,640	2,070	2,500	*b1,950	b1,950	15,000	*16,800	2,040	2,190	976	1,330	1,250
15	2,610	2,100	3,330	b2,500	b2,000	15,400	17,300	1,800	2,380	1,080	1,300	*1,570
16	2,520	2,170	4,870	b2,600	b2,100	*16,400	19,700	1,820	2,360	1,130	1,740	1,510
17	2,080	2,220	5,140	b2,500	2,070	13,300	*21,100	*1,830	2,210	1,900	1,720	1,400
18	1,750	2,460	4,980	b2,300	2,070	12,100	19,100	1,710	1,930	1,890	1,520	1,140
19	1,820	2,230	5,510	b2,400	2,010	10,400	16,600	1,610	1,600	1,680	1,300	1,170
20	1,720	2,160	6,140	b2,400	1,830	8,850	14,500	1,550	1,350	1,370	1,180	1,240
21	1,700	2,690	5,970	b2,400	1,670	7,770	13,800	1,560	1,630	1,220	974	1,220
22	1,640	5,140	5,420	2,360	2,200	7,770	13,400	1,170	1,830	1,150	908	1,250
23	1,680	6,200	5,080	2,280	2,900	8,680	12,400	1,300	1,650	1,060	*1,170	1,510
24	1,290	6,040	4,670	b2,250	3,200	8,030	11,300	1,460	1,600	965	1,400	1,730
25	1,370	5,290	4,130	2,240	3,370	7,360	10,300	1,990	2,110	731	1,240	491
26	1,590	4,380	3,840	2,230	3,250	6,740	9,300	2,740	870	987	1,180	a1,200
27	1,490	4,150	3,530	b2,250	3,050	5,320	8,560	3,710	1,340	1,180	1,180	a1,450
28	1,640	3,840	3,570	b2,200	3,050	3,600	7,940	4,140	1,510	1,110	990	a1,450
29	1,930	4,130	6,330	b2,150	-	3,930	7,250	3,900	1,510	1,160	847	a1,550
30	2,060	5,290	8,390	b2,100	------	4,840	6,480	3,920	1,480	1,210	1,000	a1,700
31	1,790	----	8,620	b2,000	-----	5,000	--------	3,690	---1,250	1,120		------
Total	59,420	105,060	129,100	104,390	61,800	245,020	383,080	87,430	76,470	37,136	36,381	37,520
Mean	1,917	3,502	4,165	3,367	2,207	7,904	12,770	2,820	2,549	1,198	1,174	1,251
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 22,900 Min 495 Mean 4,451 Cfsm 2.37 In. 32.20
Water year 1954-55: Max 21,100 Min 491 Mean 3,734 Cfsm 1.99 In. 27.01

Peak discharge (base, 17,000 cfs).--Mar. 16 (10 a.m.) 17,400 cfs (7.61 ft); Apr. 17 (8:15 p.m.) 21,500 cfs (8.55 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of partial gage-height record and powerplant records at Black River.

b Stage-discharge relation affected by ice.

Note.--Shifting-control method used Nov. 21, 26-29, Dec. 2-16, 24-28, Jan. 6 to Mar. 1.

East Branch Oswegatchie River at Cranberry Lake, N. Y.

Location.--Lat 44°13'15", long 74°51'00", on right bank 900 ft downstream from dam at outlet of Cranberry Lake, at village of Cranberry Lake, St. Lawrence County.

Drainage area.--144 sq mi.

Records available.--May 1923 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,458.23 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1938, staff gage at site 80 ft upstream at same datum.

Average discharge.--32 years, 293 cfs (unadjusted).

Extremes.--Maximum discharge during year, 1,300 cfs Apr. 21 (gage height, 6.88 ft); minimum daily, 83 cfs Oct. 7-10.
1923-55: Maximum discharge, 1,940 cfs May 13, 1943 (gage height, 7.70 ft); minimum daily, about 3 cfs Apr. 9-16, 1931.

Remarks.--Records good. Since 1867, flow almost completely regulated by Cranberry Lake (total capacity, 2,530,000,000 cu ft).

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

3.8	74	5.0	316
4.0	98	6.0	740
4.5	181	7.0	1,390

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	259	*456	395	282	531	444	384	440	602	240	162	152
2	259	456	395	285	527	464	384	440	811	237	167	152
3	259	456	395	*400	522	464	384	440	590	237	167	152
4	259	456	395	472	514	464	388	349	342	237	165	150
5	221	456	395	472	510	460	391	288	288	237	165	147
6	120	460	*391	468	514	452	399	285	288	*237	165	169
7	83	460	391	468	522	448	338	251	285	237	165	197
8	83	460	425	468	514	444	234	232	285	237	163	197
9	83	460	444	464	501	437	197	*234	285	237	163	197
10	83	417	440	514	497	460	199	234	256	237	161	195
11	*182	388	468	638	493	505	202	234	237	237	161	195
12	270	388	476	633	493	544	168	234	237	237	161	195
13	326	384	472	668	489	572	120	226	*237	234	157	192
14	366	380	472	653	480	568	104	232	237	234	154	192
15	370	377	476	638	472	358	213	232	195	232	*154	190
16	366	377	480	624	468	88	526	232	140	229	154	190
17	366	377	480	614	472	91	*902	232	140	229	154	190
18	395	377	480	600	485	91	1,010	169	140	229	154	190
19	472	377	480	585	476	92	1,160	132	138	229	154	*190
20	472	377	485	576	468	92	1,280	132	138	229	154	188
21	472	374	485	572	460	94	1,290	132	198	226	154	186
22	472	374	412	581	452	95	1,280	132	237	226	154	204
23	472	374	268	600	448	96	1,260	132	237	129	154	214
24	468	363	268	585	444	97	1,240	132	237	119	154	214
25	464	374	270	576	440	98	1,220	132	237	214	154	214
26	460	402	270	562	433	98	1,220	132	240	214	154	214
27	460	402	368	553	429	100	1,050	133	240	214	154	212
28	460	402	444	544	*425	196	682	135	240	212	154	212
29	460	399	448	540	-	265	514	140	240	209	154	209
30	460	399	388	535	--------	265	437	304	240	199	154	209
31	460	--------	276	535	--------	323	--------	437	--------	175	154	--------
Total	10,402	12,202	12,732	16,705	13,479	9,265	19,176	7,189	8,217	6,829	4,894	5,708
Mean	336	407	411	539	481	299	639	232	274	220	158	190

Adjusted for change in contents in Cranberry Lake

Mean	290	352	382	278	214	495	1,153	282	174	66.5	89.9	64.9
Cfsm	2.01	2.44	2.65	1.93	1.49	3.44	8.01	1.96	1.21	0.462	0.624	0.451
In.	2.32	2.72	3.05	2.23	1.55	3.97	8.93	2.25	1.35	0.53	0.72	0.50

	Observed			Adjusted		
Calendar year 1954:	Max 1,450	Min 38	Mean 369	Mean 379	Cfsm 2.63	In. 35.69
Water year 1954-55:	Max 1,290	Min 83	Mean 347	Mean 320	Cfsm 2.22	In. 30.12

* Discharge measurement made on this day.
Note.--Elevation of surface of Cranberry Lake, 1,485.55 ft at 12 p.m. Sept. 30, 1954; 1,482.1 ft at 12 p.m. Sept. 30, 1955; 1,483.05 ft at 12 p.m. Dec. 31, 1953; 1,484.25 ft at 12 p.m. Dec. 31, 1954 (furnished by Oswegatchie River Improvement Commission).

East Branch Oswegatchie River near Oswegatchie, N. Y.

Location.--Lat 44°13'25", long 75°04'35", on left bank 300 ft downstream from Flat Rock hydroelectric plant of Niagara Mohawk Power Corp. and 2¾ miles north of Oswegatchie, St. Lawrence County.

Drainage area.--263 sq mi.

Records available.--October 1924 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,016.52 ft above mean sea level, datum of 1929.

Average discharge.--30 years (1925-55), 528 cfs.

Extremes.--Maximum discharge during year, 2,460 cfs Apr. 20 (gage height, 5.74 ft); minimum, 3.7 cfs June 19 (gage height, 0.69 ft); minimum daily, 3.9 cfs Sept. 5.
1924-55: Maximum discharge, 4,090 cfs Apr. 12, 1947; maximum gage height, 7.1 ft Apr. 6, 1928; minimum discharge, probably less than 1 cfs during complete shutdown of powerplant; minimum daily, 1 cfs July 25, 1926.

Remarks.--Records excellent. Extensive diurnal fluctuation at low and medium flow caused by powerplant; since 1867, seasonal flow regulated to some extent by Cranberry Lake (total capacity, 2,530,000,000 cu ft).

Revisions.--WSP 759: Drainage area.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

0.7	3.9	2.5	240
.8	6.5	3.0	410
1.0	14	3.5	638
1.2	26	4.0	934
1.5	52	5.0	1,710
2.0	124	6.0	2,770

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	490	536	801	1,010	578	*659	674	304	816	275	327	224
2	338	*686	864	812	756	924	812	843	1,330	265	375	234
3	450	621	836	*863	690	910	505	628	1,070	262	319	232
4	530	764	730	913	719	835	954	419	1,310	235	324	4.2
5	920	892	637	1,010	674	545	1,130	340	852	349	331	3.9
6	895	810	650	988	634	812	1,420	355	483	423	204	249
7	615	797	*668	909	637	589	1,800	400	418	*398	4.9	308
8	452	630	641	676	618	525	1,590	318	449	325	257	224
9	388	846	654	669	723	805	1,450	375	434	373	220	214
10	368	848	634	732	839	816	1,070	*579	430	318	205	195
11	375	832	642	1,240	633	1,120	1,640	587	416	281	223	4.9
12	*490	792	422	1,140	634	2,070	1,650	503	455	347	392	226
13	558	802	834	621	643	1,750	1,490	558	418	354	225	334
14	639	614	635	617	602	1,510	1,420	406	*521	274	5.6	284
15	704	585	655	640	610	1,360	1,510	355	358	331	*353	288
16	631	723	938	554	619	1,100	1,350	409	404	384	358	322
17	455	649	814	579	911	1,220	*1,300	370	187	274	290	272
18	678	646	833	623	628	648	1,500	487	275	264	234	5.2
19	633	660	768	647	632	887	1,180	479	172	283	376	305
20	498	617	677	872	571	617	1,880	424	108	306	266	*280
21	575	568	818	862	580	730	2,190	303	259	325	4.2	231
22	581	678	979	832	596	747	1,870	308	192	300	389	345
23	590	948	645	581	636	874	1,740	318	211	295	270	288
24	616	911	631	573	918	698	1,680	402	220	296	270	219
25	444	770	640	654	688	711	1,810	340	224	262	218	68
26	565	945	616	877	652	590	1,830	501	211	321	224	272
27	554	819	499	763	616	502	1,750	515	193	334	219	269
28	731	622	630	791	611	484	1,620	326	232	341	4.2	284
29	1,170	488	707	860	-	513	1,520	349	284	266	215	300
30	666	657	1,100	641	-------	500	1,130	593	358	342	234	269
31	674	---	1,080	611	-------	750	-------	651	-------	4.7	215	-------
Total	18,273	21,756	22,678	24,160	18,648	26,801	43,465	13,745	13,290	9,407.7	7,551.9	6,754.2
Mean	589	725	732	779	666	865	1,449	443	443	303	244	225
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 2,100 Min 6.2 Mean 676 Cfsm 2.57 In. 34.91
Water year 1954-55: Max 2,190 Min 3.9 Mean 621 Cfsm 2.36 In. 32.04

* Discharge measurement made on this day.

West Branch Oswegatchie River near Harrisville, N. Y.

Location.--Lat 44°11'10", long 75°19'55", on right bank on downstream side of highway bridge, half a mile northeast of Geers Corners, 1½ miles downstream from Jenny Creek, and 4 miles downstream from Harrisville, Lewis County.

Drainage area.--258 sq mi.

Records available.--July 1916 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 738.51 ft above mean sea level, datum of 1929. Prior to Nov. 30, 1933, staff gage at same site and datum.

Average discharge.--39 years, 514 cfs.

Extremes.--Maximum discharge during year, 4,460 cfs Mar. 12 (gage height, 7.37 ft); minimum, 36 cfs Aug. 9 (gage height, 0.95 ft).
1916-55: Maximum discharge, 6,920 cfs Jan. 9, 1930 (gage height, 9.6 ft); minimum, 25 cfs Sept. 1, 1934 (gage height, 0.86 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Diurnal fluctuation, principally during low flow, caused by pulp mill at Harrisville.

Revisions (water years).--WSP 759: Drainage area. WSP 784: 1934.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 12				Mar. 13 to Sept. 30			
2.0	170	4.0	1,160	1.0	39	3.5	779
2.5	305	5.0	2,020	1.5	89	4.0	1,170
3.0	503	7.0	4,050	2.0	170	6.0	2,980
				2.5	295	7.0	4,050
				3.0	488		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	296	356	970	1,890	*218	*487	822	644	1,080	93	60	136
2	312	*342	833	1,600	221	731	1,090	570	1,070	81	53	157
3	380	370	b620	1,380	200	b860	1,470	508	1,070	94	51	145
4	687	542	b540	*1,180	196	918	1,870	460	897	88	54	117
5	1,040	812	b460	948	193	840	2,160	417	675	92	51	115
6	1,220	940	b390	812	170	712	2,330	385	523	119	50	106
7	1,100	904	*390	681	b190	b600	2,920	355	408	99	57	87
8	833	785	363	544	b185	b520	2,960	426	358	*91	67	62
9	609	681	367	475	186	465	2,260	*533	341	91	42	58
10	503	609	386	434	191	530	1,790	533	280	80	56	57
11	498	549	374	386	226	1,190	1,840	483	222	80	81	64
12	*609	508	360	349	248	3,180	*2,240	413	198	66	159	53
13	778	456	349	331	274	3,950	2,260	366	*189	67	164	76
14	882	422	328	305	262	2,950	2,170	324	200	63	146	46
15	882	405	513	286	257	2,380	2,480	298	283	65	132	82
16	764	386	778	286	242	2,180	2,710	278	334	90	*122	77
17	633	367	868	293	234	b2,100	2,420	258	250	130	112	82
18	534	352	962	286	226	b1,900	1,980	242	198	131	106	63
19	452	342	1,090	280	b220	1,450	1,630	222	180	136	102	63
20	401	342	1,140	b270	b215	b1,180	1,550	202	160	119	108	*64
21	360	429	1,100	b250	240	1,040	1,630	185	149	118	75	61
22	328	804	962	248	307	1,040	1,520	168	134	105	81	42
23	302	1,030	785	251	394	1,460	1,370	176	130	85	95	67
24	280	1,040	662	254	430	b1,650	1,220	176	111	74	122	60
25	280	918	570	251	447	b1,500	1,140	198	115	78	129	54
26	302	778	498	248	417	1,240	1,180	224	119	71	130	85
27	283	700	465	242	397	890	1,190	278	108	69	149	73
28	364	674	496	240	413	719	1,080	263	102	71	131	94
29	452	758	872	240	-	719	913	459	92	65	119	145
30	439	940	1,440	232	-----	706	752	936	89	63	97	151
31	390	-- ---	1,980	221	-------	700	-------	1,190	-------	59	99	------
Total	17,193	18,541	21,911	15,693	7,399	40,787	52,947	12,170	10,066	2,733	3,000	2,542
Mean	555	618	707	506	264	1,316	1,765	393	336	88.2	96.8	84.7
Cfsm	2.15	2.40	2.74	1.96	1.02	5.10	6.84	1.52	1.30	0.342	0.375	0.328
In.	2.48	2.67	3.16	2.26	1.07	5.88	7.63	1.75	1.45	0.39	0.43	0.37

Calendar year 1954: Max 4,610 Min 75 Mean 681 Cfsm 2.64 In. 35.80
Water year 1954-55: Max 3,950 Min 42 Mean 562 Cfsm 2.18 In. 29.54

Peak discharge (base, 3,300 cfs).--Mar. 12 (11:15 p.m.) 4,460 cfs (7.37 ft); Apr. 7 (9:30 p.m.) 3,320 cfs (6.34 ft).

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

Oswegatchie River near Heuvelton, N. Y.

Location.--Lat 44°36'00", long 75°22'45", on right bank 1½ miles downstream from Beaver Creek and 2½ miles upstream from Heuvelton, St. Lawrence County.

Drainage area.--973 sq mi.

Records available.--June 1916 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 288.85 ft above mean sea level, datum of 1929. Prior to Sept. 16, 1916, staff gage at same site and datum.

Average discharge.--39 years, 1,705 cfs.

Extremes.--Maximum discharge during year, 10,700 cfs Mar. 13 (gage height, 7.44 ft); minimum, 202 cfs Sept. 13 (gage height, 0.72 ft).
1916-55: Maximum discharge, 15,800 cfs Apr. 9, 1947 (gage height, 9.26 ft); maximum gage height, 9.33 ft Apr. 9, 1947 (ice jam); minimum discharge, 130 cfs Aug. 17, 1949 (gage height, 0.47 ft).

Remarks.--Records excellent except those for periods of ice effect or doubtful gage-height record, which are fair. Since 1867, seasonal flow slightly regulated by Cranberry Lake (total capacity, 2,530,000,000 cu ft); slight diurnal fluctuation at low and medium flow caused by powerplants. During high stages on Grass River, part of flow of that stream may pass through Upper Lake, Indian Creek, and Lower Lake and enter Oswegatchie River at Rensselaer Falls, 4½ miles above station.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 13				Mar. 14 to Sept. 30			
1.8	930	6.0	7,420	0.7	194	4.0	3,740
3.0	2,270	8.0	12,100	1.0	329	6.0	7,420
4.0	3,740			1.5	654	8.0	12,100
				2.5	1,650		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,280	1,510	4,160	4,660	1,060	2,200	3,870	2,800	1,880	408	368	309
2	1,150	1,470	3,740	4,820	*1,040	3,400	5,070	2,300	2,080	470	319	346
3	1,450	*1,580	3,240	4,770	980	4,100	5,430	1,500	2,390	457	309	351
4	2,300	2,350	2,690	*4,470	940	4,000	5,430	1,800	2,500	390	349	334
5	3,390	3,500	2,200	3,880	1,000	3,400	5,400	1,550	2,310	414	444	408
6	3,610	3,960	1,810	3,420	1,040	2,800	5,710	1,300	2,080	378	438	338
7	3,530	3,740	1,700	3,040	1,060	2,300	5,930	1,160	1,660	529	408	238
8	3,040	3,300	*1,550	2,680	1,020	2,200	6,220	1,250	1,240	523	396	243
9	2,500	2,860	1,620	2,240	980	1,900	6,540	1,450	1,030	537	304	299
10	2,000	2,480	1,730	1,850	960	1,850	6,260	1,450	950	496	261	314
11	1,760	2,310	1,740	1,770	980	*4,300	5,380	*1,640	930	496	351	299
12	*1,680	2,150	1,650	1,760	1,250	8,600	4,860	1,610	874	*438	329	279
13	2,390	2,010	1,640	1,950	1,300	10,500	*4,880	1,530	751	432	289	210
14	3,090	1,870	1,530	1,840	1,200	10,400	4,890	1,350	*710	396	399	218
15	3,080	1,750	1,720	1,390	1,120	9,760	4,770	1,260	811	457	493	259
16	2,880	1,620	2,190	1,300	1,100	9,250	4,820	1,110	777	496	*356	346
17	2,610	1,550	2,470	1,250	1,100	8,730	4,980	1,030	777	476	373	426
18	2,170	1,540	2,780	1,160	1,120	8,050	4,980	960	794	496	496	426
19	1,930	1,480	3,340	1,100	1,350	6,860	4,880	950	695	490	537	354
20	1,780	1,470	3,610	1,140	1,200	5,320	4,660	892	502	516	516	*279
21	1,640	1,900	3,500	1,160	1,120	4,370	4,540	874	476	558	470	294
22	1,430	2,640	3,240	1,180	1,240	4,140	4,810	874	450	520	438	324
23	1,340	3,100	3,020	1,300	1,850	5,710	4,820	786	402	444	368	289
24	1,360	3,420	2,860	1,250	2,050	6,740	4,420	710	373	470	319	340
25	1,260	3,500	2,440	1,140	2,000	6,320	3,900	662	408	378	438	384
26	1,340	3,270	2,190	1,080	2,150	5,290	3,800	710	396	378	396	396
27	1,230	3,060	2,130	1,060	1,900	4,200	3,900	760	390	414	334	312
28	1,260	3,270	2,100	1,240	1,950	3,160	3,800	811	396	420	329	279
29	1,400	3,630	2,580	1,160	-	2,600	3,500	980	420	402	324	304
30	1,700	4,080	3,480	1,180	------	2,370	3,200	1,040	414	420	304	391
31	1,830	-- --	4,040	1,220	------	2,670	------	1,390	------	402	294	--
Total	63,410	76,370	78,690	63,460	36,060	157,490	145,650	38,489	29,866	14,101	11,749	9,589
Mean	2,045	2,546	2,538	2,047	1,288	5,080	4,855	1,242	996	455	379	320
Cfsm	2.10	2.62	2.61	2.10	1.32	5.22	4.99	1.28	1.02	0.468	0.390	0.329
In.	2.42	2.92	3.01	2.43	1.38	6.02	5.57	1.47	1.14	0.54	0.45	0.37

Calendar year 1954: Max 14,800 Min 343 Mean 2,359 Cfsm 2.42 In. 32.91
Water year 1954-55: Max 10,500 Min 210 Mean 1,986 Cfsm 2.04 In. 27.72

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Jan. 17 to Mar. 12. Doubtful gage-height record Apr. 24 to May 11; discharge computed on basis of existing gage heights and records for upstream stations.

St. Lawrence River at Ogdensburg, N. Y.

Location.--Lat 44°42'05", long 75°29'40", at Ogdensburg, N. Y.

Drainage area.--295,200 sq mi, including that of Oswegatchie River.

Records available.--June 1860 to September 1955. Monthly discharge only for some periods, published in WSP 1307.

Gage.--Basic gage located at lock 25 at Iroquois, Ont. Auxiliary gages located at Prescott, Ont., at lock 27 above Cardinal, Ont., at lock 24 between Iroquois and Morrisburg, Ont., and at lock 23 at Morrisburg, Ont. These are gages of the Canadian Hydrographic Service. The discharge in this reach of river is considered to be the same as the discharge at Ogdensburg, N. Y., which is directly opposite Prescott, Ont.

Average discharge.--95 years (June 1860 to September 1955), 241,000 cfs.

Extremes.--Maximum daily discharge during year, 299,000 cfs May 5; minimum daily, 236,000 cfs Nov. 3.
1917-55: Maximum daily discharge, 315,000 cfs May 13, 1952; minimum daily, 139,000 cfs Feb. 7, 1936.
1860-1955: Maximum monthly discharge, 315,000 cfs May 1870; minimum monthly, 154,000 cfs February 1936.

Remarks.--Records do not include water diverted from Lake Michigan by Illinois and Michigan Canal during period of its operation prior to 1910, and by Chicago Sanitary and Ship Canal, operation of which began in 1900. They include water diverted into Lake Superior from Hudson Bay drainage by the Long Lake project, operation of which began in July 1939, and by the Ogoki project, operation of which began in July 1943. The diversions into Lake Superior amounted to less than 1 percent of the average St. Lawrence River discharge before July 1943, and since that time have averaged about 5,000 cfs.

Cooperation.--These are the official records of the U. S. Lake Survey, Corps of Engineers, U. S. Army, which have been coordinated with the counterpart Canadian agencies.

Discharge, in thousands of cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	253	254	255	258	251	254	284	296	292	285	271	266
2	252	248	253	265	245	259	285	295	290	282	268	262
3	250	236	254	262	249	252	278	294	291	280	267	262
4	253	265	260	260	250	243	284	297	292	282	269	264
5	252	258	255	256	245	246	285	299	292	281	270	263
6	251	256	253	261	244	250	290	298	290	278	265	264
7	248	256	254	264	246	251	290	294	288	279	269	261
8	253	258	270	260	244	246	287	299	282	278	260	258
9	254	253	259	258	247	249	290	296	285	280	262	257
10	249	254	255	260	246	250	292	296	289	279	265	265
11	253	263	254	259	249	259	286	298	287	273	266	260
12	253	252	254	258	248	257	281	296	287	270	262	257
13	257	253	251	258	242	264	287	295	292	274	246	251
14	250	264	250	260	242	262	290	291	290	276	263	256
15	250	250	253	263	242	266	291	294	290	274	267	255
16	258	254	255	267	242	273	289	292	290	280	267	251
17	260	251	251	264	244	280	293	294	287	278	265	256
18	254	250	260	263	243	275	292	299	287	276	265	256
19	252	253	259	261	244	274	287	294	286	273	266	257
20	254	253	254	260	243	275	288	293	286	276	267	256
21	253	252	255	253	245	264	292	292	285	277	270	252
22	252	253	258	257	246	276	295	290	287	277	269	249
23	260	252	262	261	249	295	296	291	288	278	264	250
24	253	248	257	260	248	283	289	292	284	270	262	252
25	251	248	255	258	249	282	288	290	284	272	264	251
26	248	251	258	264	250	273	289	290	284	274	267	250
27	253	254	255	266	249	289	293	290	284	269	264	251
28	254	259	252	255	251	284	291	294	284	264	260	256
29	256	256	254	260	-	281	294	294	284	266	261	250
30	257	262	257	255	------	282	295	295	284	269	266	255
31	254	--- ---	261	256	------	284	--------	292	--- ---	271	271	- - -
Total	7,847	7,616	7,933	8,062	6,893	8,278	8,671	9,120	8,621	8,541	8,218	7,693
Mean	253	254	256	260	246	267	289	294	287	276	265	256
Cfsm	0.857	0.860	0.867	0.881	0.833	0.904	0.979	0.996	0.972	0.935	0.898	0.867
In.	0.99	0.96	1.00	1.02	0.87	1.04	1.09	1.15	1.09	1.08	1.04	0.97

Calendar year 1954: Max 290 Min 211 Mean 258 Cfsm 0.874 In. 11.87
Water year 1954-55: Max 299 Min 236 Mean 267 Cfsm 0.904 In. 12.30

Note.--All figures of discharge are expressed in thousands of cubic feet per second.

Grass River at Pyrites, N. Y.

Location.--Lat 44°31'30", long 75°11'50", on left bank 1,000 ft downstream from lower bridge in Pyrites, St. Lawrence County, and half a mile upstream from Harrison Creek.

Drainage area.--335 sq mi.

Records available.--August 1924 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 350.61 ft above mean sea level, datum of 1929.

Average discharge.--31 years, 607 cfs.

Extremes.--Maximum discharge during year, 6,860 cfs Mar. 11 (gage height, 11.46 ft); minimum daily, 90 cfs Aug. 4.
1924-55: Maximum discharge, about 8,300 cfs Nov. 18, 1927 (gage height, 13.0 ft, from floodmark); minimum daily, 59 cfs Aug. 29 to Sept. 1, 1934.

Remarks.--Records good except those for periods of ice effect or doubtful gage-height record, which are fair. Diurnal fluctuation at extremely low flow caused by power-plant above station.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 11		Mar. 12 to Sept. 30			
1.8	242	1.2	86	5.0	1,820
2.4	451	1.5	157	8.0	3,930
4.0	1,210	2.0	307	11.0	6,430
6.0	2,370	3.0	720		
9.0	4,580				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	673	463	1,260	1,600	*320	640	1,360	795	905	152	106	169
2	697	*447	940	1,450	300	860	1,900	730	960	147	97	154
3	1,050	519	680	1,300	280	820	2,170	735	875	181	95	140
4	2,030	877	540	*1,200	270	760	2,140	790	686	220	90	132
5	2,520	1,320	490	1,020	260	720	2,290	720	551	200	92	125
6	2,060	1,250	450	960	280	680	*2,590	628	463	354	107	120
7	1,400	1,040	*430	880	300	640	3,480	573	398	406	109	113
8	1,030	865	410	760	300	600	3,390	771	352	317	179	106
9	820	785	470	680	280	580	2,390	1,250	314	245	212	99
10	736	740	560	700	260	640	2,060	*1,220	294	198	162	95
11	820	646	540	660	290	3,900	2,620	950	274	179	158	98
12	1,000	627	520	620	320	6,200	3,070	740	264	*154	227	100
13	*1,690	618	490	580	350	5,400	*2,990	628	290	142	256	164
14	2,140	578	480	560	360	d3,910	2,800	568	*358	130	227	142
15	1,760	587	560	560	330	d3,060	3,500	516	398	125	250	134
16	1,220	548	680	580	310	3,610	3,710	467	366	178	*227	152
17	910	519	740	560	290	d3,160	3,210	447	321	283	204	162
18	731	498	800	520	270	d2,360	2,440	432	277	241	182	140
19	636	498	1,020	490	260	1,830	2,160	406	245	260	191	127
20	578	502	1,250	460	250	d1,380	2,380	387	233	335	194	*129
21	540	790	1,160	430	280	d1,220	2,250	369	218	250	163	102
22	506	1,410	1,040	450	350	d1,590	1,930	352	204	185	139	103
23	478	1,380	960	470	430	2,990	1,590	338	195	161	143	97
24	459	1,160	940	480	540	2,150	1,340	358	187	141	156	110
25	443	995	880	450	600	1,400	1,360	409	184	137	172	125
26	424	895	840	420	560	1,170	1,560	432	184	128	159	144
27	451	845	840	380	520	920	1,420	467	190	126	136	133
28	618	935	900	350	520	900	1,210	443	179	120	125	151
29	659	1,170	1,400	320	-	880	1,020	657	162	127	117	233
30	574	1,420	1,750	330	------	820	890	1,170	154	118	114	237
31	510	----	1,900	340	-------	925	-------	1,110	-------	110	154	----
Total	30,163	24,927	25,920	20,560	9,680	56,715	67,220	19,858	10,681	6,050	4,943	4,036
Mean	973	831	836	663	346	1,830	2,241	641	356	195	159	135
Cfsm	2.90	2.48	2.50	1.98	1.03	5.46	6.69	1.91	1.06	0.582	0.475	0.403
In.	3.35	2.77	2.88	2.28	1.07	6.30	7.46	2.20	1.19	0.67	0.55	0.45

Calendar year 1954: Max 4,610 Min 154 Mean 846 Cfsm 2.53 In. 34.28
Water year 1954-55: Max 6,200 Min 90 Mean 769 Cfsm 2.30 In. 31.17

Peak discharge (base, 3,600 cfs).--Mar. 11 (10:30 p.m.) 6,860 cfs (11.46 ft); Apr. 7 (9:30 p.m.) 3,920 cfs (7.99 ft); Apr. 16 (1:45 a.m.) 3,820 cfs (7.86 ft).
* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on recorded gage heights, weather records, and record for St. Regis River at Brasher Center.
Note.--Stage-discharge relation affected by ice Dec. 2 to Mar. 13, Mar. 24, 25, 27-30 (doubtful gage-height record Feb. 13-18, Mar. 5-10).

Raquette River at Piercefield, N. Y.

Location.--Lat 44°14'05", long 74°34'20", on left bank half a mile downstream from dam of International Paper Co. at Piercefield, St. Lawrence County, and 1½ miles upstream from Dead Creek.

Drainage area.--722 sq mi.

Records available.--August 1908 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,502.12 ft above mean sea level, datum of 1929. Prior to Oct. 22, 1912, staff or chain gage at same site (datum of chain gage lowered 2 ft Jan. 1, 1911, to present datum).

Average discharge.--47 years, 1,290 cfs.

Extremes.--Maximum discharge during year, 7,240 cfs Apr. 21 (gage height, 11.56 ft); minimum, 30 cfs Oct. 26, 27 (gage height, 1.41 ft); minimum daily, 30 cfs Oct. 26.
1908-55: Maximum discharge, 8,240 cfs May 16, 1943 (gage height, 12.09 ft); minimum, 4.1 cfs Oct. 12, 1947 (gage height, 0.61 ft), caused by construction work above station; minimum daily, 4.1 cfs Oct. 12, 1947.
Revisions.--The figure of maximum discharge for the water year 1910 (not previously published) is 4,900 cfs Apr. 6, 1910 (gage height, 7.6 ft, from graph based on twice-daily gage readings), and that for the water year 1914 has been revised to 6,590 cfs (gage height, 11.23 ft), superseding figure published in WSP 384.

Remarks.--Records excellent except those for period of doubtful gage-height record, which are good. Flow regulated to some extent at Piercefield; considerable natural storage in large lakes above station. Diurnal fluctuation caused by powerplant above station.

Revisions (water years).--WSP 604: 1924. WSP 759: Drainage area. Revised figures of discharge, in cubic feet per second, for water years 1910, 1913, 1916, 1921, superseding those published in WSP 284, 354, 434, and 524, are given herewith.

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1910		1913-Con.		1913-Con.		1916-Con.	
June 1	2,400	July 10	727	Sept. 5	15	Feb. 5	2,300
2	2,400	11	530	6	24	6	2,100
3	2,200	12	513	7	53	7	2,500
4	2,000	13	146	8	178	8	2,600
5	2,200	14	372	9	198	9	2,600
6	2,200	15	417	10	118	10	2,500
7	2,400	16	358	11	89	11	2,600
8	2,400	17	513	12	58	12	2,500
9	2,600	18	530	13	55	13	2,300
10	2,600	19	530	14	58	14	2,400
11	2,200	20	530	15	62	15	2,400
12	2,200	21	513	16	80	16	2,400
13	2,400	22	387	17	71	17	2,300
14	2,000	23	464	18	71	18	2,200
15	2,000	24	464	19	92	19	2,100
16	2,200	25	149	20	100	20	1,700
17	2,000	26	201	21	100	21	1,900
18	2,000	27	165	22	92	22	1,900
19	2,400	28	219	23	108	23	1,900
20	2,200	29	496	24	113	24	1,800
21	2,000	30	496	25	216	25	1,800
22	2,000	31	432	26	306	26	1,700
23	1,900	Aug. 1	344	27	318	27	1,200
24	1,800	2	204	28	308	28	1,800
25	1,700	3	156	29	201	29	2,000
26	1,600	4	331	30	225	Mar. 1	1,900
27	1,400	5	117			2	1,900
28	1,200	6	496	1915		3	1,700
29	1,200	7	496	Dec. 27	1,000	4	1,600
30	1,400	8	372	28	1,200	5	900
July 1	1,400	9	172	29	1,300	6	1,600
2	1,300	10	417	30	1,300		
		11	480	31	1,200	1921	
1913		12	183			May 5	2,100
Feb. 13	1,400	13	513	1916		6	1,900
14	1,300	14	246	Jan. 1	1,200	7	1,800
15	1,300	15	114	2	800	8	1,700
16	1,300	16	96	3	1,600	9	1,600
17	1,300	17	67	4	1,500	10	1,500
18	1,200	18	448	5	1,500	11	1,400
19	1,300	19	432	6	1,500	12	1,400
20	1,200	20	234	7	1,600	13	1,300
21	1,100	21	265	8	1,500	14	1,200
22	1,100	22	149	9	800	15	1,100
23	1,100	23	65	16	750	16	1,200
24	1,000	24	228	17	1,400	17	1,100
25	1,000	25	234	18	1,500	18	1,000
26	1,000	26	177	19	1,500	19	950
July 1	807	27	153	20	1,600	20	900
2	807	28	97	21	1,500	21	950
3	828	29	135	22	1,500	22	1,000
4	828	30	122	23	900	23	950
5	786	31	58	31	2,000	24	900
6	786	Sept. 1	12	Feb. 1	2,100	25	850
7	287	2	9	2	2,200		
8	727	3	9	3	2,200		
9	828	4	10	4	2,300		

Raquette River at Piercefield, N. Y.--Continued

Monthly discharge, in cubic feet per second, 1910, 1913, 1916, 1921

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
June 1910	2,600	1,200	2,040	2.83	3.15
July	1,400	90	555	.769	.89
Water year 1909-10	4,840	90	1,220	1.69	23.02
Calendar year 1910	4,840	90	1,270	1.76	23.79
October 1912	1,220	†196	†840	†1.16	†1.34
Calendar year 1912	7,060	44	1,240	1.72	23.28
February 1913	2,840	872	1,540	2.13	2.22
July	828	146	511	.708	.82
August	513	58	245	.339	.39
September	318	9	112	.155	.17
Water year 1912-13	6,970	9	1,500	2.08	28.11
Calendar year 1913	6,970	9	1,390	1.93	26.05
December 1915	1,300	138	720	.997	1.15
Calendar year 1915	3,610	118	945	1.31	17.77
January 1916	2,000	750	1,350	1.87	2.16
February	2,600	1,200	2,150	2.98	3.21
March	1,900	542	1,310	1.81	2.09
Water year 1915-16	4,750	59	1,400	1.94	26.48
Calendar year 1916	4,750	59	1,380	1.91	25.97
May 1921	2,320	750	1,320	1.83	2.11
Water year 1920-21	7,030	220	1,350	1.87	25.29
Calendar year 1921	7,030	220	1,300	1.80	24.43

† Computed from chain gage Oct. 1-21; from water-stage recorder Oct. 22-31 (only monthly figures revised).

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.4	29	5.0	825
1.8	56	6.0	1,340
2.5	130	7.0	2,000
3.0	210	9.0	3,850
4.0	464	11.6	7,300

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,220	*1,490	1,650	1,560	706	672	2,030	4,590	1,650	622	266	309
2	1,190	1,370	1,620	1,590	695	647	2,030	4,290	1,820	567	254	299
3	1,200	802	1,600	1,620	680	658	2,090	4,020	2,130	567	241	297
4	1,230	160	1,570	1,630	669	669	2,150	3,670	2,460	570	232	292
5	1,270	1,030	1,520	1,630	661	702	2,230	3,440	2,300	784	218	285
6	1,290	1,490	*1,370	1,630	651	718	2,390	3,200	2,190	1,320	188	280
7	1,350	1,380	1,340	1,620	636	733	2,690	3,050	1,820	*1,190	206	261
8	1,360	1,350	1,330	1,570	622	741	2,820	2,910	1,420	1,010	244	241
9	1,350	1,280	1,230	1,500	633	944	d2,980	*2,750	1,390	852	243	228
10	1,310	1,210	1,230	1,460	622	1,380	d3,260	2,640	1,280	816	213	232
11	*1,310	843	1,210	1,430	618	1,480	d3,620	2,460	1,120	715	178	226
12	1,290	378	1,180	1,380	622	1,550	d3,930	2,350	1,000	574	180	222
13	1,500	1,120	1,150	1,350	618	1,660	4,270	2,220	*1,080	557	196	220
14	1,750	1,080	934	1,300	618	1,750	4,700	2,080	1,190	470	237	228
15	1,730	112	834	1,270	622	1,900	5,260	1,800	1,240	492	*257	248
16	1,640	32	889	1,220	618	2,140	5,770	1,450	1,230	455	261	250
17	1,560	178	917	1,100	615	2,280	6,260	1,080	1,200	461	268	257
18	1,500	390	955	1,140	612	2,340	*6,600	1,140	1,160	198	280	266
19	1,430	222	1,020	1,110	608	2,380	6,900	1,040	1,130	378	280	*270
20	1,380	1,530	1,060	1,070	604	2,370	7,120	917	1,050	448	280	264
21	1,310	1,360	1,100	923	510	2,360	7,200	908	870	394	287	239
22	1,240	240	1,360	749	536	2,360	7,090	912	899	377	292	239
23	1,060	386	1,540	770	600	2,320	6,920	936	915	355	299	241
24	772	1,070	1,480	766	584	2,300	6,800	951	884	337	294	268
25	52	2,200	1,480	766	580	2,250	6,680	975	866	329	289	268
26	30	2,060	1,440	766	601	2,260	6,380	1,020	838	322	277	270
27	31	1,930	1,400	762	654	2,220	6,080	1,070	791	322	264	277
28	33	1,820	1,400	741	*680	2,120	5,810	1,230	733	306	248	312
29	161	1,740	1,450	733	-	2,050	5,390	1,570	722	292	245	322
30	1,660	1,690	1,500	729	-------	2,040	4,970	1,610	687	280	258	342
31	1,610	---- --	1,520	*714	-------	2,120	-------	1,610	-------	273	309	------
Total	35,819	31,743	40,279	36,599	17,475	52,114	142,420	63,889	38,065	16,633	7,784	7,953
Mean	1,155	1,058	1,299	1,181	624	1,681	4,747	2,061	1,269	537	251	265
Cfsm	1.60	1.47	1.80	1.64	0.864	2.33	6.57	2.85	1.76	0.744	0.348	0.367
In.	1.85	1.64	2.07	1.89	0.90	2.68	7.34	3.29	1.96	0.86	0.40	0.41

Calendar year 1954 : Max 6,820 Min 30 Mean 1,623 Cfsm 2.25 In. 30.53
Water year 1954-55 : Max 7,200 Min 30 Mean 1,345 Cfsm 1.86 In. 25.29

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on record for adjacent days.

Raquette River at South Colton, N. Y.

Location.--Lat 44°30'40", long 74°53'00", on left bank 300 ft upstream from highway bridge at South Colton, St. Lawrence County, 500 ft downstream from South Colton powerplant, and three-quarters of a mile upstream from Cold Brook.

Drainage area.--939 sq mi.

Records available.--January 1953 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 882.05 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 8,050 cfs Apr. 27 (gage height, 8.92 ft); minimum, 2.6 cfs Mar. 6 (gage height, 1.60 ft); minimum daily, 6.0 cfs July 17.
1953-55: Maximum discharge, 8,330 cfs Apr. 22, 1954 (gage height, 9.07 ft); minimum, that of Mar. 6, 1955; minimum daily, 4.6 cfs June 2, 1954.

Remarks.--Records good. Flow regulated by Carry Falls Reservoir (usable capacity, 5,011,000,000 cu ft) since 1953; considerable natural storage in large lakes above Piercefield.

Rating table, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

1.7	6.0	3.0	409
1.8	14	4.0	1,080
1.9	26	5.0	2,050
2.0	42	7.0	4,700
2.2	84	9.0	8,200
2.5	180		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,730	1,140	1,540	2,460	*2,160	2,110	2,610	6,330	2,710	959	938	1,120
2	1,520	1,910	1,600	2,360	2,020	1,940	2,730	5,520	2,970	276	1,190	1,580
3	446	*2,040	1,710	2,190	1,920	1,860	2,740	3,460	2,530	53	1,250	15
4	1,760	1,160	1,870	1,980	2,050	2,010	2,820	3,410	3,150	12	1,310	106
5	1,780	1,730	1,480	1,920	1,860	19	*2,900	3,390	3,180	1,350	1,480	194
6	1,500	2,080	1,590	1,960	1,420	47	3,230	3,400	3,260	2,010	474	1,010
7	1,420	591	1,460	2,020	1,580	1,520	3,600	2,500	2,630	2,620	56	1,050
8	1,560	1,270	*1,250	1,970	1,370	1,990	3,650	679	1,930	1,480	1,170	1,200
9	37	2,050	*1,360	1,940	1,680	2,040	3,720	2,710	2,290	8.5	1,270	1,830
10	355	1,710	1,570	2,030	1,640	1,760	4,090	*3,560	2,030	*1,120	1,030	144
11	846	2,050	1,790	2,510	1,980	2,170	4,500	3,520	1,410	*1,220	1,340	14
12	1,890	2,010	1,720	2,950	1,800	2,390	4,390	2,770	13	1,330	1,100	1,150
13	*2,260	432	1,510	2,720	200	1,480	4,230	2,370	2,040	1,350	300	1,450
14	2,150	449	1,020	3,010	1,600	2,430	4,730	2,360	1,660	1,350	11	1,230
15	2,290	1,920	1,000	2,720	1,990	2,840	5,230	756	*1,720	1,700	1,610	1,260
16	3,200	2,250	964	2,770	2,010	3,400	5,370	2,280	1,750	12	676	1,370
17	1,900	2,360	2,040	2,890	1,880	3,020	*5,230	1,680	1,490	6.0	*1,490	17
18	3,120	621	1,880	3,170	1,900	3,010	5,200	1,440	286	944	1,180	140
19	2,510	1,020	1,880	2,870	1,800	3,130	5,480	1,210	422	903	1,100	1,570
20	2,480	1,210	1,560	1,210	24	3,000	5,660	1,170	1,580	1,050	205	1,480
21	2,140	1,450	2,090	570	1,840	3,060	5,700	138	1,540	1,330	86	1,060
22	2,230	1,150	2,120	816	2,200	3,000	6,310	46	1,910	1,460	1,100	*1,180
23	2,080	674	2,150	3,230	1,980	3,110	6,930	1,790	1,840	406	1,030	889
24	669	904	2,240	2,850	1,230	2,980	6,960	1,560	1,210	7.9	1,290	28
25	1,650	801	2,350	3,340	1,370	3,030	6,850	1,440	123	953	1,580	8.5
26	2,030	2,050	2,330	2,430	1,320	2,870	7,200	1,160	12	1,250	870	1,090
27	1,680	1,690	2,220	2,430	113	2,810	7,720	1,320	1,700	1,390	340	1,230
28	2,050	1,540	2,190	2,370	1,470	2,740	6,850	1,410	1,750	1,020	27	1,460
29	1,900	1,900	2,460	2,420	-	2,690	6,780	1,230	1,600	1,390	954	1,370
30	317	1,690	2,510	2,310	------	2,680	6,640	1,910	986	135	1,170	928
31	196	-----	2,630	1,960	-----	2,550	-----	1,990	------	339	1,110	------
Total	51,696	43,852	56,084	72,376	44,407	73,686	150,050	68,509	51,722	29,434.4	28,737	27,173.5
Mean	1,668	1,462	1,809	2,335	1,586	2,377	5,002	2,210	1,724	949	927	906
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-
(†)	+82.3	+100	+24.2	-793	-661	-58.1	+1,451	+363	-123	-307	-532	-511

Calendar year 1954: Max 8,160 Min 4.6 Mean 2,088 Cfsm 2.22 In. 30.20
Water year 1954-55: Max 7,720 Min 6.0 Mean 1,912 Cfsm 2.04 In. 27.65

* Discharge measurement made on this day.
† Change in contents, equivalent in cubic feet per second, in Carry Falls Reservoir (furnished by Niagara Mohawk Power Corp.); for calendar year 1954, +111 cfs; for water year 1955, -78.5 cfs.

Raquette River at Raymondville, N. Y.

Location.--Lat 44°50'20", long 74°58'45", on right bank 250 ft upstream from old highway bridge at Raymondville, St. Lawrence County, 0.3 mile downstream from Trout Brook, 0.4 mile downstream from powerplant of Niagara Mohawk Power Corp., and 18 miles upstream from mouth.

Drainage area.--1,131 sq mi.

Records available.--November 1943 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 183.33 ft above mean sea level, datum of 1929.

Average discharge.--11 years (1944-55), 2,089 cfs.

Extremes.--Maximum discharge during year, 7,760 cfs May 1 (gage height, 6.31 ft); maximum gage height, 7.71 ft Mar. 11 (backwater from ice); minimum discharge, 8.5 cfs May 24 (gage height, 0.59 ft); minimum daily, 92 cfs Sept. 4.
1943-55: Maximum discharge, 11,000 cfs Apr. 17, 1954 (gage height, 7.60 ft); maximum gage height, 9.24 ft Feb. 22, 1954 (backwater from ice); minimum discharge, 4.4 cfs Oct. 15, 1951; minimum daily, 7.0 cfs Oct. 15, 1951; minimum gage height, 0.42 ft July 13, 1950.

Remarks.--Records good except those for period of ice effect, which are fair. Flow regulated by Carry Falls Reservoir (usable capacity, 5,011,000,000 cu ft), about 46 miles upstream, since 1953; considerable natural storage in large lakes above Piercefield.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-19		Oct. 20 to Sept. 30			
3.0	1,520	1.0	69	3.5	2,210
4.0	2,970	1.4	206	4.5	3,880
5.0	4,870	1.8	430	6.5	8,220
		2.5	1,000		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,910	1,810	2,090	2,800	2,200	1,950	3,760	6,730	2,330	1,140	842	1,380
2	1,860	1,830	2,030	3,100	*2,250	2,050	4,390	6,610	3,030	1,040	1,110	1,640
3	2,010	*2,000	1,950	2,700	2,250	2,100	4,340	4,590	3,040	836	1,220	476
4	2,900	2,630	1,860	2,200	2,200	2,100	3,760	3,140	3,070	774	1,220	92
5	2,580	2,770	1,480	*2,000	2,300	2,000	3,940	2,880	3,270	1,190	1,350	166
6	2,200	2,400	1,980	2,100	2,200	1,950	4,980	3,280	3,200	1,340	972	892
7	1,960	1,970	1,810	2,200	2,000	1,900	5,270	3,500	3,220	1,270	869	1,210
8	1,890	2,180	*1,780	2,200	2,100	1,850	4,950	3,460	3,200	1,200	1,090	1,120
9	2,010	1,930	1,720	2,100	2,050	1,800	4,660	2,770	2,670	*1,120	1,210	1,170
10	1,940	1,890	1,730	2,200	2,000	*1,850	4,650	2,630	2,010	1,030	1,170	1,370
11	1,980	1,870	1,720	2,300	1,950	2,400	4,660	*3,170	1,710	1,170	1,180	170
12	2,170	1,850	1,760	2,800	2,100	2,800	5,120	3,200	1,660	1,190	1,280	992
13	*2,610	1,820	1,770	3,300	2,150	3,200	*5,400	3,140	1,700	1,280	1,260	1,140
14	2,580	1,820	1,790	3,500	2,200	3,500	5,210	2,440	1,710	1,260	714	1,160
15	2,480	1,840	1,800	3,600	2,000	3,500	5,420	2,280	*1,680	1,140	965	1,110
16	2,330	1,810	1,800	3,400	1,950	4,000	6,330	2,320	1,690	1,010	1,240	1,160
17	2,320	1,810	1,900	3,200	2,000	4,600	*6,240	2,100	1,640	822	*1,190	1,140
18	2,360	1,810	1,750	3,400	2,100	4,300	5,890	1,660	1,610	1,030	1,120	630
19	3,070	1,790	1,750	3,600	2,100	4,000	6,150	1,450	1,560	775	1,170	1,170
20	3,070	1,800	1,900	3,800	1,950	3,800	6,460	857	1,360	792	1,180	1,200
21	2,620	2,010	2,100	2,800	1,800	3,800	6,480	1,540	1,350	1,080	484	*1,160
22	2,240	2,280	2,300	2,500	1,800	3,600	6,820	1,150	1,330	1,320	868	1,140
23	2,350	2,300	2,450	2,400	1,800	4,400	6,980	1,380	1,580	1,170	1,190	1,140
24	2,320	2,170	2,600	2,600	1,900	3,900	7,030	1,370	1,300	582	1,120	1,120
25	2,280	2,070	2,700	2,800	1,850	3,570	7,210	1,390	1,580	958	1,170	342
26	2,010	2,060	2,800	3,000	1,850	3,610	7,210	1,270	736	1,240	1,160	1,070
27	2,080	1,940	2,600	2,800	1,900	3,690	7,190	1,500	1,520	1,280	1,090	1,140
28	2,110	1,990	2,500	2,900	1,900	3,630	7,190	481	1,160	1,260	335	1,130
29	1,960	2,580	2,600	2,700	-	3,600	6,940	1,550	1,000	1,290	936	1,150
30	1,850	2,680	2,500	2,500	------	3,200	6,890	1,680	1,100	1,130	1,220	1,160
31	1,830	------	2,400	2,400	------	3,310	------	1,660	------	396	1,070	------
Total	69,880	61,710	63,920	85,900	56,850	95,960	171,520	77,138	58,016	33,115	32,995	29,940
Mean	2,254	2,057	2,062	2,771	2,030	3,095	5,717	2,488	1,934	1,068	1,064	998
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954 : Max 10,300 Min 241 Mean 2,498 Cfsm 2.21 In. 29.97
Water year 1954-55 : Max 7,210 Min 92 Mean 2,293 Cfsm 2.03 In. 27.52

* Discharge measurement made on this day.
Note.--Stage-discbarge relation affected by ice Dec. 15 to Mar. 24 (doubtful gage-height record Feb. 4-7).

St. Regis River at Brasher Center, N. Y.

Location.--Lat 44°51'50", long 74°46'45", on left bank 600 ft upstream from highway bridge at Brasher Center, St. Lawrence County, and 6½ miles downstream from confluence of East and West Branches at Winthrop.

Drainage area.--616 sq mi.

Records available.--August 1910 to November 1917, January 1919 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 217.23 ft above mean sea level, datum of 1929. Prior to June 24, 1916, chain gage at site 600 ft downstream at different datum. June 24, 1916, to Nov. 10, 1917, and Jan. 1, 1919, to Aug. 13, 1920, staff gage at present site and datum.

Average discharge.--43 years (1910-17, 1919-55), 1,064 cfs.

Extremes.--Maximum and minimum discharges for the water years 1911-17, and 1955, some of which have been revised, superseding figures published in the water-supply papers indicated, are contained in the following table:

WSP	Water year	Maximum			Minimum		
		Date	Discharge (cfs)	Gage height (feet)	Date	Discharge (cfs)	Gage height (feet)
304	1911	Apr. 7, 1911	‡16,240	a10.1	July 30, 1911	†225	-
324	1912	Apr. 6, 1912	‡15,750	9.0	July 14, 20, 1912	†225	-
354	1913	Mar. 27, 1913	*7,880	b7.30	(c)	‡143	3.80
384	1914	Mar. 27, 1914	*12,400	d8.3	Aug. 10, 12, 1914	105	3.75
404	1915	Apr. 12, 1915	*6,650	6.8	Oct. 5, 1914	120	3.8
434	1916	Apr. 2, 1916	*14,700	e10.2	Aug. 21, 1915	162	5.75
454	1917	Apr. 3, 1917	*6,310	9.6	Aug. 8, 1917	34	5.25
-	1955	Mar. 12, 1955	13,900	f12.00	Sept.26, 27, 1955	208	5.84

* Revised.
† Minimum daily.
‡ Not previously published.
a Backwater from ice.
b Maximum gage height, 9.7 ft Jan. 18, 1913 (backwater from ice).
c Occurred Aug. 25, Sept. 7, 8, 9, 12, 17, 1913.
d Maximum gage height, 9.1 ft Mar. 27, 1914 (backwater from ice).
e Maximum gage height, 10.2 ft Mar. 31, Apr. 2, 1915 (ice jam).
f Maximum gage height, 12.31 ft Mar. 11, 1955 (backwater from ice).

1910-17, 1919-55: Maximum discharge, 16,800 cfs Apr. 6, 1937 (gage height, 12.82 ft); maximum gage height recorded, about 15.3 ft Apr. 6, 1937 (ice jam); minimum discharge observed, about 34 cfs Aug. 8, 1917 (gage height, 5.25 ft); minimum daily, 37 cfs Aug. 8, 1917.

Remarks.--Records good except those for periods of ice effect, which are fair. Slight diurnal fluctuation caused by power operations above station.

Revisions.--WSP 584: Drainage area. Revised figures of discharge for the water years 1911-16, superseding those published in WSP 304, 324, 354, 384, 404, 434, are given herein. The statement discrediting record for Aug. 22-31, 1910, published in WSP 1114 is erroneous. The discharge for Aug. 30, 1910, is revised to 188 cfs, superseding figure of 30 cfs published in WSP 324 and 874. The discharge for other days in August 1910 originally published in WSP 324 have been found reliable.

St. Regis River at Brasher Center, N. Y.--Continued

Discharge, in cubic feet per second, water year October 1910 to September 1911

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	250	897	455	850	900	750	2,530	3,740	925	690	438	342
2	238	897	616	900	850	750	2,130	5,440	860	638	415	279
3	236	722	569	1,000	800	700	2,330	4,040	990	690	308	262
4	329	834	722	1,200	750	700	1,940	3,740	990	742	296	279
5	377	834	834	1,500	700	650	1,510	2,960	925	690	342	308
6	438	960	722	1,300	750	650	10,000	2,740	990	619	392	342
7	1,390	1,100	650	1,200	700	700	10,000	2,230	1,060	742	446	925
8	1,900	960	600	1,300	650	650	9,000	2,130	801	590	438	990
9	1,720	834	550	1,400	650	700	7,450	1,940	860	619	376	860
10	1,390	834	550	1,300	600	750	5,060	1,850	1,130	552	472	590
11	1,030	1,170	500	1,200	600	750	4,360	1,760	801	561	342	454
12	778	1,240	500	1,200	550	700	3,740	1,760	990	590	279	524
13	522	1,100	480	1,100	600	750	4,360	1,430	1,130	362	369	498
14	400	960	550	1,100	650	800	5,440	1,350	1,430	342	322	524
15	400	778	600	1,000	600	1,100	5,830	1,510	1,510	296	296	590
16	329	834	650	1,000	550	1,600	5,830	690	1,680	342	342	524
17	400	722	650	950	550	1,900	5,830	1,060	1,430	296	322	472
18	423	569	600	900	600	1,600	5,060	860	1,200	472	302	438
19	362	616	700	950	600	1,300	3,460	925	860	415	322	542
20	400	669	700	1,000	550	1,200	3,740	690	742	498	415	542
21	329	505	650	1,100	550	1,100	3,080	742	860	392	454	524
22	238	522	600	1,000	600	950	3,740	801	990	369	415	415
23	250	522	550	950	600	1,200	3,740	990	801	308	392	392
24	329	455	700	950	650	1,400	3,200	860	638	296	392	415
25	616	616	750	1,000	650	1,300	3,200	3,080	524	342	454	392
26	1,470	616	650	950	700	1,400	3,740	2,230	524	279	384	498
27	1,810	616	600	900	800	1,700	4,040	1,680	742	362	472	860
28	1,900	616	700	1,000	850	2,200	3,740	1,350	742	240	342	1,270
29	1,720	569	800	1,100	-	3,200	4,040	1,350	690	302	498	561
30	1,640	505	850	1,200	-------	2,800	3,740	1,060	742	225	472	498
31	1,170	---	800	1,100	-------	2,600	-------	925	-------	240	524	-----
Total	24,786	23,072	19,848	33,600	18,600	38,550	135,860	57,913	28,557	14,101	12,033	16,110
Mean	800	769	640	1,080	664	1,240	4,530	1,870	952	455	388	537
Cfsm	1.30	1.25	1.04	1.75	1.08	2.01	7.35	3.04	1.55	0.739	0.630	0.872
In.	1.50	1.39	1.20	2.03	1.12	2.33	8.20	3.50	1.72	0.85	0.73	0.97

Calendar year 1910: Max - Min - Mean - Cfsm - In. -
Water year 1910-11: Max 10,000 Min 225 Mean 1,160 Cfsm 1.88 In. 25.54

Note.--Stage-discharge relation affected by ice Dec. 7 to Mar. 31 and probably early part of April (no gage-height record Dec. 18 to Mar. 27; discharge estimated on basis of discharge measurements, observer's notes, weather records, and records for nearby stations).

Discharge, in cubic feet per second, water year October 1911 to September 1912

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	561	619	1,760	1,500	440	500	4,600	1,850	4,700	356	423	542
2	590	860	1,760	1,300	420	500	4,000	1,760	3,740	356	438	619
3	561	925	1,430	1,100	400	500	3,600	1,510	3,200	328	392	925
4	742	742	1,200	1,000	400	420	3,200	1,130	2,530	285	472	990
5	1,270	638	1,060	1,000	420	460	5,060	1,130	2,130	267	590	990
6	1,590	638	860	900	440	500	12,900	1,270	1,850	328	638	1,130
7	1,430	742	990	750	460	550	11,000	1,350	1,680	328	600	1,200
8	1,200	1,130	860	650	460	550	7,450	1,510	1,680	279	619	1,130
9	990	1,430	1,200	550	440	500	5,440	1,510	1,590	267	524	990
10	860	1,350	1,430	600	420	480	4,700	1,510	1,270	256	454	742
11	590	1,350	1,850	550	400	460	3,740	1,510	1,130	279	446	860
12	542	1,350	2,130	500	400	420	3,740	1,350	1,060	267	423	860
13	690	1,060	3,460	480	440	400	3,740	1,270	1,130	245	454	801
14	619	1,060	3,460	550	460	380	2,960	1,350	1,130	225	472	742
15	524	990	2,740	500	420	400	3,200	1,350	1,060	235	454	638
16	507	925	2,530	460	420	460	6,220	1,200	990	279	454	860
17	524	990	1,850	500	440	600	5,440	1,270	860	291	392	1,130
18	590	1,130	1,760	480	460	800	5,440	1,680	860	267	362	1,130
19	690	1,510	1,940	460	460	1,100	5,440	1,850	801	245	376	1,130
20	285	1,430	1,760	550	480	1,400	5,060	1,680	580	225	362	1,430
21	638	1,350	1,680	600	550	1,600	4,360	1,060	638	250	349	1,510
22	638	1,350	1,590	550	600	1,500	2,130	2,330	600	431	342	1,430
23	590	1,130	2,230	500	650	1,400	2,960	2,330	571	516	362	1,430
24	619	628	2,330	480	650	1,500	3,740	2,330	516	516	392	1,510
25	498	990	1,940	460	600	1,400	4,040	2,040	498	362	415	1,590
26	590	860	1,940	440	600	1,300	2,960	1,680	489	342	498	1,430
27	580	860	1,760	420	550	1,200	3,080	1,510	454	308	925	1,430
28	561	925	1,760	420	550	1,200	2,330	1,350	431	273	1,130	1,430
29	552	1,590	1,700	440	550	2,000	1,850	3,740	431	296	860	1,590
30	524	1,850	1,700	460	------	3,000	2,130	7,450	369	392	638	1,760
31	619	----	1,700	440	-------	5,500	-------	7,450	-------	415	561	-----
Total	21,764	32,402	56,360	19,590	13,980	32,980	136,510	62,310	38,968	9,709	15,817	33,949
Mean	702	1,080	1,820	632	482	1,060	4,550	2,010	1,300	313	510	1,130
Cfsm	1.14	1.75	2.95	1.03	0.782	1.72	7.39	3.26	2.11	0.508	0.828	1.83
In.	1.31	1.96	3.40	1.18	0.84	1.99	8.24	3.76	2.35	0.59	0.95	2.05

Calendar year 1911: Max 10,000 Min 225 Mean 1,280 Cfsm 2.08 In. 28.12
Water year 1911-12: Max 12,900 Min 225 Mean 1,300 Cfsm 2.11 In. 28.62

Note.--Stage-discharge relation affected by ice Jan. 1 to Mar. 31 (no gage-height record Jan. 7 to Mar. 31; discharge estimated on basis of discharge measurements, observer's notes, weather records, and records for nearby stations).

St. Regis River at Brasher Center, N. Y.--Continued

Discharge, in cubic feet per second, water year October 1912 to September 1913

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,760	801	1,060	2,530	1,600	1,100	4,700	1,270	1,200	423	322	153
2	1,430	742	1,430	2,040	1,400	1,000	4,040	1,060	990	376	296	162
3	1,270	801	4,360	1,850	1,300	950	2,740	690	860	362	235	191
4	1,130	860	2,330	2,960	1,500	900	5,830	542	860	335	308	191
5	925	742	2,130	2,330	1,300	850	7,030	561	860	308	296	153
6	742	742	2,130	2,400	1,200	950	5,830	590	801	322	376	162
7	742	860	1,940	2,200	1,100	900	4,360	638	801	335	392	148
8	690	3,200	1,760	1,900	1,000	850	2,960	638	1,130	362	376	148
9	619	3,080	1,590	1,800	1,000	800	2,640	638	1,130	342	322	162
10	542	2,740	1,430	1,700	950	950	2,230	638	990	362	277	167
11	590	2,130	1,270	1,900	950	1,200	2,430	638	925	308	296	162
12	638	1,680	1,270	2,400	900	1,100	2,430	590	990	342	296	153
13	742	1,510	1,510	1,900	900	1,600	2,230	690	860	362	258	191
14	860	2,130	1,760	2,200	950	3,000	1,940	561	742	322	258	191
15	860	2,130	1,850	2,600	1,100	5,000	1,680	542	561	322	252	186
16	742	1,940	1,130	3,200	1,000	8,000	1,760	590	542	342	258	172
17	742	1,740	1,430	4,800	950	3,900	1,590	690	446	342	252	153
18	638	1,590	1,680	5,500	900	3,000	1,590	690	369	308	218	202
19	638	1,430	1,270	5,000	900	2,600	1,590	742	472	322	218	202
20	619	1,270	1,430	4,800	950	3,800	1,510	638	472	296	202	224
21	498	1,130	2,130	5,000	1,200	7,500	1,590	742	454	296	191	246
22	362	1,130	2,850	4,000	1,100	4,200	1,510	742	463	308	162	342
23	438	1,200	3,740	3,200	950	3,740	1,590	860	407	258	172	454
24	561	1,200	3,740	2,800	900	3,460	1,590	990	392	258	167	472
25	1,060	1,200	3,740	2,200	900	4,040	1,430	990	392	296	148	472
26	1,430	1,130	3,460	2,000	900	5,060	1,350	860	407	296	186	392
27	1,590	990	3,080	1,800	850	7,680	1,200	860	423	258	218	322
28	1,430	925	2,640	1,600	850	7,450	1,130	990	423	296	271	283
29	1,130	990	2,330	1,500	-	7,030	1,130	1,510	454	308	271	277
30	990	925	2,330	1,400	------	7,030	1,270	1,850	454	362	252	258
31	742	-- ---	2,960	1,500	-----	6,620	--------	1,680	--------	342	240	- -
Total	27,150	42,938	67,760	83,010	29,500	106,460	74,900	25,710	20,270	10,071	7,986	6,991
Mean	876	1,430	2,190	2,680	1,050	3,430	2,500	829	676	325	258	233
Cfsm	1.42	2.32	3.56	4.35	1.70	5.57	4.06	1.35	1.10	0.528	0.419	0.378
In.	1.64	2.59	4.09	5.01	1.78	6.43	4.52	1.55	1.22	0.61	0.48	0.42

Calendar year 1912: Max 12,900 Min 225 Mean 1,370 Cfsm 2.22 In. 30.27
Water year 1912-13: Max 8,000 Min 148 Mean 1,380 Cfsm 2.24 In. 30.34

Note.--Stage-discharge relation affected by ice Jan. 6 to Mar. 22.

Discharge, in cubic feet per second, water year October 1913 to September 1914

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	277	1,130	801	650	1,100	700	3,950	4,270	428	500	152	820
2	322	925	590	460	950	650	6,000	3,360	500	482	152	820
3	638	801	925	650	900	550	7,000	2,710	500	550	140	940
4	990	690	1,130	550	950	500	4,600	2,360	455	395	210	940
5	1,060	561	1,060	380	900	460	3,400	2,150	550	322	222	765
6	860	561	860	550	800	420	2,480	1,940	600	302	160	500
7	638	638	990	460	700	460	3,090	1,940	580	335	128	455
8	524	690	1,130	460	600	420	1,640	1,940	500	350	120	655
9	463	742	1,060	460	550	420	1,940	1,740	600	322	114	710
10	392	990	860	420	500	380	1,940	1,460	550	322	105	820
11	362	1,430	860	420	480	420	1,940	1,220	395	283	120	655
12	376	1,350	742	380	480	380	1,640	880	335	283	114	395
13	438	1,130	690	340	460	380	1,640	1,000	302	222	140	302
14	438	1,060	860	340	460	460	1,640	880	240	205	222	222
15	472	990	1,200	380	440	650	1,380	940	270	240	200	410
16	524	860	1,510	420	440	850	1,840	820	283	372	160	322
17	454	860	925	460	460	750	2,830	600	372	240	152	240
18	415	742	990	460	480	700	3,360	710	302	210	258	185
19	454	638	1,680	460	440	650	3,950	655	302	200	210	200
20	524	1,430	1,130	420	420	600	7,700	550	335	152	200	170
21	1,510	1,940	860	380	380	550	7,250	710	322	240	210	128
22	1,760	1,760	742	420	360	500	5,650	600	350	200	302	160
23	1,760	1,590	860	550	340	500	3,950	428	372	200	222	160
24	1,590	1,430	860	650	360	850	3,950	455	302	283	170	140
25	1,430	1,430	742	550	380	3,200	2,830	600	270	283	185	120
26	1,430	1,590	638	460	500	9,000	2,830	600	258	283	152	120
27	1,760	1,200	600	550	600	11,000	3,950	655	350	240	120	152
28	1,680	1,130	700	750	750	8,150	4,270	520	258	372	210	210
29	1,590	1,080	800	1,000	-	6,850	4,270	500	270	240	185	520
30	1,430	925	900	1,100	------	6,050	4,270	455	500	200	283	550
31	1,130	-- --	800	850	------	4,600	--------	410	--------	185	410	- -
Total	27,691	32,273	28,495	16,380	16,180	62,050	107,180	38,058	11,651	9,013	5,728	12,786
Mean	893	1,080	919	528	578	2,000	3,570	1,230	388	291	185	426
Cfsm	1.45	1.75	1.49	0.857	0.938	3.25	5.80	2.00	0.630	0.472	0.300	0.692
In.	1.67	1.95	1.72	0.99	0.98	3.75	6.47	2.30	0.70	0.54	0.35	0.77

Calendar year 1913: Max 8,000 Min 148 Mean 1,240 Cfsm 2.01 In. 27.36
Water year 1913-14: Max 11,000 Min 105 Mean 1,010 Cfsm 1.64 In. 22.19

Note.--Stage-discharge relation affected by ice Dec. 27 to Mar. 27, Apr. 2-5 (no gage-height record Jan. 18-29, Feb. 13-22, Feb. 24 to Mar. 17).

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St. Regis River at Brasher Center, N. Y.--Continued

Discharge, in cubic feet per second, water year October 1914 to September 1915

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	283	482	600	340	550	1,300	570	1,390	494	330	625	494
2	258	410	655	380	550	1,200	570	1,480	390	330	494	458
3	258	446	820	420	500	1,100	551	1,390	458	315	390	390
4	200	550	820	380	500	1,500	522	1,480	330	282	407	375
5	128	500	1,070	420	700	1,000	680	1,480	315	239	458	302
6	152	428	520	460	1,100	1,200	930	1,570	282	330	475	302
7	140	395	710	1,600	950	600	1,220	1,140	263	740	475	302
8	128	395	940	950	800	800	1,480	1,390	375	592	475	375
9	170	482	940	700	700	700	1,860	2,080	315	592	458	522
10	350	820	655	900	650	700	2,190	1,220	302	680	740	658
11	350	372	500	700	950	800	4,440	1,300	302	658	800	551
12	200	350	600	600	1,100	900	6,250	1,220	475	494	658	458
13	185	322	372	380	950	700	5,110	1,070	800	407	551	390
14	152	395	395	420	900	500	4,770	658	930	407	475	458
15	190	500	480	500	1,100	432	5,470	522	930	390	375	458
16	240	600	400	400	1,400	680	3,080	740	1,000	494	352	352
17	309	940	360	380	1,100	432	2,430	658	800	475	658	315
18	410	710	340	700	950	522	2,190	551	625	625	1,000	330
19	446	1,070	320	1,100	1,100	625	1,970	352	592	1,860	930	315
20	1,220	600	380	1,400	950	432	1,660	390	494	1,660	680	250
21	940	520	500	1,100	800	390	1,970	458	494	1,390	592	315
22	464	655	460	950	700	475	1,760	800	458	1,140	1,000	263
23	410	600	420	800	650	625	1,300	625	407	800	2,080	282
24	380	580	380	950	800	1,070	1,140	458	458	551	2,080	250
25	520	395	360	750	2,400	1,220	522	458	551	352	1,760	263
26	380	580	340	650	1,900	1,300	432	680	570	282	1,390	263
27	296	710	340	800	1,600	865	1,140	680	458	475	1,000	352
28	335	820	360	750	1,400	592	1,480	680	390	458	740	592
29	410	600	420	700	-	625	1,140	494	390	592	570	658
30	580	600	360	650	-------	625	1,300	432	375	680	494	551
31	520	-------	302	600	-------	625	-------	475	-------	800	522	-------
Total	11,004	16,827	16,119	21,830	27,750	24,535	60,127	28,321	15,023	19,420	23,704	11,844
Mean	355	561	520	704	991	791	2,000	914	501	626	765	395
Cfsm	0.576	0.911	0.844	1.14	1.61	1.28	3.25	1.48	0.813	1.02	1.24	0.641
In.	0.66	1.02	0.97	1.32	1.68	1.48	3.63	1.71	0.91	1.17	1.43	0.72

Calendar year 1914: Max 11,000 Min 105 Mean 885 Cfsm 1.44 In. 19.50
Water year 1914-15: Max 6,250 Min 128 Mean 758 Cfsm 1.23 In. 16.70

Note.--Stage-discharge relation affected by ice Dec. 15 to Mar. 14.

Discharge, in cubic feet per second, water year October 1915 to September 1916

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	475	592	494	850	2,600	1,800	9,000	1,570	1,390	695	296	179
2	407	625	475	950	2,400	1,300	13,000	1,480	1,220	590	259	183
3	432	551	432	850	2,000	1,100	11,800	1,660	1,220	533	237	183
4	494	475	407	850	1,900	1,000	8,400	1,860	1,220	481	237	195
5	680	494	458	950	1,700	750	3,360	1,480	1,220	514	220	264
6	1,220	494	432	1,500	1,400	550	2,810	1,760	930	571	215	259
7	1,070	407	424	1,400	1,100	650	2,560	1,570	800	410	220	220
8	1,000	432	407	1,300	1,000	600	2,190	1,390	680	452	237	215
9	740	458	407	1,200	950	550	2,080	1,140	930	495	237	207
10	551	390	380	1,100	850	600	1,760	1,140	930	402	237	175
11	475	458	380	1,100	850	500	1,970	1,220	680	365	283	199
12	458	458	360	1,400	800	460	2,190	930	1,140	418	342	199
13	407	407	340	1,300	800	480	2,190	930	1,070	402	302	191
14	330	458	340	1,200	800	550	2,430	740	930	350	220	199
15	390	375	400	1,100	800	600	2,680	800	1,140	365	248	179
16	390	625	380	1,100	750	550	3,220	865	930	335	237	195
17	330	680	360	1,000	750	500	2,810	1,970	1,000	365	220	179
18	330	740	400	1,000	750	460	2,940	6,650	1,070	372	191	195
19	330	592	440	1,000	750	460	2,680	6,650	1,220	380	179	276
20	315	592	480	950	750	480	2,810	4,770	1,390	365	171	237
21	282	865	440	950	750	550	2,560	3,810	1,570	335	175	220
22	263	865	400	1,200	750	500	2,190	3,220	1,220	302	195	220
23	407	800	360	2,600	750	460	2,940	2,560	1,000	402	175	226
24	390	680	480	2,400	800	440	2,810	2,190	810	427	179	248
25	390	522	680	2,200	850	460	2,810	1,760	695	410	179	215
26	375	475	1,200	2,000	950	500	3,080	1,570	695	365	175	276
27	302	475	1,100	2,600	1,200	800	2,080	1,390	611	335	179	296
28	330	475	1,100	3,800	1,600	950	2,430	1,140	495	322	171	350
29	302	494	1,000	3,600	1,800	3,800	1,860	1,220	810	283	183	264
30	282	522	950	3,200	-------	6,500	1,570	1,390	875	264	195	302
31	475	-------	850	3,000	-------	10,000	-------	1,570	-------	237	183	-------
Total	14,622	16,476	16,756	49,650	33,150	38,700	107,210	62,395	29,891	12,522	6,777	6,746
Mean	472	549	541	1,600	1,140	1,250	3,570	2,010	996	404	219	225
Cfsm	0.766	0.891	0.878	2.60	1.85	2.03	5.80	3.26	1.62	0.656	0.356	0.365
In.	0.88	0.99	1.01	3.00	2.00	2.34	6.47	3.77	1.80	0.76	0.41	0.41

Calendar year 1915: Max 6,250 Min 239 Mean 768 Cfsm 1.25 In. 16.93
Water year 1915-16: Max 13,000 Min 171 Mean 1,080 Cfsm 1.75 In. 23.84
Calendar year 1916: Max 13,000 Min 171 Mean 1,070 Cfsm 1.74 In. 23.74

Note.--Stage-discharge relation affected by ice Dec. 10 to Jan. 4, Jan. 6-31, Feb. 3, 4, Feb. 9 to Apr. 2.

St. Regis River at Brasher Center, N. Y.--Continued

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-4		Oct. 5 to Sept. 30			
7.0	1,400	5.8	184	8.0	2,970
8.0	3,000	6.1	389	9.0	5,070
9.0	5,090	6.5	770	11.0	10,600
		7.0	1,370		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,400	957	1,940	2,400	540	980	2,320	1,640	1,270	335	258	494
2	1,530	913	1,610	2,100	*500	*1,400	3,310	1,520	1,440	320	258	484
3	1,940	1,100	1,240	1,800	480	1,350	3,390	1,400	1,500	312	258	432
4	3,960	*1,940	940	1,650	460	1,250	2,900	1,320	1,380	305	264	381
5	4,240	2,290	840	*1,400	450	1,140	3,600	1,270	1,200	320	285	350
6	3,270	2,030	760	1,350	470	1,060	4,040	1,160	1,040	406	327	335
7	2,650	1,680	720	1,250	490	1,000	5,580	1,090	902	475	464	305
8	2,220	1,440	700	1,100	490	960	4,660	1,300	792	484	750	292
9	1,880	1,330	*840	960	470	940	3,730	2,010	680	406	858	278
10	1,710	1,240	1,040	980	440	1,000	4,000	2,090	600	350	750	271
11	1,760	1,110	1,040	920	480	2,700	4,910	*1,680	542	312	719	264
12	1,880	1,090	980	860	520	10,000	5,450	1,380	551	292	935	285
13	2,760	1,060	920	820	560	d6,460	*5,330	1,160	650	*429	678	320
14	*3,370	1,040	900	780	560	d4,500	6,000	968	913	258	660	358
15	2,790	1,030	980	800	520	d3,770	7,330	814	1,100	220	610	358
16	2,210	979	1,140	840	500	6,800	7,140	869	*990	277	560	343
17	1,830	957	1,200	820	470	d5,680	6,150	858	814	305	*484	343
18	1,580	935	1,300	780	450	d4,610	4,930	825	680	366	458	327
19	1,400	913	1,600	740	440	d4,110	4,770	792	601	374	475	298
20	1,140	957	2,000	720	430	d3,410	5,600	760	484	423	494	292
21	1,030	1,560	1,900	700	480	d3,240	4,660	740	458	335	441	*285
22	979	2,720	1,750	740	560	d3,690	3,810	700	441	312	406	264
23	957	2,340	1,600	780	720	5,200	3,350	670	423	298	610	258
24	935	1,970	1,550	800	860	3,400	2,950	660	423	350	740	424
25	902	1,770	1,450	780	900	2,350	2,720	720	449	374	710	303
26	825	1,590	1,400	720	860	d1,970	2,650	814	343	350	532	214
27	924	1,450	1,450	640	820	d1,640	2,460	869	327	324	432	424
28	1,240	1,520	1,600	580	800	d1,590	2,210	847	350	312	415	350
29	1,320	1,830	2,500	520	-	d1,550	1,970	1,000	350	298	406	358
30	1,190	2,210	2,800	540	------	d1,540	1,780	1,400	350	292	406	351
31	1,050	---	2,700	560	-------	1,680	--------	1,360	--------	271	504	-------
Total	56,872	43,951	43,390	30,430	15,720	90,970	123,700	34,686	22,043	10,485	16,147	10,041
Mean	1,835	1,465	1,400	982	561	2,935	4,123	1,119	735	338	521	335
Cfsm	2.98	2.38	2.27	1.59	0.911	4.76	6.69	1.82	1.19	0.549	0.846	0.544
In.	3.43	2.65	2.62	1.84	0.95	5.49	7.47	2.09	1.33	0.63	0.97	0.61

Calendar year 1954: Max 8,380 Min 360 Mean 1,544 Cfsm 2.51 In. 34.03
Water year 1954-55: Max 10,000 Min 214 Mean 1,366 Cfsm 2.22 In. 30.08

Peak discharge (base, 5,600 cfs).--Mar. 12 (4:45 a.m.) 13,900 cfs (12.00 ft); Mar. 16 (5:45 p.m.) 8,080 cfs (10.16 ft); Apr. 7 (6 p.m.) 5,780 cfs (9.29 ft); Apr. 15 (6:45 p.m.) 7,520 cfs (9.96 ft); Apr. 20 (2:45 a.m.) 5,780 cfs (9.29 ft).

* Discharge measurement made on this day.

d Doubtful gage-height record; discharge computed from reconstructed gage-height graph based on existing gage heights and record for Grass River at Pyrites.

Note.--Stage-discharge relation affected by ice Dec. 3 to Mar. 12, Mar. 16, 23-25, Apr. 4, 5.

Salmon River at Chasm Falls, N. Y.

Location.--Lat 44°45'20", long 74°13'10", on right bank a quarter of a mile downstream from powerplant of Niagara Mohawk Power Corp. at Chasm Falls, Franklin County, and 3 miles downstream from Duane Stream.

Drainage area.--132 sq mi.

Records available.--July 1925 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,011.52 ft above mean sea level, datum of 1929.

Average discharge.--30 years, 229 cfs.

Extremes.--Maximum discharge during year, 2,300 cfs Apr. 16 (gage height, 4.57 ft); minimum, 34 cfs May 28 (gage height, 0.77 ft); minimum daily, 96 cfs July 14.
1925-55: Maximum discharge, 2,890 cfs Apr. 25, 1926 (gage height, 5.0 ft); minimum, 14 cfs Feb. 12, 1943, Aug. 15, 1952; minimum daily, 28 cfs Sept. 4, 1934.

Remarks.--Records good. Diurnal fluctuation at low and medium flow caused by powerplant. A small diversion from tributary stream above station is used as water supply for village of Malone.

Revisions (water years).--WSP 729: 1931(m). WSP 759: Drainage area.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 21		Nov. 22 to Sept. 30			
1.5	161	1.2	92	3.0	886
2.0	343	1.5	159	4.0	1,700
3.0	886	2.0	335	4.5	2,220

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	291	228	269	386	162	205	326	335	285	109	102	133
2	294	242	245	344	155	267	372	318	394	121	110	116
3	369	253	232	331	*154	254	424	301	313	127	101	115
4	740	*264	221	296	152	239	417	288	253	119	97	113
5	849	260	241	*251	141	232	537	288	221	119	115	115
6	688	256	225	269	142	213	696	269	196	173	195	110
7	552	246	224	234	144	187	995	261	187	132	223	100
8	442	170	206	242	146	187	843	305	169	121	358	97
9	370	170	*250	234	148	203	659	358	161	117	215	101
10	393	240	211	228	156	*216	790	314	140	110	147	99
11	388	238	218	228	171	344	1,030	284	151	101	268	117
12	388	249	222	234	176	561	1,160	*274	172	100	269	152
13	779	241	218	249	186	611	1,130	253	189	97	197	126
14	*759	246	204	242	173	476	*1,400	233	222	*96	179	114
15	546	249	289	230	173	414	1,830	224	205	105	152	122
16	433	209	252	239	168	508	2,070	242	*184	153	170	121
17	345	197	206	235	169	502	1,490	127	157	145	158	115
18	308	209	256	232	164	452	1,120	134	151	144	*169	109
19	276	208	335	232	165	408	1,060	127	147	208	154	104
20	256	211	272	226	166	357	1,280	126	129	162	144	112
21	238	314	236	226	172	335	1,050	124	158	131	116	112
22	237	444	236	219	204	322	834	176	174	120	141	*100
23	272	358	249	208	232	389	729	117	141	127	123	100
24	256	322	261	200	223	358	630	159	143	157	132	164
25	231	305	237	190	207	308	558	142	141	138	112	191
26	228	284	228	192	195	270	515	174	140	124	110	212
27	242	269	241	184	199	232	470	147	132	119	113	216
28	231	261	251	153	192	208	424	124	128	126	107	224
29	256	280	372	172	-	249	384	217	126	108	103	212
30	246	288	405	167	------	269	353	266	117	108	117	203
31	231	-- ---	406	162	-------	295	-------	235	-------	98	145	-- -- --
Total	12,134	7,711	7,918	7,235	4,835	10,071	25,576	6,942	5,426	3,915	4,842	4,025
Mean	391	257	255	233	173	325	853	224	181	126	156	134
Cfsm	2.96	1.95	1.93	1.77	1.31	2.46	6.46	1.70	1.37	0.955	1.18	1.02
In.	3.42	2.17	2.23	2.04	1.36	2.84	7.21	1.96	1.53	1.10	1.36	1.13

Calendar year 1954: Max 1,790 Min 92 Mean 290 Cfsm 2.20 In. 29.79
Water year 1954-55: Max 2,070 Min 96 Mean 276 Cfsm 2.09 In. 28.35

* Discharge measurement made on this day.

Chateaugay River near Chateaugay, N. Y.

Location.--Lat 44°54'35", long 74°05'10", on right bank 150 ft downstream from dam of International Hydroelectric Corp., 1 mile south of Chateaugay, Franklin County, and 5 miles upstream from Marble River.

Drainage area.--112 sq mi.

Records available.--September to December 1908, October 1926 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 847.04 ft above mean sea level, datum of 1929. September to December 1908, staff gage 2¼ miles downstream at different datum.

Average discharge.--29 years (1926-55), 179 cfs.

Extremes.--Maximum discharge during year, 1,220 cfs Apr. 15 (gage height, 5.47 ft); minimum, 70 cfs Aug. 5 (gage height, 1.40 ft); minimum daily, 72 cfs Aug. 3, 4, 9. 1908, 1926-55: Maximum discharge, 2,060 cfs Apr. 8, 1928 (gage height, 7.3 ft), from rating curve extended above 970 cfs by logarithmic plotting; minimum, 6 cfs Nov. 20, 1928 (gage height, 0.23 ft); minimum daily, 26 cfs July 8, 1934.

Remarks.--Records good except those for periods of ice effect or backwater from rock dam, which are fair. Flow regulated by Upper and Lower Chateaugay Lakes. Considerable diurnal fluctuation caused by power operations prior to 1953.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 11		Mar. 12 to Sept. 30			
1.5	90	1.3	64	4.0	646
2.0	162	2.0	159	5.5	1,240
3.0	368	3.0	361		
4.0	673				

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	270	160	358	250	185	200	312	214	227	94	78	153
2	276	164	358	250	180	200	337	177	231	90	76	157
3	353	174	348	260	*185	198	323	146	229	88	72	157
4	391	*194	346	280	190	203	326	142	220	92	72	157
5	452	181	340	270	190	202	349	137	218	90	76	173
6	478	170	330	*280	185	197	422	136	189	84	74	190
7	484	167	280	270	190	197	402	137	176	84	92	214
8	466	167	270	260	180	198	356	151	148	84	74	237
9	443	165	*270	260	190	*189	364	159	136	82	72	259
10	435	164	276	270	180	201	444	161	128	82	78	259
11	424	165	272	260	160	489	561	161	126	82	92	271
12	431	164	270	260	135	367	656	*157	120	82	92	277
13	539	162	268	250	130	299	721	149	120	82	110	273
14	*545	169	270	240	130	280	*886	142	118	78	118	277
15	555	164	280	210	155	307	1,090	143	112	*76	125	290
16	496	165	270	210	180	361	*1,190	138	*108	80	135	284
17	449	165	270	205	190	294	1,150	136	96	76	135	275
18	418	165	290	200	190	290	1,040	136	96	76	*135	241
19	405	165	290	200	185	270	1,020	132	96	76	134	210
20	394	165	270	200	185	270	954	134	96	76	134	190
21	277	225	260	200	180	267	890	131	96	76	134	155
22	170	294	240	195	185	306	794	131	96	76	137	*155
23	167	358	240	205	195	328	728	137	94	82	138	154
24	165	358	250	215	205	314	701	134	100	78	134	156
25	165	343	240	220	200	307	620	138	96	76	134	134
26	164	333	235	210	195	303	477	140	96	76	140	128
27	174	341	230	210	185	301	374	146	96	76	143	128
28	167	331	240	200	186	312	344	173	96	74	143	128
29	165	333	270	195	-	305	268	199	96	74	143	119
30	162	366	270	205	------	292	218	208	96	74	146	125
31	162	----	260	205	-------	296	-------	223	----	74	143	----
Total	10,642	6,637	8,661	7,145	5,026	8,543	18,317	4,748	3,952	2,490	3,509	5,926
Mean	343	221	279	230	180	276	611	153	132	80.3	113	198
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 1,140 Min 86 Mean 246 Cfsm 2.20 In. 29.85
Water year 1954-55: Max 1,190 Min 72 Mean 235 Cfsm 2.10 In. 28.43

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5-9, Dec. 14 to Feb. 27, Mar. 14, 18-20 (no gage-height record Dec. 21-23, Jan. 7-13, Jan. 16 to Feb. 1). Backwater from rock dam June 13 to Aug. 18. Increase in storage in Chateaugay Lakes during calendar year 1954, about 291,329,000 cu ft (equivalent mean discharge, 9.24 cfs; runoff, 1.12 in); increase in elevation, 2.20 ft. Decrease in storage during water year 1955, about 487,314,000 cu ft (equivalent mean discharge, 15.5 cfs; runoff, 1.88 in); decrease in elevation, 3.68 ft.

Great Chazy River at Perry Mills, N. Y.

Location.--Lat 45°00'00", long 73°30'05", on left bank 500 ft upstream from highway bridge at Perry Mills, Clinton County, and 7½ miles upstream from Corbeau Creek.

Drainage area.--247 sq mi.

Records available.--September 1928 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 164.93 ft above mean sea level, datum of 1929.

Average discharge.--27 years, 275 cfs.

Extremes.--Maximum discharge during year, 3,700 cfs Apr. 6 (gage height, 8.00 ft), release from upstream ice jam; maximum gage height, 8.02 ft Apr. 3 (backwater from ice); minimum discharge, 41 cfs July 14 (gage height, 1.99 ft); minimum daily, 44 cfs July 15. 1928-55: Maximum discharge, 6,000 cfs Apr. 7, 1937 (gage height, 9.74 ft); maximum gage height, 11.5 ft Mar. 9, 1946, from floodmark (ice jam); minimum discharge, about 0.8 cfs Sept. 18, 1932 (gage height, 1.33 ft); minimum daily, 10 cfs Sept. 18, 1932.

Remarks.--Records good except those for period of ice effect, which are fair. Diurnal fluctuation caused by sawmill immediately upstream. Slight regulation by Chazy Lake, from which Clinton Prison at Dannemora obtains its water supply.

Revisions (water years).--WSP 714: 1930. WSP 759: Drainage area.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 7				Apr. 8 to Sept. 30			
2.8	187	5.0	1,160	2.0	42	2.6	141
3.2	301	6.0	1,840	2.2	68	3.2	301
4.0	615	8.0	3,700				

Note.--Same as preceding table above 3.2 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	284	244	794	520	220	300	680	339	186	59	82	112
2	328	211	560	460	220	400	940	315	301	92	88	109
3	500	300	470	430	*230	560	1,300	296	252	99	118	107
4	2,110	*850	400	400	220	*520	1,200	280	174	70	101	103
5	1,330	903	390	370	210	410	1,550	273	150	58	99	105
6	701	587	340	*390	240	340	2,050	266	136	73	109	105
7	817	427	310	360	250	300	3,260	239	124	86	116	105
8	688	360	290	340	240	280	1,820	267	114	65	164	103
9	533	333	300	360	260	300	1,030	413	114	64	129	103
10	484	311	*310	380	280	310	1,410	316	110	60	110	96
11	545	290	*320	330	290	500	2,040	260	116	50	115	109
12	589	296	310	330	300	860	1,770	*214	120	60	127	124
13	1,970	283	300	310	280	940	1,280	201	127	50	118	110
14	1,430	282	300	320	260	760	*1,780	181	128	46	157	105
15	*742	325	310	320	260	600	2,200	176	139	44	144	110
16	591	297	350	360	250	740	2,020	166	*127	*67	131	94
17	513	293	320	330	270	720	1,220	175	110	70	141	94
18	407	250	380	310	260	600	904	184	102	58	*120	87
19	375	260	460	290	260	540	1,120	164	96	64	114	84
20	338	268	500	280	250	560	1,810	164	97	50	112	79
21	314	724	410	280	240	560	1,040	123	109	62	107	81
22	296	2,200	330	300	250	520	804	139	97	60	105	*82
23	279	1,170	320	290	310	560	736	149	94	73	116	81
24	264	732	340	320	360	500	657	210	92	89	116	84
25	258	666	320	320	330	420	593	164	110	88	112	87
26	267	611	310	280	300	370	568	194	114	80	109	86
27	278	528	330	290	280	400	554	181	108	77	105	86
28	296	530	360	270	280	380	473	152	97	80	103	89
29	235	742	500	250	-	420	418	155	77	79	103	87
30	226	1,060	660	280	------	430	372	163	57	79	105	87
31	264	----	620	270	------	470	------	154	------	73	116	------
Total	18,252	16,333	12,214	10,340	7,400	15,570	37,599	6,673	3,778	2,125	3,592	2,894
Mean	589	544	394	334	264	502	1,253	215	126	68.5	116	96.5
Cfsm	2.38	2.20	1.60	1.35	1.07	2.03	5.07	0.870	0.510	0.277	0.470	0.391
In.	2.75	2.46	1.84	1.56	1.11	2.34	5.66	1.00	0.57	0.32	0.54	0.44

Calendar year 1954: Max 3,320 Min 54 Mean 459 Cfsm 1.86 In. 25.23
Water year 1954-55: Max 3,260 Min 44 Mean 375 Cfsm 1.52 In. 20.59

Peak discharge (base, 2,500 cfs).--Oct. 13 (5:15 p.m.) 2,550 cfs (6.84 ft); Apr. 6 (7:45 p.m.) 3,700 cfs (8.00 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2 to Apr. 6.

Saranac River at Plattsburg, N. Y.

Location.--Lat 44°40'50", long 73°28'20", on right bank in Plattsburg, Clinton County, 600 ft downstream from Imperial Paper & Color Corp. dam, 3 miles upstream from mouth, and 5½ miles downstream from Mead Brook.

Drainage area.--608 sq mi.

Records available.--March 1903 to September 1930, October 1943 to September 1955. Published as "near Plattsburg" 1903-30.

Gage.--Water-stage recorder. Datum of gage is 155.74 ft above mean sea level, datum of 1929. Prior to Nov. 12, 1919, staff gage, and Nov. 12, 1919, to Sept. 30, 1930, water-stage recorder, at site 1.5 miles upstream at different datum.

Average discharge.--39 years (1903-30, 1943-55), 841 cfs.

Extremes.--Maximum discharge during year, 6,190 cfs Apr. 15 (gage height, 8.43 ft); minimum, 34 cfs Aug. 16, Sept. 30 (gage height, 1.74 ft); minimum daily, 212 cfs Sept. 25. 1903-30, 1943-55: Maximum discharge, 11,500 cfs Apr. 8, 1928, from computation of flow over dam and through waste gates and powerplant; minimum daily, 15 cfs Aug. 4, 1908.

Remarks.--Records excellent except those for periods of ice effect or doubtful gage-height record, which are fair. Considerable diurnal fluctuation caused by power and industrial operations. Slight regulation by storage in Lower Saranac Lake and elsewhere. During year, city of Plattsburg diverted about 4 cfs from Mead and West Brooks, tributaries above station, for municipal supply.

Revisions (water years).--WSP 354: Drainage area. WSP 384: 1909-10 (monthly discharge only). Revised figures of discharge, for the water years 1907-8, superseding those published in WSP 244, are given herewith:

Discharge, in cubic feet per second, water year October 1906 to September 1907

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	181	722	686	543	400	355	2,171	2,069	634	711	409	187
2	312	581	210	779	430	319	1,642	1,830	428	674	480	210
3	337	550	606	695	328	266	1,362	1,580	606	694	279	300
4	412	206	403	682	378	331	853	1,876	610	618	240	363
5	330	222	326	904	393	376	961	2,558	616	623	325	652
6	242	363	548	898	435	377	854	1,899	528	582	392	1,150
7	80	390	313	881	428	401	779	1,521	576	922	454	749
8	336	537	550	785	411	456	825	1,621	660	872	442	667
9	617	384	156	716	406	460	619	1,611	450	739	445	597
10	471	394	264	570	308	302	501	1,659	582	561	414	574
11	434	70	411	628	342	397	516	1,396	620	498	242	499
12	417	479	368	577	435	461	566	1,737	458	459	286	461
13	478	346	359	410	409	468	701	1,183	408	458	264	506
14	136	307	492	525	411	450	652	1,127	479	395	304	487
15	400	286	492	520	368	452	759	945	493	528	444	376
16	417	408	458	471	403	475	683	864	269	520	287	445
17	491	487	706	404	264	365	1,346	908	391	431	288	414
18	437	109	809	487	357	558	950	928	378	402	154	416
19	382	843	403	477	479	617	900	861	424	377	305	304
20	364	564	453	358	426	550	822	863	403	311	286	302
21	42	898	383	828	420	597	737	879	431	243	307	270
22	246	755	423	774	393	498	788	965	614	314	334	215
23	398	870	332	639	368	1,664	840	789	621	299	311	356
24	476	742	275	483	245	1,761	1,358	924	974	428	309	298
25	597	321	454	458	372	970	1,332	824	823	477	235	360
26	680	848	456	400	341	1,327	1,247	630	824	424	288	440
27	628	648	491	318	366	1,367	1,417	943	798	410	313	454
28	328	784	400	503	362	3,078	1,318	628	716	257	321	376
29	557	906	530	437	-	4,542	1,572	578	713	483	397	258
30	556	465	308	502	------	3,948	1,633	613	684	431	447	513
31	637	---	286	437	------	2,694	------	549	------	403	350	------
Total	12,419	15,485	13,351	18,089	10,678	30,882	30,704	37,358	17,211	15,544	10,352	13,199
Mean	401	516	431	584	381	996	1,020	1,210	574	501	334	440
Cfsm	0.661	0.850	0.710	0.962	0.628	1.64	1.68	1.99	0.946	0.825	0.550	0.725
In.	0.76	0.95	0.82	1.11	0.65	1.89	1.88	2.29	1.05	0.95	0.63	0.81

Calendar year 1906: Max 2,940 Min 42 Mean 679 Cfsm 1.12 In. 15.19
Water year 1906-7: Max 4,542 Min 42 Mean 617 Cfsm 1.02 In. 13.79

Saranac River at Plattsburg, N.Y. --Continued

Discharge, in cubic feet per second, water year October 1907 to September 1908

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	620	499	490	979	490	712	2,391	2,047	1,584	329	301	149
2	541	293	418	904	536	602	2,288	1,989	1,318	396	243	127
3	479	383	419	947	525	658	1,866	2,397	1,462	371	184	312
4	482	541	472	836	457	648	1,478	2,824	1,162	258	68	290
5	475	477	551	788	459	675	1,602	2,414	1,091	270	140	288
6	451	445	549	709	507	646	1,858	1,972	917	357	731	199
7	422	1,084	515	790	455	590	2,391	1,950	1,034	295	525	340
8	654	1,057	377	782	478	626	2,218	3,181	1,064	298	374	266
9	1,029	780	635	678	434	680	2,061	2,180	911	299	286	278
10	770	635	825	549	518	614	1,872	1,888	859	287	333	253
11	773	585	1,330	587	480	593	2,459	1,754	761	279	319	251
12	662	493	792	738	491	666	2,434	1,635	648	210	306	257
13	575	552	663	739	470	659	1,985	2,361	495	395	332	223
14	737	442	626	685	437	923	1,656	2,237	488	333	322	296
15	625	466	598	530	547	1,286	1,644	1,807	867	328	297	255
16	666	508	638	673	1,269	1,485	1,772	1,522	809	319	273	249
17	586	490	650	654	1,306	1,011	1,717	1,700	730	308	344	247
18	587	540	627	711	1,135	825	1,739	1,914	723	503	401	252
19	579	509	611	654	963	732	1,771	2,020	591	620	356	250
20	436	583	590	614	867	766	1,706	1,817	602	596	363	177
21	539	553	689	684	839	778	1,595	1,805	479	502	315	295
22	513	634	653	750	845	896	1,453	1,702	595	472	310	258
23	527	615	781	709	933	1,038	1,523	1,691	641	397	180	231
24	420	606	877	634	691	1,352	1,582	1,593	683	333	303	249
25	358	642	1,001	557	794	1,183	1,754	1,579	577	331	232	254
26	372	596	949	633	752	1,174	1,809	1,452	439	307	280	244
27	418	534	813	649	689	2,331	2,261	1,480	455	465	246	182
28	612	814	900	542	738	2,469	2,432	1,451	257	417	246	241
29	659	526	1,280	550	718	4,356	2,122	1,392	302	341	286	281
30	597	571	1,046	483	-------	3,253	1,811	1,370	303	311	242	277
31	498	-- -	1,156	475	-------	2,462	-------	1,588	--------	312	269	- - - -
Total	17,662	17,253	22,521	21,213	19,823	36,691	57,250	58,712	22,847	11,239	9,407	7,471
Mean	570	575	726	684	684	1,180	1,910	1,890	762	363	303	249
Cfsm	0.939	0.947	1.20	1.13	1.13	1.94	3.15	3.11	1.26	0.598	0.499	0.410
In.	1.08	1.06	1.38	1.30	1.21	2.25	3.51	3.60	1.40	0.69	0.58	0.46

Calendar year 1907: Max 4,542 Min 154 Mean 662 Cfsm 1.09 In. 14.78
Water year 1907-8: Max 4,358 Min 68 Mean 825 Cfsm 1.36 In. 18.52
Calendar year 1908: Max 4,358 Min 68 Mean 746 Cfsm 1.23 In. 16.76

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,010	858	d1,300	1,050	840	997	1,490	1,760	1,220	728	242	489
2	916	771	1,180	1,010	840	1,260	1,740	1,650	1,660	691	348	406
3	956	877	1,030	1,140	820	1,100	2,130	1,600	1,860	656	285	367
4	2,280	1,470	804	1,100	*720	*987	2,010	1,390	1,420	635	396	292
5	2,000	*1,310	893	1,020	700	963	2,380	1,390	1,210	655	359	319
6	1,540	1,090	827	*1,020	800	951	2,940	947	1,160	690	397	409
7	1,420	1,010	824	941	840	952	4,050	754	900	634	490	364
8	1,410	1,050	812	851	840	839	2,890	624	856	632	521	298
9	1,360	1,070	848	933	880	892	2,310	826	837	602	545	368
10	1,340	821	*933	1,010	900	957	2,890	753	821	578	343	255
11	1,400	841	835	804	920	1,220	3,870	687	740	648	408	316
12	1,370	805	832	844	900	1,900	4,120	*711	715	493	517	455
13	1,860	807	927	797	860	1,710	3,670	834	896	437	410	517
14	1,740	837	777	799	840	1,330	*4,640	867	811	364	443	452
15	*1,420	931	983	736	860	1,160	5,640	911	816	454	460	357
16	1,160	835	1,050	910	900	1,450	5,480	881	776	551	407	403
17	1,080	770	906	916	955	1,260	4,420	831	*725	503	361	306
18	1,290	858	836	818	920	1,110	3,760	816	595	*591	345	273
19	1,080	788	1,100	824	933	1,090	3,940	716	679	630	453	352
20	1,070	789	1,020	838	922	1,010	4,660	722	705	617	*350	374
21	1,030	1,110	878	759	897	1,090	3,590	657	614	526	377	406
22	999	2,390	817	785	1,010	968	3,190	690	732	444	468	334
23	867	d1,300	814	853	1,170	989	2,940	713	757	450	460	*351
24	836	d1,080	872	936	1,090	984	2,670	728	675	477	365	368
25	807	d1,160	927	881	1,000	1,020	2,480	737	684	714	378	212
26	696	d1,100	893	912	952	1,070	2,540	794	763	405	316	321
27	796	d1,160	922	883	956	1,090	2,300	706	640	369	280	364
28	858	d1,220	916	840	978	1,020	2,050	603	704	429	339	348
29	795	d1,350	1,150	800	-	1,100	1,970	861	686	420	446	390
30	716	d1,400	1,180	920	-------	1,120	1,830	1,000	703	280	228	390
31	746	-- ---	1,050	940	-------	1,210	-------	973	--------	216	394	-- - -
Total	36,848	31,858	29,136	27,870	25,243	34,799	94,590	28,132	26,360	16,519	12,131	10,856
Mean	1,189	1,062	940	899	902	1,123	3,153	907	879	533	391	362
Cfsm	1.96	1.75	1.55	1.48	1.48	1.85	5.19	1.49	1.45	0.877	0.643	0.595
In.	2.25	1.95	1.78	1.70	1.54	2.13	5.79	1.72	1.61	1.01	0.74	0.66

Calendar year 1954: Max 6,020 Min 280 Mean 1,133 Cfsm 1.86 In. 25.29
Water year 1954-55: Max 5,640 Min 212 Mean 1,026 Cfsm 1.69 In. 22.88

* Discharge measurement made on this day.
d Doubtful gage-height record; discharge computed on basis of Kent Falls powerplant record.
Note.--Stage-discharge relation affected by ice Jan. 28 to Feb. 16.

West Branch Ausable River near Newman, N. Y.

Location.--Lat 44°18'40", long 73°55'00", on right bank 4 miles northeast of Newman, Essex County, and 4 miles downstream from Lake Placid Outlet.

Drainage area.--116 sq mi.

Records available.--June 1916 to December 1917, July 1919 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 1,620.76 ft above mean sea level, datum of 1929. Prior to July 14, 1927, staff gage at same site and datum.

Average discharge.--36 years (1919-55), 221 cfs.

Extremes.--Maximum discharge during year, 3,350 cfs Apr. 15 (gage height, 7.65 ft); minimum, 37 cfs Aug. 1 (gage height, 2.37 ft); minimum daily, 43 cfs Aug. 1.
1916-17, 1919-55: Maximum discharge, 10,800 cfs Sept. 22, 1938 (gage height, 12.20 ft), from rating curve extended above 3,500 cfs by logarithmic plotting; practically no flow Sept. 13, 1920 (gage height, 1.60 ft), caused by closing gates in logging dam; minimum daily, 7.2 cfs July 29, 1920.

Remarks.--Records good except those for periods of ice effect or backwater from aquatic vegetation, which are fair. Diurnal fluctuation at low and medium flow caused by mills above station.

Revisions (water years).--WSP 1337: 1921-25.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.3	35	4.0	452
2.6	67	5.0	1,000
3.0	131	6.0	1,700
3.5	257	8.0	3,770

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	200	147	177	230	88	124	188	583	1,170	84	43	150
2	198	140	160	205	84	280	237	543	989	84	74	108
3	323	242	150	190	88	215	315	539	584	104	62	90
4	663	339	140	165	84	190	265	584	382	90	56	84
5	608	292	140	140	*80	155	282	631	287	84	52	78
6	406	*240	124	150	96	140	509	455	233	150	54	78
7	309	206	114	135	104	122	769	301	195	170	62	74
8	267	176	108	*124	100	116	500	326	173	114	106	68
9	242	184	116	140	104	*118	380	342	152	90	72	64
10	235	164	120	135	112	150	630	264	139	82	60	60
11	297	157	*116	125	124	370	1,090	224	135	74	62	62
12	379	163	110	122	135	1,060	1,060	214	123	68	140	140
13	389	151	106	118	125	626	1,030	*208	133	64	150	120
14	329	153	106	125	114	434	2,050	219	154	62	500	90
15	271	157	170	124	118	322	*2,930	190	159	58	180	82
16	*260	162	190	130	108	342	1,960	178	137	74	180	82
17	244	139	145	125	114	294	1,320	175	122	78	140	74
18	206	157	180	118	110	250	1,080	150	*110	66	140	68
19	186	436	380	110	106	220	1,480	137	100	64	*150	62
20	176	439	290	104	104	205	1,350	135	113	*62	112	66
21	165	583	220	102	106	190	994	129	140	56	88	58
22	155	662	170	106	116	193	988	127	135	56	74	56
23	146	394	160	114	140	243	892	150	130	52	104	*56
24	138	304	170	108	135	211	707	240	118	52	120	90
25	132	264	150	104	116	194	741	258	124	50	94	114
26	128	237	140	106	112	155	615	438	135	50	78	90
27	145	211	150	110	110	165	476	286	122	52	290	78
28	206	201	175	102	106	150	403	216	110	58	235	140
29	167	205	680	104	-	174	434	253	100	54	130	145
30	178	208	460	110	------	169	537	357	90	52	102	104
31	156	----	330	106	-------	174	--------	297	--------	54	200	----
Total	7,904	7,513	5,947	3,987	3,039	7,751	26,212	9,149	6,794	2,308	3,910	2,631
Mean	255	250	192	129	109	250	874	295	226	74.5	126	87.7
Cfsm	2.20	2.16	1.66	1.11	0.940	2.16	7.53	2.54	1.95	0.642	1.09	0.756
In.	2.53	2.41	1.91	1.28	0.97	2.48	8.40	2.93	2.18	0.74	1.25	0.84

Calendar year 1954: Max 2,930 Min 60 Mean 304 Cfsm 2.62 In. 35.54
Water year 1954-55: Max 2,930 Min 43 Mean 239 Cfsm 2.06 In. 27.92

Peak discharge (base, 2,000 cfs).--Apr. 15 (6:45 a.m.) 3,350 cfs (7.65 ft); Apr. 19 (9 p.m.) 2,240 cfs (6.62 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 2 to Mar. 12, Mar. 18, 19, 26-28, Apr. 8, 9. Backwater from aquatic vegetation June 21 to Sept. 30.

Black Brook at Black Brook, N. Y.

Location.--Lat 44°26'50", long 73°44'45", on right bank three-quarters of a mile south of hamlet of Black Brook, Clinton County, and 1½ miles upstream from mouth.

Drainage area.--49.4 sq mi.

Records available.--September 1924 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 888.48 ft above mean sea level, datum of 1929. Prior to Oct. 24, 1936, staff gage at same site and datum.

Average discharge.--31 years, 50.4 cfs.

Extremes.--Maximum discharge during year, 505 cfs Apr. 7 (gage height, 4.86 ft); maximum gage height recorded, 4.97 ft Feb. 8 (backwater from ice); minimum discharge, 5.8 cfs July 12 (gage height, 1.405 ft).
1924-55: Maximum discharge, 1,050 cfs Apr. 6, 1937 (gage height, 6.95 ft), from rating curve extended above 450 cfs by logarithmic plotting; minimum, 0.8 cfs July 2, Aug. 29, 1931.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Appreciable regulation by Fern Lake and Taylor Pond. Prior to October 1937, diurnal fluctuation at low and medium flow caused by powerplant.

Revisions (water years).--WSP 759: Drainage area. WSP 1337: 1925.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 6

1.8	21	3.0	141
2.0	34	4.0	311
2.5	80	5.0	540

Apr. 7 to Sept. 30

1.4	5.7	2.0	34
1.6	12	2.5	80

Note.--Same as preceding table above 2.5 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	32	111	74	44	92	142	52	85	10	37	16
2	26	31	94	72	42	118	175	50	105	10	38	13
3	34	52	82	66	44	120	220	47	67	10	37	10
4	130	148	76	62	41	114	219	41	45	9.8	48	9.1
5	137	145	74	60	40	104	238	40	34	9.4	53	8.1
6	86	*101	68	62	49	96	309	40	28	10	59	7.8
7	66	79	62	*58	52	92	418	37	28	9.8	57	7.0
8	56	70	58	54	50	*84	240	40	21	8.7	58	38
9	48	64	62	60	52	96	152	38	19	8.1	55	51
10	48	62	64	58	56	108	193	36	17	7.8	53	52
11	53	64	60	54	64	146	332	33	15	7.4	60	53
12	59	62	*58	54	70	217	315	30	17	6.8	62	62
13	104	57	56	52	66	227	222	*28	24	6.6	64	56
14	111	57	56	56	62	175	247	28	19	24	50	54
15	82	61	64	58	64	155	273	26	18	37	21	56
16	*69	56	76	58	58	156	*215	25	16	43	21	55
17	64	54	66	56	62	175	147	23	14	40	19	54
18	57	50	62	54	60	170	111	22	*13	42	17	53
19	47	49	92	52	58	155	118	22	12	45	*17	52
20	43	46	84	50	56	140	189	21	12	40	11	51
21	40	71	74	49	60	136	132	20	12	40	11	51
22	38	225	66	52	72	138	104	20	13	39	9.4	51
23	34	138	64	54	100	149	90	20	13	*39	11	*52
24	33	102	68	52	98	140	78	37	12	50	11	58
25	34	99	62	50	90	130	79	33	14	41	10	56
26	33	93	60	52	88	116	84	42	20	40	9.1	53
27	34	87	64	52	86	120	78	36	19	39	9.1	54
28	39	84	76	49	84	108	70	30	16	40	9.4	57
29	37	98	104	50	-	125	63	42	13	38	8.4	55
30	36	118	92	52	------	123	57	45	11	38	8.2	54
31	34	----	82	50	-------	124	-------	37	--------	37	21	------
Total	1,737	2,455	2,237	1,732	1,768	4,149	5,310	1,041	752	826.4	954.6	1,299.0
Mean	56.0	81.8	72.2	55.9	63.1	134	177	33.6	25.1	26.7	30.8	43.3
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 405 Min 10 Mean 62.2 Cfsm 1.26 In. 17.11
Water year 1954-55: Max 418 Min 6.6 Mean 66.5 Cfsm 1.35 In. 18.26

* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Mar. 10, Mar. 14, 15, 17-20, 25-29 (doubtful gage-height record Feb. 10-17).

East Branch Ausable River at Au Sable Forks, N. Y.

Location.--Lat 44°26'20", long 73°40'55", on left bank 700 ft upstream from upper highway bridge in Au Sable Forks, Essex County, and half a mile upstream from confluence with West Branch.

Drainage area.--198 sq mi.

Records available.--September 1924 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 545.37 ft above mean sea level, datum of 1929. Prior to Sept. 21, 1938, staff gage at lower highway bridge in Au Sable Forks, 400 ft upstream from confluence with West Branch at datum 3.54 ft lower.

Average discharge.--31 years, 314 cfs.

Extremes.--Maximum discharge during year, 5,240 cfs Mar. 12 (gage height, 6.93 ft), release from upstream ice jam; maximum gage height, 8.26 ft Mar. 11 (backwater from ice); minimum discharge, 45 cfs Aug. 1 (gage height, 1.05 ft).
1924-55: Maximum discharge, 20,100 cfs Sept. 22, 1938 (gage height, 12.91 ft), from rating curve extended above 5,800 cfs by logarithmic plotting on basis of velocity-area studies; minimum observed, 20 cfs Aug. 11, 14, 28, 1934.

Remarks.--Records excellent except those for periods of ice effect, which are fair.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 14				Apr. 15 to Sept. 30			
1.3	73	2.3	357	1.0	40	3.0	718
1.7	153	3.0	718	1.3	76	4.0	1,460
				1.7	157	5.0	2,450
Note.--Same as following table above 3.0 ft.				2.3	360	7.0	5,370

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	207	175	366	350	108	150	526	1,040	1,990	81	47	170
2	192	180	300	310	94	340	692	940	1,630	76	67	129
3	272	689	240	270	98	270	712	919	879	86	66	108
4	790	1,110	225	240	*90	240	637	954	580	79	56	95
5	712	643	220	205	88	200	685	1,040	394	78	52	86
6	478	*468	180	215	108	170	1,250	778	300	121	50	86
7	383	375	170	*200	116	150	1,440	534	246	157	54	81
8	308	324	165	175	112	*140	821	483	208	114	103	72
9	274	305	190	185	116	150	643	478	187	95	79	67
10	268	268	205	175	130	320	1,290	373	168	84	63	64
11	329	250	*195	165	145	800	2,010	311	155	72	62	63
12	503	254	175	155	155	1,900	1,700	289	152	64	122	80
13	498	240	170	150	145	857	1,480	*285	165	62	270	84
14	424	240	170	155	135	599	2,920	285	168	59	1,140	72
15	341	246	270	160	140	572	*3,920	260	168	57	343	70
16	*366	220	300	150	130	695	2,510	236	147	63	289	70
17	345	213	230	145	135	470	1,780	227	129	86	214	67
18	286	252	280	140	125	330	1,480	205	*118	78	284	66
19	250	773	560	130	122	310	2,430	184	108	79	*211	60
20	233	860	400	120	120	300	2,050	173	102	72	147	58
21	213	1,870	300	120	130	318	1,480	160	118	63	112	54
22	198	1,670	260	125	145	278	1,420	152	125	*58	99	52
23	186	853	240	130	160	286	1,340	160	120	56	129	52
24	175	621	260	124	155	243	1,040	268	104	60	129	*73
25	166	508	230	118	140	225	1,330	316	132	56	106	130
26	161	434	215	122	130	200	1,130	700	129	51	90	118
27	186	375	230	124	125	210	834	449	122	50	194	101
28	264	361	270	118	120	180	689	323	116	59	279	121
29	257	439	840	120	-	210	718	304	97	56	157	233
30	240	448	680	125	-------	225	912	356	86	49	122	170
31	180	----	500	120	-------	315	--------	296	--------	46	182	-------
Total	9,685	15,664	9,036	5,141	3,517	11,653	41,869	13,478	9,113	2,267	5,318	2,752
Mean	312	522	291	166	126	376	1,396	435	304	73.1	172	91.7
Cfsm	1.58	2.64	1.47	0.838	0.636	1.90	7.05	2.20	1.54	0.369	0.869	0.463
In.	1.82	2.94	1.70	0.97	0.66	2.19	7.86	2.53	1.71	0.43	1.00	0.52

Calendar year 1954: Max 4,490 Min 54 Mean 461 Cfsm 2.33 In. 31.62
Water year 1954-55: Max 3,920 Min 46 Mean 355 Cfsm 1.79 In. 24.33

Peak discharge (base, 3,700 cfs).--Nov. 21 (8 p.m.) 3,930 cfs (6.12 ft); Mar. 12 (2:30 a.m.) 5,240 cfs (6.93 ft); Apr. 15 (5:30 a.m.) 4,540 cfs (6.51 ft); Apr. 19 (6:15 p.m.) 3,930 cfs (6.12 ft); June 1 (1:15 p.m.) 3,710 cfs (5.97 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 2 to Mar. 11, Mar. 17-20, 25-30.

Ausable River near Au Sable Forks, N. Y.

Location.--Lat 44°27'05", long 73°38'35", on left bank 1¾ miles downstream from confluence of East and West Branches at Au Sable Forks, Clinton County.

Drainage area.--448 sq mi.

Records available.--August 1910 to September 1955. Prior to September 1924, published as "at Au Sable Forks."

Gage.--Water-stage recorder at present site since September 1924. Datum of gage is 505.65 ft above mean sea level, datum of 1929. August 1910 to September 1925, chain gage at site 1½ miles upstream at different datum.

Average discharge.--31 years (1924-55), 688 cfs.

Extremes.--Maximum discharge during year, 8,890 cfs Apr. 15 (gage height, 7.33 ft); minimum, 110 cfs July 22 (gage height, 1.17 ft).
1910-55: Maximum discharge, 24,200 cfs Sept. 22, 1938 (gage height, 11.65 ft), from rating curve extended above 9,100 cfs on basis of slope-area determination at gage height 11.39 ft; maximum gage height, about 14.0 ft Mar. 27, 1934 (ice jam); practically no flow July 21, 1912, result of unusual regulation.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Slight regulation since 1905, principally by Taylor Pond and Fern Lake. Diurnal fluctuation at low and medium flow caused by powerplants above station.

Revisions (water years).--WSP 664: Drainage area. WSP 854: 1925(M), 1934 (maximum gage height).

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	146	4.0	2,200
1.5	211	5.0	3,700
2.0	421	6.5	6,710
2.5	721	8.0	10,900
3.0	1,120		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	518	426	800	880	300	420	1,060	1,890	3,290	208	155	431
2	501	421	660	740	270	840	1,350	1,730	3,250	204	187	311
3	592	1,080	560	640	280	700	1,560	1,700	1,780	222	194	259
4	1,750	2,000	490	560	270	600	1,430	1,740	1,160	218	177	225
5	1,720	*1,310	480	490	*260	520	1,540	1,890	846	208	180	205
6	1,150	984	430	520	300	460	2,470	1,470	653	280	184	201
7	918	801	400	*490	320	*430	3,290	1,040	547	397	191	187
8	798	694	380	430	310	*370	2,000	976	473	294	269	191
9	667	634	440	460	320	400	1,480	1,010	421	240	251	213
10	653	589	480	430	340	580	2,400	816	378	211	208	204
11	764	559	*460	410	390	1,700	4,030	680	350	184	208	204
12	1,090	553	420	390	410	3,600	3,710	621	355	168	316	276
13	1,190	523	400	380	390	2,100	3,110	*608	368	158	456	315
14	1,080	529	380	390	360	1,420	5,760	621	397	162	1,740	263
15	*846	547	540	400	380	1,270	*8,230	571	397	177	653	247
16	808	495	642	390	350	1,450	5,650	518	355	201	523	242
17	779	490	540	370	360	1,150	3,860	512	*315	229	447	234
18	653	501	580	350	340	942	3,150	457	286	218	496	225
19	583	1,180	1,200	330	330	840	4,480	411	263	225	*431	208
20	541	1,480	920	310	320	760	4,510	392	247	201	348	201
21	512	2,590	700	310	330	760	3,070	368	307	187	270	196
22	468	3,180	600	330	380	743	2,880	360	328	179	236	184
23	442	1,680	560	340	460	793	2,740	364	311	*171	274	*184
24	416	1,200	580	320	440	728	2,140	577	278	197	307	236
25	397	1,030	520	310	400	640	2,480	607	303	174	263	337
26	383	910	490	320	380	560	2,160	1,280	332	162	222	303
27	421	808	520	330	370	571	1,660	873	328	162	380	270
28	577	764	580	310	360	512	1,380	623	299	174	650	294
29	559	885	1,850	320	-	580	1,380	673	259	171	365	495
30	512	950	1,630	330	-------	600	1,660	861	229	162	282	388
31	463	-- ---	1,220	320	-------	743	-------	757	-------	152	430	-- -- --
Total	22,751	29,793	20,452	12,900	9,720	27,782	86,600	26,996	19,105	6,296	11,293	7,709
Mean	734	993	660	416	347	896	2,887	871	637	203	364	257
Cfsm	1.64	2.22	1.47	0.929	0.775	2.00	6.44	1.94	1.42	0.453	0.812	0.574
In.	1.89	2.47	1.70	1.07	0.81	2.31	7.19	2.24	1.59	0.52	0.94	0.64

Calendar year 1954: Max 8,810 Min 170 Mean 967 Cfsm 2.16 In. 29.27
Water year 1954-55: Max 8,230 Min 152 Mean 771 Cfsm 1.72 In. 23.37

Peak discharge (base, 6,200 cfs).--Apr. 15 (7 a.m.) 8,890 cfs (7.33 ft); Apr. 19 (8:15 p.m.) 6,880 cfs (6.57 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 1-15, 17-29, Jan. 1 to Mar. 12, Mar. 19-21, 25, 26, 29, 30.

Bouquet River at Willsboro, N. Y.

Location.--Lat 44°21'30", long 73°23'50", on right bank at Willsboro, Essex County, 2½ miles downstream from North Branch Bouquet River and 3 miles upstream from mouth.

Drainage area.--275 sq mi.

Records available.--August and September 1904 (gage heights and discharge measurements only), August to November 1908, July 1923 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 150.88 ft above mean sea level, datum of 1929. Prior to November 1908, staff gages at site three-quarters of a mile downstream at various datums. July 23 to Aug. 28, 1923, staff gage at site 600 ft downstream at same datum.

Average discharge.--32 years (1923-55), 307 cfs.

Extremes.--Maximum discharge during year, 3,650 cfs Apr. 15 (gage height, 6.50 ft); maximum gage height, 8.04 ft Mar. 11 (ice jam); minimum discharge, 45 cfs July 30 (gage height, 2.23 ft).
1923-55: Maximum discharge, 11,800 cfs Oct. 1, 1924 (gage height, 10.85 ft), from rating curve extended above 4,600 cfs by logarithmic plotting; minimum, 10 cfs Nov. 26, 1941 (gage height, 1.87 ft).

Remarks.--Records good except those for periods of ice effect, which are fair. Occasional slight diurnal fluctuation at low flow caused by powerplants above station.

Revisions.--WSP 759: Drainage area.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 11				Mar. 12 to Sept. 30			
2.5	96	3.5	598	2.3	57	4.0	960
2.7	157	4.0	1,000	2.5	101	5.0	1,870
3.0	286	5.0	2,000	3.0	289	6.0	3,010
				3.5	592	7.0	4,300

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	172	195	628	450	130	250	760	675	1,280	112	64	225
2	176	184	487	370	122	420	1,300	613	1,530	104	91	170
3	191	334	360	320	124	370	940	592	744	122	84	136
4	467	1,370	270	280	*118	320	1,160	572	499	112	76	126
5	460	*768	245	240	116	270	1,320	579	387	106	68	108
6	323	527	235	260	135	240	1,660	506	310	147	68	111
7	276	416	205	*230	145	*210	2,450	423	266	192	75	107
8	238	356	195	205	140	190	1,370	392	238	139	77	98
9	221	323	215	215	145	210	1,000	392	208	118	84	93
10	225	297	230	205	155	400	1,370	352	200	102	78	88
11	252	276	220	195	170	900	2,540	320	213	107	80	93
12	312	267	*200	185	180	1,800	2,330	305	204	93	128	122
13	318	262	195	175	175	1,350	1,510	289	225	92	141	136
14	291	248	205	180	165	860	1,980	*284	208	87	607	107
15	*257	252	340	190	170	780	*3,370	266	189	84	326	99
16	238	229	600	180	160	940	*2,900	256	170	93	261	98
17	272	225	450	170	165	640	1,700	242	*155	99	230	94
18	243	234	920	160	155	480	1,280	225	139	94	1,120	93
19	221	358	1,190	150	150	440	1,470	221	136	84	370	87
20	208	548	709	145	145	420	1,920	204	141	81	*225	84
21	195	1,010	450	135	160	450	1,230	200	150	79	162	83
22	191	1,920	370	145	180	400	1,090	185	164	*77	167	82
23	180	907	310	150	200	470	1,070	185	148	73	457	78
24	172	636	330	145	185	400	858	208	135	72	224	*96
25	165	577	290	135	165	310	1,070	234	173	72	177	129
26	157	541	270	145	155	280	1,210	396	201	66	142	116
27	165	467	290	150	150	290	873	331	184	68	129	104
28	199	487	400	140	145	250	725	256	150	72	204	105
29	212	966	620	140	-	300	668	234	141	76	189	114
30	199	939	700	145	-------	320	668	247	125	67	143	124
31	199	----	540	140	-------	450	-------	238	-------	67	183	----
Total	7,395	16,119	12,669	6,075	4,305	15,410	43,792	10,422	9,013	2,957	6,430	3,306
Mean	239	537	409	196	154	497	1,460	336	300	95.4	207	110
Cfsm	0.869	1.95	1.49	0.713	0.560	1.81	5.31	1.22	1.09	0.347	0.753	0.400
In.	1.00	2.18	1.71	0.82	0.58	2.08	5.92	1.41	1.22	0.40	0.87	0.45

Calendar year 1954: Max 3,410 Min 67 Mean 445 Cfsm 1.62 In. 21.94
Water year 1954-55: Max 3,370 Min 64 Mean 378 Cfsm 1.37 In. 18.64

Peak discharge (base, 2,800 cfs).--Apr. 7 (8:15 a.m.) 2,840 cfs (5.86 ft); Apr. 11 (9:15 a.m.) 2,990 cfs (5.98 ft); Apr. 15 (4 p.m.) 3,650 cfs (6.50 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-18, Dec. 21 to Apr. 4 (doubtful gage-height record Feb. 2-4).

Lake George at Rogers Rock, N. Y.

Location.--Lat 43°48'10", long 73°27'25", on west shore 500 ft north of Hooper's dock at Rogers Rock, Essex County, and 0.4 mile west of Baldwin.

Records available.--July 1913 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 315.93 ft above mean sea level, adjustment of 1912. Prior to Nov. 4, 1929, staff gages at several sites within half a mile of present site at same datum. Nov. 4, 1929, to Sept. 26, 1936, staff gage at present site and datum.

Extremes.--Maximum gage height during year, 4.12 ft June 25; minimum, 2.37 ft Nov. 21.
1913-55: Maximum gage height observed, 5.09 ft Apr. 9, 1936; minimum, 0.64 ft Dec. 20, 1941.

Remarks.--Elevation of lake surface regulated by powerplant and floodgates at Ticonderoga. Lake George has been controlled by a dam at its outlet for more than 100 years.

Mean gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.06	2.57	2.78	3.18	2.72	2.76	3.20	3.88	3.96	3.85	3.52	3.29
2	3.04	2.52	2.78	3.21	2.71	2.77	3.24	3.90	3.98	3.84	3.48	3.25
3	3.04	2.58	2.78	3.20	2.70	2.74	3.32	3.91	4.01	3.84	3.45	3.23
4	3.05	2.74	2.82	3.16	2.68	2.73	3.43	3.91	4.02	3.86	3.46	3.24
5	3.01	2.71	2.79	3.16	2.66	2.75	3.49	3.91	4.00	3.87	3.45	3.21
6	2.98	2.69	2.75	3.19	2.64	2.75	3.56	3.89	4.01	3.89	3.41	3.22
7	2.95	2.68	2.76	3.18	2.68	2.75	3.65	3.87	4.00	3.88	3.45	3.16
8	2.96	2.69	2.80	3.13	2.65	2.73	3.68	3.91	3.98	3.88	3.50	3.11
9	2.94	2.64	2.75	3.12	2.64	2.70	3.68	3.90	3.97	3.87	3.54	3.11
10	2.89	2.65	2.70	3.10	2.63	2.68	3.70	3.86	3.99	3.86	3.55	3.15
11	2.93	2.66	2.70	3.08	2.65	2.73	3.73	3.85	4.00	3.74	3.36	3.07
12	2.92	2.57	2.70	3.07	2.70	2.80	3.78	3.84	3.96	3.69	3.31	3.11
13	2.91	2.58	2.68	3.04	2.69	2.86	3.81	3.82	3.99	3.72	3.33	3.07
14	2.88	2.59	2.66	3.05	2.67	2.87	3.84	3.77	3.96	3.73	3.47	3.12
15	2.87	2.52	2.81	3.04	2.65	2.90	3.92	3.79	3.94	3.70	3.50	3.06
16	2.90	2.53	2.84	3.03	2.65	2.93	3.93	3.78	3.94	3.76	3.47	3.00
17	2.88	2.50	2.83	3.01	2.66	3.00	3.98	3.77	3.92	3.73	3.47	3.03
18	2.84	2.49	2.89	2.97	2.64	2.98	3.96	3.79	3.92	3.73	3.45	3.02
19	2.80	2.50	3.05	2.95	2.63	2.98	3.92	3.75	3.89	3.70	3.42	3.01
20	2.79	2.50	3.04	2.94	2.62	3.00	3.91	3.73	3.90	3.71	3.43	2.97
21	2.75	2.54	3.05	2.91	2.62	3.01	3.91	3.73	3.93	3.70	3.44	2.94
22	2.73	2.63	3.11	2.91	2.60	3.06	3.90	3.73	3.95	3.68	3.40	2.90
23	2.75	2.63	3.09	2.90	2.61	3.16	3.87	3.73	3.94	3.68	3.38	2.89
24	2.69	2.61	3.08	2.89	2.62	3.16	3.82	3.72	3.91	3.56	3.36	2.94
25	2.68	2.63	3.06	2.88	2.60	3.16	3.82	3.74	3.95	3.58	3.37	2.93
26	2.63	2.63	3.12	2.85	2.59	3.18	3.85	3.75	3.91	3.58	3.36	2.90
27	2.68	2.65	3.09	2.86	2.57	3.25	3.85	3.81	3.89	3.54	3.31	2.92
28	2.65	2.67	3.10	2.81	2.56	3.26	3.83	3.85	3.88	3.49	3.29	2.91
29	2.62	2.72	3.08	2.80	-	3.21	3.83	3.84	3.87	3.51	3.28	2.88
30	2.62	2.80	3.19	2.77	-------	3.20	3.86	3.85	3.87	3.52	3.31	2.90
31	2.60	----	3.20	2.74	-------	3.21	-------	3.84	-------	3.52	3.32	-----
Mean	2.84	2.61	2.91	3.00	2.64	2.94	3.74	3.82	3.95	3.72	3.39	3.05

Calendar year 1954: Max 4.39 Min 2.37 Mean 3.26
Water year 1954-55: Max 4.02 Min 2.49 Mean 3.22

Lake George Outlet at Ticonderoga, N. Y.

Location.--Lat 43°50'35", long 73°26'00", at Ticonderoga, Essex County. River channel gage on right bank 250 ft downstream from "C" Mill dam of International Paper Co., 250 ft upstream from Trout Brook, and half a mile downstream from upper dam ("A" Mill dam) of International Paper Co. Turbine gate-opening gage in powerhouse at "C" Mill dam.

Drainage area.--234 sq mi.

Records available.--August 1904 to December 1905, October 1942 to September 1955.

Gage.--Water-stage recorder and concrete control on river channel. Datum of gage is 190.41 ft above mean sea level, datum of 1929. Turbine gate-opening recorder in powerhouse. Prior to Dec. 31, 1905, staff gages at site 2,000 ft upstream at different datum.

Average discharge.--13 years (1942-55), 329 cfs.

Extremes.--Maximum daily discharge during year, 952 cfs Apr. 18; minimum daily, 27 cfs Oct. 10.
1942-55: Maximum daily discharge, 1,290 cfs June 5, 6, 1947; minimum daily, 6.1 cfs July 6, 1952.

Remarks.--Records good except those for periods of no gate-opening record, which are fair. Discharge in tailrace determined from rating for turbine gates developed from discharge measurements. Records represent total discharge from Lake George and include flow in river channel and in tailrace. Diurnal fluctuation at low and medium flow caused by three powerplants. Appreciable regulation by Lake George.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	227	188	238	256	288	572	558	285	267	265	154	192
2	88	242	238	272	286	579	558	306	277	263	181	192
3	31	246	238	298	288	573	564	343	279	114	179	195
4	176	242	237	298	289	573	675	338	276	40	152	a89
5	232	224	140	299	289	573	718	349	187	210	142	a35
6	232	242	187	301	290	573	781	349	252	288	141	a157
7	230	101	244	301	291	573	851	342	308	297	59	154
8	227	193	246	301	292	573	867	272	307	277	139	144
9	90	247	282	175	294	567	875	288	303	277	169	144
10	27	247	332	247	295	537	883	310	298	108	172	142
11	182	248	244	289	299	519	854	307	281	193	172	128
12	229	248	208	283	299	514	894	307	278	243	171	157
13	228	248	218	283	299	519	911	305	281	248	173	165
14	228	99	243	282	299	453	927	303	273	247	123	165
15	232	199	252	286	299	360	943	248	270	242	162	150
16	231	258	243	290	299	360	935	244	276	238	178	145
17	91	258	243	286	299	360	943	222	265	90	181	146
18	169	258	252	290	299	352	952	234	262	174	176	146
19	213	258	170	292	299	349	943	241	266	186	196	145
20	213	237	253	290	282	255	935	248	261	184	195	146
21	232	235	258	290	430	239	943	239	262	182	185	146
22	244	245	258	287	519	251	927	201	272	182	177	146
23	244	245	258	262	525	259	902	264	271	191	177	146
24	97	245	171	281	537	261	886	223	265	72	175	148
25	180	245	43	291	543	260	886	192	267	171	174	a146
26	233	246	43	291	543	261	831	193	263	206	176	a148
27	235	245	216	291	533	251	754	190	255	208	183	a151
28	235	238	258	290	531	409	631	192	252	208	192	199
29	235	243	257	291	-	552	386	160	268	213	192	163
30	235	240	258	283	------	552	331	205	269	209	194	164
31	105	------	257	288	------	558	------	230	------	85	196	------
Total	5,851	6,910	6,985	8,764	10,036	13,567	24,044	8,130	8,111	6,111	5,236	4,494
Mean	189	230	225	283	358	438	801	262	270	197	169	150
Cfsm	-	-	-	-	-	-	-	-	-	-	-	-
In.	-	-	-	-	-	-	-	-	-	-	-	-

Calendar year 1954: Max 988 Min 18 Mean 339 Cfsm 1.45 In. 19.65
Water year 1954-55: Max 952 Min 27 Mean 297 Cfsm 1.27 In. 17.20

a No gate-opening record; discharge estimated from reconstructed gate-opening record based on river channel record, observer's notes, and powerplant records.

Poultney River below Fair Haven, Vt.

Location.--Lat 43°37'40", long 73°18'50", on right bank a third of a mile downstream from Carver Falls, 1.9 miles upstream from Hubbardton River, and 3¼ miles northwest of Fair Haven, Rutland County.

Drainage area.--187 sq mi.

Records available.--October 1928 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 155 ft (from topographic map).

Average discharge.--27 years, 250 cfs.

Extremes.--Maximum discharge during year, 3,080 cfs Mar. 12 (gage height, 12.40 ft); maximum gage height, 13.43 ft Mar. 2 (backwater from ice); minimum daily discharge, 10 cfs Sept. 17.

1928-55: Maximum discharge, 14,800 cfs July 20, 1945 (gage height, 24.36 ft, from high-water mark in gage well), from rating curve extended above 1,900 cfs on basis of computations of peak flow over dam at gage heights 16.10, 21.40, and 24.36 ft; minimum daily, 2.9 cfs Oct. 13, 1935.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by powerplant above station and by Lake Bomoseen.

Revisions (water years).--WSP 1114: 1929(M), 1932-35.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 16 to Dec. 25)

1.6	8.3	3.0	142
1.8	14	4.0	365
2.0	24	7.0	1,190
2.5	71	11.0	2,400

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	155	40	455	367	180	1,000	702	217	146	34	19	39
2	155	*60	365	348	80	1,500	764	224	*214	31	19	25
3	130	50	300	372	110	1,000	848	180	208	31	19	16
4	140	288	243	343	140	600	932	184	127	30	19	12
5	150	252	221	304	145	442	1,140	161	102	43	30	14
6	*145	187	177	297	130	355	1,140	157	76	34	15	36
7	140	162	179	279	120	306	1,210	141	78	49	11	*17
8	149	139	*168	*254	180	310	943	126	73	34	11	27
9	143	142	164	254	160	318	747	156	60	18	11	14
10	132	128	174	241	145	355	710	147	61	19	11	12
11	125	119	179	243	155	1,210	820	128	54	36	11	12
12	111	116	156	230	210	2,070	741	112	35	34	100	48
13	71	102	150	235	225	1,390	626	112	68	18	40	28
14	64	87	179	230	215	960	621	99	63	18	80	28
15	61	95	357	220	185	912	1,040	101	47	18	95	29
16	54	97	306	220	175	1,140	906	81	47	17	*60	11
17	80	89	246	220	160	1,010	713	91	47	17	44	10
18	78	97	382	220	145	705	624	86	47	17	61	15
19	75	95	1,100	125	155	582	576	80	17	46	60	61
20	75	91	646	90	80	*523	593	68	58	33	42	104
21	74	201	422	95	120	565	514	67	56	32	19	97
22	72	360	384	140	150	481	487	51	33	32	41	103
23	70	257	330	190	500	514	444	58	55	16	33	103
24	68	235	295	205	1,000	449	306	57	33	16	34	37
25	66	197	246	185	800	429	*375	77	54	16	45	37
26	65	215	193	180	600	330	495	122	47	16	43	83
27	70	184	231	190	450	268	339	88	57	16	21	110
28	80	197	293	185	500	244	332	87	*47	16	21	103
29	60	456	534	185	-	300	313	62	34	19	24	99
30	19	612	492	135	-------	367	250	172	34	19	22	102
31	50	-- ---	416	100	-------	540	-------	126	--- ---	19	22	- -- -
Total	2,927	5,350	9,983	6,882	7,215	21,175	20,251	3,618	2,078	794	1,083	1,432
Mean	94.4	178	322	222	258	683	675	117	69.3	25.6	34.9	47.7
Cfsm	0.505	0.952	1.72	1.19	1.38	3.65	3.61	0.626	0.371	0.137	0.187	0.255
In.	0.58	1.06	1.99	1.37	1.43	4.21	4.03	0.72	0.41	0.16	0.22	0.28

Calendar year 1954: Max 1,700 Min 19 Mean 304 Cfsm 1.63 In. 22.03
Water year 1954-55: Max 2,070 Min 10 Mean 227 Cfsm 1.21 In. 16.46

Peak discharge (base, 2,600 cfs).--Mar. 12 (1 to 2 a.m.) 3,080 cfs (12.40 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-6, Oct. 17 to Nov. 3, Feb. 4-6, 13, 14, Aug. 1-16; discharge estimated on basis of 5 discharge measurements, weather records, recorded range in stage, powerplant records, and records for Otter Creek at Center Rutland. Stage-discharge relation affected by ice Jan. 12 to Mar. 4, Mar. 8.

East Creek at Rutland, Vt.

Location.--Lat 43°37'40", long 72°59'20", on left bank on grounds of Rutland Country Club, at Rutland, Rutland County, 280 ft downstream from Grove Street Bridge and 2 miles upstream from mouth.
Drainage area.--51.1 sq mi.
Records available.--August 1940 to September 1955.
Gage.--Water-stage recorder. Altitude of gage is 570 ft (from topographic map).
Average discharge.--15 years, 102 cfs (adjusted for diversion and storage).
Extremes.--Maximum discharge during year, 1,250 cfs Aug. 13 (gage height, 3.97 ft), from rating curve extended above 670 cfs on basis of computation of flow over dam and slope-area determination at gage height 7.10 ft; minimum daily, 12 cfs June 19.
1940-55: Maximum discharge, 36,500 cfs June 3, 1947 (gage height, 20.3 ft, from high-water mark in gage house), mean of two slope-area determinations, caused by failure of East Pittsford Dam 5.8 miles upstream; minimum daily, 3.1 cfs Nov. 8, 1947.
Remarks.--Records excellent. Diversion above station from Mendon Brook for municipal supply of Rutland. Flow regulated by powerplants and Chittenden Reservoir (usable capacity, 819,800,000 cu ft); prior to June 3, 1947, also regulated by East Pittsford Reservoir (usable capacity, 150,000,000 cu ft).

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 25				May 26 to Sept. 30			
1.1	20	2.0	220	1.0	10	1.7	124
1.2	29	2.5	425	1.1	16	2.0	220
1.4	56	3.0	655	1.2	26	2.3	337
1.7	124			1.4	55		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	123	124	135	67	101	263	146	74	203	79	91	74
2	34	92	131	75	94	201	180	139	*100	50	126	45
3	34	*471	116	154	96	104	158	117	79	32	89	23
4	117	283	46	136	98	101	179	125	53	16	97	26
5	114	183	52	128	97	67	174	115	37	71	107	14
6	123	105	96	132	24	50	240	108	54	150	59	*67
7	124	60	112	123	137	123	270	64	43	59	26	*77
8	110	134	110	*128	120	115	206	70	45	80	65	76
9	69	109	*108	30	106	126	132	123	32	30	74	76
10	20	103	115	125	121	164	225	54	79	18	*82	29
11	127	101	58	118	134	376	353	58	30	102	208	31
12	120	103	31	112	142	284	266	54	28	85	73	68
13	117	44	110	111	*42	177	217	68	70	94	313	69
14	115	39	105	116	113	193	374	51	56	94	237	65
15	112	102	251	109	112	195	620	28	45	84	66	76
16	57	88	151	32	101	263	394	57	37	45	34	43
17	28	100	122	117	108	203	238	51	40	29	173	30
18	107	101	207	107	106	*156	231	33	24	87	62	14
19	102	106	256	104	96	102	326	42	12	73	49	42
20	119	113	179	103	41	73	284	41	73	70	36	60
21	121	249	139	105	114	137	242	32	101	77	31	47
22	119	232	131	96	142	114	238	25	70	86	48	39
23	33	157	138	36	222	121	220	73	86	62	49	47
24	23	140	140	114	152	85	*133	68	116	49	50	43
25	112	86	69	103	85	122	239	263	27	102	37	25
26	103	120	39	94	52	74	235	138	31	90	45	39
27	134	82	145	110	52	40	196	70	74	86	30	34
28	131	60	142	100	108	101	172	47	*79	102	20	68
29	135	192	217	97	-	89	157	67	82	98	60	63
30	52	150	175	28	--------	101	117	153	74	38	63	70
31	46	--------	121	96	--------	121	--------	79	--------	33	75	--------
Total	2,881	4,029	3,947	3,106	2,916	4,441	7,162	2,487	1,880	2,171	2,575	1,480
Mean	92.9	134	127	100	104	143	239	80.2	62.7	70.0	83.1	49.3
(†)	-39.7	+20.5	-3.58	-31.8	-40.2	+22.4	+117	+21.7	-10.4	-36.0	-7.02	-23.2
Adjusted for diversion and change in reservoir contents												
Mean	53.2	155	124	68.4	63.9	166	356	102	52.3	34.0	76.0	26.1
Cfsm	1.04	3.03	2.43	1.34	1.25	3.25	6.97	2.00	1.02	0.665	1.49	0.511
In.	1.20	3.38	2.79	1.54	1.30	3.74	7.78	2.30	1.14	0.77	1.72	0.57

	Observed			Adjusted		
Calendar year 1954:	Max 475	Min 17	Mean 119	Mean 128	Cfsm 2.50	In. 34.06
Water year 1954-55:	Max 620	Min 12	Mean 107	Mean 106	Cfsm 2.07	In. 28.23

* Discharge measurement made on this day.
† Change in contents in Chittenden Reservoir and diversion from Mendon Brook for municipal supply of Rutland, equivalent in cubic feet per second. Records furnished by Central Vermont Public Service Corp. and city of Rutland.

Otter Creek at Center Rutland, Vt.

Location.--Lat 43°36'15", long 73°00'50", on right bank at downstream side of bridge on U. S. Highway 4 at Center Rutland, Rutland County, 200 ft downstream from dam, 1.2 miles downstream from East Creek, and 1½ miles west of Rutland.

Drainage area.--307 sq mi.

Records available.--May 1928 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 475.80 ft above mean sea level, datum of 1929. Prior to July 22, 1929, chain gage at same site and datum.

Average discharge.--27 years, 556 cfs.

Extremes.--Maximum discharge during year, 4,390 cfs Apr. 16 (gage height, 7.04 ft); minimum daily, 96 cfs Sept. 18.
1928-55: Maximum discharge, 13,700 cfs Sept. 22, 1938 (gage height, 12.45 ft), from rating curve extended above 3,500 cfs on basis of computation of peak flow over dam; minimum daily, 45 cfs Sept. 21, 1947.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow regulated by powerplants and Chittenden Reservoir on East Creek (usable capacity, 819,800,000 cu ft); prior to June 3, 1947, also regulated by East Pittsford Reservoir (usable capacity, 150,000,000 cu ft).

Revisions (water years).--WSP 1084: 1929.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 16				Apr. 17 to Sept. 30			
0.9	159	3.0	990	0.5	92	3.0	935
1.4	275	4.0	1,700	1.0	179	4.0	1,560
2.0	461	5.0	2,460	1.5	303	6.0	3,320
2.5	680	7.0	4,350	2.0	461		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	311	361	874	770	250	1,380	958	830	896	220	153	278
2	234	*315	720	710	230	1,780	1,340	820	734	203	224	214
3	230	1,650	598	824	220	1,390	1,650	719	544	218	176	157
4	324	3,110	444	715	215	834	1,280	677	408	171	164	153
5	321	2,240	483	580	210	621	1,350	620	347	198	178	135
6	*308	1,210	393	607	169	583	1,620	553	330	427	207	*178
7	306	811	436	566	366	586	2,120	459	280	329	113	188
8	283	766	*461	*452	448	510	2,000	487	259	256	182	181
9	241	643	471	340	381	506	1,410	535	236	170	156	177
10	190	554	521	486	378	693	1,640	418	260	141	161	116
11	296	503	466	395	565	1,760	2,460	377	201	209	705	123
12	306	493	376	370	732	2,520	2,770	341	201	196	895	190
13	286	390	445	375	*466	2,160	2,370	341	327	192	1,110	177
14	270	359	406	355	460	1,460	2,200	312	381	189	2,550	168
15	264	422	1,310	325	418	1,190	3,050	269	289	182	2,160	174
16	334	374	1,170	301	377	1,540	4,190	274	240	154	852	139
17	361	382	734	371	362	1,640	3,170	260	220	142	936	115
18	346	412	1,020	335	356	1,160	2,190	238	194	219	562	96
19	311	447	2,020	328	339	*918	1,960	231	159	221	510	124
20	328	654	1,480	315	281	725	2,070	221	198	179	407	141
21	324	1,650	932	285	359	834	1,920	195	242	172	351	125
22	304	2,050	678	285	500	696	1,640	189	238	174	289	114
23	212	1,490	623	240	1,070	675	1,530	227	300	147	337	119
24	199	1,010	725	305	1,380	588	*1,340	221	318	124	345	191
25	268	802	558	285	1,070	622	1,280	829	394	191	227	223
26	258	758	404	275	692	565	1,440	1,020	367	173	233	179
27	289	648	587	285	588	481	1,300	484	*393	166	208	151
28	345	612	610	265	678	467	1,150	343	293	194	199	197
29	321	1,020	1,500	260	-	486	979	358	261	185	222	218
30	292	1,050	1,550	205	------	529	870	935	230	126	212	200
31	327	-----	1,070	255	-----	714	-----	518	------	98	279	------
Total	8,989	27,186	24,065	12,465	13,560	30,613	55,247	14,301	9,740	5,966	15,303	4,941
Mean	290	906	776	402	484	988	1,842	461	325	192	494	165
Cfsm	0.945	2.95	2.53	1.31	1.58	3.22	6.00	1.50	1.06	0.625	1.61	0.537
In.	1.09	3.29	2.92	1.51	1.64	3.71	6.69	1.73	1.18	0.72	1.85	0.60
(†)	-44.3	+16.3	-7.9	-36.3	-44.8	+18.0	+113	+17.4	-15.0	-40.8	-11.9	-27.9

Calendar year 1954: Max 3,110 Min 102 Mean 744 Cfsm 2.42 In. 32.90 Ac-ft
Water year 1954-55: Max 4,190 Min 96 Mean 609 Cfsm 1.98 In. 26.93 Ac-ft

Peak discharge (base, 3,400 cfs).--Apr. 16 (10:30 to 11:30 a.m.) 4,390 cfs (7.04 ft).
* Discharge measurement made on this day.
† Change in contents in Chittenden Reservoir, equivalent in cubic feet per second, furnished by Central Vermont Public Service Corp.; for calendar year 1954, +4.9 cfs; for water year 1955, -5.3 cfs.

Note.--Stage-discharge relation affected by ice Jan. 5, 11-15, 18, 20-22, Jan. 24 to Feb. 5, Mar. 8.

Otter Creek at Middlebury, Vt.

Location.--Lat 44°00'45", long 73°10'05", on right bank 150 ft upstream from highway bridge in Middlebury, Addison County, and 3½ miles downstream from Middlebury River.

Drainage area.--628 sq mi.

Records available.--April 1903 to April 1907, October 1910 to January 1920, October 1928 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 335.75 ft above mean sea level, datum of 1929. Apr. 1, 1903, to Apr. 30, 1907, and Oct. 5, 1910, to Jan. 31, 1920, chain gage at site 1,800 ft upstream at datum 10 ft lower, and Oct. 1, 1928, to Oct. 17, 1933, at present datum.

Average discharge.--39 years (1903-6, 1910-19, 1928-55), 985 cfs.

Extremes.--Maximum discharge during year, 4,150 cfs Apr. 21 (gage height, 5.62 ft); maximum gage height, 5.64 ft Apr. 21 (affected by powerplant shutdown); minimum daily discharge, 201 cfs Aug. 1.

1903-7, 1910-20, 1928-55: Maximum discharge, 11,000 cfs Mar. 20, 21, 1936 (gage height, 10.3 ft); minimum daily, 100 cfs Dec. 28, 1914.

Maximum discharge known, 13,600 cfs Nov. 4, 1927 (gage height, 13.3 ft, present datum, at chain-gage site 1,800 ft upstream), from rating curve extended above 9,000 cfs by logarithmic plotting.

Remarks.--Records excellent except those for periods of ice effect or backwater from aquatic vegetation and/or debris, which are fair. Some regulation by Chittenden Reservoir (capacity, 819,800,000 cu ft) on East Creek.

Revisions (water years).--WSP 434: 1903-4. WSP 684: 1913(M), drainage area. WSP 1114: 1913. WSP 1207: 1929, 1931.

Rating table, water year 1954-55, except periods of ice effect or backwater from aquatic vegetation or debris (gage height, in feet, and discharge, in cubic feet per second)

1.2	188	3.0	1,300
1.5	281	4.0	2,280
2.0	555	6.0	4,610

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	548	496	1,730	1,930	b380	1,870	1,750	2,490	*1,500	385	201	430
2	542	503	1,620	1,700	b370	2,170	2,020	2,270	1,620	369	274	413
3	484	724	1,430	1,500	b360	2,090	2,200	2,060	1,400	436	298	374
4	436	*1,810	1,160	1,430	b350	2,100	2,240	1,790	1,100	391	285	311
5	576	1,930	b930	1,290	b380	2,110	2,380	1,520	858	320	267	236
6	562	1,980	b770	1,200	424	2,070	2,520	1,320	730	529	252	226
7	562	2,000	b690	*b1,100	408	1,960	2,660	1,140	674	737	256	*294
8	555	1,940	b785	b1,000	b620	1,820	2,650	1,010	583	632	259	298
9	516	1,770	*865	b900	b750	1,570	2,650	1,060	529	430	259	298
10	436	1,520	910	b810	b750	1,470	2,750	1,070	503	339	249	274
11	419	1,210	955	b770	758	2,040	2,900	955	454	281	242	242
12	548	985	b865	b730	b1,090	2,310	2,940	842	396	315	734	285
13	555	835	765	b730	1,220	2,370	2,930	751	396	320	1,020	324
14	542	688	b760	b740	985	2,520	3,020	716	490	311	1,440	307
15	490	639	1,020	b680	858	2,970	3,410	653	604	274	1,700	285
16	472	667	1,520	639	814	3,580	3,480	597	529	290	1,800	281
17	490	646	1,590	625	758	3,450	3,410	604	430	294	1,740	274
18	548	660	1,540	b640	709	*3,290	3,650	562	364	245	1,590	217
19	536	702	2,040	b630	667	3,160	3,880	536	320	391	1,230	211
20	562	730	2,090	b540	618	2,970	4,130	510	274	374	925	223
21	542	1,060	b2,050	b530	590	2,740	4,130	466	349	320	716	223
22	516	1,780	b1,850	b520	779	2,510	4,010	419	454	281	590	223
23	478	1,910	b1,800	b510	1,350	2,280	3,880	369	*454	252	472	211
24	413	1,950	b1,700	b490	1,770	2,040	*3,700	454	478	252	522	230
25	329	1,910	b1,550	b480	b1,790	1,720	3,540	503	529	239	536	263
26	402	1,770	b1,400	b500	1,770	1,550	3,400	1,270	590	277	454	294
27	442	1,570	b1,300	b500	1,710	1,310	3,190	1,430	555	290	391	298
28	516	1,330	1,240	b480	1,630	1,040	3,020	1,010	569	294	349	302
29	542	1,320	b1,550	b460	-	1,020	2,830	723	478	270	324	294
30	529	1,680	b1,750	b440	------	1,040	2,690	841	408	270	354	320
31	484	-----	1,970	b390	-----	1,380	-----	1,180	------	242	442	------
Total	15,572	38,715	42,195	24,884	24,658	66,520	91,960	31,121	18,618	10,650	20,171	8,461
Mean	502	1,290	1,361	803	881	2,146	3,065	1,004	621	344	651	282
Cfsm	0.799	2.05	2.17	1.28	1.40	3.42	4.88	1.60	0.989	0.548	1.04	0.449
In.	0.92	2.29	2.50	1.47	1.46	3.94	5.45	1.84	1.10	0.63	1.19	0.50
(†)	-44.3	+16.3	-7.9	-36.3	-44.8	+18.0	+113	+17.4	-15.0	-40.8	-11.9	-27.9

Calendar year 1954: Max 3,600 Min 223 Mean 1,268 Cfsm 2.02 In. 27.42
Water year 1954-55: Max 4,130 Min 201 Mean 1,078 Cfsm 1.72 In. 23.29

* Discharge measurement made on this day.

† Change in contents in Chittenden Reservoir, equivalent in cubic feet per second, furnished by Central Vermont Public Service Corp; for calendar year 1954, +4.9 cfs; for water year 1955, -5.3 cfs.

b Stage-discharge relation affected by ice. Backwater from aquatic vegetation and/or debris Oct. 1 to Dec. 20, June 2 to Sept. 30.

Jail Branch at East Barre, Vt.

Location.--Lat 44°09'40", long 72°27'00", on right bank 75 ft downstream from highway bridge, at East Barre, Washington County, 0.6 mile downstream from East Barre Detention Reservoir, and 3.9 miles upstream from mouth.
Drainage area.--40.4 sq mi.
Records available.--August 1920 to September 1923, November 1933 to September 1955. Prior to October 1922, published as Jail Brook at East Barre.
Gage.--Water-stage recorder. Datum of gage is 1,071.59 ft above mean sea level (levels by Corps of Engineers). Aug. 14, 1920, to Sept. 30, 1923, staff gage at site a quarter of a mile upstream at different datum. Nov. 1, 1933, to Jan. 25, 1935, staff gage at present site and datum.
Average discharge.--25 years, 57.3 cfs (adjusted for storage).
Extremes.--Maximum discharge during year, 363 cfs Apr. 16 (gage height, 1.27 ft); maximum gage height, 2.29 ft Mar. 2 (ice jam); minimum discharge not determined.
1920-23, 1933-55: Maximum discharge, 1,820 cfs Oct. 1, 1920 (gage height, 9.50 ft, from graph based on gage readings, site and datum then in use), from rating curve extended above 900 cfs; minimum, 0.1 cfs Aug. 18, 1950, Aug. 3, 4, 31, Sept. 1, 3, 1953.
Remarks.--Records good except those below 10 cfs and those for periods of ice effect, no gage-height record, or backwater from leaves, which are fair. Discharge affected by East Barre Detention Reservoir since 1935 (see p. 364). Diurnal fluctuation at low flow caused by mill above station. Diversion from reservoir on Orange Brook, a tributary above station, for city of Barre.
Revisions (water years).--WSP 564: 1922. WSP 1034: Drainage area. WSP 1237: 1921(M).

Rating tables, water year 1954-55, except periods of ice effect and backwater from leaves (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 19			Dec. 20 to Sept. 30		
-0.4	13	-1.84	0.2	-0.9	8.2
-.3	16	-1.8	.4	-.6	19
0.0	36	-1.7	.7	-.2	45
.3	72	-1.5	1.5	.2	92
.7	154	-1.3	2.2	.7	187
1.2	309	-1.2	2.8	1.3	375
		-1.1	4.1		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	41	120	45	11	45	114	279	212	2.9	0.6	2.5
2	17	32	*92	43	11	120	137	260	153	2.6	.5	2.0
3	19	101	70	40	10	80	146	191	85	2.9	.4	1.3
4	41	209	50	37	10	45	114	106	40	2.7	.3	1.2
5	61	97	40	*35	10	38	154	102	33	2.6	.2	1.3
6	31	61	35	35	10	36	226	91	28	7.5	.2	1.3
7	41	47	32	32	11	33	291	77	21	7.5	.4	1.2
8	35	41	30	30	12	30	291	124	18	3.8	1.8	1.1
9	30	38	30	27	14	28	275	200	16	3.1	1.1	1.1
10	34	27	30	25	*16	30	285	118	13	2.7	.6	1.0
11	46	26	28	23	18	110	312	82	14	2.2	1.4	1.2
12	48	26	26	22	20	269	312	66	18	1.8	2.5	1.5
13	34	24	25	21	22	121	312	59	25	*1.7	6.0	1.9
14	26	22	23	20	20	65	318	55	27	1.5	99	1.3
15	22	22	50	20	18	56	348	45	23	1.3	19	1.1
16	60	21	40	20	17	95	352	41	14	1.8	7.3	1.5
17	45	22	35	18	17	*86	336	34	10	3.3	6.4	1.3
18	38	32	120	17	17	62	312	27	8.0	1.9	9.1	1.1
19	40	35	250	17	17	50	318	27	6.7	2.2	6.4	1.0
20	25	76	130	15	18	50	340	26	6.0	1.8	4.5	.9
21	17	183	70	15	19	43	*344	23	18	1.5	3.1	.9
22	15	284	55	15	38	42	340	21	*20	1.1	2.6	.8
23	15	253	46	16	84	41	336	19	9.1	1.2	2.8	.8
24	15	211	41	16	130	36	326	*18	6.7	2.1	5.6	1.8
25	14	153	36	14	70	36	326	65	8.0	1.4	3.8	2.3
26	*15	131	32	13	45	34	318	123	7.8	.8	2.7	2.1
27	21	137	31	13	35	36	318	45	6.4	.7	2.7	1.9
28	30	119	60	13	31	32	301	29	5.0	1.1	3.2	2.2
29	33	147	180	12	-	29	298	26	4.0	1.3	2.5	2.6
30	59	106	60	11	-------	31	295	52	3.3	1.1	*2.4	2.2
31	62	-------	50	11	-------	60	-------	35	-------	.8	2.5	-------
Total	1,007	2,724	1,917	691	751	1,869	8,495	2,466	837.0	70.9	201.6	44.4
Mean	32.5	90.8	61.8	22.3	26.8	60.3	283	79.5	27.9	2.29	6.50	1.48
(†)	+0.35	+0.82	-0.73	-0.46	+0.47	+0.27	+17.4	-15.4	-2.46	-0.06	+0.04	0

Adjusted for change in contents in East Barre Detention Reservoir

Mean	32.8	91.6	61.1	21.8	27.3	60.6	301	64.1	25.4	2.23	6.54	1.48
Cfsm	0.812	2.27	1.51	0.540	0.676	1.50	7.45	1.59	0.629	0.055	0.162	0.037
In.	0.94	2.53	1.74	0.62	0.70	1.73	8.30	1.83	0.70	0.06	0.19	0.04

	Observed			Adjusted		
Calendar year 1954:	Max 332	Min 4.0	Mean 72.8	Mean 72.8	Cfsm 1.80	In. 24.47
Water year 1954-55:	Max 352	Min 0.2	Mean 57.7	Mean 57.7	Cfsm 1.43	In. 19.38

* Discharge measurement made on this day.
† Change in contents in East Barre Detention Reservoir, equivalent in cubic feet per second.
Note.--No gage-height record Dec. 8 to Jan. 4, July 11, 12, 14-16, 18-25, July 27 to Aug. 13, Aug. 31 to Sept. 23; discharge estimated on basis of weather records and records for East Barre Detention Reservoir, Dog River at Northfield Falls, North Branch Winooski River at Wrightsville, and Wells River at Wells River. Stage-discharge relation affected by ice Nov. 10-16, Dec. 1-7, Jan. 5 to Mar. 11, Mar. 14-31, and during most of period of no gage-height record Dec. 8 to Jan. 4. Backwater from leaves Sept. 24-30.

North Branch Winooski River at Wrightsville, Vt.

Location.--Lat 44°18'00", long 72°34'45", on right bank at Wrightsville, Washington County, three-quarters of a mile downstream from Wrightsville Detention Reservoir and 3½ miles upstream from mouth.
Drainage area.--69.2 sq mi.
Records available.--October 1933 to September 1955.
Gage.--Water-stage recorder and concrete control. Datum of gage is 550.53 ft above mean sea level (levels of Corps of Engineers). Prior to Nov. 21, 1934, staff gage at same site and datum.
Average discharge.--22 years, 133 cfs (adjusted for storage).
Extremes.--Maximum discharge during year, 825 cfs Apr. 20 (gage height, 3.75 ft); minimum daily, 1.7 cfs Aug. 5.
1933-55: Maximum discharge, 2,170 cfs Apr. 12, 1934 (gage height, 6.53 ft), from rating curve extended above 920 cfs; minimum daily, 0.2 cfs Aug. 13, 1941.
Maximum discharge known, 17,200 cfs Nov. 3, 1927, by computation of peak flow over dam three-quarters of a mile above gage.
Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Discharge affected since 1935 by Wrightsville Detention Reservoir (see p. 364). Diurnal fluctuation at low flow caused by small mill above station.
Revisions (water years).--WSP 1237: 1934-39.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.08	1.7	1.0	59
.1	2.2	1.5	132
.3	7.9	2.0	224
.5	15	3.0	510
.7	27	3.8	850

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	94	174	140	31	92	180	632	150	12	3.5	*26
2	80	83	*146	120	29	125	267	596	193	11	2.7	21
3	107	90	119	105	27	115	306	559	137	13	2.5	18
4	416	208	94	96	24	105	332	510	92	11	2.0	16
5	453	243	92	*93	23	98	386	454	66	10	1.7	13
6	413	196	76	92	22	90	478	383	48	18	6.5	13
7	365	154	73	88	22	85	580	290	37	22	12	11
8	298	127	72	82	23	80	600	194	31	17	36	10
9	224	112	72	75	26	78	588	165	26	13	29	9.5
10	171	98	73	70	*25	77	600	137	21	11	18	9.2
11	198	86	73	67	28	130	664	110	20	9.2	15	7.6
12	256	82	68	65	33	340	700	94	20	8.5	16	13
13	232	75	66	63	60	392	705	80	24	*7.9	22	18
14	180	68	62	61	55	350	705	73	44	6.4	180	16
15	144	67	78	59	50	292	746	67	60	4.9	153	14
16	127	59	106	59	47	*263	780	59	46	5.2	149	12
17	110	58	94	57	44	*250	780	52	32	6.7	206	11
18	95	62	102	53	42	195	770	47	22	5.5	335	10
19	85	78	254	50	40	160	790	43	18	6.1	303	9.5
20	82	105	256	48	39	140	815	42	15	5.5	206	7.6
21	75	276	185	46	39	130	*810	39	14	6.1	121	7.6
22	68	444	135	45	50	124	795	35	*21	4.9	79	7.6
23	62	422	115	46	80	118	795	32	20	5.8	114	6.1
24	57	359	98	44	160	110	780	*30	23	4.9	a130	7.3
25	52	284	90	41	125	100	765	*30	35	3.9	a63	13
26	*49	218	86	37	110	100	750	59	47	3.0	a53	13
27	65	165	80	37	100	96	732	63	38	4.6	a45	13
28	*117	140	85	36	95	89	710	49	26	4.6	a38	15
29	108	158	169	33	-	85	682	40	18	4.1	a32	19
30	101	193	208	33	--------	85	660	38	15	4.4	a28	19
31	101	--------	175	32	--------	110	--------	36	--------	4.4	*a26	--------
Total	4,960	4,804	3,576	1,973	1,449	4,604	19,251	5,038	1,359	254.6	2,427.9	386.0
Mean	160	160	115	63.6	51.8	149	642	163	45.3	8.21	78.3	12.9
(†)	+0.56	+2.57	-0.41	-3.98	+2.11	+0.95	+71.3	-71.6	-0.79	-0.62	+0.99	-0.29
Adjusted for change in contents in Wrightsville Detention Reservoir												
Mean	161	163	115	59.7	53.9	149	713	90.9	44.5	7.60	79.3	12.6
Cfsm	2.33	2.36	1.66	0.863	0.779	2.15	10.3	1.31	0.643	0.110	1.15	0.182
In.	2.67	2.62	1.91	0.99	0.81	2.49	11.50	1.51	0.72	0.13	1.32	0.20

	Observed			Adjusted			
Calendar year 1954:	Max 845	Min 8.1	Mean 158	Mean 159	Cfsm 2.30	In. 31.14
Water year 1954-55:	Max 815	Min 1.7	Mean 137	Mean 137	Cfsm 1.98	In. 26.87

* Discharge measurement made on this day.
† Change in contents in Wrightsville Detention Reservoir, equivalent in cubic feet per second.
a No gage-height record; discharge estimated on basis of 1 discharge measurement, weather records, recorded range in stage, and records for Wrightsville Detention Reservoir.
Note.--Stage-discharge relation affected by ice Dec. 6-8, 11-14, 17, 21-27, Dec. 31 to Mar. 12, Mar. 17-21, 25, 26, 29, 30.

Reservoirs in Winooski River basin above Montpelier, Vt.

East Barre Detention Reservoir.--Lat 44°09'20", long 72°26'40", at reservoir on Jail Branch at East Barre, Washington County, 4½ miles upstream from mouth of Jail Branch. Staff gage read once daily. Datum of gage is 1,127.9 ft above mean sea level (levels by Corps of Engineers). Drainage area, 38.8 sq mi. Records available, March and April 1936, September 1938 to September 1955. Maximum gage height observed during year, 23.7 ft Apr. 20, 21; minimum observed, 0.1 ft Aug. 5, 6. Maximum gage height observed during period 1936, 1938-55, 36.0 ft Mar. 22, 1936; minimum observed, 0.1 ft several days in August and September 1939, Aug. 4, Sept. 1, 4, 5, 1953, Aug. 5, 6, 1955.

Reservoir is formed by earth-fill dam completed by Corps of Engineers in 1935 for flood control. Capacity of reservoir, 506,000,000 cu ft between gage heights 0.0 ft (bottom of outlet opening) and 37.1 ft (crest of spillway). Dam has no gates; below gage height 37.1 ft, outflow from reservoir is dependent on capacity of outlet opening, 4 ft square, near base of dam. Gage read by employee of State of Vermont Water Conservation Board.

Wrightsville Detention Reservoir.--Lat 44°18'35", long 72°34'30", at reservoir on North Branch Winooski River at Wrightsville, Washington County, a third of a mile downstream from Long Meadow Brook and 4¼ miles upstream from mouth. Staff gage read irregularly prior to Feb. 28, once daily thereafter. Datum of gage is 612.75 ft above mean sea level (levels by Corps of Engineers). Drainage area, 66.5 sq mi. Records available, March and April 1936, September 1938 to September 1955. Maximum gage height observed during year, 52.5 ft Apr. 21; minimum observed, 0.3 ft July 25. Maximum gage height during period 1936, 1938-55, 63.7 ft Mar. 22, 1936, from graph based on gage readings; minimum observed, 0.2 ft Aug. 17, 1949, and Aug. 17-19, 1950.

Reservoir is formed by earth-fill dam completed by Corps of Engineers in 1935 for flood control. Capacity of reservoir, 873,500,000 cu ft between gage heights 0.0 ft (bottom of outlet opening) and 72.25 ft (crest of spillway). Dam has no gates; below gage height 72.25 ft, outflow from reservoir is dependent on capacity of outlet opening, 5½ ft square, near base of dam. Gage read by employee of State of Vermont Water Conservation Board.

Month-end gage height and contents, water year October 1954 to September 1955

Date	East Barre Detention Reservoir			
	Gage height (feet)†	Contents (millions of cubic feet)	Change in contents	
			Millions of cubic feet	Equivalent, cubic feet per second
Sept.30	2.0	1.11	-	-
Oct. 31	3.2	2.04	+0.93	+0.35
Nov. 30	5.3	4.17	+2.13	+.82
Dec. 31	3.4	2.21	-1.96	-.73
Calendar year 1954	-	-	+1.53	+.05
Jan. 31	1.8	.99	-1.22	-.46
Feb. 28	3.3	2.12	+1.13	+.47
Mar. 31	4.1	2.84	+.72	+.27
Apr. 30	14.9	47.9	+45.06	+17.4
May 31	7.0	6.62	-41.28	-15.4
June 30	.5	.25	-6.37	-2.46
July 31	.2	.10	-.15	-.06
Aug. 31	.4	.20	+.10	+.04
Sept.30	.4	.20	0	0
Water year 1954-55	-	-	-.91	-.03
Date	Wrightsville Detention Reservoir			
Sept.30	3.1	7.85	-	-
Oct. 31	3.6	9.35	+1.50	+0.56
Nov. 30	5.6	16.0	+6.65	+2.57
Dec. 31	5.3	14.9	-1.10	-.41
Calendar year 1954	-	-	+10.65	+.34
Jan. 31	1.8	4.25	-10.65	-3.98
Feb. 28	3.6	9.35	+5.10	+2.11
Mar. 31	4.4	11.9	+2.55	+.95
Apr. 30	31.7	196.6	+184.7	+71.3
May 31	2.0	4.80	-191.8	-71.6
June 30	1.2	2.75	-2.05	-.79
July 31	.5	1.10	-1.65	-.62
Aug. 31	1.6	3.75	+2.65	+.99
Sept.30	1.3	3.00	-.75	-.29
Water year 1954-55	-	-	-4.85	-.15

† Gage height at 12 p.m. determined from graph based on engineer's or observer's readings and records for station on river below reservoir.

Winooski River at Montpelier, Vt.

Location.--Lat 44°15'25", long 72°35'35", on right bank 0.4 mile upstream from Dog River and 1 mile downstream from depot at Montpelier, Washington County.
Drainage area.--397 sq mi.
Records available.--May 1909 to September 1923, August 1928 to September 1955.
Gage.--Water-stage recorder. Datum of gage is 499.99 ft above mean sea level, datum of 1929. Prior to June 16, 1914, chain gage at site 0.9 mile upstream at different datum. June 16 to July 3, 1914, staff gage at present site and datum.
Average discharge.--36 years (1914-23, 1928-55), 592 cfs (adjusted for storage since October 1938).
Extremes.--Maximum discharge during year, 5,130 cfs Apr. 6 (gage height, 9.36 ft); minimum daily, 57 cfs Aug. 6.
1909-23, 1928-55: Maximum discharge, 20,200 cfs Apr. 7, 1912 (gage height, about 16.7 ft, present datum), from rating curve extended above 6,900 cfs by logarithmic plotting; minimum daily, 17 cfs Sept. 3, 1933.
Maximum discharge known, 57,000 cfs Nov. 3, 1927 (gage height, 27.1 ft), from rating curve extended above 6,900 cfs by logarithmic plotting.
Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow regulated by several small powerplants above station, by Peacham Pond, and since 1926, by Mollys Falls Reservoir (combined usable capacity, 492,000,000 cu ft), which regulate runoff from 24 sq mi, and by East Barre and Wrightsville Dentention Reservoirs since 1935 (see preceding page).
Revisions (water years).--WSP 434: 1915. WSP 894: Drainage area.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.9	51	4.5	655
3.2	105	5.0	1,020
3.5	189	7.0	2,900
4.0	378	9.0	4,760

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	335	450	*925	660	270	640	1,300	1,670	1,710	152	62	167
2	339	425	765	584	240	900	1,640	1,530	1,230	130	67	143
3	396	651	648	578	250	740	1,630	1,470	688	125	93	117
4	1,430	1,250	500	596	200	640	1,720	1,260	480	110	81	88
5	*1,280	964	500	*530	205	580	2,210	1,220	383	111	74	94
6	980	734	400	530	185	520	3,310	1,120	323	139	57	120
7	910	596	430	514	210	470	3,780	948	307	140	76	137
8	769	508	440	440	250	440	2,860	918	268	131	116	128
9	642	502	445	400	240	420	2,400	1,210	250	122	136	129
10	542	460	470	420	230	520	3,010	918	243	99	116	95
11	688	416	470	410	260	940	3,680	714	229	107	100	78
12	850	369	410	410	*300	1,750	3,400	616	229	111	99	114
13	714	378	390	400	310	1,300	2,910	554	222	102	112	184
14	590	344	380	380	320	1,120	3,050	519	339	99	656	157
15	514	331	650	370	320	*1,120	4,180	465	344	88	450	156
16	560	356	707	360	310	1,250	3,940	425	276	78	387	154
17	480	331	500	330	310	1,250	3,170	416	236	126	465	130
18	420	378	856	360	310	900	2,730	383	199	82	858	90
19	425	425	1,870	350	310	812	3,490	369	164	110	655	95
20	411	556	1,140	340	290	740	*3,720	361	170	102	413	91
21	378	1,580	800	350	290	707	2,900	361	186	92	287	88
22	339	1,830	700	360	400	674	*2,700	261	*309	122	225	94
23	327	1,380	600	300	640	668	2,590	272	250	92	549	124
24	311	1,130	600	290	920	648	2,300	268	215	70	508	122
25	272	996	570	330	760	622	2,340	*437	335	89	356	101
26	314	835	460	310	620	572	2,520	869	261	*75	284	97
27	*370	812	475	280	540	524	2,410	445	227	88	206	102
28	642	762	566	280	500	420	2,210	331	210	115	166	104
29	492	1,020	1,170	290	-	500	2,000	284	169	99	140	145
30	524	1,120	865	230	--------	520	1,840	315	152	70	164	147
31	572	--------	790	230	--------	776	--------	312	--------	63	*188	--------
Total	17,816	21,889	20,492	12,212	9,990	23,683	81,940	21,241	10,604	3,237	8,146	3,591
Mean	575	730	661	394	357	764	2,731	685	353	104	263	120
(†)	-3.20	+2.29	-8.56	-45.1	-16.7	-8.88	+188	-84.3	-4.89	-13.7	+.98	-27.2

Adjusted for change in reservoir contents

Mean	572	732	652	349	340	755	2,920	601	349	90.7	264	92.5
Cfsm	1.44	1.84	1.64	0.879	0.856	1.90	7.36	1.51	0.879	0.228	0.665	0.233
In.	1.66	2.06	1.89	1.01	0.89	2.19	8.20	1.75	0.98	0.26	0.77	0.26

	Observed			Adjusted			
Calendar year 1954:	Max 3,280	Min 84	Mean 715	Mean 716	Cfsm 1.80	In. 24.49	
Water year 1954-55:	Max 4,180	Min 57	Mean 643	Mean 641	Cfsm 1.61	In. 21.92	

Peak discharge (base, 3,900 cfs).--Apr. 6 (7:30 p.m.) 5,130 cfs (9.36 ft); Apr. 11 (9 to 10 p.m.) 4,140 cfs (8.38 ft); Apr. 16 (1 a.m.) 4,560 cfs (8.80 ft); Apr. 19 (8 p.m.) 4,580 cfs (8.82 ft).
* Discharge measurement made on this day.
† Change in contents in Peacham Pond, Mollys Falls Reservoir, and East Barre and Wrightsville Detention Reservoirs, equivalent in cubic feet per second. Part of records furnished by State of Vermont Water Conservation Board and Green Mountain Power Corp.
Note.--Stage-discharge relation affected by ice Dec. 4-8, 12-14, 17, 21-26, 31, Jan. 1, 5, 6, Jan. 8 to Mar. 18, Mar. 20, 28-30.

Dog River at Northfield Falls, Vt.

Location.--Lat 44°10'55", long 72°38'30", on right bank 1 mile downstream from Northfield Falls, Washington County, and 1¼ miles downstream from Cox Branch.

Drainage area.--76.1 sq mi.

Records available.--November 1934 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 603.00 ft above mean sea level (levels by Corps of Engineers).

Average discharge.--21 years, 124 cfs.

Extremes.--Maximum discharge during year, 1,920 cfs Apr. 10 (gage height, 5.03 ft); minimum, 5.1 cfs July 31, Aug. 1.

1934-55: Maximum discharge, 9,750 cfs Sept. 21, 1938 (gage height, 11.53 ft), from rating curve extended above 1,500 cfs on basis of computation of peak flow over dam at gage height 8.49 ft and slope-area determinations at gage heights 8.96 and 11.53 ft; minimum, 4.3 cfs Aug. 31, Sept. 7, 1942.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Some regulation at low flow by powerplant above station.

Revisions (water years).--WSP 1237: 1935-37.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.5	5.1	2.0	230
.6	7.9	2.5	420
.8	16	3.0	655
1.0	30	4.0	1,230
1.2	50	5.0	1,900
1.5	98		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	69	172	148	46	115	253	217	224	19	6.4	*17
2	62	63	148	146	43	170	398	189	129	18	7.6	14
3	63	166	132	136	40	130	392	172	90	19	7.3	12
4	97	332	109	*127	37	110	356	153	73	17	7.0	11
5	*107	198	116	113	35	100	474	156	65	17	7.0	11
6	83	151	95	120	35	94	831	141	57	20	6.4	12
7	94	127	98	105	36	90	1,060	127	51	21	8.2	11
8	86	113	94	94	*36	80	630	151	49	17	11	10
9	74	105	94	86	35	90	465	143	46	15	9.2	9.6
10	76	92	96	82	37	150	862	122	41	14	12	8.5
11	84	88	90	80	45	220	1,280	109	41	14	9.6	8.5
12	90	87	81	77	63	350	966	98	42	*14	9.2	17
13	79	76	83	75	60	270	690	92	43	12	18	14
14	71	74	72	72	56	240	854	88	50	12	55	12
15	66	71	125	70	54	*214	1,530	83	44	11	24	11
16	77	66	113	74	51	268	1,150	76	36	16	20	11
17	71	70	88	70	50	244	716	71	32	16	16	9.6
18	65	74	243	65	48	198	560	66	28	15	36	9.2
19	66	68	447	62	46	165	790	62	26	19	27	9.2
20	66	96	237	59	47	160	*783	59	25	14	16	8.8
21	60	423	172	56	50	153	537	55	*32	13	14	8.5
22	56	460	153	56	60	143	438	51	49	12	9.5	7.9
23	54	227	146	60	120	138	*412	48	34	11	11	7.9
24	53	178	143	59	175	127	336	*47	29	10	15	14
25	50	164	122	54	135	122	416	81	38	11	14	17
26	*50	153	132	52	100	118	452	106	30	10	12	14
27	63	141	118	54	92	113	388	72	25	10	20	12
28	85	146	120	52	88	109	336	56	22	11	18	14
29	71	192	312	51	-	105	282	51	20	10	14	14
30	77	*198	220	49	-------	107	248	56	20	7.9	*14	13
31	77	---	178	47	-------	152	-------	44	-------	5.4	19	-------
Total	2,238	4,468	4,549	2,451	1,720	4,845	18,885	3,042	1,491	431.3	473.4	348.7
Mean	72.2	149	147	79.1	61.4	156	630	98.1	49.7	13.9	15.3	11.6
Cfsm	0.949	1.96	1.93	1.04	0.807	2.05	8.28	1.29	0.653	0.183	0.201	0.152
In.	1.09	2.18	2.22	1.20	0.84	2.37	9.23	1.49	0.73	0.21	0.23	0.17

Calendar year 1954: Max 1,390 Min 15 Mean 145 Cfsm 1.91 In. 25.93
Water year 1954-55: Max 1,530 Min 5.4 Mean 123 Cfsm 1.62 In. 21.96

Peak discharge (base, 1,600 cfs).--Apr. 10 (9 p.m.) 1,920 cfs (5.03 ft); Apr. 15 (10 to 11 p.m.) 1,780 cfs (4.85 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 12 to Feb. 7, Feb. 12 to Mar. 14; discharge estimated on basis of weather records, recorded range in stage when available, and records for Mad River near Moretown and Ayers Brook at Randolph (Part 1A). Stage-discharge relation affected by ice Dec. 6, 7, 12, Jan. 7-11, Feb. 8-11, Mar. 19, 20, and during most of periods of no gage-height record.

Mad River near Moretown, Vt.

Location.--Lat 44°16'40", long 72°44'35", on left bank at downstream side of highway bridge, 2.4 miles downstream from Moretown, Washington County, and 3.8 miles upstream from mouth.

Drainage area.--139 sq mi.

Records available.--July to November 1910, November 1928 to September 1955.

Gage.--Water-stage recorder. Concrete control since Oct. 13, 1933. Altitude of gage is 545 ft (from topographic map). July 6 to Nov. 4, 1910, staff gage at same site at different datum. Nov. 20, 1928, to Sept. 27, 1930, chain gage at same site at present datum.

Average discharge.--27 years (1928-55), 253 cfs.

Extremes.--Maximum discharge during year, 4,420 cfs Apr. 15 (gage height, 7.97 ft), from rating curve extended above 2,500 cfs on basis of computations of flow over dam at gage heights 9.98, 11.51, 16.34, and 19.4 ft; maximum gage height, 13.01 ft Mar. 11 (ice jam); minimum discharge, 8 cfs Aug. 6; minimum daily, 18 cfs July 31, Aug. 7.
1910, 1928-55: Maximum discharge, 18,400 cfs Sept. 22, 1938 (gage height, 16.34 ft, from floodmarks), from rating curve extended above 2,500 cfs by method explained above; minimum, 1.4 cfs Oct. 1, 1930.
Maximum discharge known, 23,000 cfs Nov. 3, 1927 (gage height, 19.4 ft, from floodmarks), by computation of peak flow over dam.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record and those for period July 21 to Sept. 30, which are fair. Regulation at low flow by mill in Moretown.

Revisions (water years).--WSP 744: Drainage area. WSP 854: 1934(M). WSP 1114: 1929, 1930(M), 1936-37.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used July 21)

Oct. 1 to Apr. 14		Apr. 15 to July 21				July 22 to Sept. 30			
3.5	65	3.2	26	4.5	540	1.8	13	3.5	148
3.7	119	3.4	55	5.0	980	2.2	38	3.8	225
4.0	236	3.7	131	6.0	1,970	2.6	66	4.2	420
4.5	540	4.0	248	8.0	4,460	3.0	96	4.7	770
5.0	980								
7.0	3,130								

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	107	157	334	280	90	270	520	564	1,110	43	23	*80
2	104	143	270	280	85	330	696	498	491	48	42	54
3	174	742	*225	260	78	250	703	470	324	70	44	42
4	388	944	185	230	71	210	670	440	239	46	27	37
5	351	519	200	200	66	190	827	464	200	43	26	33
6	223	376	170	200	70	175	1,650	374	162	104	27	40
7	223	307	190	180	86	165	1,710	297	141	86	18	34
8	184	265	185	170	84	160	989	403	125	61	94	31
9	169	236	190	160	68	170	719	452	119	45	68	27
10	184	205	210	150	72	400	1,570	334	102	43	22	24
11	271	192	190	145	105	500	2,040	272	97	37	23	27
12	270	180	190	140	140	1,300	1,400	235	99	33	32	104
13	223	161	165	135	130	700	1,050	222	99	31	43	65
14	184	157	115	130	115	550	1,880	200	251	*30	195	42
15	165	150	322	125	110	500	3,640	177	188	27	60	37
16	225	136	256	140	105	*863	2,050	158	119	34	51	39
17	188	136	170	130	105	600	1,250	148	94	41	101	30
18	157	153	420	120	100	435	1,100	134	79	31	750	29
19	153	169	712	115	95	355	2,160	125	70	36	300	31
20	165	256	370	110	105	320	1,510	119	61	36	150	26
21	143	1,050	310	105	110	324	1,040	111	*84	26	120	25
22	129	822	270	105	150	280	*908	99	193	33	80	24
23	119	442	250	110	280	275	890	89	99	24	110	23
24	113	346	270	110	350	251	701	86	76	23	160	61
25	104	329	250	105	270	241	989	*386	114	27	120	90
26	99	302	210	100	210	223	836	440	76	23	80	60
27	*235	280	210	105	185	215	701	217	66	26	90	48
28	*295	290	230	100	170	192	556	165	57	26	100	61
29	192	442	550	95	-	210	519	148	50	23	85	74
30	201	407	450	93	-------	235	572	158	45	19	65	63
31	188	----	350	91	-------	299	-------	177	-------	18	134	----
Total	5,926	10,294	8,419	4,519	3,605	11,188	35,846	8,162	5,030	1,193	3,240	1,361
Mean	191	343	272	146	129	361	1,195	263	168	38.5	105	45.4
Cfsm	1.37	2.47	1.96	1.05	0.928	2.60	8.60	1.89	1.21	0.277	0.755	0.327
In.	1.59	2.75	2.25	1.21	0.96	2.99	9.59	2.18	1.35	0.32	0.87	0.36

Calendar year 1954: Max 3,300 Min 26 Mean 308 Cfsm 2.22 In. 30.05
Water year 1954-55: Max 3,640 Min 18 Mean 271 Cfsm 1.95 In. 26.42

Peak discharge (base, 3,400 cfs).--Apr. 15 (2 a.m.) 4,420 cfs (7.97 ft); Apr. 19 (4 p.m.) 3,980 cfs (7.65 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Feb. 3-5, 14, 15, Mar. 13-15, Aug. 18-30; discharge estimated on basis of weather records and records for other stations in Winooski River basin. Stage-discharge relation affected by ice Dec. 3-9, 11, 12, 14, 18, Dec. 20 to Mar. 15, Mar. 18-20, 27, 29, 30.

Waterbury Reservoir near Waterbury, Vt.

Location.--Lat 44°22'55", long 72°46'15", at dam on Waterbury River, 2 2/3 miles upstream from mouth and 3½ miles north of Waterbury, Washington County.

Drainage area.--109 sq mi.

Records available.--September 1938 to September 1955.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (levels by Corps of Engineers). Prior to Dec. 10, 1938, staff gage at same site and datum.

Extremes.--Maximum elevation during year, 593.79 ft Apr. 26; minimum, 549.90 ft Apr. 2. 1938-55: Maximum elevation, 613.45 ft May 4, 1940; minimum observed, 501.3 ft Oct. 16, 1938.

Remarks.--Reservoir is formed by earth-fill dam completed by Corps of Engineers during summer of 1937 for conservation and flood control. Total usable capacity for flood control, 2,812,300,000 cu ft between elevations 500.0 ft (bottom of lowest outlet) and 617.5 ft (crest of spillway) above mean sea level. Usable capacity for conservation, 1,582,700,000 cu ft between elevations 500.0 and 592.0 ft (sill of taintor gate) above mean sea level.

Elevation, in feet, at 12 p.m., water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	589.79	586.12	589.92	a588.73	576.22	565.72	550.09	593.08	592.57	589.08	584.06	586.45
2	590.35	585.59	589.62	a588.93	575.40	565.89	550.13	593.03	592.11	589.24	583.60	586.06
3	591.83	585.57	589.27	g588.98	574.53	565.50	550.10	592.93	591.36	589.37	583.18	585.99
4	593.23	586.10	589.54	g588.30	573.69	564.99	550.59	592.73	590.75	589.46	582.76	586.09
5	592.93	586.31	589.90	g588.83	572.89	564.48	552.03	592.72	591.02	589.62	582.48	586.19
6	592.42	586.27	588.43	g588.65	573.19	564.57	556.24	592.26	590.89	589.92	582.68	585.81
7	591.96	586.72	588.96	588.23	572.00	563.62	560.25	591.70	590.73	590.05	583.33	585.39
8	591.35	586.61	588.60	587.75	571.11	562.59	561.32	591.48	590.55	590.14	583.63	584.94
9	590.90	586.50	g588.21	588.08	570.27	561.58	561.56	591.38	590.35	590.22	583.76	584.48
10	591.01	586.05	g587.96	587.61	569.43	560.89	564.20	591.05	590.18	589.76	583.82	584.00
11	591.29	586.32	g587.68	587.05	568.95	563.68	568.58	590.81	590.32	589.41	584.07	584.19
12	591.34	586.04	g587.69	586.49	568.66	566.54	570.78	590.65	590.49	589.05	584.28	584.34
13	591.48	585.90	g587.05	585.96	569.22	566.65	572.00	590.41	590.32	588.68	584.99	584.02
14	591.33	586.20	g586.65	585.39	568.58	566.14	574.75	590.39	591.17	588.27	586.47	583.64
15	590.85	585.80	g586.70	584.85	567.96	565.60	581.40	590.75	591.12	587.87	587.10	583.28
16	590.65	585.34	g586.40	585.20	567.29	565.91	584.86	590.63	590.69	588.07	588.89	582.90
17	591.07	584.85	g585.96	584.58	566.59	565.44	586.26	590.47	590.46	588.22	591.61	582.38
18	590.69	584.51	g585.95	583.99	565.88	564.69	587.51	590.27	590.66	587.90	593.15	582.49
19	590.25	584.70	a587.08	583.39	565.11	563.75	591.05	590.08	590.81	587.52	592.53	582.01
20	589.80	585.40	g587.11	582.79	565.53	562.73	592.76	590.02	590.49	587.14	591.80	581.35
21	589.31	587.83	g586.69	582.12	564.78	561.65	593.15	590.26	590.25	586.72	591.06	580.88
22	588.88	588.44	g586.25	581.54	564.43	560.59	593.53	590.50	590.08	586.33	590.39	580.40
23	588.43	588.45	g585.82	581.84	565.41	559.41	593.73	590.32	589.89	586.40	589.93	579.66
24	588.62	588.40	g586.61	581.17	565.90	558.20	593.49	590.19	589.70	586.44	589.46	579.22
25	588.09	589.00	a585.86	580.50	565.68	557.10	593.76	590.19	589.98	586.04	589.06	579.39
26	587.51	589.03	a586.11	579.79	565.42	555.99	593.52	590.36	590.25	585.58	588.63	578.98
27	587.26	589.34	g585.71	579.13	566.12	555.05	593.33	590.28	589.94	585.14	588.34	578.54
28	587.07	589.87	g585.84	578.35	565.67	553.72	592.93	590.51	589.66	584.76	588.05	578.30
29	586.68	590.07	g587.71	577.58	-	552.38	592.86	590.73	589.39	584.40	587.60	577.97
30	586.30	590.07	g588.73	577.85	-------	551.20	593.03	591.39	589.13	584.44	587.08	577.56
31	586.64	-------	g588.56	577.03	-------	550.24	-------	591.47	-------	584.47	586.80	-------

a No gage-height record; elevation estimated on basis of records for station on Waterbury River.
g Elevation computed from daily tape-gage reading and records for station on Waterbury River.

Monthly elevation and contents, water year October 1954 to September 1955

Date	Elevation (feet)†	Contents (millions of cubic feet)	Change in contents	
			Millions of cubic feet	Equivalent, cubic feet per second
Sept.30	589.60	1,490.8	-	-
Oct. 31	586.64	1,386.0	-104.8	-39.1
Nov. 30	590.07	1,507.7	+121.7	+47.0
Dec. 31	g588.56	1,454.0	-53.7	-20.0
Calendar year 1954	-	-	+258.5	+8.2
Jan. 31	577.03	1,082.4	-371.6	-139
Feb. 28	565.67	787.1	-295.3	-122
Mar. 31	550.24	466.2	-320.9	-120
Apr. 30	593.03	1,622.9	+1,156.7	+446
May 31	591.47	1,562.0	-60.9	-22.7
June 30	589.13	1,474.2	-87.8	-33.9
July 31	584.47	1,311.3	-162.9	-60.8
Aug. 31	586.80	1,391.6	+80.3	+30.0
Sept.30	577.56	1,097.7	-293.9	-113
Water year 1954-55	-	-	-393.1	-12.5

† Elevation at 12 p.m.
g Computed from daily tape-gage reading.

Waterbury River near Waterbury, Vt.

Location.--Lat 44°22'10", long 72°46'10", on right bank 1 mile downstream from Waterbury Reservoir, 1 2/3 miles upstream from mouth, and 2½ miles north of Waterbury, Washington County.
Drainage area.--111 sq mi.
Records available.--July to October 1910 (gage heights only), December 1935 to September 1955.
Gage.--Water-stage recorder. Concrete control since Dec. 8, 1937. Datum of gage is 428.00 ft above mean sea level (levels by Corps of Engineers). July 7 to Oct. 31, 1910, staff gage 2 miles upstream at different datum.
Average discharge.--19 years (1936-55), 232 cfs (adjusted for storage).
Extremes.--Maximum discharge during year, 847 cfs Apr. 26 (gage height, 8.34 ft); minimum daily, 4.9 cfs Aug. 10.
1935-55: Maximum discharge, 6,520 cfs Mar. 18, 1936 (gage height, 19.38 ft); minimum daily, 0.6 cfs several times during summers of 1938-39, 1941, 1944.
Remarks.--Records excellent except those below 25 cfs, those for period of no gage-height record, and those computed from once-daily tape-gage readings, which are good. Flow completely regulated by Waterbury Reservoir (see preceding page).
Revisions (water years).--WSP 824: 1936.

Rating tables, water year 1954-55 (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 10				May 11 to Sept. 30	
5.1	7.8	7.0	287	5.0	4.2
5.3	15	7.5	450	5.1	6.8
5.6	34	8.0	665	5.3	14
6.0	77	8.5	935	5.6	34
6.5	163				

Note.--Same as preceding table above 5.6 ft.

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	302	339	*345	12	338	296	482	675	500	56	191	210
2	25	338	339	12	330	300	494	665	580	11	197	204
3	167	330	341	330	328	287	490	652	560	7.5	180	81
4	589	334	30	334	323	295	494	629	400	6.2	173	6.2
5	670	274	29	338	315	295	502	620	8	7.2	181	5.9
6	593	270	335	272	g10	142	518	602	180	8.5	5.7	198
7	544	29	363	338	g392	381	526	562	170	6.8	8.3	204
8	534	232	264	346	g354	385	522	474	165	6.5	5.4	202
9	457	229	335	10	g335	404	518	530	175	6.2	5.2	200
10	304	331	264	323	g321	410	534	442	160	226	4.9	202
11	362	43	276	341	*g296	439	548	368	7	174	27	6.2
12	344	260	125	339	291	522	517	299	7	163	6.2	180
13	341	194	336	319	8.1	518	539	314	195	183	8.6	187
14	344	27	341	314	324	g518	548	198	310	194	31	191
15	424	296	331	298	299	g518	570	9.4	350	192	7.6	197
16	377	298	330	9.7	300	518	421	201	340	6.8	7.8	194
17	28	298	329	325	297	518	526	214	210	5.9	403	246
18	347	316	304	324	301	514	566	207	7	217	680	6.2
19	350	139	30	328	298	510	588	207	6	204	680	208
20	342	78	329	320	8.1	510	593	153	205	188	588	287
21	348	87	329	326	297	510	690	8.1	195	204	486	202
22	316	405	324	311	302	506	*726	7.5	*160	183	445	199
23	312	346	332	9.7	166	506	825	172	148	5.7	393	284
24	28	314	325	317	249	502	814	147	166	5.2	396	237
25	342	32	26	319	294	444	792	165	8.4	174	285	6.8
26	352	233	26	331	261	445	825	115	7.5	198	265	183
27	337	98	327	324	9.1	389	764	145	211	206	202	196
28	328	30	323	345	286	438	705	8	179	170	172	190
29	325	341	21	331	-	457	647	8	161	156	242	186
30	325	359	107	10	--------	449	660	7	152	5.4	285	192
31	26	--------	317	341	--------	467	--------	160	--------	5.2	*250	--------
Total	10,483	6,900	7,833	8,197.4	7,332.3	13,393	17,944	8,964.0	5,922.9	3,182.1	6,811.7	5,091.3
Mean	338	230	253	264	262	432	598	289	197	103	220	170
(†)	-39.1	+47.0	-20.0	-139	-122	-120	+446	-22.7	-33.9	-60.8	+30.0	-113

Adjusted for change in contents in Waterbury Reservoir

Mean	299	277	233	126	140	312	1,044	266	164	41.8	250	56.3
Cfsm	2.69	2.50	2.10	1.14	1.26	2.81	9.41	2.40	1.48	0.377	2.25	0.507
In.	3.11	2.78	2.42	1.31	1.31	3.24	10.50	2.77	1.64	0.43	2.59	0.57

	Observed			Adjusted			
Calendar year 1954:	Max 1,570	Min 9.9	Mean 268	Mean 276	Cfsm 2.49	In. 33.75	
Water year 1954-55:	Max 825	Min 4.9	Mean 280	Mean 267	Cfsm 2.41	In. 32.67	

* Discharge measurement made on this day.
† Change in contents in Waterbury Reservoir, equivalent in cubic feet per second.
g Computed from once-daily tape-gage reading, recorded range in stage, and records for station at Waterbury Reservoir.
Note.--No gage-height record May 25 to June 22; discharge estimated on basis of weather records, recorded range in stage, and records for station at Waterbury Reservoir.

Winooski River near Essex Junction, Vt.

Location.--Lat 44°28'40", long 73°08'20", on right bank half a mile downstream from Muddy Brook and 2 miles southwest of Essex Junction, Chittenden County.
Drainage area.--1,044 sq mi.
Records available.--October 1928 to September 1955.
Gage.--Water-stage recorder. Altitude of gage is 185 ft (from topographic map).
Average discharge.--27 years, 1,676 cfs (adjusted for storage since October 1938).
Extremes.--Maximum discharge during year, 15,100 cfs Apr. 15 (gage height, 9.36 ft); minimum daily, 120 cfs July 31.

1928-55: Maximum discharge, 45,300 cfs Mar. 19, 1936 (gage height, 23.54 ft), from rating curve extended above 27,000 cfs on basis of computations of peak flow over dam at gage heights 18.72, 23.54, and 50.4 ft and slope-area determination at gage height 50.4 ft; minimum daily, 70 cfs Sept. 25, 1937.

Maximum discharge known, 113,000 cfs Nov. 4, 1927 (gage height, 50.4 ft, from floodmarks), from rating curve extended above 27,000 cfs by method explained above.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow regulated by powerplants above station, by Peacham Pond and Mollys Falls Reservoir (combined usable capacity, 492,000,000 cu ft), by Waterbury Reservoir since 1937 (see p. 368), and by East Barre and Wrightsville Detention Reservoirs since 1935 (see p.364).
Revisions (water years).--WSP 714: 1930(M). WSP 894: Drainage area.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	101	2.5	1,630
.6	180	3.0	2,380
1.0	329	4.0	4,400
1.5	620	6.0	9,230
2.0	1,060	9.0	14,500

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	813	1,430	2,950	2,330	900	1,800	3,500	4,490	4,350	378	385	757
2	1,000	1,290	2,400	1,770	900	3,250	4,630	4,080	4,310	514	355	647
3	823	1,440	2,070	1,870	850	2,500	5,510	3,860	2,720	346	365	518
4	3,370	4,570	1,630	2,000	900	2,000	4,890	3,500	1,960	315	326	285
5	3,730	3,520	1,350	1,800	800	1,700	5,810	3,340	1,390	326	414	309
6	2,780	2,490	1,350	1,650	850	1,600	7,700	3,180	940	996	146	446
7	2,630	2,110	1,210	1,400	600	1,500	12,600	2,670	896	466	138	520
8	2,310	1,680	1,350	1,350	950	1,400	8,860	2,420	820	393	388	462
9	2,080	1,620	1,380	1,300	900	1,400	6,020	3,080	848	414	227	552
10	1,760	1,320	*1,580	1,200	900	1,700	6,680	2,720	784	266	252	602
11	1,870	1,120	1,550	1,400	1,000	3,000	11,200	2,180	622	512	345	225
12	2,350	1,120	1,320	1,350	1,200	8,500	10,800	1,660	590	444	344	971
13	2,240	1,150	1,240	1,300	1,200	5,500	7,700	1,510	810	419	546	639
14	1,960	1,020	1,440	1,250	850	3,750	8,420	1,440	1,080	411	1,030	*634
15	1,790	998	1,690	1,300	1,100	3,200	14,200	1,220	1,540	392	1,200	539
16	1,680	1,110	2,250	1,200	1,050	4,500	13,000	1,280	1,340	350	1,360	558
17	1,660	1,090	1,650	950	1,050	4,500	8,900	1,140	1,000	142	2,770	592
18	1,200	1,090	1,800	1,150	1,000	3,500	6,940	1,050	508	466	7,680	302
19	1,220	1,040	5,690	1,100	1,000	3,000	8,870	997	348	489	3,360	422
20	1,360	1,280	3,500	1,100	750	2,600	12,100	974	644	441	2,040	499
21	1,270	2,660	2,200	1,050	850	2,600	7,940	782	731	408	1,420	460
22	1,110	6,380	2,050	1,050	1,100	2,400	6,610	500	718	500	1,160	372
23	987	3,820	1,900	950	1,500	2,300	6,640	860	828	132	*1,490	478
24	1,040	2,990	1,900	750	3,000	2,200	5,890	*756	768	169	1,720	524
25	967	2,430	1,600	1,000	2,400	2,070	5,910	816	848	436	1,360	368
26	. 952	2,150	1,400	1,050	1,900	2,020	6,840	1,770	822	393	948	466
27	1,130	1,990	1,300	1,000	1,300	1,830	5,910	1,550	710	388	1,080	444
28	1,540	1,920	1,550	1,000	1,400	1,510	5,560	1,060	694	342	464	495
29	1,620	2,490	4,300	950	-	1,890	4,890	742	622	342	600	474
30	1,440	3,560	3,240	900	--------	1,940	4,700	762	538	144	732	548
31	1,510	--------	2,610	550	--------	2,280	--------	966	--------	120	855	--------
Total	52,192	62,878	63,450	39,020	32,200	83,940	229,220	57,355	34,779	11,854	35,500	15,108
Mean	1,684	2,096	2,047	1,259	1,150	2,708	7,641	1,850	1,159	382	1,145	504
(†)	-42.3	+49.2	-28.6	-184	-139	-129	+634	-107	-38.8	-74.5	+31.0	-141
Adjusted for change in reservoir contents												
Mean	1,641	2,145	2,018	1,075	1,011	2,579	8,275	1,743	1,121	308	1,176	363
Cfsm	1.57	2.05	1.93	1.03	0.968	2.47	7.93	1.67	1.07	0.295	1.13	0.348
In.	1.81	2.29	2.23	1.19	1.01	2.85	8.84	1.92	1.20	0.34	1.30	0.39

	Observed			Adjusted			
Calendar year 1954:	Max 11,000	Min 90	Mean 2,086	Mean 2,095	Cfsm 2.01	In. 27.25	
Water year 1954-55:	Max 14,200	Min 120	Mean 1,966	Mean 1,951	Cfsm 1.87	In. 25.37	

Peak discharge (base, 12,500 cfs).--Apr. 7 (7:30 a.m.) 14,100 cfs (8.75 ft); Apr. 12 (5 to 6 a.m.) 12,800 cfs (7.89 ft); Apr. 15 (4 to 5 p.m.) 15,100 cfs (9.36 ft); Apr. 20 (3 to 4 a.m.) 14,500 cfs (9.01 ft).

* Discharge measurement made on this day.

† Change in contents in Peacham Pond, Mollys Falls Reservoir, East Barre and Wrightsville Detention Reservoirs, and Waterbury Reservoir, equivalent in cubic feet per second. Part of records furnished by State of Vermont Water Conservation Board and Green Mountain Power Corp.

Note.--Stage-discharge relation affected by ice Dec. 13, 14, 16-18, 20-29, Jan. 5 to Mar. 24 (no gage-height record Feb. 2-7).

Lamoille River at Johnson, Vt.

Location.--Lat 44°37'20", long 72°40'50", on right bank at falls 0.7 mile upstream from bridge in Johnson, Lamoille County, and 0.8 mile upstream from Gihon River.

Drainage area.--310 sq mi.

Records available.--July 1910 to December 1913, September 1928 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 495 ft (from topographic map). Prior to Dec. 31, 1913, chain gage at bridge 0.7 mile downstream at different datum.

Average discharge.--27 years (1928-55), 521 cfs.

Extremes.--Maximum discharge during year, 6,030 cfs Apr. 16 (gage height, 11.23 ft); minimum, 75 cfs July 12, 24, 29; minimum daily, 123 cfs July 31.
1910-13, 1928-55: Maximum discharge, 13,000 cfs Mar. 18, 1936 (gage height, 16.48 ft), from rating curve extended above 8,500 cfs on basis of computation of peak flow over dam; minimum, 11 cfs Sept. 2, 1935; minimum daily, 16 cfs Oct. 26, 1947.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by powerplant above station.

Revisions (water years).--WSP 894: Drainage area. WSP 1114: 1933, 1934(M). WSP 1237: 1912(M), 1930, 1932(M).

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 15		Apr. 16 to Sept. 30	
2.1	222	1.7	108
3.0	546	2.0	183
5.0	1,480	3.0	530
8.0	3,280	5.0	1,450
11.0	5,800	7.0	2,600
		10.0	4,850

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	384	429	706	550	270	410	804	947	1,790	174	188	225
2	464	376	522	520	250	700	980	1,020	1,050	190	191	174
3	738	395	524	540	240	*600	990	559	607	158	180	232
4	3,180	822	442	460	230	500	1,120	520	461	176	182	181
5	1,880	*766	360	430	260	418	1,580	704	337	195	179	215
6	916	525	327	380	250	400	2,820	579	358	a200	261	228
7	840	410	390	360	260	400	4,190	522	303	a190	223	210
8	*596	433	408	350	260	398	2,500	586	236	*a180	405	201
9	337	364	*391	330	260	421	1,520	746	237	172	218	213
10	535	379	384	370	280	480	2,300	634	229	156	185	209
11	645	340	395	390	300	900	3,970	502	236	171	215	215
12	684	377	340	360	300	2,150	3,410	462	214	140	290	414
13	673	326	380	350	330	1,400	2,500	396	242	156	240	*264
14	546	311	350	380	400	980	3,290	362	461	169	913	211
15	456	329	500	370	350	820	5,500	336	319	190	524	221
16	344	307	560	350	320	1,050	4,830	372	229	233	1,490	216
17	432	325	480	320	300	1,000	2,860	320	217	210	2,380	198
18	414	358	480	300	290	800	2,890	318	190	207	2,530	172
19	327	391	1,400	290	280	660	3,390	272	190	181	*1,050	202
20	309	425	900	*300	310	598	4,010	295	202	191	549	223
21	320	1,210	600	330	340	570	2,450	270	179	197	381	214
22	295	2,280	620	300	380	528	1,940	252	245	239	342	217
23	295	1,020	640	300	550	550	1,970	*277	214	143	823	215
24	243	735	600	310	700	550	*1,670	231	261	124	1,090	212
25	298	502	500	300	600	473	1,720	235	277	165	648	210
26	322	613	520	310	500	380	1,980	348	273	160	296	208
27	332	499	470	300	450	370	1,850	285	229	160	224	198
28	540	542	420	300	400	351	1,690	256	216	200	193	217
29	490	801	1,150	280	-	350	1,320	242	196	156	226	225
30	394	892	900	290	-------	452	1,010	536	186	163	202	224
31	436	-- --	700	280	-------	515	-------	404	-------	123	244	- --
Total	18,665	17,482	17,359	11,000	9,660	20,174	73,054	13,788	10,384	5,469	17,062	6,564
Mean	602	583	560	355	345	651	2,435	445	346	176	550	219
Cfsm	1.94	1.88	1.81	1.15	1.11	2.10	7.85	1.44	1.12	0.568	1.77	0.706
In.	2.24	2.10	2.08	1.32	1.16	2.42	8.76	1.65	1.25	0.66	2.05	0.79

Calendar year 1954: Max 5,870 Min 80 Mean 625 Cfsm 2.02 In. 27.39
Water year 1954-55: Max 5,500 Min 123 Mean 605 Cfsm 1.95 In. 26.48

Peak discharge (base, 5,400 cfs).--Apr. 16 (3:30 a.m.) 6,030 cfs (11.23 ft); Apr. 19 (11:30 to 12 p.m.) 5,690 cfs (10.89 ft); Aug. 17 (9 p.m.) 6,010 cfs (11.21 ft).

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, weather records, recorded range in stage, powerplant records, and records for station at East Georgia.

Note.--Stage-discharge relation affected by ice Dec. 5, 7, Dec. 11 to Mar. 4, Mar. 6, 7, 10-19, 21, 23, 24, 26, 27.

Lamoille River at East Georgia, Vt.

Location.--Lat 44°40'45", long 73°04'20", on right bank at East Georgia, Franklin County, 0.5 mile upstream from railroad bridge and 1 mile downstream from Beaver Meadow Brook.

Drainage area.--686 sq mi.

Records available.--August 1929 to September 1955. Prior to October 1937, published as "near Milton."

Gage.--Water-stage recorder. Altitude of gage is 285 ft (from topographic map). Prior to December 1937, at site 3½ miles downstream at different datum.

Average discharge.--26 years, 1,223 cfs, adjusted to present drainage area.

Extremes.--Maximum discharge during year, about 13,000 cfs Apr. 16; maximum gage height, 10.24 ft Dec. 19 (ice jam), but may have been higher Mar. 12 (ice jam during period of no gage-height record); minimum daily discharge, 238 cfs July 25.
1929-55: Maximum discharge, 23,200 cfs Mar. 19, 1936 (gage height, 12.52 ft, site and datum then in use), by computation of peak flow over dam; maximum gage height, 15.86 ft Mar. 11, 1946 (ice jam); minimum daily discharge, 91 cfs July 30, 1933.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Low flow regulated by powerplants above station.

Revisions.--WSP 894: Drainage area.

Rating table, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.5	216	6.0	3,230
3.0	383	7.0	5,050
3.5	620	8.0	7,250
4.0	970	10.0	13,100
5.0	1,910		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	822	906	2,020	1,500	620	950	1,700	2,320	3,390	336	247	516
2	1,280	780	1,610	1,300	580	1,850	2,150	2,190	3,690	348	327	488
3	2,310	830	1,300	1,300	560	1,350	2,200	1,920	1,860	311	313	391
4	7,490	*1,900	978	1,100	540	1,150	2,500	1,480	1,190	357	278	347
5	*6,470	2,160	800	1,000	590	1,000	3,000	1,620	853	367	275	358
6	3,100	1,610	750	900	580	930	6,000	1,550	752	421	411	444
7	2,590	1,230	900	850	610	900	9,000	1,230	706	423	583	424
8	1,930	1,050	900	800	610	880	6,000	1,220	626	*368	1,170	376
9	1,400	970	860	750	610	920	3,500	1,590	516	341	626	329
10	1,490	882	850	800	640	1,000	5,000	1,550	504	327	324	323
11	1,720	822	900	850	670	2,300	8,500	1,250	493	245	475	305
12	1,960	794	800	800	690	5,000	8,000	1,050	444	275	1,050	843
13	2,400	801	850	800	780	3,250	6,000	890	515	261	752	791
14	1,820	745	800	850	900	2,250	7,000	808	1,100	259	1,840	488
15	1,410	766	1,100	800	800	2,000	12,000	766	1,460	266	1,760	396
16	1,200	706	1,250	750	740	2,250	11,000	738	845	298	3,580	440
17	1,120	700	1,100	700	700	2,200	6,500	712	650	383	2,920	427
18	1,030	706	1,100	650	660	1,850	6,500	638	492	376	7,110	384
19	946	780	3,000	650	660	1,500	7,000	656	404	419	*3,520	371
20	860	885	2,500	640	710	1,300	8,500	644	408	383	1,540	368
21	745	2,210	1,750	700	770	1,250	5,500	626	447	316	1,060	372
22	726	4,950	1,400	690	860	1,200	4,500	516	451	275	808	391
23	712	2,870	1,400	690	1,300	1,200	4,510	554	508	285	1,250	372
24	680	1,810	1,300	700	1,600	1,200	*3,820	*543	514	260	1,980	321
25	650	1,590	1,200	720	1,300	1,100	3,570	522	468	238	1,330	384
26	638	1,440	1,100	690	1,200	1,000	4,450	586	562	266	868	374
27	732	1,390	1,050	710	1,000	900	3,860	712	540	289	656	375
28	1,050	1,370	1,050	720	900	780	3,800	638	454	316	480	349
29	1,050	2,130	2,300	640	-	800	2,870	546	378	327	496	440
30	898	2,720	2,000	660	-----	890	2,710	885	384	282	440	436
31	882	-- --	1,700	630	------	1,150	-------	935	------	275	558	-- --
Total	52,111	42,503	40,618	25,340	22,180	46,300	161,640	31,885	25,604	9,893	39,027	12,623
Mean	1,681	1,417	1,310	817	792	1,494	5,388	1,029	853	319	1,259	421
Cfsm	2.45	2.07	1.91	1.19	1.15	2.18	7.85	1.50	1.24	0.465	1.84	0.614
In.	2.83	2.30	2.20	1.37	1.20	2.51	8.76	1.73	1.39	0.54	2.12	0.68

Calendar year 1954: Max 10,900 Min 190 Mean 1,498 Cfsm 2.18 In. 29.66
Water year 1954-55: Max 12,000 Min 238 Mean 1,397 Cfsm 2.04 In. 27.63

Peak discharge (base, 10,400 cfs).--Apr. 16 (about 2:30 p.m.) about 13,000 cfs.
* Discharge measurement made on this day.
Note.--No gage-height record Jan. 31 to Feb. 25, Mar. 5-28, Apr. 5-22; discharge estimated on basis of weather records, recorded range in stage when available, and records for station at Johnson. Stage-discharge relation affected by ice Dec. 5 to Apr. 4 and during part of period of no gage-height record in April.

Missisquoi River near North Troy, Vt.

Location.--Lat 44°58'20", long 72°23'15", on right bank 200 ft upstream from Big Falls, 1½ miles downstream from Jay Branch, and 2¼ miles upstream from North Troy, Troy County.

Drainage area.--131 sq mi.

Records available.--August 1931 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 580 ft (from topographic map).

Average discharge.--24 years, 269 cfs.

Extremes.--Maximum discharge during year, 3,880 cfs Apr. 15 (gage height, 8.92 ft); minimum not determined; minimum daily, 13 cfs July 24, 31, Sept. 9, 18, 25.
1931-55: Maximum discharge, 7,980 cfs May 3, 1940 (gage height, 12.87 ft), from rating curve extended above 3,600 cfs by logarithmic plotting, verified by computation of flow over dam at gage height 11.70 ft; minimum, 9.4 cfs Aug. 28, 1949 (gage height, 0.74 ft); minimum daily, 11 cfs Aug. 28, 1949, Aug. 30, 1953.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. Some regulation from small powerplant above station.

Revisions (water years).--WSP 924: 1940. WSP 1114: 1933(M), 1936-39.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	11	2.5	213
1.0	18	3.0	352
1.2	28	5.0	1,170
1.6	58	7.0	2,350
2.0	108	9.0	3,950

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	769	178	304	250	75	210	425	641	948	52	35	49
2	541	152	243	230	*72	250	475	544	533	34	32	39
3	1,140	*154	206	240	70	200	520	476	268	34	30	*20
4	3,000	330	150	205	66	180	670	416	170	53	28	28
5	1,480	431	185	180	65	160	1,030	406	134	57	25	47
6	*579	281	150	170	65	150	1,670	375	111	72	22	35
7	468	198	157	160	67	140	2,130	278	96	55	40	31
8	346	202	*160	150	67	135	1,020	289	86	49	80	16
9	287	181	167	150	66	130	661	396	80	*21	*65	13
10	327	151	169	155	70	170	1,150	321	82	24	50	34
11	378	138	172	140	80	500	2,260	244	88	47	61	19
12	457	155	135	130	100	1,000	1,850	206	95	44	154	90
13	1,090	134	148	135	125	700	1,330	188	87	32	72	64
14	491	146	128	140	125	460	2,030	176	239	32	706	40
15	333	152	226	130	115	400	3,640	152	247	30	304	37
16	324	123	270	120	110	500	2,700	138	134	37	763	48
17	270	131	174	115	100	420	1,350	136	94	47	413	18
18	230	151	237	115	95	370	1,380	131	68	56	510	13
19	202	170	720	110	90	300	2,220	136	64	47	239	40
20	188	203	406	105	88	270	2,070	146	71	44	135	42
21	173	938	260	105	92	255	1,150	118	127	35	106	39
22	162	1,320	190	100	150	244	1,040	102	183	36	68	31
23	140	468	170	98	250	234	*1,270	96	170	16	60	33
24	138	327	175	98	310	223	1,010	99	111	13	70	17
25	130	284	155	92	265	216	921	*99	202	31	65	13
26	138	270	145	92	230	188	930	125	120	29	51	57
27	186	236	145	90	200	193	849	106	80	27	41	32
28	274	262	160	80	185	157	697	99	73	24	31	44
29	193	321	600	84	-	170	610	116	66	22	39	37
30	184	340	450	82	------	196	705	170	54	15	43	69
31	198	----	325	80	------	*247	--------	133	--------	13	49	----
Total	14,816	8,527	7,282	4,131	3,393	8,968	39,763	7,058	4,881	1,128	4,387	1,095
Mean	478	284	235	133	121	289	1,325	228	163	36.4	142	36.5
Cfsm	3.65	2.17	1.79	1.02	0.924	2.21	10.1	1.74	1.24	0.278	1.08	0.279
In.	4.21	2.42	2.07	1.17	0.96	2.55	11.29	2.00	1.39	0.32	1.25	0.31

Calendar year 1954: Max 3,400 Min 28 Mean 362 Cfsm 2.76 In. 37.48
Water year 1954-55: Max 3,640 Min 13 Mean 289 Cfsm 2.21 In. 29.94

Peak discharge (base, 3,300 cfs).--Oct. 4 (8 a.m.) 3,680 cfs (8.68 ft); Apr. 15 (4:30 p.m.) 3,880 cfs (8.92 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Feb. 2, 3, July 25 to Aug. 9; discharge estimated on basis of 2 discharge measurements, weather records, recorded range in stage when available, and records for Missisquoi River near Richford and Lamoille River at Johnson. Stage-discharge relation affected by ice Dec. 4, 5, 19, Dec. 22 to Mar. 21, Mar. 29, Apr. 1-6.

Missisquoi River near Richford, Vt.

Location.--Lat 44°57'30", long 72°41'55", on left bank 1 2/3 miles upstream from Trout River, 3 miles south of Richford, Franklin County, and 3¾ miles downstream from North Branch.

Drainage area.--479 sq mi.

Records available.--July 1911 to September 1923, October 1928 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 410 ft (from topographic map). Prior to Aug. 1, 1915, chain gage at site a quarter of a mile downstream at datum 4.35 ft lower. Aug. 1, 1915, to Sept. 30, 1923, water-stage recorder at present site and datum. Oct. 1, 1928, to Sept. 30, 1929, chain gage at former site at datum 4.6 ft lower.

Average discharge.--35 years (1911-19, 1928-55), 916 cfs.

Extremes.--Maximum discharge during year, 10,700 cfs Oct. 13 (gage height, 12.48 ft); maximum gage height, 12.64 ft Mar. 12 (backwater from ice); minimum discharge, 54 cfs Aug. 1.

1911-23, 1928-55: Maximum discharge, 17,200 cfs May 4, 1940 (gage height, 15.15 ft), from rating curve extended above 9,300 cfs on basis of computation of peak flow over dam at gage height 14.70 ft, slope-area determination at gage height 12.90 ft, and study of discharge per foot of width at measuring section; maximum gage height, 18.92 ft Mar. 15, 1946 (ice jam); minimum discharge observed, 8 cfs July 14, 1911.

Maximum discharge known, 45,000 cfs during flood of November 1927 (gage height, 23.1 ft, from floodmarks), from rating curve extended above 9,300 cfs by method explained above.

Remarks.--Records excellent except those for period of ice effect, which are fair. Slight diurnal fluctuation at low flow; regulation greater prior to 1934.

Revisions (water years).--WSP 784: Drainage area. WSP 1237: 1913-14(M), 1922(M), 1923, 1929-30.

Rating tables, water year 1954-55, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1-3		Oct. 4 to Sept. 30			
6.0	2,400	2.5	58	6.0	2,220
7.0	3,420	2.7	94	8.0	4,260
7.5	3,970	3.0	180	12.0	9,910
		4.0	655		

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,610	662	1,400	900	280	700	1,400	1,580	1,370	153	58	160
2	2,480	595	1,070	800	*250	900	1,500	1,400	1,770	140	96	143
3	3,640	*573	800	820	245	800	1,700	1,230	962	123	74	120
4	6,250	994	700	730	240	700	2,300	1,080	595	112	68	101
5	5,700	1,640	650	670	240	620	3,490	1,120	476	134	69	99
6	*3,450	1,280	600	620	235	560	5,180	1,510	393	149	101	106
7	2,030	923	550	590	240	540	7,180	1,090	339	153	314	115
8	1,510	776	510	560	250	500	5,610	923	299	123	694	96
9	1,200	707	*530	540	240	490	3,610	1,080	268	*112	434	96
10	1,230	613	550	560	245	600	3,570	1,090	251	96	201	80
11	1,340	546	570	520	275	2,000	5,720	860	333	80	140	78
12	1,670	551	530	490	325	3,000	6,440	714	330	82	184	115
13	7,720	520	500	500	390	2,300	5,520	631	339	90	235	177
14	4,330	500	490	510	400	1,800	5,920	590	457	84	412	*132
15	2,670	535	700	480	390	1,500	9,050	530	727	78	930	117
16	1,930	485	680	460	375	1,750	9,290	481	516	103	723	101
17	1,530	467	600	440	350	1,500	6,510	467	380	143	*970	94
18	1,190	485	900	420	340	1,300	4,640	435	286	160	839	94
19	986	535	2,200	410	320	1,150	5,510	435	239	137	627	74
20	853	562	1,700	390	310	1,050	6,480	472	214	108	398	74
21	762	1,960	1,000	380	310	940	5,000	430	386	96	267	94
22	674	3,770	720	370	500	890	3,420	375	681	94	222	92
23	613	2,590	600	360	800	850	*3,260	343	551	82	180	92
24	573	1,580	620	350	1,000	800	3,050	339	435	74	177	82
25	520	1,330	550	345	900	750	2,690	*330	408	61	170	72
26	520	1,180	510	340	800	710	2,740	357	496	58	156	71
27	708	1,020	510	330	720	670	2,410	352	337	66	140	78
28	909	1,030	600	300	680	640	2,230	317	260	74	123	108
29	769	1,510	1,900	310	-	670	1,790	406	218	72	120	112
30	700	1,750	1,700	305	------	750	1,720	1,320	177	63	108	110
31	720	------	1,150	295	------	850	------	714	------	61	191	------
Total	61,787	31,649	26,090	15,095	11,650	32,280	128,930	23,001	14,493	3,161	9,421	3,083
Mean	1,993	1,055	842	487	416	1,041	4,298	742	483	102	304	103
Cfsm	4.16	2.20	1.76	1.02	0.868	2.17	8.97	1.55	1.01	0.213	0.635	0.215
In.	4.80	2.46	2.03	1.17	0.90	2.51	10.01	1.79	1.13	0.25	0.73	0.24

Calendar year 1954: Max 8,620 Min 106 Mean 1,243 Cfsm 2.59 In. 35.24
Water year 1954-55: Max 9,290 Min 58 Mean 988 Cfsm 2.06 In. 28.02

Peak discharge (base, 7,600 cfs).--Oct. 3 (11 p.m.) 7,840 cfs (10.66 ft); Oct. 13 (6:30 a.m.) 10,700 cfs (12.48 ft); Apr. 15 (11 to 12 p.m.) 10,400 cfs (12.31 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 3 to Apr. 4.

Lake Champlain at Burlington, Vt.

Location.--Lat 44°29'00", long 73°13'30", 50 ft south of Gulf Oil Co. dock at Burlington, Chittenden County, 0.1 mile north of Burlington Water Department pumping station, and 0.6 mile north of railroad station.

Records available.--May 1907 to September 1955.

Gage.--Water-stage recorder. Datum of gage is 92.86 ft above mean sea level, datum of 1929. Prior to July 20, 1937, staff gage at site three-quarters of a mile south and July 20, 1937, to Sept. 7, 1939, float gage at site 0.1 mile south, both at present datum.

Extremes.--Maximum gage height during year, 7.54 ft Apr. 22; minimum, 1.10 ft Sept. 30, affected by seiche.
1907-55: Maximum gage height observed, 8.65 ft Mar. 27, 28, 1936; minimum observed, -0.25 ft Dec. 4, 1908.

Revisions (water years).--WSP 684: 1912-29 (datum correction). WSP 1207: 1938 (datum correction).

Mean gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.69	2.88	3.45	3.65	2.84	3.02	4.73	7.19	4.25	2.70	1.52	1.92
2	2.75	2.85	3.49	3.64	2.80	3.19	4.83	7.09	4.30	2.67	1.54	1.91
3	2.85	2.88	3.47	3.67	2.77	3.33	4.94	6.99	4.31	2.64	1.52	1.89
4	2.95	2.92	3.39	3.67	2.75	3.40	5.05	6.87	4.28	2.56	1.47	1.85
5	3.10	2.97	3.29	3.67	2.71	3.44	5.19	6.78	4.24	2.53	1.44	1.80
6	3.25	3.02	3.21	3.65	2.66	3.45	5.35	6.67	4.18	2.54	1.47	1.78
7	3.30	3.02	3.17	3.64	2.68	3.44	5.62	6.56	4.12	2.48	1.48	1.74
8	3.29	2.99	3.16	3.61	2.65	3.44	5.86	6.44	4.06	2.45	1.45	1.72
9	3.21	3.00	3.17	3.60	2.62	3.43	5.96	6.33	3.97	2.40	1.45	1.68
10	3.26	2.92	3.22	3.57	2.58	3.42	6.00	6.23	3.86	2.35	1.35	1.50
11	3.30	3.03	3.20	3.54	2.60	3.52	6.12	6.13	3.80	2.28	1.35	1.45
12	3.28	2.76	3.16	3.50	2.64	3.87	6.27	6.01	3.72	2.26	1.41	1.55
13	3.48	2.92	3.14	3.46	2.64	4.19	6.35	5.90	3.66	2.23	1.47	1.58
14	3.48	2.84	3.11	3.43	2.63	4.38	6.40	5.78	3.59	2.15	1.54	1.52
15	3.63	2.69	3.17	3.40	2.63	4.48	6.66	5.66	3.55	2.07	1.53	1.46
16	3.54	2.73	3.22	3.39	2.63	4.62	6.95	5.51	3.49	2.08	1.59	1.52
17	3.54	2.59	3.20	3.35	2.64	4.77	7.04	5.40	3.45	2.05	1.70	1.45
18	3.50	2.70	3.21	3.31	2.63	4.86	7.15	5.26	3.37	2.05	1.93	1.43
19	3.47	2.64	3.35	3.29	2.60	4.89	7.27	5.14	3.30	2.04	2.05	1.42
20	3.44	2.55	3.46	3.28	2.59	4.89	7.41	5.05	3.25	2.00	2.09	1.41
21	3.37	2.61	3.50	3.24	2.55	4.89	7.51	4.96	3.19	1.95	2.07	1.39
22	3.33	2.90	3.51	3.23	2.57	4.90	7.52	4.84	3.14	1.90	2.04	1.38
23	3.28	3.04	3.48	3.19	2.66	4.93	7.53	4.74	3.09	1.87	2.10	1.34
24	3.20	3.07	3.51	3.14	2.75	4.92	7.52	4.65	3.04	1.87	2.11	1.28
25	3.16	3.13	3.50	3.10	2.83	4.88	7.50	4.59	3.00	1.84	2.09	1.29
26	3.11	3.21	3.44	3.06	2.88	4.87	7.50	4.54	2.97	1.80	2.02	1.27
27	3.08	3.22	3.44	3.03	2.91	4.84	7.48	4.45	2.93	1.74	2.02	1.22
28	2.98	3.19	3.46	2.99	2.96	4.79	7.42	4.27	2.88	1.70	2.00	1.19
29	3.10	3.21	3.48	2.94	---	4.76	7.36	4.24	2.82	1.70	1.98	1.21
30	2.99	3.34	3.58	2.92	-------	4.72	7.28	4.21	2.75	1.63	1.87	1.15
31	2.86	---	3.64	2.88	-------	4.69	-------	4.17	-------	1.53	1.90	-------
Mean	3.22	2.93	3.35	3.36	2.69	4.23	6.53	5.57	3.55	2.13	1.73	1.51

Calendar year 1954: Max 7.19 Min 0.85 Mean 3.50
Water year 1954-55: Max 7.53 Min 1.15 Mean 3.40

Note.--Gage heights for periods Oct. 2-5, 11-15, Oct. 20 to Nov. 4, Nov. 10-25, Dec. 2-9, July 3-7 computed on basis of records for Richelieu River (Lake Champlain) at Rouses Point, N. Y., adjusted for wind direction and velocity, recorded range in stage when available, and weather records.

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Richelieu River (Lake Champlain) at Rouses Point, N. Y.

Location.--Lat 44°59'45", long 73°21'40", on left bank at outlet of Lake Champlain, 90 ft north of Rutland Railway bridge at Rouses Point, Clinton County, and 1 mile south of Fort Montgomery.

Drainage area.--8,277 sq mi.

Records available.--October 1863 to December 1870 (maximum and minimum monthly gage heights at St. Johns, Quebec, published in WSP 97), March 1871 to September 1955 (daily gage heights; those for 1871-1907 published in WSP 894). January 1875 to September 1916 (monthly discharge) at Chambly, Quebec, published in WSP 424. Gage heights prior to Oct. 1, 1925, published as Richelieu River at Fort Montgomery, Rouses Point.

Gage.--Water-stage recorder. Datum of gage is 93.00 ft above mean sea level, datum of 1929. March 1871 to May 1923, staff gage located in Fort Montgomery at present datum. May 1923 to October 1938, staff gage at present site and datum.

Extremes.--Maximum gage height during year, 7.59 ft Apr. 17; minimum, 0.96 ft Aug. 5.
1871-1955: Maximum gage height observed, 8.80 ft Mar. 30, 1903; minimum observed, -0.83 ft Oct. 23, 1941.
Observations at St. Johns, Quebec, indicate a maximum gage height of 8.83 ft (computed) during April 1869.

Mean gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.63	2.78	3.32	3.61	2.73	2.98	4.61	7.07	4.09	2.70	1.52	1.87
2	2.61	2.75	3.38	3.65	2.70	3.12	4.71	6.99	4.19	2.64	1.41	1.83
3	2.66	2.67	3.40	3.56	2.67	3.24	4.84	6.93	4.22	2.54	1.41	1.81
4	2.87	2.91	3.55	3.55	2.64	3.34	4.93	6.81	4.17	2.52	1.46	1.83
5	2.98	2.87	3.27	3.57	2.63	3.35	5.12	6.68	4.09	2.48	1.40	1.77
6	3.06	2.90	3.23	3.56	2.58	3.38	5.31	6.55	4.06	2.45	1.39	1.80
7	3.15	2.94	3.23	3.48	2.56	3.39	5.51	6.45	3.95	2.42	1.47	1.64
8	3.33	2.93	3.41	3.54	2.55	3.37	5.70	6.34	3.90	2.41	1.36	1.59
9	3.37	2.82	3.29	3.53	2.54	3.37	5.88	6.17	3.81	2.42	1.41	1.64
10	3.18	2.87	3.07	3.47	2.52	3.35	5.91	6.12	3.78	2.32	1.56	2.29
11	3.28	3.02	3.05	3.45	2.48	3.45	5.98	6.00	3.71	2.13	1.40	1.54
12	3.24	2.63	3.06	3.41	2.56	3.77	6.18	5.91	3.65	2.08	1.31	1.49
13	3.35	2.89	3.02	3.37	2.55	4.09	6.47	5.77	3.59	2.10	1.31	1.45
14	3.44	2.86	2.96	3.34	2.56	4.28	6.50	5.62	3.47	2.12	1.54	1.78
15	3.63	2.58	3.04	3.33	2.54	4.44	6.53	5.54	3.44	2.09	1.62	1.45
16	3.55	2.72	3.03	3.30	2.54	4.52	6.81	5.38	3.40	2.09	1.58	1.40
17	3.51	2.54	3.16	3.24	2.55	4.67	7.24	5.29	3.35	2.01	1.66	1.53
18	3.42	2.66	3.24	3.24	2.51	4.76	7.07	5.22	3.31	1.96	1.92	1.42
19	3.36	2.62	3.29	3.21	2.49	4.79	7.10	5.05	3.24	1.90	1.97	1.45
20	3.33	2.51	3.30	3.16	2.49	4.80	7.31	4.98	3.19	1.93	2.02	1.33
21	3.25	2.48	3.33	3.15	2.50	4.77	7.43	4.89	3.16	1.94	2.09	1.23
22	3.22	2.79	3.44	3.13	2.50	4.82	7.43	4.78	3.14	1.89	2.09	1.24
23	3.24	2.94	3.56	3.10	2.58	4.82	7.42	4.71	3.05	1.84	1.93	1.27
24	3.08	3.01	3.41	3.06	2.67	4.79	7.40	4.58	2.96	1.66	1.91	1.20
25	3.06	3.03	3.41	3.02	2.75	4.75	7.37	4.49	2.93	1.69	2.00	1.16
26	3.00	3.10	3.56	3.01	2.81	4.74	7.33	4.38	2.88	1.72	2.02	1.18
27	3.06	3.22	3.37	2.95	2.84	4.74	7.29	4.47	2.84	1.63	1.89	1.31
28	2.94	3.21	3.36	2.91	2.88	4.68	7.26	4.51	2.82	1.56	1.84	1.26
29	3.06	3.13	3.36	2.90	-	4.65	7.19	4.28	2.78	1.55	1.85	1.18
30	2.89	3.28	3.56	2.81	-------	4.61	7.14	4.17	2.75	1.67	2.16	1.46
31	2.82	----	3.58	2.78	-------	4.60	-------	4.06	-------	1.61	1.94	-------
Mean	3.15	2.86	3.30	3.27	2.60	4.14	6.43	5.49	3.46	2.07	1.69	1.51

Calendar year 1954: Max 7.11 Min 0.77 Mean 3.43
Water year 1954-55: Max 7.43 Min 1.16 Mean 3.33

Lake Memphremagog at Newport, Vt.

Location.--Lat 44°56'10", long 72°12'15", on east side of bridge on U. S. Highway 5 at Newport, Orleans County.

Records available.--May 1931 to September 1955.

Gage.--Chain gage read once daily. Datum of gage is 673.00 ft above mean sea level, datum of 1929. Prior to July 21, 1934, chain gage on highway bridge 0.1 mile southeast at same datum.

Extremes.--Maximum gage height observed during year, 11.59 ft Apr. 22; minimum observed, 7.39 ft Sept. 30.
1931-55: Maximum gage height observed, 12.92 ft Apr. 20, 1933; minimum observed, 6.69 ft Nov. 4, 1934.

Remarks.--Elevation of lake regulated by powerplant and gates at Magog, Quebec.

Gage height, in feet, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10.11	-	9.91	10.23	9.98	8.53	8.20	10.29	9.72	9.21	8.11	8.41
2	10.07	-	9.93	10.21	9.98	8.55	8.18	10.15	9.74	9.21	8.09	8.41
3	10.07	-	9.91	10.03	9.98	8.57	8.28	10.09	9.75	9.19	7.97	8.39
4	10.37	-	9.91	10.09	9.98	8.61	8.38	10.15	9.77	9.15	7.93	8.39
5	10.33	9.74	9.91	10.05	9.98	8.63	8.56	10.09	9.82	9.11	7.91	8.37
6	10.35	9.76	9.91	10.03	9.96	8.63	8.70	10.12	9.80	8.99	7.89	8.27
7	10.29	9.72	9.88	10.03	9.96	8.61	9.10	10.04	9.78	8.97	8.07	8.25
8	10.17	9.70	9.84	10.07	9.96	8.60	9.66	10.02	9.76	8.87	8.05	8.18
9	10.01	9.66	9.80	10.09	9.94	8.56	9.82	10.04	9.66	8.82	7.93	8.14
10	9.99	9.64	9.84	10.09	9.94	8.42	9.80	10.02	9.60	8.77	7.89	8.12
11	9.95	9.62	9.90	10.07	9.92	8.38	9.78	10.02	9.58	8.65	7.87	8.04
12	10.05	9.66	9.98	10.07	9.94	8.56	9.98	10.01	9.52	8.63	7.91	8.02
13	10.25	9.62	9.80	10.07	9.89	8.72	10.00	10.00	9.58	8.57	7.89	8.00
14	10.21	9.41	9.72	10.07	9.87	8.76	10.21	9.99	9.68	8.53	7.95	7.88
15	10.17	9.41	9.76	10.05	9.87	8.78	10.63	9.98	9.66	8.53	7.97	7.98
16	10.13	9.37	9.74	10.05	9.89	8.85	10.81	10.05	9.60	8.51	8.11	7.98
17	10.07	9.33	9.72	10.05	9.89	8.86	10.99	9.97	9.56	8.49	8.22	7.88
18	10.03	9.21	9.70	10.05	9.87	8.90	11.07	9.94	9.47	8.49	8.31	7.88
19	9.97	9.23	9.86	10.05	9.85	8.86	11.19	9.98	9.43	8.49	8.37	7.88
20	9.95	9.19	9.90	10.05	9.82	8.84	11.29	9.95	9.41	8.47	8.44	7.94
21	9.93	9.35	9.96	10.03	9.67	8.82	11.29	9.93	9.39	8.43	8.46	7.86
22	9.91	9.61	10.02	10.03	9.62	8.80	11.59	9.90	9.41	8.39	8.50	7.84
23	9.91	9.65	10.00	10.05	8.47	8.76	11.13	9.86	9.43	8.42	8.50	7.68
24	9.89	9.71	9.98	10.05	8.43	8.66	10.84	9.84	9.37	8.47	8.48	7.58
25	9.83	9.73	10.00	10.03	8.43	8.61	10.91	9.78	9.39	8.40	8.50	7.68
26	9.83	9.75	10.02	10.07	8.41	8.48	10.83	9.76	9.39	8.27	8.52	7.69
27	9.77	9.79	10.40	10.04	8.47	8.42	10.77	9.63	9.39	8.27	8.58	7.71
28	9.73	9.79	10.86	10.02	8.51	8.36	10.65	9.62	9.35	8.29	8.54	7.47
29	9.71	9.90	10.40	10.02	-	8.32	10.59	9.61	9.29	8.23	8.38	7.42
30	-	9.93	10.17	10.02	-------	8.28	10.49	9.66	9.23	8.17	8.33	7.39
31	-	-------	10.21	10.02	-------	8.26	-------	9.70	-------	8.11	8.39	-------

Note.--Gage heights for periods Dec. 26, Jan. 6 to Feb. 22, Mar. 7-9, were taken to top of ice. No gage-height record Oct. 30 to Nov. 4.

Black River at Coventry, Vt.

Location.--Lat 44°52'08", long 72°16'14", on right bank 15 ft downstream from highway bridge, 800 ft upstream from Stony Brook, and 0.35 mile northwest of Coventry, Orleans County.

Drainage area.--122 sq mi.

Records available.--October 1951 to September 1955.

Gage.--Water-stage recorder. Altitude of gage is 725 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,530 cfs Apr. 16 (gage height, 6.73 ft); minimum daily, 14 cfs July 29-31.
1951-55: Maximum discharge, that of Apr. 16, 1955; minimum daily, 11 cfs Aug. 29 to Sept. 1, 1953.

Remarks.--Records excellent except those for periods of ice effect, which are fair. Flow regulated by mill above station.

Rating tables, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 15				Apr. 16 to Sept. 30			
2.2	62	4.5	650	1.5	12	3.5	324
2.5	110	5.0	920	1.8	28	4.0	490
3.0	208	6.0	1,670	2.1	50	5.0	960
3.5	324	6.5	2,220	2.5	110	6.0	1,670
4.0	479			3.0	208	6.5	2,220

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	218	157	272	250	65	185	311	327	517	38	16	66
2	240	136	229	225	64	230	395	281	514	36	22	58
3	461	*130	190	220	*64	210	430	249	386	40	40	*49
4	1,160	179	155	210	66	200	520	223	228	39	36	46
5	1,010	238	*160	180	62	175	620	212	143	53	35	52
6	710	208	155	165	64	155	1,000	225	121	46	27	47
7	604	163	138	150	74	140	1,310	221	105	41	64	51
8	430	141	140	140	66	130	1,090	206	90	40	204	42
9	301	132	139	135	66	125	848	210	87	37	*93	41
10	*256	119	145	130	72	135	1,030	191	78	22	56	34
11	256	110	145	120	80	220	1,370	163	76	44	91	30
12	293	112	145	115	100	520	1,570	145	83	38	137	64
13	355	108	138	110	125	540	1,300	133	94	32	89	74
14	291	102	135	110	125	440	1,320	133	116	36	293	61
15	236	105	160	105	115	415	1,940	130	148	35	342	53
16	202	93	210	105	110	472	2,180	121	109	31	692	43
17	187	95	200	100	105	420	1,410	112	80	17	646	38
18	167	105	195	100	105	365	1,040	111	66	55	740	38
19	151	119	450	96	100	325	1,250	100	58	54	534	47
20	143	141	370	95	100	285	1,420	107	61	41	341	41
21	138	385	300	92	100	265	1,090	94	60	44	173	33
22	128	650	250	90	135	240	910	85	68	38	105	36
23	123	519	210	86	225	231	*770	84	65	31	106	37
24	115	417	175	84	*300	216	687	84	59	18	189	35
25	110	253	155	80	270	205	633	85	60	30	163	17
26	110	221	150	76	240	190	628	*95	80	40	113	49
27	128	210	150	74	220	180	656	105	69	41	85	40
28	193	212	160	70	195	155	610	86	65	26	71	36
29	169	240	350	68	-	170	494	79	45	14	67	42
30	153	284	375	67	------	175	399	121	51	14	60	43
31	167	----	310	66	------	*206	------	208	------	14	63	----
Total	9,205	6,084	6,456	3,714	3,413	7,920	29,231	4,726	3,782	1,085	5,693	1,343
Mean	297	203	208	120	122	255	974	152	126	35.0	184	44.8
Cfsm	2.43	1.66	1.70	0.984	1.00	2.09	7.98	1.25	1.03	0.287	1.51	0.367
In.	2.81	1.85	1.97	1.13	1.04	2.41	8.91	1.44	1.15	0.33	1.74	0.41

Calendar year 1954: Max 1,900 Min 34 Mean 262 Cfsm 2.15 In. 29.13
Water year 1954-55: Max 2,180 Min 14 Mean 226 Cfsm 1.85 In. 25.19

Peak discharge (base, 1,700 cfs).--Apr. 16 (3:30 a.m.) 2,530 cfs (6.73 ft).
* Discharge measurement made on this day.
Note.--Stage-discharge relation affected by ice Dec. 3-8, 11, 12, Dec. 14 to Mar. 15, Mar. 18-20, 25-30, Apr. 3-6.

Clyde River at Newport, Vt.

Location.--Lat 44°56'20", long 72°11'25", on right bank in Newport, Orleans County, just downstream from small tributary entering from north, 1 mile upstream from mouth.

Drainage area.--142 sq mi.

Records available.--May 1909 to September 1924, November 1928 to May 1936, September 1938 to September 1955. Prior to November 1928, published as "at West Derby."

Gage.--Water-stage recorder. Datum of gage is 682.36 ft above mean sea level, datum of 1929. May 25, 1909, to Sept. 20, 1915, staff or chain gage and Sept. 21, 1915, to Sept. 30, 1924, and Nov. 16, 1928, to May 4, 1936, water-stage recorder, at site 0.65 mile upstream at different datum.

Average discharge.--33 years (1909-19, 1929-35, 1938-55), 249 cfs.

Extremes.--Maximum discharge during year, 2,140 cfs Apr. 17 (gage height, 7.66 ft); minimum daily, 16 cfs July 30, 31.
1909-24, 1928-36, 1938-55: Maximum discharge, 3,900 cfs Mar. 20, 1936 (gage height, 5.76 ft, site and datum then in use), from rating curve extended above 2,800 cfs on basis of computation of peak flow over dam; minimum daily, 3.0 cfs Oct. 27, 1930.

Remarks.--Records good except those for periods of ice effect, which are fair. Flow regulated by powerplant and reservoirs above station.

Revisions (water years).--WSP 744: 1913(M), drainage area. WSP 924: 1940.

Rating table, water year 1954-55, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	13	4.0	325
2.4	26	5.0	695
2.6	45	6.0	1,160
3.0	100	7.0	1,720
3.5	204	8.0	2,360

Discharge, in cubic feet per second, water year October 1954 to September 1955

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	346	274	266	241	b200	291	280	794	280	310	37	243
2	230	319	320	141	b200	302	187	744	290	142	28	219
3	313	330	286	277	b155	297	140	704	226	20	46	41
4	467	332	158	360	b205	301	377	641	259	34	46	*19
5	533	319	*54	242	b95	266	448	623	237	62	47	51
6	561	33	235	253	b25	99	459	589	296	120	38	95
7	579	35	247	240	b200	289	485	561	225	118	41	60
8	574	256	172	b135	b160	314	704	545	225	151	31	49
9	523	321	138	b75	b155	215	686	537	232	*145	*44	36
10	*472	274	220	b255	179	212	704	501	240	29	66	19
11	455	240	170	282	258	262	794	459	79	268	44	18
12	410	188	83	b250	181	340	844	430	18	317	36	59
13	441	24	172	b245	b25	188	906	419	224	120	20	50
14	424	24	168	b250	b235	323	1,010	384	217	254	22	30
15	414	92	198	190	b235	417	1,320	273	196	302	68	37
16	362	70	206	25	218	430	1,770	238	204	122	172	81
17	271	187	b180	232	261	430	1,910	289	203	76	220	98
18	351	222	203	238	259	434	1,680	257	82	18	295	22
19	353	233	168	214	24	434	1,470	251	87	22	277	90
20	309	209	b245	b260	56	427	1,380	247	261	26	292	121
21	308	146	319	b200	258	424	1,330	121	248	36	326	41
22	241	324	317	b25	325	417	*1,190	128	222	97	284	40
23	115	373	295	94	294	378	1,060	258	198	54	255	51
24	34	388	305	253	[illegible]	255	1,040	238	150	27	322	22
25	262	374	112	b27[illegible]	[illegible]45	233	1,060	*118	166	30	82	21
26	257	346	b105	b200	b210	b265	1,070	98	102	92	107	50
27	226	348	218	b195	196	129	1,060	228	247	29	122	31
28	206	278	290	b240	261	b245	1,020	98	251	72	94	40
29	197	256	241	b25	-	244	956	24	290	42	258	29
30	141	248	340	b25	------	281	875	106	407	16	222	49
31	79	---	342	b200	------	*377	--------	118	--------	16	83	------
Total	10,454	7,063	6,773	6,092	5,353	9,519	28,215	11,021	6,362	3,167	4,025	1,812
Mean	337	235	218	197	191	307	940	356	212	102	130	60.4
Cfsm	2.37	1.65	1.54	1.39	1.35	2.16	6.62	2.51	1.49	0.718	0.915	0.425
In.	2.74	1.85	1.77	1.60	1.40	2.49	7.39	2.89	1.67	0.83	1.05	0.47

Calendar year 1954: Max 2,450 Min 22 Mean 348 Cfsm 2.45 In. 33.26
Water year 1954-55: Max 1,910 Min 16 Mean 274 Cfsm 1.93 In. 26.15

* Discharge measurement made on this day.
b Stage-discharge relation affected by ice.
Note.--Discharge in cubic feet per second per square mile and runoff in inches may not represent natural flow because of regulation.

Marsh Creek near Germfask, Mich.

Location.--Lat 46°10'00", long 86°00'50", in E½ sec. 35, T. 44 N., R. 14 W., 1 mile upstream from mouth and 7 miles southwest of Germfask.

Drainage area.--15 sq mi, not including area from which flow is diverted to Duck Creek (watershed indeterminate because of swamps).

Records available.--April 1938 to September 1941 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 650 ft (estimated from river-profile map of Manistique River). Prior to Feb. 23, 1939, staff gage at same site and datum.

Extremes.--1938-41: Maximum discharge, 319 cfs Apr. 27, 1939 (gage height, 8.39 ft); minimum, 0.2 cfs Aug. 15, 1939 (gage height, 0.80 ft).

Remarks.--Flow originating upstream from line between R. 14 W. and R. 15 W. is diverted from Marsh Creek basin through drainage canal into Duck Creek and is not included in these records.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1941, superseding those published in WSP 924, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1941		1941-Con.		1941-Con.		1941-Con.		1941-Con.	
Sept. 1	6.7	Sept. 7	4.8	Sept.13	5.7	Sept.19	13	Sept.25	6.8
2	5.4	8	4.2	14	6.4	20	11	26	9.5
3	4.6	9	4.4	15	9.0	21	9.7	27	9.4
4	4.4	10	6.5	16	13	22	8.4	28	10
5	5.7	11	7.4	17	17	23	7.3	29	10
6	5.7	12	6.5	18	15	24	6.5	30	9.7

Month	Cfs-days	Maximum	Minimum	Mean
Sept. 1941.....	243.7	17	4.2	8.12
Water year 1940-41...	3,556.6	78	1.1	9.74

Galien River near New Troy, Mich.

Location.--Lat 41°51'23", long 86°32'48", in SW¼ sec. 17, T. 7 S., R. 19 W., on downstream side of highway bridge, 1 mile upstream from East Branch and 1.4 miles south of New Troy.

Drainage area.--47 sq mi.

Records available.--July 1945 to February 1947 (discontinued).

Gage.--Wire-weight gage. Altitude of gage is 630 ft (from topographic map).

Extremes.--1945-47: Maximum discharge, 427 cfs Jan. 5, 1946 (gage height, 10.04 ft); minimum, 10 cfs Aug. 28, 1946 (gage height, 3.54 ft).

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1947, superseding those published in WSP 1084, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1946		1946-Con.		1946-Con.		1946-Con.	
Nov. 1	24	Nov. 12	23	Nov. 23	20	Dec. 4	19
2	27	13	21	24	21	5	19
3	24	14	20	25	19	6	18
4	23	15	19	26	19	7	16
5	21	16	21	27	20	8	17
6	20	17	24	28	20	9	19
7	23	18	22	29	19	10	24
8	23	19	20	30	19	11	24
9	22	20	21	Dec. 1	19	12	65
10	23	21	21	2	19		
11	22	22	21	3	19		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
November 1946.....	642	27	19	21.4	0.455	0.51
December.....	880	93	16	28.4	.604	.70
Calendar year 1946...	13,617	376	11	37.3	.794	10.78

Portage River near Munith, Mich.

Location.--Lat 42°21'00", long 84°15'45", on line between secs. 25 and 36, T. 1 S., R. 1 E., on highway bridge half a mile downstream from Orchard Creek and 2¾ miles south of Munith.

Drainage area.--118 sq mi.

Records available.--February 1944 to June 1946 (discontinued).

Gage.--Wire-weight gage. Datum of gage is 900.00 ft above mean sea level, datum of 1929 (levels by Michigan Department of Conservation). Prior to Apr. 9, 1945, chain gage at same site and datum.

Extremes.--1944-46: Maximum discharge, 625 cfs May 19, 1945 (gage height, 9.84 ft); minimum daily, 6.0 cfs Aug. 15, 1944.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1946, superseding those published in WSP 1054, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1946		1946-Con.		1946-Con.	
May 28	85	June 4	69	June 11	37
29	70	5	64	12	34
30	60	6	60	13	33
31	70	7	52	14	30
June 1	80	8	50	15	26
2	77	9	50	16	31
3	73	10	42		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
May 1946.....	1,667	120	25	53.8	0.456	0.53
June.....	2,199	160	26	73.3	.621	.69

Fish Creek near Carson City, Mich.

Location.--Lat 43°10', long 84°51', on line between secs. 14 and 23, T. 9 N., R. 5 W., on downstream side of highway bridge 1 mile south of Carson City.

Drainage area.--145 sq mi.

Records available.--February 1936 to September 1938 (discontinued).

Gage.--Chain gage. Altitude of gage is 740 ft (from survey level line in vicinity). Oct. 10, 1936, to July 25, 1937, water-stage recorder at same site and datum.

Extremes.--1936-38: Maximum discharge, 1,670 cfs Feb. 6, 1938 (gage height, 8.63 ft); minimum observed, 8.4 cfs Aug. 7, 8, 1936.

Remarks.--Slight regulation by powerplants above station.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1936, and 1938, superseding those published in WSP 804 and 854, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1936		1936-Con.		1936-Con.		1937-Con.		1938-Con.	
Feb. 27	180	Mar. 11	500	Mar. 24	307	Dec. 29	43	Jan. 9	53
28	180	12	450	25	281	30	45	10	48
29	180	13	400	26	256	31	50	11	47
Mar. 1	180	14	360	27	231			12	46
2	180	15	340	28	207	1938		13	45
3	180	16	387	29	183	Jan. 1	54	14	45
4	200	17	360	30	172	2	63	15	45
5	230	18	333			3	70	16	46
6	220	19	307	1937		4	70	17	47
7	210	20	307	Dec. 2	63	5	68	18	48
8	220	21	281	3	60	6	65	19	48
9	270	22	281	7	50	7	62		
10	360	23	294	8	55	8	58		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1936.....	8,635	500	148	279	1.92	2.21
December 1937.....	1,666	66	35	53.7	.370	.43
Calendar year 1937	30,788	396	22	84.4	.582	7.90
January 1938.....	2,148	130	45	69.3	.478	.55
Water year 1937-38.	39,225	1,560	21	107	.738	10.06

St. Marys River near Willshire, Ohio

Location.--Lat 40°44'05", long 84°44'10", in sec. 34, T. 3 S., R. 1 E., at highway bridge 3 miles southeast of Willshire, Van Wert County, and three-fourths of a mile upstream from Black Creek.

Drainage area.--355 sq mi.

Records available.--September 1925 to September 1932 (discontinued).

Gage.--Chain gage. Altitude of gage is 775 ft (from topographic map).

Average discharge.--7 years (1925-32), 277 cfs.

Extremes.--1925-32: Maximum discharge, 4,260 cfs Jan. 15, 1930 (gage height, 16.65 ft, from graph based on gage readings); minimum, 5.3 cfs Aug. 20, 1932 (gage height, 1.18 ft).

Remarks.--Flow regulated by Lake St. Marys. Some diversion from or into Wabash River and into Miami and Erie Canal.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1926, superseding those published in WSP 624, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1926		1926-Con.		1926-Con.		1926-Con.		1926-Con.	
Jan. 1	35	Jan. 13	49	Jan. 25	349	Feb. 6	427	Feb. 18	565
2	43	14	49	26	193	7	335	19	619
3	49	15	49	27	137	8	241	20	601
4	52	16	55	28	146	9	253	21	675
5	55	17	58	29	113	10	253	22	835
6	58	18	493	30	97	11	253	23	755
7	58	19	835	31	101	12	193	24	601
8	72	20	921	Feb. 1	173	13	193	25	1,030
9	76	21	695	2	307	14	475	26	1,180
10	66	22	715	3	379	15	493	27	1,080
11	55	23	795	4	411	16	529	28	1,140
12	55	24	637	5	427	17	601		

Month	Maximum	Minimum	Mean
January 1926.....	921	35	231
February.....	1,180	173	537
Water year 1925-26.....	2,930	16	328
Calendar year 1926.....	2,930	17	364

Ottawa River at Kalida, Ohio

Location.--Lat 40°58'51", long 84°12'12", in SW¼ sec. 5, T. 1 S., R. 6 E., at highway bridge in Kalida, Putnam County, 1 mile upstream from Plum Creek and 3½ miles upstream from mouth.

Drainage area.--315 sq mi.

Records available.--September 1930 to December 1935 (discontinued).

Gage.--Chain gage. Datum of gage is 707.41 ft above mean sea level.

Average discharge.--5 years (1930-35), 152 cfs.

Extremes.--1930-35: Maximum discharge, 4,110 cfs Jan. 1, 1933 (gage height, 13.90 ft); minimum, 4.3 cfs Sept. 18, 1932 (gage height, 1.22 ft).

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1931, 1935-36, superseding those published in WSP 729 and 784, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1930		1935-Con.		1935-Con.		1935-Con.		1935-Con.	
Dec. 1	54	Aug. 11	117	Sept. 9	13	Oct. 8	8.5	Nov. 6	18
		12	64	10	22	9	8.8	7	16
1935		13	49	11	26	10	11	8	20
July 16	190	14	40	12	14	11	10	9	17
17	72	15	46	13	12	12	7.6	10	20
18	49	16	40	14	10	13	15	11	22
19	36	17	34	15	9.4	14	10	12	24
20	28	18	43	16	8.8	15	9.7	13	22
21	24	19	56	17	8.5	16	8.8	14	23
22	60	20	36	18	8.2	17	8.8	15	20
23	176	21	33	19	7.6	18	11	16	18
24	1,350	22	20	20	8.5	19	12	17	18
25	409	23	18	21	8.8	20	12	18	21
26	986	24	17	22	8.8	21	12	19	20
27	358	25	15	23	9.4	22	15	20	16
28	145	26	13	24	9.1	23	13	21	15
29	134	27	12	25	8.8	24	43	22	16
30	46	28	12	26	8.2	25	18	23	16
31	34	29	12	27	12	26	14	24	15
Aug. 1	26	30	13	28	14	27	12	25	16
2	26	31	12	29	18	28	10	26	16
3	21	Sept. 1	12	30	14	29	12	27	17
4	24	2	12	Oct. 1	12	30	12	28	15
5	84	3	12	2	9.4	31	13	29	15
6	43	4	15	3	8.8	Nov. 1	13	30	14
7	52	5	14	4	9.7	2	12		
8	139	6	9.1	5	8.2	3	12		
9	232	7	9.7	6	8.2	4	13		
10	145	8	12	7	8.8	5	16		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
December 1930.....	-	71	10	17.5	0.056	0.06
Water year 1930-31.....	-	1,160	6.3	47.5	.151	2.05
Calendar year 1931.....	-	1,290	6.3	76.3	.242	3.29
July 1935.....	8,025	1,790	20	259	.822	.95
August.....	1,494	232	12	48.2	.153	.18
September.....	354.9	26	7.6	11.8	.037	.04
Water year 1934-35.....	47,074.9	3,300	5.4	129	.410	5.55
October 1935.....	372.3	43	7.6	12.0	.038	.04
November.....	516	23	12	17.2	.055	.06
December.....	-	-	-	†30.0	†.095	†.11
Calendar year 1935.....	47,481.2	3,300	7.6	130	.413	5.60

† Estimated; not previously published.

Blanchard River at Glandorf, Ohio

Location.--Lat 41°02'40", long 84°04'55", in NE¼ sec. 17, T. 1 N., R. 7 E., near center of span of upstream side of highway bridge, half a mile upstream from Pike Run and three-quarters of a mile north of Glandorf, Putnam County.

Drainage area.--643 sq mi.

Records available.--August 1921 to July 1928, January 1947 to December 1951 (discontinued).

Gage.--Wire-weight gage read once daily below 5 ft and twice daily above. Aug. 30, 1921, to July 31, 1928, chain gage at same site and datum.

Average discharge.--12 years (1921-28, 1946-51), 598 cfs.

Extremes.--1921-28, 1947-51: Maximum discharge, 15,800 cfs Feb. 15, 1950 (gage height, 27.0 ft); minimum, 0.3 cfs Oct. 7, 1951 (gage height, 1.73 ft).

Revisions (water years).--WSP 1084: 1922, 1924, 1926-28. Revised figures of discharge, in cubic feet per second, for the water years 1926, 1927, and 1928, superseding those published in WSP 624, 644, and 664, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1925		1926-Con.		1926-Con.		1926-Con.		1927-Con.	
Oct. 16	40	Jan. 11	65	Feb. 26	3,000	Mar. 15	85	Dec. 25	130
17	70	12	60	27	2,500	16	85	26	120
18	90	13	55	28	2,000			27	110
19	50	14	50	Mar. 1	1,500	1927		28	100
Nov. 8	240	15	50	2	1,000	Sept. 9	190	29	140
12	1,100	16	45	3	600	10	170	30	170
13	1,400	24	100	4	400	11	170	31	250
14	1,700	25	55	5	200	12	160		
15	1,900	26	55	6	150	13	150	1928	
16	1,800	27	55	7	130	15	650	Jan. 1	270
17	1,500	28	55	8	120	Dec. 18	3,000	2	270
18	950	29	55	9	110	19	1,500	3	75
19	500	30	55	10	100	20	800	4	70
		31	55	11	95	21	500	5	70
1926		Feb. 1	100	12	90	22	300	6	70
Jan. 9	75	2	150	13	90	23	200	7	150
10	70	25	3,500	14	85	24	150	8	300

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1925	121	18	51.8	0.081	0.09
November	1,900	38	492	.765	.85
Calendar year 1925	4,460	6.9	238	.370	5.03
January 1926	1,940	45	221	.344	.40
February	3,820	100	1,280	1.99	2.07
March	3,420	85	815	1.27	1.46
Water year 1925-26	10,900	9	620	.964	13.11
Calendar year 1926	10,900	9	691	1.07	14.62
September 1927	650	27	152	.236	.26
Water year 1926-27	12,500	18	678	1.05	14.32
December 1927	7,270	100	2,120	3.30	3.80
Calendar year 1927	12,500	18	760	1.18	16.04
January 1928	1,140	-	452	.703	.81

South Branch Portage River near Pemberville, Ohio

Location.--Lat 41°22'45", long 83°28'35", in sec. 21, T. 5 N., R. 12 E., at highway bridge, 2½ miles southwest of Pemberville, Wood County.
Drainage area.--334 sq mi.
Records available.--August 1930 to September 1935 (discontinued).
Gage.--Chain gage. Altitude of gage is 645 ft (from topographic map).
Average discharge.--5 years (1930-35), 139 cfs.
Extremes.--1930-35: Maximum discharge, 7,350 cfs Mar. 14, 1933 (gage height, 13.00 ft); minimum, 0.2 cfs Oct. 13-15, 1934.
Revisions.--The maximum discharge for the water year 1934 has been revised to 3,840 cfs Apr. 17, 1934 (gage height, 9.6 ft, from graph based on gage readings), superseding figure published in WSP 784.
Revisions.--Revised figures of discharge, in cubic feet per second, for periods in the water year 1935, superseding those published in WSP 784, are given herewith:

1935		1935-Con.	
Feb. 15	70	Feb. 26	200
16	130	27	200
17	90	28	150

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
February 1935	1,201.8	200	5.8	42.9	0.128	0.13
Water year 1934-35	29,826.8	2,290	.2	81.7	.245	3.33

Sandusky River near Bucyrus, Ohio

Location.--Lat 40°48'13", long 83°00'21", in NE¼ sec. 10, T. 3 S., R. 16 E., on right bank at upstream side of highway bridge, 1½ miles west of Bucyrus, Crawford County, and 12 miles downstream from Loss Creek.
Drainage area.--89.8 sq mi.
Records available.--August 1925 to November 1935, July 1938 to December 1951 (discontinued).
Gage.--Water-stage recorder. Datum of gage is 955.9 ft above mean sea level, adjustment of 1912. Prior to May 11, 1940, chain gage at same site and datum.
Average discharge.--23 years, 81.4 cfs.
Extremes.--1925-35, 1938-51: Maximum discharge observed, 5,800 cfs Dec. 14, 1927 (gage height, 9.15 ft); minimum discharge, 0.4 cfs Sept. 29, 1941, July 16, 1942.
Flood of Mar. 23, 1913, reached a stage of 14.5 ft, from floodmarks.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in the water-supply papers indicated.

WSP	Water year	Date	Discharge (cfs)	Gage height (feet)
624	1926	Apr. 9, 1926	1,780	6.6
744	1928	Dec. 14, 1927	5,800	9.15
729	1932	Jan. 18, 1932	1,640	6.4
759	1934	Mar. 3, 1934	1,070	5.8
784	1935	May 3, 1935	1,260	5.7
874	1939	Mar. 12, 1939	4,200	9.00
894	1940	Mar. 3, 1940	2,660	7.90
1054	1946	June 17, 1946	3,020	8.21

Remarks.--Low flow slightly affected by operation of reservoirs for municipal supply of Bucyrus.
Revisions (water years).--WSP 744: 1925-32. WSP 874: 1938. Revised figures of discharge, in cubic feet per second, for the water years 1931 and 1939, superseding figures published in WSP 744 and 874, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1930		1930-Con.		1938-Con.		1938-Con.	
Oct. 13	3.0	Oct. 22	3.0	Oct. 4	1.2	Oct. 13	2.2
14	3.0	23	2.4	5	2.3		
15	2.4	24	3.0	6	1.5	1939	
16	2.1	25	2.6	7	1.3	Mar. 12	2,210
17	2.4	26	3.0	8	1.2	13	1,760
18	2.1			9	1.3		
19	1.9	1938		10	1.3		
20	2.3	Oct. 2	1.3	11	1.2		
21	2.9	3	1.2	12	1.3		

Month	Cfs-days	Maximum	Minimum	Mean	Per square mile	Runoff in inches
October 1930	-	9.0	1.9	3.34	0.037	0.04
Calendar year 1930	-	3,110	.8	87.9	.979	13.28
Water year 1930-31		547	1.9	36.7	.409	5.54
October 1938	54.2	3.0	1.2	1.75	.019	.02
March 1939	9,031	2,210	30	291	3.24	3.74
Water year 1938-39	23,765.3	2,210	1.0	65.1	.725	9.82
Calendar year 1939	22,880.0	2,210	1.0	62.7	0.698	9.45

Orwell Brook near Altmar, N. Y.

Location.--Lat 43°31'35", long 76°01'00", at downstream side of highway bridge, 1½ miles northwest of Altmar, Oswego County, and 700 ft upstream from Salmon River.
Records available.--June 1911 to June 1916 (discontinued).
Drainage area.--22.1 sq mi.
Gage.--Chain gage. Altitude of gage is 520 ft (from topographic map).
Extremes.--1911-16: Maximum discharge, 610 cfs Apr. 7, 1912 (gage height, 5.5 ft); minimum, 5 cfs Aug. 6, 7, 14, 22, 23, 24, Sept. 5, 1911 (gage height, 1.65 ft).
Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1914 and 1916, superseding those published in WSP 384 and 434, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1914		1914-Con.		1915-Con.		1915-Con.	
Mar. 1	46	Mar. 11	36	Dec. 11	34	Dec. 21	60
2	42	12	40	12	32	22	50
3	38	13	38	13	30	23	46
4	36	14	36	14	34	24	44
5	34	15	55	15	32	25	55
6	34	16	80	16	30	26	60
7	32	17	100	17	38	27	80
8	34			18	60	28	65
9	40	1915		19	90	29	60
10	38	Dec. 10	36	20	70	30	55
						31	50

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1914.....	453	32	103	4.66	5.36
Water year 1913-14.....	453	6	44.0	1.99	27.01
Calendar year 1914.....	453	6	a41.5	1.88	25.46
December 1915.....	90	30	49.5	2.24	2.58
Calendar year 1915.....	368	8	36.7	1.66	22.56

a Partly estimated.

Black River at Black River, N. Y.

Location.--Lat 44°00'05", long 75°48'35", on left bank a quarter of a mile downstream from highway bridge and powerplant of Northern New York Utilities Co., three-quarters of a mile downstream from village of Black River, Jefferson County, and 4 miles upstream from Watertown.
Drainage area.--1,858 sq mi (revised). At former sites, September 1902 to December 1913, 1,851 sq mi; March 1897 to November 1901, 1,870 sq mi (revised).
Records available.--February 1897 to November 1901, August 1902 to December 1913, October 1916 to September 1920 (discontinued). Monthly discharge only July to September 1920, published in WSP 1307. Published as "at Huntingtonville Dam, near Watertown" 1897-1901 and as "at (or near) Felts Mills" 1902-13.
Gage.--Staff gage. Altitude of gage is 510 ft (from topographic map). Feb. 22, 1897, to Dec. 31, 1901, at site 2 miles downstream at different datum and Sept. 1, 1902, to Dec. 31, 1913, at site 5 miles upstream at different datum.
Average discharge.--19 years, 3,706 cfs.
Extremes.--1897-1913, 1916-20: Maximum discharge, 32,500 cfs Mar. 28, 1913 (furnished by State engineer and surveyor); minimum daily, 10 cfs Aug. 26, 1907.
Revisions.--The maximum discharge for the water year 1920 has been revised to 18,400 cfs Mar. 28, 1920 (gage height, 12.8 ft, from graph based on gage readings), superseding figure published in WSP 504.
Remarks.--Flow regulated by Beaver River flow, Fulton Chain of Lakes, Forestport Reservoir, and other reservoirs. Some diurnal fluctuation at low flow caused by mills and powerplants above station. During canal season water is diverted out of basin through Forestport feeder and Black River canal (flowing south). Water for municipal supply of city of Watertown diverted from river at Huntingtonville Dam.
Revisions.--Revised figures of discharge, in cubic feet per second, for water year 1920, superseding those published in WSP 504, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1920		1920-Con.		1920-Con.	
Jan. 14	1,600	Jan. 20	1,300	Jan. 26	1,100
15	1,500	21	1,400	27	1,100
16	1,400	22	1,500	28	1,200
17	1,400	23	1,400	29	1,300
18	1,300	24	1,300	30	1,400
19	1,300	25	1,200	31	1,500

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
January 1920.....	3,410	1,100	1,750	0.942	1.08

Oswegatchie River near Ogdensburg, N. Y.

Location.--Lat 44°38'00", long 75°28'30", on upstream side of Eel Weir Bridge, 1 mile downstream from Black Lake and 5½ miles upstream from Ogdensburg, St. Lawrence County, and mouth.

Drainage area.--1,580 sq mi.

Records available.--May 1903 to November 1916 (discontinued).

Gage.--Chain gage. Altitude of gage is 270 ft (from topographic map).

Average discharge.--13 years, 2,660 cfs.

Extremes.--1903-16: Maximum discharge, 15,800 cfs Mar. 31, 1905 (gage height, 10.15 ft); minimum daily, 295 cfs June 10, 1915.

Revisions.--The maximum discharge for the water year 1913 has been revised to 14,800 cfs Mar. 31, 1913 (gage height, 10.0 ft, from graph based on gage readings), superseding figure published in WSP 384.

Remarks.--Some diurnal fluctuation caused by mills 5 miles above station at Heuvelton and 10 miles above station at Rensselaer Falls. Flow regulated by Cranberry Lake (total capacity, 2,530,000,000 cu ft) and Black Lake.

Revisions.--Revised figures of discharge, in cubic feet per second, for high-water periods in the water year 1913, superseding those published in WSP 354, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge
1913		1913-Con.		1913-Con.	
Mar. 31	14,400	Apr. 6	12,000	Apr. 12	8,690
Apr. 1	13,800	7	12,000	13	8,050
2	12,700	8	12,000	14	7,740
3	12,000	9	11,300	15	6,810
4	12,000	10	10,640	16	6,200
5	12,700	11	9,650	17	5,010

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
March 1913.....	14,400	1,770	7,080	4.48	5.16
April.....	13,750	1,620	6,950	4.40	4.91
Water year1912-13.....	14,400	300	3,530	2.23	30.27
Calendar year 1913.....	14,400	300	3,050	1.93	26.22

Deer River at Brasher Iron Works, N. Y.

Location.--Lat 44°53'35", long 74°41'50", on left bank 1,000 ft downstream from highway bridge in village of Brasher Iron Works, St. Lawrence County, and 2 miles upstream from St. Regis River.

Drainage area.--189 sq mi (revised).

Records available.--July 1912 to September 1916 (discontinued). Published as "at Ironton" July to December 1912.

Gage.--Staff gage. Altitude of gage is 210 ft (from topographic map).

Extremes.--1912-16: Maximum discharge, 9,700 cfs Jan. 17, 1913 (gage height, 9.3 ft), from rating curve extended above 3,000 cfs by logarithmic plotting; minimum observed, 17 cfs Aug. 19, 20, Sept. 14, 1913 (gage height, 0.80 ft).

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1913, 1915, and 1916, superseding those published in WSP 354, 404, and 434, are given herewith:

Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge	Date	Discharge
1913		1914-Con.		1914-Con.		1915-Con.		1915-Con.	
Jan. 10	600	Dec. 17	75	Dec. 27	75	Dec. 12	48	Dec. 22	70
17	2,700	18	70	28	70	13	50	23	85
18	2,000	19	80	29	90	14	55	24	120
24	550	20	90	30	85	15	55	25	150
June 1	251	21	100	31	80	16	50	26	200
		22	130			17	55	27	280
1914		23	110	1915		18	60	28	240
Dec. 14	90	24	95	Dec. 9	55	19	70	29	220
15	85	25	85	10	55	20	70	30	190
16	80	26	80	11	50	21	65	31	160

Month	Maximum	Minimum	Mean	Per square mile	Runoff in inches
January 1913	2,700	320	883	4.67	5.39
June	251	52	102	.540	.60
Water year 1912-13	3,920	17	348	1.84	25.01
Calendar year 1913	3,920	17	a279	a1.48	a20.00
December 1914	294	70	115	.608	.70
Calendar year 1914	2,810	25	173	.915	12.46
Water year 1914-15	920	35	152	.804	10.90
December 1915	280	48	99.4	.526	.61
Calendar year 1915	920	37	149	.788	10.68
Water year 1915-16	3,760	24	229	1.21	16.49

a Partly estimated.

For several years records of the water-surface elevation of many of the lakes in Indiana have been collected by the Geological Survey under cooperative agreements with the Indiana Department of Conservation, Division of Water Resources. These records have not been published but are available in the files of the district office of the Geological Survey in Indianapolis, Ind. In general, the records are based on once-daily readings of a staff gage by a local observer and consist of daily, monthly, and yearly mean water-surface elevation as well as graphs showing the fluctuation in elevation. Discharge measurements, made at the outflow, are also available in some instances.

The lakes for which records have been collected are listed in the following table. The established level, sometimes referred to as the legal level, is that elevation set by the courts to which the average level of the lake is to be held; it is normally set at about the average level that has prevailed for a number of years prior to the establishment of the level.

Lakes in Indiana in the St. Lawrence River basin for which records are available

Lake	County	Drainage area (square miles)	Surface area (acres)	Established level†	Records available
Adams Lake near Wolcottville	LaGrange	5.69	267	953.59	1945-55
Attwood Lake near Wolcottville	LaGrange	1.31	156	899.99	1947-52
Bass Lake near Angola	Steuben	.60	56	-	1954-55
Bear Lake near Wolflake	Noble	6.12	125	-	1942-55
Big Long Lake near Stroh	LaGrange	4.13	378	-	1953-55
Big Turkey Lake at Stroh	LaGrange	34.6	424	926.61	1945-55
Bixler Lake at Kendallville	Noble	3.63	112	963.65	1945-55
Blackman Lake near Wolcottville	LaGrange	1.4	60.6	-	1953-55
Bower Lake near Pleasant Lake	Steuben	87.5	24	-	1945-55
Cedar Lake near Ontario	LaGrange	1.66	108	871.90	1948-51
Cedar Lake near Waterloo	De Kalb	21.8	27	896.76	1943-54
Cree Lake near Kendallville	Noble	4.90	54	945.23	1949-55
Crooked Lake at Crooked Lake	Steuben	11.9	733	988.17	1945-55
DeWart Lake near Leesburg	Kosciusko	7.88	476	867.70	1945-55
Diamond Lake near Wawaka	Noble	2.82	96	-	1945-55
Eagle Lake near Kimmel	Noble	1.77	59	-	1945-48
Emma Lake near Emma	LaGrange	-	38	-	1954-55
Fish Lake near Plato	LaGrange	10.8	91	-	1945-55
Fish Lake near Scott	LaGrange	6.14	22	-	1954-55
Fox Lake near Angola	Steuben	1.13	142	1,018.83	1942-52
Hackenburg Lake near Wolcottville	LaGrange	54.8	37	897.36	1945-55
Hamilton Lake at Hamilton	Steuben	12.8	765	898.83	1943-55
Heaton Lake near Elkhart	Elkhart	8.78	69	767.30	1945-52
Hogback Lake near Angola	Steuben	106	121	-	1945-55
Howard Lake near Angola	Steuben	39.4	34	-	1954-55
Hunter Lake near Middlebury	Elkhart	.72	94	856.90	1945-52
Indiana Lake near Bristol	Elkhart	.53	129	759.73	1945-52
Jimerson Lake at Nevada Mills	Steuben	47.0	346	964.66	1945-55
Knapp Lake near Washington Center	Noble	6.52	77	878.25	1945-55
Lake Gage at Panama	Steuben	17.2	324	954.25	1945-55
Lake George at Hobart	Lake	124	282	-	1946-55
Lake George at Jamestown	Steuben	12.3	488	985.28	1945-55
Lake James at Lake James	Steuben	43.0	1,030	964.96	1942-49
Lake Pleasant near Nevada Mills	Steuben	-	294	-	1954-55
Lake of the Woods near Helmer	LaGrange	5.62	122	-	1951-55
Latta Lake near Rome City	Noble	-	35	-	1954-55
Little Long and Round Lake-Kendallville	Noble	-	64	-	1954-55
Little Otter Lake near Fremont	Steuben	19.8	88	965.18	1945-52
Little Turkey Lake at Elmira	LaGrange	56.0	124	925.72	1945-55
Long Lake at Moonlight	Steuben	70.8	92	-	1945-55
Loon Lake near Angola	Steuben	2.73	129	-	1954-55
Lower Long Lake near Albion	Noble	3.96	60	889.81	1945-52
North Twin Lake near Howe	LaGrange	-	131	-	1954-55
Oliver Lake near Valentine	LaGrange	11.3	362	899.45	1945-55
Otter Lake near Flint	Steuben	6.82	115	-	1954-55
Pigeon Lake near Angola	Steuben	-	53	-	1954-55
Pleasant Lake at Pleasant Lake	Steuben	.94	50	963.52	1945-55
Pretty Lake near Stroh	LaGrange	2.91	185	965.50	1949-52
Round Lake at Clear Lake	Steuben	7.25	28	1,037.38	1943-55
Royer Lake near Plato	LaGrange	4.91	54	-	1952-55
Sackrider Lake near Kendallville	Noble	-	40	-	1954-55
Sand Lake near Burr Oak	Noble	15.0	44	893.56	1945-51
Shipshewana Lake near Shipshewana	LaGrange	4.00	191	852.04	1951-55
Silver Lake near Angola	Steuben	3.72	233	959.40	1945-52
Simonton Lake near Elkhart	Elkhart	4.37	245	772.19	1945-55
Skinner Lake near Albion	Noble	13.8	122	-	1945-55
Sparta Lake at Kimmel	Noble	.26	24	878.50	1945-51
Stone Lake near Scott	LaGrange	-	118	-	1954-55
Story Lake near Hudson	De Kalb	2.48	62	-	1946, 1954-55
Sylvan Lake at Rome City	Noble	31.5	575	916.20	1942-55
Syracuse Lake at Syracuse	Kosciusko	37.3	367	858.87	1943-55
Wabee Lake near Milford	Kosciusko	13.4	180	829.79	1945-52
Waldron Lake near Cosperville	Noble	131	198	-	1947-55
Wall Lake near Orland	LaGrange	1.43	125	942.25	1952-54
Wawasee Lake near Wawasee	Kosciusko	37.3	2,620	858.89	1942-55
Witmer Lake near Wolcottville	LaGrange	35.8	215	897.36	1945-47
Wolf Lake near Goshen	Elkhart	.88	100	813.00	1947-55
Wolf Lake at Hammond	Lake	5.72	999	-	1946-48

† Elevation, in feet, above mean sea level.

Measurements of streamflow in the St. Lawrence River basin, made at points other than regular gaging stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. Measurements believed to have been made under base-flow conditions are identified by an asterisk (*) to the left of the discharge figure. These measurements when correlated with the simultaneous discharge of a nearby stream where continuous records are available will give a picture of the low-flow potentiality of stream. The column headed, "Measured previously" shows the water years in which measurements were made at the same, or practically the same, site.

Determinations of peak flow at points other than regular gaging stations are given in a separate table on page 405.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955

Streams tributary to Lake Superior

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Whiteface River.	St. Louis River.	On line between secs. 14 and 23, T. 53 N., R. 19 W., at Meadowlands, Minn.	453		Apr. 27	523
Sturgeon River.	Portage Lake.	SW¼ sec. 4, T. 53 N., R. 33 W., at bridge on U. S. Highway 41, 1 mile southeast of Chassell, Mich.	-	1954	Apr. 14 Apr. 19	6,510 5,800
Snake River...	....do.....	SW¼ sec. 10, T. 53 N., R. 33 W., at bridge on U. S. Highway 41, 3 miles southeast of Chassell, Mich.	-		Apr. 14 Apr. 19	312 128
Iron River....	Lake Superior	SW¼ sec. 13, T. 51 N., R. 27 W., at outlet of Lake Independence near Big Bay, Mich.	-	1945-54	May 3 July 29	163 52.3

Streams tributary to Lake Michigan

Gulliver Lake Outlet.	Lake Michigan	SW¼ sec. 2, T. 41 N., R. 14 W., 1½ miles southwest of Gulliver, Mich.	-	1945-54	Nov. 9 Feb. 16 Apr. 27 July 28	*10.4 *2.55 *17.5 0
North Manistique Lake Outlet.	Manistique Lake.	Sec. 20, T. 45 N., R. 11 W., at bridge on State Highway 98, ¼ mile northeast of Helmer, Mich.	-	1946-54	Nov. 10 Feb. 16 Apr. 28 July 27	*17.6 *12.5 *24.2 *1.98
Big Spring....	Indian Lake..	S½ sec. 25, T. 42 N., R. 17 W., at Palms Book State Park, 7 miles northwest of Manistique, Mich.	-	1950-54	Nov. 11 Apr. 29 July 28	*31.0 *36.0 *27.1
Chicagon Creek	Paint River..	Chicago Lake Outlet, SW¼ sec. 24, T. 43 N., R. 34 W., at U. S. Highway 2, 6½ miles east of Iron River, Mich.	-	1945-54	Oct. 5 Jan. 4 Apr. 25 July 31	0 *10.9 *20.1 .92
Briar Hill Creek.	....do.....	Fortune Lake Outlet, SW¼ sec. 24, T. 43 N., R. 33 W., at New Bristol Location, near Crystal Falls, Mich.	-	1945-54a	Oct. 5 Jan. 4 Apr. 25 July 13	*14.1 *13.0 *22.5 *14.2
Root River....	Lake Michigan	Lat 42°52'20", long 87°59'35", between secs. 22 and 27, T. 5 N., R. 21 E., at bridge on State Highway 100, 5¼ miles southeast of Hales Corners, Wis.	50.3		Aug. 23 Aug. 23	*1.59 *1.67
Do.....	....do.....	Lat 42°50'40", long 87°57'5" at corner between T. 4 N., T. 5 N., R. 21 E., R. 22 E., at bridge on U. S. Highway 41, 6⅔ miles southwest of South Milwaukee, Wis.	136		Aug. 23	*2.33
Grand Calumet River.	Little Calumet River.	Lat 41°36'30", long 87°18'25", 20 ft above middle coke plant sewer at Gary, Ind.	-		May 19	31.3
Do.....	....do.....	Lat 41°36'30", long 87°18'25", 200 ft below middle coke plant sewer at Gary, Ind.	-		Nov. 9 May 19	52.2 69.0
Do.....	....do.....	Lat 41°36'25", long 87°19'15", 60 ft upstream from Monon St. entrance to coke plant at Gary, Ind.	-		Nov. 9 May 19	89.5 104
Do.....	....do.....	Lat 41°36'25", long 87°19'45", 50 ft upstream from bridge on Virginia St. at Gary, Ind.	-		Nov. 9 May 19 Aug. 10	265 256 329
Do.....	....do.....	Lat 41°36'25", long 87°20'00", half way between Broadway and Virginia Sts. at Gary, Ind.	-		May 19	344
Do.....	....do.....	Lat 41°36'25", long 87°20'15", 150 ft above Broadway St. Bridge at Gary, Ind.	-		Nov. 9 May 19 Aug. 10 Sept.22	512 491 591 565

* Base flow.
a Published as Fortune Lake Outlet, 1945.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Michigan--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Grand Calumet River.	Little Calumet River.	Lat 41°36'30", long 87°20'55", between Elgin, Joliet and Eastern Ry. and Baltimore & Ohio RR. bridges at Gary, Ind.	-		May 19 Sept.22	559 587
Do.....	....do.....	Lat 41°36'25", long 87°21'15", 500 ft below Buchanan Street Bridge at Gary, Ind.	-		Nov. 9 May 19 Aug. 10 Sept.22	564 582 723 640
Do.....	....do.....	Lat 41°36'35", long 87°23'10", 30 ft above P. Ft. W. & C. Railroad at Gary, Ind.	-		May 19 Aug. 11 Sept.22	649 769 735
Do.....	....do.....	Lat 41°36'30", long 87°23'40", at bridge on U. S. Highway 12 at Gary, Ind.	-		May 19 Aug. 11 Sept.23	725 810 824
Do.....	....do.....	Lat 41°36'40", long 87°25'20", 50 ft above Elgin, Joliet and Eastern Ry. bridge at Gary, Ind.	-		Nov. 10 Aug. 11 Sept.22	734 783 813
Do.....	....do.....	Lat 41°36'50", long 87°27'40", 100 ft above bridge on Kennedy St. at East Chicago, Ind.	-		Nov. 10 May 19 Aug. 11 Sept.22	870 726 1,010 844
Indiana Harbor Canal.	Grand Calumet River.	Lat 41°37'15", long 87°28'15", at bridge on 151st St. at East Chicago, Ind.	-		Nov. 11 May 20 Aug. 10 Sept.23	785 657 977 933
Do.....	....do.....	Lat 41°39'20", long 87°27'35", at bridge on Dickey St. at East Chicago, Ind.	-		Sept.22	1,040
Grand Calumet River.	Little Calumet River.	Lat 41°37'15", long 87°30'30", at bridge on Calumet Ave. at Hammond, Ind.	-		Nov. 11 May 20 Aug. 11 Sept.22	117 181 209 57.1
Cady ditch...	Hart ditch.....	Lat 32°30'18", long 87°26'40", at bridge on Kleinman Ave. at Highland, Ind.	-		Oct. 11	72.1
Salt Creek...	Little Calumet River.	Lat 41°35'00", long 87°08'15", immediately below Elgin, Joliet and Eastern Ry. 0.5 mile northeast of McCool, Ind.	-		June 13	52.4
Curtis Creek.	Pigeon River...	Lat 41°41'25", long 85°18'55", at Curtis Creek Trout Rearing Station, 1.9 miles west of Mongo, Ind.	-		Apr. 16	4.5
Little Calumet River.	Lake Michigan..	In N½NE¼ sec. 29, T. 36 N., R. 15 E., at Wentworth Avenue Bridge at south edge of Calumet City, Ill.	-		Oct. 11	600
Thorn Creek..	Little Calumet River.	In W½ sec. 25, T. 36 N., R. 14 E., at end of Bernice Road, 1 mile northwest of Lansing, Ill.	-		Nov. 9	*29.3
Midlothian Creek.	....do.....	In NE¼NW¼ sec. 28, T. 36 N., R. 13 E., at bridge on 167th Street, 2 miles northeast of Tinley Park, Ill.	-		Oct. 12 Nov. 9	332 *3.07
Drain No. 30	Swan Creek.....	NE¼ sec. 11, T. 7 S., R. 8 W., at bridge at north limits of Bronson, Mich.	-		Aug. 22	2.02
Fawn River...	St. Joseph River.	NW¼ sec. 15, T. 8 S., R. 11 W., 1 mile south of bridge on U. S. Highway 112, 9 miles west of Sturgis, Mich.	-		Aug. 22	77.4
Klinger Lake Outlet.	Fawn River.....	SE¼ sec. 35, T. 7 S., R. 11 W., 5 miles east of White Pigeon, Mich.	-	1941-54	Oct. 5 Mar. 14 May 9 Aug. 10	24.2 *29.7 *20.7 15.8
White Pigeon River.	St. Joseph River.	NW¼ sec. 11, T. 8 S., R. 12 W., at highway bridge, 2 miles west of White Pigeon, Mich.	-		Aug. 23	193
Paw Paw River	....do.....	NW¼ sec. 26, T. 2 S., R. 14 W., ¼ mile upstream from highway bridge and 4 miles north of Paw Paw, Mich.	-		Aug. 25	*40.1
West Branch Paw Paw River	Paw Paw River..	NE¼ sec. 35, T. 2 S., R. 14 W., 3 miles north of Paw Paw, Mich.	-		Aug. 26	*12.9
Brush Creek..	....do.....	SE¼ sec. 10, T. 3 S., R. 15 W., at bridge on U. S. Highway 12, at Lawrence, Mich.	-		Aug. 25	*16.5
Mud Lake drain.	....do.....	SW¼ sec. 4, T. 3 S., R. 16 W., 500 ft upstream from Van Auken drain, 1 mile north of Hartford, Mich.	-		Aug. 25	*1.20

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Michigan--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Pine Creek...	Paw Paw River.	NW¼ sec. 17, T. 3 S., R. 16 W., 200 ft above mouth and 1 mile west of Hartford, Mich.	-		Aug. 25	*2.32
Mill Creek...	....do.....	SW¼ sec. 23, T. 3 S., R. 17 W., at bridge on U. S. Highway 12 at Watervliet, Mich.	-		Aug. 25	*14.6
Ryno drain...	....do.....	NE¼ sec. 29, T. 3 S., R. 17 W., 100 ft downstream from bridge on U. S. Highway 12 at Coloma, Mich.	-		Aug. 25	*.27
Battle Creek.	Kalamazoo River.	SW¼ sec. 24, T. 2 N., R. 5 W., at former gaging station, 1 mile southwest of Charlotte, Mich.	-	1931b	Oct. 16 Nov. 9 Dec. 4 Jan. 13 Feb. 15 Mar. 4 Mar. 21 Apr. 21 May 19 June 7 July 27 Aug. 31 Sept.22	73.4 *24.2 *34.8 *46.3 *19.5 84.4 46.2 32.3 *15.8 17.1 *9.10 9.24 *5.76
Gun Lake Outlet.	Gun River.....	NW¼ sec. 6, T. 2 N., R. 10 W., near Shelbyville, Mich.	-	1943c, 1944, 1946-54	Dec. 21 Mar. 16 June 8 Aug. 17	*31.4 46.6 35.3 0
Rabbit River.	Kalamazoo River.	SE¼ sec. 2, T. 3 N., R. 12 W., 1½ miles west of Wayland, Mich.	-		Aug. 23	*9.39
Portage River	Grand River...	SW¼ sec. 21, T. 1 S., R. 2 E., near Munith, Mich.	-	1944-54	Nov. 20 Feb. 24 Apr. 30 Aug. 12	37.3 *35.6 *24.2 *.97
Trist Branch Portage River.	Portage River.	SW¼ sec. 33, T. 1 S., R. 2 E., near Munith, Mich.	-	1944-54	Nov. 20 Feb. 24 Apr. 30 Aug. 10	26.0 *18.4 *15.7 *10.2
Portage Lake inlet.	....do.....	SE¼ sec. 6, T. 2 S., R. 2 E., near Munith, Mich.	-	1944-54	Nov. 20 Feb. 24 Apr. 30 Aug. 10	4.91 *3.09 *3.20 *2.13
Huntoon Creek	Grand River...	NW¼ sec. 33, T. 1 N., R. 1 W., above unnamed tributary entering on right, 1 mile south of Leslie, Mich.	-		Aug. 17	*1.47
Sandstone Creek.	....do.....	NW¼ sec. 22, T. 1 S., R. 2 W., just below dam site at Tomkins Center, Mich.	-		Aug. 16	*19.4
Cedar River..	....do.....	NE¼ sec. 5, T. 3 N., R. 2 E., 300 ft below highway bridge, ½ mile above Doan Creek, and 3 miles east of Williamston, Mich.	-	1931	Sept.13	*12.2
Doan Creek...	Cedar River...	SW¼ sec. 5, T. 3 N., R. 2 E., 1 mile below Dietz Creek and 2¼ miles east of Williamston, Mich.	-		Sept.13	*2.20
Cedar River..	Grand River...	SE¼ sec. 21, T. 4 N., R. 1 W., 200 ft above highway bridge, ¼ mile south of Okemos, Mich.	-		Sept.13	7.80
Sycamore Creek.	Cedar River...	NE¼ sec. 31, T. 3 N., R. 1 W., at Harper Rd., 1 mile north of Mason, Mich.	-		Aug. 16	*3.91
Mud Creek....	Sycamore Creek.	NW¼ sec. 29, T. 3 N., R. 1 W., 2 miles north of Mason, Mich.	-		Aug. 16	*1.98
Pine Creek...	Maple River...	SW¼ sec. 9, T. 9 N., R. 3 W., 300 ft upstream from bridge on State Highway 57, ½ mile southwest of Perrington, Mich.	-		Aug. 24	*2.25
Fish Creek...	....do.....	SE¼ sec. 23, T. 9 N., R. 5 W., 2 miles south of Carson City, Mich.	-		Aug. 19	*37.1
Libhart Creek.	Grand River...	SW¼ sec. 24, T. 7 N., R. 6 W., at railroad bridge, 1 mile west of Lyons, Mich.	-		Aug. 19	*7.15
Prairie Creek.	....do.....	SW¼ sec. 16, T. 7 N., R. 6 W., 500 ft upstream from State Highway 21, 2 miles east of Ionia, Mich.	-		Aug. 19	*18.2
Flat River...	....do.....	SW¼ sec. 15, T. 12 N., R. 7 W., at State Highway 46, at Six Lakes, Mich.	-		Aug. 24	*11.7

* Base flow.
b Daily discharges published February 1948 to September 1954.
c Published as Gun River, 1943.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Michigan--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Thornapple River.	Grand River..	NE¼ sec. 25, T. 3 N., R. 6 W., 3 miles east of Vermontville, Mich.	-		Aug. 18	*15.4
Lacey Creek...	Thornapple River.	NE¼ sec. 36, T. 3 N., R. 6 W., 3 miles southeast of Vermontville, Mich.	-		Aug. 18	*2.43
Shanty Brook..	....do.....	SE¼ sec. 4, T. 2 N., R. 6 W., 3 miles south of Vermontville, Mich.	-		Aug. 18	*1.04
Jordan Lake Outlet.	....do.....	NW¼ sec. 9, T. 4 N., R. 7 W., 2 miles southwest of Lake Odessa, Mich.	-	1946-54	Nov. 23 Mar. 18 May 10 Aug. 23	*16.2 *39.4 *15.3 *3.35
Cedar Creek...	Rogue River..	SE¼ sec. 25, T. 10 N., R. 11 W., at bridge on Cherry St., at Cedar Springs, Mich.	-	1941	Aug. 24	*.84
Plaster Creek.	Grand River..	SE¼ sec. 12, T. 6 N., R. 12 W., at bridge on Buchanan St., at Grand Rapids, Mich.	48.0	1952	Aug. 23	*4.51
Sand Creek....	....do.....	NW¼ sec. 27, T. 7 N., R. 13 W., at State Highway 50, 6 miles west of Grand Rapids, Mich.	-	1953-54	Oct. 13	46.7
Backus Creek..	Houghton Creek.	N½ sec. 5, T. 22 N., R. 2 W., 4 miles northeast of Prudenville, Mich.	-	1944-54	Oct. 11 Jan. 27 Apr. 21 July 11	31.3 7.14 38.9 0
Muskegon River	Lake Michigan	NE¼ sec. 25, T. 23 N., R. 5 W., at Reedsburg Dam near Houghton Lake, Mich.	-	1953-54	July 27	83.4
Bear Creek....	Muskegon River.	NW¼ sec. 7, T. 21 N., R. 4 W., 7 miles southwest of Houghton Lake.	-	1953-54	Oct. 11 Apr. 21 July 25	23.4 38.4 0.49
Hess Lake Outlet.	....do.....	NW¼ sec. 33, T. 12 N., R. 12 W., 3 miles southwest of Newaygo, Mich.	-	1945-46, 1948-54	Oct. 8 Feb. 1 May 12 Aug. 19	*16.5 *9.59 12.2 *.5
Portage Creek.	Manistee River.	SW¼ sec. 8, T. 26 N., R. 4 W., 5½ miles west of Grayling, Mich.	15.6	1942-54	Oct. 11 Jan. 11 Apr. 21 July 5	20.3 25.9 28.4 *7.96
Black Creek...	....do.....	NW¼ sec. 28, T. 27 N., R. 5 W., 11 miles northwest of Grayling, Mich.	-		Oct. 28	*3.86
Do.....	....do.....	NW¼ sec. 20, T. 26 N., R. 5 W., 11½ miles west of Grayling, Mich.	-		Oct. 28	*6.53
Do.....	....do.....	W½ sec. 29, T. 26 N., R. 5 W., 75 ft above Manistee River, 7 miles northeast of Sharon, Mich.	27.3	1954	Oct. 28	*2.93
North Branch Manistee River.	....do.....	Sec. 3, T. 27 N., R. 6 W., 7½ miles north of Kalkaska, Mich.	-	1945-50	Oct. 28	*5.16
Do.....	....do.....	Corner of secs. 10, 11, 14 and 15, T. 27 N., R. 6 W., 2 miles below Manistee Lake and 9 miles northeast of Spencer, Mich.	13.0	1954	Oct. 28	*4.99
Unnamed tributary.	....do.....	NW¼ sec. 13, T. 27 N., R. 6 W., 1 mile above North Branch Manistee River and 9 miles northeast of Spencer, Mich.	33.3	1954	Oct. 28	*10.3
Fife Lake Outlet.	....do.....	SW¼ sec. 13, T. 25 N., R. 9 W., at Fife Lake, Mich.	11.1	1944-54	Oct. 5 Jan. 20 Apr. 5 July 25	6.45 8.10 11.3 *1.80
Slagle Creek.	....do.....	SW¼ sec. 12, T. 22 N., R. 12 W., at Harrietta State fish hatchery.	-	1953-54	Oct. 5	17.0
Little Manistee River.	....do.....	NE¼ sec. 31, T. 21 N., R. 15 W., 6 miles northeast of Free Soil, Mich.	-	1954	Oct. 6 Aug. 22	213 120
Betsie River..	Lake Michigan	Sec. 5, T. 25 N., R. 12 W., 1 mile northwest of Karlin, Mich.	44.7	1944-54	Oct. 5 Jan. 20 Apr. 6 July 26	60.0 57.5 78.0 *29.8
Tobeco Creek..	P-To-Ba-Go Pond.	NW¼ sec. 5, T. 28 N., R. 9 W., 2 miles south of Elk Rapids, Mich.	-	1949-54	Oct. 6 Jan. 25 Apr. 6 July 26	9.97 3.95 14.8 *.04
Carp River....	Lake Michigan	SE¼ sec. 15, T. 38 N., R. 4 W., at Carp Lake, Mich.	26.3	1944-54	Oct. 13 Jan. 19 Apr. 20 July 20	13.0 14.8 112 0

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Huron, Mich.

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Mill Creek....	Lake Huron...	NW¼ sec. 4, T. 38 N., R. 3 W., 5 miles southeast of Mackinaw City.	-	1954	Oct. 13	.34
					Nov. 11	1.47
					Dec. 14	.77
					Jan. 19	.76
					Mar. 15	6.27
					Apr. 20	10.7
					May 18	.46
					June 14	*.15
					July 20	0
					Aug. 16	0
Little Black River.	....do.....	NE¼ sec. 26, T. 38 N., R. 2 W., ½ mile west of Cheboygan.	-		Feb. 15	4.00
					Mar. 15	46.8
					Apr. 19	47.6
					May 18	*2.89
					June 14	*2.35
					July 20	0
					Aug. 16	0
					Sept.14	0
East Branch Maple River	Maple River..	NW¼ sec. 25, T. 37 N., R. 4 W., 2½ miles northeast of Pellston.	26.5	1942-54	Oct. 13	*3.82
					Jan. 19	13.3
					Apr. 20	39.6
					July 20	*4.39
Grand Lake Outlet.	Lake Huron...	SE¼ sec. 15, T. 34 N., R. 7 E., 14 miles southeast of Rogers City.	34.3	1945-54	Oct. 25	79.9
					Jan. 3	55.5
					Apr. 6	76.8
					July 8	15.4
East Fish Lake Outlet.	Fuller Creek.	NE¼ sec. 34, T. 29 N., R. 2 E., 7 miles east of Lewiston.	-	1943-54	Oct. 25	1.27
					Jan. 26	1.91
					Apr. 21	1.79
					July 6	1.23
Fuller Creek..	Hunt Creek...	S½NE¼ sec. 35, T. 29 N., R. 2 E., 7½ miles east of Lewiston.	-	1943-54	Oct. 25	7.03
					Jan. 26	7.95
					Apr. 21	9.22
					July 6	7.43
Hunt Creek....	Thunder Bay River.	Sec. 25, T. 29 N., R. 2 E., 8½ miles east of Lewiston.	-	1943-54	Oct. 25	25.5
					Jan. 26	*22.6
					Apr. 21	28.9
					July 6	*22.4
Lake St. Helen Outlet.	South Branch Au Sable River.	SE¼ sec. 8, T. 23 N., R. 1 W., 2½ miles northwest of St. Helen.	72.2	1944-54	Oct. 11	81.5
					Jan. 27	36.4
					Apr. 21	94.4
					July 11	3.32
South Branch Au Sable River.	Au Sable River.	SE¼ sec. 29, T. 26 N., R. 1 W., 9 miles west of Luzerne.	-	1951-54	Oct. 7	303
					Jan. 13	173
					Apr. 13	401
					July 11	113
North Branch Au Sable River.	....do.....	SE¼ sec. 16, T. 27 N., R. 1 W., 6 miles south of Lovells.	-	1951, 1953-54	Oct. 6	175
					Jan. 12	154
					Apr. 13	218
					July 11	132
Big Creek.....	North Branch Au Sable River.	SW¼ sec. 23, T. 27 N., R. 1 W., 7 miles southeast of Lovells.	-	1951-54	Oct. 6	91.9
					Jan. 12	75.8
					Apr. 13	122
					July 11	*43.4
East Branch Au Gres River.	Lake Huron...	E½ sec. 8, T. 22 N., R. 6 E., 7 miles northeast of Whittemore.	-	1944-54	Oct. 14	54.1
					Jan. 18	32.8
					Apr. 19	62.0
					July 19	*25.2
Guiley Creek..	East Branch Au Gres River.	W½ sec. 9, T. 22 N., R. 6 E., 7 miles northeast of Whittemore.	-	1944-54	Oct. 14	44.6
					Jan. 18	15.3
					Apr. 19	33.8
					July 19	*18.8
West Branch Chippewa River.	Chippewa River.	SW¼ sec. 5, T. 15 N., R. 7 W., 2½ miles southwest of Barryton.	-	1950-54	Oct. 7	43.2
					Jan. 13	27.8
					Apr. 4	56.1
					July 7	*2.09
Shiawassee River.	Saginaw River.	SW¼ sec. 28, T. 5 N., R. 7 E., 1 mile northwest of Holly.	-		Aug. 22	*9.89
Bottom Creek..	North Branch Flint River	SE¼ sec. 8, T. 9 N., R. 11 E., ¼ mile above mouth and 1 mile south of North Branch.	-		Aug. 24	*3.91
Grave Creek...	....do.....	SE¼ sec. 7, T. 9 N., R. 11 E., 1½ miles southwest of North Branch.	-		Aug. 24	*1.62
Squaw Creek...	....do.....	SE¼ sec. 21, T. 10 N., R. 10 E., 6 miles northwest of North Branch.	-		Aug. 24	0

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Huron, Mich.--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
North Branch Flint River	Flint River..	SE¼ sec. 8, T. 9 N., R. 10 E., ¼ mile downstream from bridge on State Highway 24, 6 miles northeast of Columbiaville.	-		Aug. 24	*7.17
Pine Creek...	South Branch Flint River	NE¼ sec. 10, T. 7 N., R. 10 E., 2½ miles east of Lapeer.	-		Aug. 25	*1.59
Hunters Creek.	....do.....	SW¼ sec. 8, T. 7 N., R. 10 E., 1½ miles south of Lapeer.	-		Aug. 25	*2.55
Spring Bank Creek.	Farmers Creek	NW¼ sec. 28, T. 6 N., R. 9 E., at Jasmond Rd., 5 miles northeast of Ortonville.	-		Aug. 25 Sept.20	*.11 *.20
Do.....	....do.....	NW¼ sec. 20, T. 6 N., R. 9 E., at Hegel Rd., 5 miles northeast of Ortonville.	-		Aug. 25 Sept.20	*.19 *.35
Plum Creek...	South Branch Flint River	NE¼ sec. 19, T. 8 N., R. 10 E., at highway bridge, 3 miles north of Lapeer.	-		Aug. 25	*.98
South Branch Flint River	Flint River..	NE¼ sec. 1, T. 8 N., R. 9 E., at bridge, 3½ miles southeast of Columbiaville.	-		Aug. 24	23.1
Lime Lake Outlet.	Kearsley Creek.	SE¼ sec. 31, T. 6 N., R. 9 E., 2 miles north of Ortonville.	-		Aug. 25 Sept.20	*.28 *.20
Kearsley Creek.	Flint River..	NW¼ sec. 18, T. 7 N., R. 8 E., 3½ miles east of Flint.	70.0	1952-54	Aug. 25	10.2
Black Creek..	Kearsley Creek.	NE¼ sec. 8, T. 7 N., R. 8 E., at bridge, 1 mile west of Davison.	-	1952-54	Aug. 25	.70
Swartz Creek.	Flint River..	SW¼ sec. 25, T. 5 N., R. 7 E., at Mackey Rd., 2 miles east of Holly.	-		Aug. 24 Sept.20	.45 *.06
Do.....	....do.....	NE¼ sec. 22, T. 5 N., R. 7 E., at Fagan Rd., 2 miles northeast of Holly.	-		Sept.20	*.35
Little Lake Outlet.	Swartz Creek.	SW¼ sec. 14, T. 5 N., R. 7 E., at Fagan Rd., 2½ miles northeast of Holly.	-		Aug. 24	.71
Swartz Creek.	Flint River..	SE¼ sec. 10, T. 6 N., R. 6 E., 5 miles west of Grand Blanc.	-		Aug. 23	1.01
Thread Creek.	Swartz Creek.	NE¼ sec. 29, T. 5 N., R. 8 E., at McGinnis Rd., 5 miles east of Holly.	-		Aug. 24 Sept.20	1.48 *1.02
Do.....	....do.....	NE¼ sec. 18, T. 5 N., R. 8 E., at Groveland Mills, 5½ miles northeast of Holly.	-		Aug. 24 Sept.20	2.86 *1.38
Do.....	....do.....	SW¼ sec. 33, T. 7 N., R. 7 E. at bridge, 2 miles north of Grand Blanc.	-		Aug. 23	2.73
Bent Run.....	Flint River..	NW¼ sec. 24, T. 9 N., R. 5 E., of highway bridge 2½ miles east of Montrose.	-		Aug. 23	13.2
Pine Run.....	....do.....	SE¼ sec. 16, T. 9 N., R. 6 E., at highway bridge ½ mile west of Clio.	-		Aug. 23	2.15

Streams tributary to Lake St. Clair, Mich.

Clinton River	Lake St. Clair.	SW¼ sec. 10, T. 3 N., R. 9 E., at Loon Lake Outlet, at Drayton Plains.	-	1943, 1947-54d	Oct. 8 Mar. 31 July 20	58.1 *96.5 *15.2
Do.....	....do.....	NE¼ sec. 2, T. 2 N., R. 9 E., at Cass Lake Outlet, at Keego Harbor.	-	1945, 1948-54e	Nov. 5 Mar. 31 July 20	*75.0 *117 *12.2
Paint Creek..	Clinton River	SE¼ sec. 2, T. 4 N., R. 10 E., 50 ft below old powerhouse on lake outlet at Lake Orion.	-		Sept.21	*23.9
Trout Creek..	Paint Creek..	SE¼ sec. 24, T. 4 N., R. 10 E., at Greenshield Rd., 3 miles southeast of Lake Orion.	-		Aug. 25 Sept.20	1.26 *1.07
Michigan Fish Division pond outlet.	Trout Creek..	NW¼ sec. 19, T. 4 N., R. 11 E., ¼ mile above mouth and 3 miles southeast of Lake Orion.	-		Aug. 25 Sept.20	1.06 .96
West Branch Stoney Creek.	Stoney Creek.	SW¼ sec. 5, T. 4 N., R. 11 E., at Harmon Rd., 2 miles east of Lake Orion.	-		Aug. 25 Sept.20	.98 *.58
Do.....	....do.....	SE¼ sec. 5, T. 4 N., R. 11 E., at Predmore Rd., 2½ miles east of Lake Orion.	-		Aug. 25 Sept.20	1.16 *.50
Stoney Creek.	Clinton River	SW¼ sec. 31, T. 4 N., R. 12 E., 3 miles west of Washington.	67.2	1935-54	Oct. 7 Nov. 2 Dec. 7 Mar. 22 Apr. 27 May 12 June 10	*18.1 25.4 *32.3 112 48.4 *21.8 23.4

* Base flow.
d Published as Loon Lake Outlet, 1947-54.
e Published as Cass Lake Outlet, 1945, 1948-54.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Erie

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Huron River..	Lake Erie.....	SE¼ sec. 18, T. 2 N., R. 8 E., at Proud Lake Outlet, 3 miles southwest of Commerce, Mich.	-	1947-54f	Nov. 5 Mar. 25 June 14 July 22	*64.2 *108 35.3 *22.3
Mann Creek...	Huron River...	NW¼ sec. 27, T. 2 N., R. 6 E., 3 miles east of Brighton, Mich.	18.4		June 20 July 26 Aug. 17 Sept.14	*7.19 *7.28 *9.89 *8.13
South Lake Outlet.	Portage River.	NE¼ sec. 9, T. 1 S., R. 3 E., at Boyce Rd., 7 miles northeast of Chelsea, Mich.	-		Aug. 24 Sept.22	*1.08 0
Gosling Lake Outlet.	....do.....	NW¼ sec. 32, T. 1 N., R. 4 E., 3 miles west of Pinckney, Mich.	-		Aug. 24 Sept.22	0 0
Crooked Lake Outlet.	....do.....	SE¼ sec. 32, T. 1 N., R. 4 E., 3½ miles southwest of Pinckney, Mich.	-		Aug. 24 Sept.22	*.02 *.01
Unnamed tributary.	Portage Lake..	NW¼ sec. 11, T. 1 S., R. 4 E., at Stinchfield Woods Rd., 3½ miles south of Pinckney, Mich.	-		Aug. 24 Sept.22	*.06 *.04
Mill Creek...	Huron River...	SE¼ sec. 2, T. 2 S., R. 3 E., 1½ miles northwest of Chelsea, Mich.	-		Aug. 24 Sept.22	*.30 *.24
River Raisin.	Lake Erie.....	NE¼ sec. 33, T. 3 S., R. 3 E., 2 miles northwest of Manchester, Mich.	-		Aug. 17	*56.0
Wolf Creek...	River Raisin..	SE¼ sec. 28, T. 6 S., R. 3 E., at bridge on Tipton Rd., 1 mile northwest of Adrian, Mich.	-		Aug. 17	*12.1
Posey Lake Outlet.	Bean Creek....	NW¼ sec. 4, T. 7 S., R. 1 E., 3 miles northeast of Hudson, Mich.	-		Mar. 1	10.7
Ten Mile Creek.	Ottawa River..	Lat 41°39'29", long 83°37'19", at Secor Road bridge ¼ mile above Toledo University, at Toledo, Ohio, at gaging station site 1945-48.	158	1945-48	Sept.22	*.26
East Branch St. Joseph River.	St. Joseph River.	Lat 41°39'55", long 84°32'30", at bridge on U. S. Highway 20, 1¼ miles southeast of Pioneer, Ohio.	166		Aug. 24	9.68
West Branch St. Joseph River.	....do.....	Lat 41°39'15", long 84°34'20" at bridge on U. S. Highway 20, 2 miles southwest of Pioneer, Ohio.	103		Aug. 24	15.7
Eagle Creek..	....do.....	Lat 41°33'25", long 84°40'35", at highway bridge, 4 miles southwest of Montpelier, Ohio.	35.0		Aug. 24	2.70
St. Joseph River.	Maumee River..	Lat 41°31'05", long 84°41'50", at bridge on State Highway 34, 1¾ miles east of Blakeslee, Ohio, at gaging station site 1926-32.	369	1926-32, 1954	Aug. 24	38.2
East Branch Clear Creek.	St. Marys River.	Lat 40°32'25", long 84°21'35", at bridge on State Highway 29, 1½ miles southeast of St. Marys, Ohio.	69.5		Sept.20	*0
Twelvemile Creek.	....do.....	Lat 40°39'55", long 84°30'30", at highway bridge, ¼ mile southeast of Mendon, Ohio.	37.0		Sept.22	*.01
St. Marys River.	Maumee River..	Lat 40°40'35", long 84°31'10", at bridge on State Highway 707, at Mendon, Ohio.	297		Sept.21	*6.69
Do.....	....do.....	Lat 40°44'05", long 84°44'10", at highway bridge, 3 miles southeast of Willshire, Ohio, at gaging station site. 1925-32.	355	1925-32, 1954	Sept.21	*7.48
Black Creek..	St. Marys River.	Lat 40°43'35", long 84°44'15", at bridge on U. S. Highway 33, 3 miles southeast of Willshire, Ohio.	54	1932	Sept.21	*.05
Gordon Creek.	Maumee River..	Lat 41°15'10", long 84°34'50", at highway bridge, 2¾ miles southwest of Sherwood, Ohio.	43.2		Sept.21	*.03
Mill Creek...	Tiffin River..	Lat 41°37'20", long 84°19'25", at bridge on State Highway 246, 3½ miles south of Fayette, Ohio	39.4	1950	Aug. 25	*.96
Beaver Creek.	....do.....	Lat 41°27'20", long 84°26'05", at bridge on State Highway 192, 3 miles northwest of Evansport, Ohio.	44.3		Aug. 25	*2.38
Brush Creek..	....do.....	Lat 41°26'00", long 84°23'20", at highway bridge, ½ mile northeast of Evansport, Ohio.	63.6		Aug. 25	*0
Lick Creek...	....do.....	Lat 41°22'05", long 84°26'20", at highway bridge, 5 miles northwest of Brunersburg, Ohio.	106		Aug. 24	*4.49

* Base flow.
f Published as Proud Lake Outlet, 1947-53.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Erie--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Mud Creek....	Tiffin River..	Lat 41°21'00", long 84°26'20", at highway bridge, 4 miles northwest of Brunersburg, Ohio.	56.1		Aug. 24	*3.73
Tiffin River.	Maumee River..	Lat 41°20'48", long 84°25'08", at highway bridge, 3 miles northwest of Brunersburg, Ohio, at gaging station site 1928-35.	766	1928-35, 1954	Sept.21	*10.7
Auglaize River.	....do.....	Lat 40°39'20", long 84°03'10", at bridge on Amherst Rd., 1 mile west of South Warsaw, Ohio.	42.0		Sept.20	*.06
Do.....	....do.....	Lat 40°37'10", long 84°07'20", at bridge on Mudsock Rd., 2¼ miles northwest of Uniopolis, Ohio.	87		Sept.20	*.90
Pusheta Creek	Auglaize River.	Lat 40°33'55", long 84°13'30", at bridge on U. S. Highway 33, 1½ miles southwest of Wapakoneta, Ohio.	35.8		Sept.20	*.28
Auglaize River.	Maumee River..	Lat 40°39'10", long 84°15'35", at highway bridge, 2 miles north of Buckland, Ohio.	159		Sept.20	*1.39
Miami and Erie Canal.	Jennings Creek.	Lat 40°50'45", long 84°20'25", at Third Street Bridge in Delphos, Ohio, at gaging station site 1928-33.	-	1928-35, 1945-54	Nov. 2 Dec. 3 Jan. 12 Feb. 9 Apr. 7 June 7 July 29 Sept.20	7.99 5.24 3.23 .24 7.20 13.1 10.3 9.37
Jennings Creek.	Auglaize River.	Lat 40°53'40", long 84°18'25", at highway bridge, 1 mile southwest of Fort Jennings, Ohio.	67.0		Sept.20	9.62
Hog Creek....	Ottawa River..	Lat 40°46'30", long 40°56'15", at highway bridge, 1¼ miles northeast of Lafayette, Ohio.	73.2		Aug. 24	*1.40
Little Ottawa River.	....do.....	Lat 40°41'35", long 84°09'40", at Zurmehly Road Bridge, 4½ miles southwest of Lima, Ohio.	13.3		Aug. 24	*.13
Sugar Creek..	....do.....	Lat 40°47'20", long 84°05'10", at Blue Lick Road Bridge, 3½ miles northeast of Lima, Ohio.	22.5		Aug. 24	*.32
Do.....	....do.....	Lat 40°57'20", long 84°10'45", at highway bridge, 2¼ miles southeast of Kalida, Ohio.	64.6		Aug. 24	*.07
Plum Creek...	....do.....	Lat 40°59'15", long 84°11'50", at bridge on State Highway 115, at Kalida, Ohio.	43.2		Aug. 24	*.52
Blanchard River.	Auglaize River.	Lat 40°54'05", long 83°33'35", at highway bridge, at Mount Blanchard, Ohio.	114		Sept.19	*0
The outlet...	Blanchard River.	Lat 41°01'55", long 83°32'50", at bridge on State Highway 15, 5½ miles east of Findlay, Ohio.	40.4		Sept.19	*.24
Tiderishi Creek.	Ottawa Creek.	Lat 40°55'50", long 83°43'40", at bridge on State Highway 698, 2¼ miles north of Janera, Ohio.	4.51	1950-51	Mar. 4	61.3
Ottawa Creek.	Blanchard River.	Lat 41°01'45", long 83°47'40", at bridge on County Road 86, 1¾ miles north of Benton Ridge, Ohio.	63.6		Sept.19	*.43
Riley Creek..	....do.....	Lat 40°54'20", long 83°54'00", at highway bridge, 1 mile northwest of Bluffton, Ohio.	61.3		Sept.19	1.93
Do.....	....do.....	Lat 41°00'00", long 84°00'00", at highway bridge, 3 miles southeast of Ottawa, Ohio.	87.7		Sept.20	*.37
Cranberry Creek.	....do.....	Lat 41°02'10", long 84°05'10", at highway bridge, at Glandorf, Ohio.	38.9		Sept.20	*0
Blanchard River.	Auglaize River.	Lat 41°02'28", long 84°13'37", at highway bridge, 4 miles east of Dupont, Ohio, at gaging station site 1928-35.	749	1928-35, 1954	Sept.20	*5.05
Little Auglaize River.	....do.....	Lat 40°51'20", long 84°26'10", at highway bridge ½ mile east of Middlepoint, Ohio.	64.9		Aug. 24	*.18
Dog Creek....	Little Auglaize River.	Lat 41°01'15", long 84°23'20", at bridge on State Highway 114, 1½ miles west of Mandale, Ohio.	59.5		Aug. 24	*.44
Little Auglaize River	Auglaize River.	Lat 41°03'35", long 84°24'00", at highway bridge, 2¼ miles southeast of Melrose, Ohio.	190		Aug. 24	*0.58
Roller Creek.	Town Creek....	Lat 40°46'15", long 84°38'15", at highway bridge, ¼ mile west of Ohio City, Ohio.	4.94	1946-54	Oct. 13 Nov. 15 Jan. 10 Feb. 21 Mar. 4 Mar. 4 Mar. 31 May 12	23.6 *.52 3.62 11.5 115 105 9.07 *.04

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Erie--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Roller Creek.	Town Creek....	Lat 40°46'15", long 84°38'15", at highway bridge, ¼ mile west of Ohio City, Ohio.	4.94	1946-54	June 23 July 27 Sept.15	*0.01 *.01 *0
Town Creek...	Little Auglaize River.	Lat 40°49'30", long 84°34'50", at bridge on U. S. Highway 127, 3 miles south of Van Wert, Ohio, at gaging station site 1945-53.	20.4	1945-54	Aug. 25 Sept.15	*0 *0
Middle Creek.	....do.....	Lat 41°02'55", long 84°24'35", at highway bridge, 2 miles northeast of Roselms, Ohio.	100		Sept.21	*.58
Prairie Creek	....do.....	Lat 41°03'20", long 84°26'20", at highway bridge, 2½ miles southwest of Melrose, Ohio.	107		Aug. 24	*1.00
Blue Creek...	Auglaize River	Lat 41°06'05", long 84°28'35", at bridge on State Highway 637, 2 miles northeast of Hedges, Ohio.	100		Sept.21	*0
Flatrock Creek.	....do.....	Lat 41°02'10", long 84°48'10", at bridge on State line road, 2 miles northwest of McGill, Ohio.	107		Sept.21	*0
Do.....	....do.....	Lat 41°09'45", long 84°30'55", at bridge on State Highway 111, 4 miles northeast of Paulding, Ohio.	200		Sept.21	*0
Powell Creek.	....do.....	Lat 41°13'50", long 84°21'40", at bridge on State Highway 66, 2½ miles north of Arthur, Ohio.	98.2		Sept.21	*0
Turkeyfoot Creek.	Maumee River..	Lat 41°25'00", long 84°01'05", at bridge on County Highway 8, ½ mile northwest of Damascus, Ohio.	73.2		Aug. 24	*.38
South Turkeyfoot Creek.	....do.....	Lat 41°23'10", long 83°59'45", at bridge on County Highway P, 3 miles northwest of McClure, Ohio.	141		Aug. 25	*.02
Bad Creek....	....do.....	Lat 41°27'25", long 83°57'35", at bridge on Township Highway U, ¼ mile southwest of Colton, Ohio.	55.9		Sept.22	*0
Yellow Creek.	Beaver Creek..	Lat 41°13'30", long 83°50'30", at bridge on Custer Rd., 3½ miles northeast of Deshler, Ohio.	52		Aug. 25	*0
Beaver Creek.	Maumee River..	Lat 41°23'35", long 83°50'40", at bridge on Wintergreen Rd., 1¾ miles southeast of Grand Rapids, Ohio.	174		Aug. 24	*.67
Tontogany Creek.	....do.....	Lat 41°27'05", long 83°44'55", at bridge on Robinson Road, 2½ miles north of Tontogany, Ohio.	47.6		Aug. 24	*0
West Fork Swan Creek.	Swan Creek....	Lat 41°34'05", long 83°52'20", at bridge on State Highway 64, 1½ miles southeast of Swanton, Ohio.	27.3		Sept.22	*.04
Swan Creek...	Maumee River..	Lat 41°37'37", long 83°35'40", at Detroit Avenue Bridge on U. S. Highway 25, at Toledo, Ohio, at gaging station site 1945-48.	185	1945-48, 1950	Sept.22	*.51
North Branch Portage River.	Portage River.	Lat 41°23'20", long 83°33'40", at highway bridge, 5 miles northeast of Bowling Green, Ohio at gaging station site 1923-32.	54.0	1923-32	Aug. 24	*5.10
Havens Creek.	Sandusky River.	Lat 41°17'40", long 83°11'55", at bridge on State Highway 12, ¾ mile southwest of Havens, Ohio.	5.00	1946-54	Nov. 18 Dec. 20 Jan. 11 Feb. 22 Mar. 31 May 12 June 22 July 27 Sept.16	*0 *0 1.37 13.5 7.12 *.21 *0 *.01 *0
West Branch Cuyahoga River.	Cuyahoga River	Lat 41°28'15", long 81°10'45", at bridge on State Highway 87, 1¼ miles west of Burton, Ohio.	26.6		Sept. 7	*3.14
Bridge Creek.	....do.....	Lat 41°25'05", long 81°10'05", at bridge on Rapids Road, 4 miles southwest of Burton, Ohio.	37.7		Sept. 7	*5.68
Congress Lake Outlet.	....do.....	Lat 41°09'21", long 81°19'10", at bridge on State Highway 5, 2 miles east of Kent, Ohio, at gaging station site, 1927-35.	76.9	1927-35	Sept. 7	*8.96
Furnace Run..	....do.....	Lat 41°12'05", long 81°34'20", at bridge on Riverview Road, ¼ mile south of Everett, Ohio.	20.3		Sept. 6	*.19
Silver Creek.	Chagrin River.	Lat 41°28'10", long 81°20'25", at bridge on State Highway 306, ½ mile north of Russell Center, Ohio.	13.1		Sept. 7	*2.95
East Branch Chagrin River.	....do.....	Lat 41°37'55", long 81°21'50", at bridge on State Highway 306, at Kirtland, Ohio.	45.0		Sept. 6	*4.79

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Erie--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Hoskins Creek	Grand River...	Lat 41°36'20", long 80°58'00", at bridge on State Highway 6, ¾ mile west of Hartsgrove, Ohio.	6.94	1948-50	Oct. 16	205
Walnut Creek.	Lake Erie.....	Lat 42°03'09", long 80°10'05", at highway bridge, ½ mile northeast of Weis Library, Pa. and 3.4 mile above Bear Run.	26.9	1944,1946, 1948-49, 1951-54	Aug. 9	*1.36
Mill Creek...	....do.....	Lat 42°05'38", long 80°04'20", in Glenwood Park, at south edge of Erie, Pa., 1.5 miles above U. S. Highway 20 crossing.	9.20	1944,1946, 1948-49, 1951-54	Aug. 9	*.83
Chautauqua Creek.	....do.....	Lat 42°20'16", long 79°36'08", at bridge on State Route 5, at Barcelona, N. Y.	34.6	1950	June 9	*16.1
Silver Creek.	....do.....	Lat 42°32'39", long 79°09'55", at bridge on State Route 5, at Silver Creek, N. Y., 0.3 mile above mouth of Walnut Creek.	25.0		June 8	*1.54
Walnut Creek.	Silver Creek..	Lat 42°32'43", long 79°10'09", at bridge on State Route 5 at Silver Creek, N. Y., 0.1 mile above mouth.	26.3		June 8	*4.50
Grannis Brook.	Cattaraugus Creek.	Lat 42°28'03", long 78°54'52", at culvert 1.1 miles east of Gowanda, N. Y. and 1.4 miles above mouth.	2.10	1950	June 7	*.11
North Branch Clear Creek	Clear Creek...	Lat 42°34'00", long 78°50'50", at State gage 1.5 miles south of Langford, N. Y.	2.09	1954	Oct. 20 Nov. 9 Dec. 2 Jan. 6 Feb. 1 Mar. 3 Apr. 2 May 4	*1.48 *1.68 4.65 14.6 0 8.02 *3.28 *.18
Smoke Creek..	Lake Erie.....	Lat 42°49'24", long 78°48'12", at Abbott Road Bridge, at Lackawanna, N.Y., 1.9 miles above mouth of South Branch.	13.0	1953-54	June 9	*.53
South Branch Smoke Creek	Smoke Creek...	Lat 42°48'18", long 78°48'36", at Willet Road bridge at Lackawanna, N. Y., 1.6 miles above mouth.	13.6	1953-54	June 9	*.83

Streams tributary to Niagara River, N. Y.

Murder Creek.	Ledge Creek...	Lat 43°01'10", long 78°30'08", at bridge on State Route 93, at Akron.	59.8		Mar. 5 June 11	214 *1.06
Beaver Meadow Brook	Murder Creek..	Lat 43°00'40", long 78°31'18", above inflow, 1.2 miles southwest of Akron.	2.18	1954	Mar. 5 June 10	5.70 *.46
Tonawanda Creek.	Niagara River.	Lat 43°05'33", long 78°38'03", at bridge at Rapids.	358	1954	Oct. 22 Dec. 15 Dec. 29 Dec. 30 Jan. 11 Mar. 3 Apr. 21	212 463 1,520 2,600 455 4,390 686
Bull Creek...	Sawyer Creek.	Lat 43°05'51", long 78°48'24", at Aiken Road Bridge, 4.0 miles above mouth and 5.8 miles northeast of city hall at North Tonawanda.	12.5	1954	June 10	*.16
Ellicott Creek.	Tonawanda Creek.	Lat 42°56'16", long 78°37'21", at Pavement Road Bridge, 3.3 miles east of Bowmansville.	64.0	1954	June 9	*2.86
Bergholtz Creek.	Cayuga Creek..	Lat 43°06'06", long 78°54'21", at Luther Street Bridge at Bergholtz.	9.09	1954	June 10	*0.23
Gill Creek...	Niagara River.	Lat 43°05'48", long 79°01'30", below Hyde Park Dam at Niagara Falls.	12.1	1954	June 12	*0

Streams tributary to Lake Ontario

Sixmile Creek.	Lake Ontario..	Lat 43°16'17", long 78°57'27", at bridge 1.3 miles above mouth and 3.4 miles northwest of Ransomville, N. Y.	12.5		June 10	*0
Twelvemile Creek.	....do.....	Lat 43°16'45", long 78°53'24", at bridge 3.9 miles southwest of Wilson, N. Y. and 4.4 miles above mouth.	34.1		June 10	*0
East Branch Twelvemile Creek.	....do.....	Lat 43°18'24", long 78°49'53", at bridge at southeast side of Wilson, N. Y. and 0.8 mile above mouth.	35.3	1951	June 10	*.07

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Ontario--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Hopkins Creek	Lake Ontario..	Lat 43°19'37", long 78°44'35", at bridge on State Route 18, 1.6 miles southwest of Olcott, N. Y.	15.0		June 10	*.12
Johnson Creek	....do.....	Lat 43°18'21", long 78°25'07", at bridge 1.8 miles southwest of Lyndonville, N. Y.	81.6		June 13	*35.1
Unnamed tributary.	Johnson Creek.	Lat 43°18'15", long 78°24'25", at culvert 0.1 mile above mouth and 1.4 miles south of Lyndonville, N. Y.	2.02		June 13	*0.25
Do.....	....do.....	Lat 43°19'58", long 78°21'03", at culvert, 2.1 miles northeast of Lyndonville, N. Y.	5.04		June 13	*.24
Oak Orchard Creek.	Lake Ontario..	Lat 43°09'32", long 78°24'30", at bridge at former gaging-station site, 3.5 miles south of Medina, N. Y.	147	1903-4	June 13	*12.1
Otter Creek..	Oak Orchard Creek.	Lat 43°17'52", long 78°15'04", at bridge, 1.5 miles south of Waterport, N. Y.	19.0		June 13	*3.56
Marsh Creek..	....do.....	Lat 43°21'08", long 78°10'13", 800 ft above tributary and 1.1 miles east of Carlton, N. Y.	34.2		June 14	*1.20
Unnamed tributary.	Marsh Creek...	Lat 43°21'04", long 78°10'20", 0.1 mile above mouth and 1.0 mile east of Carlton, N. Y.	8.31		June 14	*0
West Branch Sandy Creek.	Sandy Creek...	Lat 43°14'28", long 78°10'40", at culvert on State Route 31, southeast side of Albion, N. Y.	13.4		June 14	.34
East Branch Sandy Creek.	....do.....	Lat 43°11'59", long 78°01'34", at culvert, 1.7 miles south of Holley, N. Y.	11.7		June 14	.78
West Creek...	Salmon Creek..	Lat 43°18'08", long 77°48'48", at Collamer Road Bridge, 1.5 miles northwest of Hilton, N. Y.	31.0		June 14	2.20
Genesee River.	Lake Ontario..	Lat 41°58'33", long 77°51'24", at bridge at Hickox, Pa., 200 ft above mouth of Middle Branch.	40.4		July 26	*2.16
Middle Branch Genesee River.	Genesee River.	Lat 41°58'30", long 77°51'28", at bridge at Hickox, Pa., 300 ft above mouth.	16.6		July 26	*2.72
Rose Lake Run	....do.....	Lat 41°59'30", long 77°52'14", at bridge at State Route 499, at Genesee, Pa., 0.1 mile above mouth.	23.7		July 26	*2.15
Cryder Creek.	....do.....	Lat 42°00'30", long 77°50'29", at bridge at Paynesville, N. Y.	47.3	1954	July 26	*4.47
Marsh Creek..	....do.....	Lat 42°01'56", long 77°56'28", at bridge at Stone Dam, N. Y., 1.5 miles above mouth.	10.1	1954	July 26	*.15
Ford Brook...	....do.....	Lat 42°04'03", long 77°55'43", at bridge, 0.3 mile above mouth and 0.3 mile south of Stannard, N. Y.	11.5		July 26	*.73
Chenunda Creek.	....do.....	Lat 42°05'19", long 77°55'21", at bridge at State Route 19, at Stannards Corners, N. Y.	31.0	1954	July 26	*0
Dyke Creek...	....do.....	Lat 42°09'19", long 77°47'44", at bridge on State Route 36, at Andover, N. Y.	20.8		July 25	*0
Elm Valley Creek.	Dyke Creek....	Lat 42°09'06", long 77°51'44", at bridge on State Route 17, at Elm Valley, N. Y.	10.2		July 25	*0
Duffy Hollow Creek.	....do.....	Lat 42°08'48", long 77°52'47", at bridge on State Route 17, 0.2 mile above mouth and 1.2 miles southwest of Elm Valley, N. Y.	2.94		July 25	*0
Dyke Creek...	Genesee River.	Lat 42°07'47", long 77°55'02", at bridge, 1.8 miles northeast of Wellsville, N. Y. and 1.9 miles above mouth.	63.5	1954	July 25	*2.33
Smith Hollow Creek.	Dyke Creek....	Lat 42°07'46", long 77°55'08", at mouth, 1.7 miles east of Wellsville, N. Y.	1.26		July 25	*0
Trapping Brook.	....do.....	Lat 42°07'44", long 77°55'10", at mouth, 1.6 miles east of Wellsville, N. Y.	5.26		July 25	*0
Crowner Brook.	Genesee River.	Lat 42°07'38", long 77°57'54", at bridge at northwest section of city line of Wellsville, N. Y.	3.97		July 26	*0
Brimmer Brook	....do.....	Lat 42°07'38", long 77°58'29", at bridge 0.8 mile above mouth and 1.3 miles northwest of Wellsville, N. Y.	8.13		July 26	*.42
Vandermark Creek.	....do.....	Lat 42°10'10", long 77°58'46", at bridge at State Route 19, at Scio, N. Y.	22.7	1951-52, 1954	July 26	*0
Knight Creek.	....do.....	Lat 42°10'15", long 77°59'17", at bridge 0.3 mile above mouth and 0.5 mile west of Scio, N. Y.	22.0	1954	July 26	*1.41

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Ontario--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Van Campen Creek.	Genesee River.	Lat 42°12'05", long 78°08'43", at bridge on State Route 275, 0.3 mile above mouth of South Branch and 0.7 mile southwest of Friendship, N. Y.	8.58		July 27	*.08
South Branch Van Campen Creek.	Van Campen Creek.	Lat 42°11'18", long 78°08'43", at bridge on State Route 275, 1.2 miles above mouth and 1.5 miles southwest of Friendship, N. Y.	24.4		July 27	*.88
Van Campen Creek.	Genesee River.	Lat 42°12'22", long 78°07'46", at Moss Brook Street Bridge at Friendship, N. Y.	45.8	1954	July 27	*1.98
Angelica Creek.	....do.....	Lat 42°18'38", long 78°02'16", at bridge on State Route 408, 1.2 miles west of Angelica, N. Y.	61.3	1954	July 27	*.40
White Creek..	....do.....	Lat 42°19'39", long 78°06'30", at bridge on State Route 19, 1.1 miles south of Belfast, N. Y.	14.7		July 27	*0
Black Creek..	....do.....	Lat 42°16'34", long 78°13'02", at bridge, 0.5 mile east of Black Creek, N. Y.	11.5		July 27	*0
Do.....	....do.....	Lat 42°19'55", long 78°06'49", at bridge on State Route 19, 0.8 mile south of Belfast, N. Y.	31.8		July 27	*0.03
Wigwam Creek.	....do.....	Lat 42°20'04", long 78°05'53", at bridge 0.4 mile above mouth and 1.0 mile southeast of Belfast, N. Y.	11.4		July 27	*0
Crawford Creek.	....do.....	Lat 42°22'21", long 78°08'31", at bridge at State Route 19, 0.6 mile north of Oramel, N. Y.	10.7		July 27	*0
Caneadea Creek.	....do.....	Lat 42°21'52", long 78°17'53", at bridge 0.6 mile northeast of Hardy Corners, N. Y.	11.8		July 27	*1.03
Do.....	....do.....	Lat 42°23'10", long 78°13'52", at bridge 1.0 mile southeast of Rushford, N. Y.	37.7		July 28	*3.37
Rush Creek...	Caneadea Creek	Lat 42°21'06", long 78°13'03", at bridge 0.6 mile northeast of McGrawville, N. Y.	8.80		July 28	*.90
Sixtown Creek	Cold Creek....	Lat 42°28'54", long 78°08'57", 0.3 mile above mouth and 0.8 mile northwest of Hume, N. Y.	24.7		July 28	*.47
Cold Creek...	Genesee River.	Lat 42°28'23", long 78°08'12", at bridge at Hume, N. Y.	39.1		July 28	*1.92
Rush Creek...	....do.....	Lat 42°27'54", long 78°05'48", at bridge 0.2 mile above mouth and 0.9 mile east of Fillmore, N. Y.	41.6		July 27	*0
Wiscoy Creek.	....do.....	Lat 42°30'02", long 78°07'06", 150 ft below dam at Mills Mills, N. Y. and 1.6 miles above mouth of East Koy Creek.	55.1		July 28	*.16
East Koy Creek.	Wiscoy Creek..	Lat 42°38'21", long 78°08'04", at bridge at Gainesville, N. Y.	28.8		July 28	*4.20
Do.....	....do.....	Lat 42°31'16", long 78°05'51", at bridge 0.8 mile above mouth and 1.5 miles northwest of Wiscoy, N. Y.	48.5		July 28	*7.69
Wolf Creek...	Genesee River.	Lat 42°37'50", long 78°02'46", at East Park Road Bridge at Castile, N. Y.	10.4	1954	July 28	*.51
Beards Creek.	....do.....	Lat 42°46'30", long 77°53'51", at bridge on State Route 36, at Leicester, N. Y.	12.4		June 6	*.37
Jess Brook...	Springwater Creek.	Lat 42°38'48", long 77°34'54", 1.1 miles above mouth and 1.1 miles northeast of Springwater, N. Y.	.37	1953	June 6	*.04
Oatka Creek..	Genesee River.	Lat 42°42'57", long 78°07'41", 0.2 mile above mouth of Relyea Creek and 1.7 miles south of Warsaw, N. Y.	22.0		June 7	*4.68
Stony Creek..	Oatka Creek...	Lat 42°43'39", long 78°09'49", at bridge 1.9 miles southwest of Warsaw, N. Y. and 1.8 miles above mouth.	8.03		June 7	*0.73
Irondequoit Creek.	Irondequoit River.	Lat 43°03'23", long 77°29'29", at bridge on Thornell Road, 2.5 miles southeast of Pittsford, N. Y.	46.1		June 15	*15.3
Fourmile Creek.	Lake Ontario..	Lat 43°13'23", long 77°22'13", at bridge on Old Ridge Road, east side of Union Hill, N. Y.	6.04		June 15	*0
West Branch Fourmile Creek.	Fourmile Creek	Lat 43°13'21", long 77°22'47", at bridge on U. S. Highway 104, west side of Union Hill, N. Y.	9.34		June 15	*.02
Fourmile Creek.	Lake Ontario..	Lat 43°15'53",. long 77°24'01", at bridge 1.7 miles east of Nine-mile Point, N. Y. and 1.8 miles above mouth.	18.7		June 15	*.02
Fish Creek...	....do.....	Lat 43°16'20", long 77°18'52", at culvert on Lake Road, 0.8 mile above mouth and 1.7 miles north-east of Lakeside, N. Y.	9.72		June 16	*.04

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Ontario--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Dennison Creek.	Lake Ontario..	Lat 43°16'21", long 77°17'52", at Lake Road, 0.4 mile above mouth and 1.9 miles northwest of Furnaceville, N. Y.	7.08		June 16	*0
Bear Creek...	....do.....	Lat 43°15'05", long 77°16'31", at Furnace Road Bridge, at Furnaceville, N. Y.	10.8		June 16	*.04
Salmon Creek.	....do.....	Lat 43°16'48", long 77°10'57", 500 ft above Lake Rd. alongside Jay St. at Pultneyville, N. Y. and 0.5 mile above mouth.	19.7		June 16	*0.01
Do.....	....do.....	Lat 43°12'07", long 77°01'33", at School Street Bridge at Sodus Center, N. Y.	39.9		June 16	*2.43
Do.....	....do.....	Lat 43°15'52", long 77°01'31", at Lake Road Bridge, 2.1 miles northeast of Sodus, N. Y.	44.7		June 16	*4.48
Sodus Creek..	....do.....	Lat 43°11'30", long 76°54'46", at Glenmark Road Bridge, 1.1 miles northwest of North Rose, N. Y.	8.05		June 16	*1.09
Unnamed tributary.	Sodus Creek...	Lat 43°11'21", long 76°53'49", at Glenmark Road Bridge, northwest section of North Rose, N. Y.	1.47		June 16	*.38
Wolcott Creek	Lake Ontario..	Lat 43°11'26", long 76°48'12", at bridge 2.2 miles south of Wolcott, N. Y.	12.1		June 17	*1.83
Sterling Valley Creek.	Little Sodus Creek.	Lat 43°21'50", long 76°37'55", at bridge 1.0 mile north of Sterling Valley, N. Y.	25.0		June 17	*1.31
Ninemile Creek.	Lake Ontario..	Lat 43°23'07", long 76°36'21", at bridge on State Route 104A, 1.4 miles northeast of North Sterling, N. Y.	33.2		June 17	*4.79
Catherine Creek.	Seneca Lake...	Lat 42°19'17", long 76°50'46", alongside State Route14, 1.8 miles south of Montour Falls, N. Y.	40.7		June 23	5.92
Glen Creek...	....do.....	Lat 42°22'33", long 76°52'16", at State Park 200 ft below falls at Watkins Glen, N. Y.	23.2		June 23	.77
Hector Falls Creek.	....do.....	Lat 42°25'19", long 76°49'54", at bridge on State Route 227, 0.9 mile east of Burdett, N. Y.	12.1		June 23	1.14
Rock Stream..	....do.....	Lat 42°28'52", long 76°55'44", at culvert on Old Lake Road, 0.7 mile north of Rock Stream, N. Y. and 1.0 mile above mouth.	8.01		June 23	.07
Saw Mill Creek.	....do.....	Lat 42°29'54", long 76°53'17", at bridge 0.2 mile above mouth and 0.8 mile west of Hector, N. Y.	6.19		June 23	.05
Plum Point Creek.	....do.....	Lat 42°35'26", long 76°57'18", at bridge at Himrod, N. Y.	3.00		June 22	.35
Mill Creek...	....do.....	Lat 42°35'57", long 76°49'25", at bridge 1.0 mile south of Lodi, N. Y.	6.98		June 23	.08
Indian Creek.	....do.....	Lat 42°41'03", long 76°52'57", 0.1 mile above mouth and 0.5 mile northwest of Willard, N. Y.	8.58		June 24	*0
Keuka inlet..	Keuka Lake....	Lat 42°23'43", long 77°15'29", at bridge at Pleasant Valley, 2.0 miles southwest of Hammondsport, N. Y.	13.6		June 22	4.30
Sugar Creek..	West Branch Keuka Lake.	Lat 42°37'20", long 77°09'30", at bridge 1.7 miles north of Branchport, N. Y. and 1.9 miles above mouth.	28.6		June 22	2.06
Wagener Glen Creek.	....do.....	Lat 42°31'51", long 77°09'10", at bridge on State Route 54A, 0.1 mile above mouth and 0.7 mile northeast of Pulteney, N. Y.	4.09		June 22	.09
Crosby Creek.	Keuka Lake....	Lat 42°33'32", long 77°05'37", at culvert on State Route 54, 0.2 mile south of Crosby, N. Y.	1.69		June 22	*0
Willow Grove Creek.	....do.....	Lat 42°36'44", long 77°04'26", at bridge on State Route 54, 0.2 mile south of State Route 54 and Second Milo Road intersection about 3.7 miles southwest of Penn Yan, N. Y.	3.14		June 22	*0
Unnamed tributary.	....do.....	Lat 42°37'07", long 77°05'31", at bridge on Keuka College Road, at northside of Keuka Park, N. Y.	3.66		June 22	*0
Kashong Creek	Seneca Lake...	Lat 42°45'53", long 76°58'34", at bridge on State Route 14, 0.2 mile southwest of Kashong Point, N. Y.	32.5		June 22	*0
Kendig Creek.	Seneca River..	Lat 42°52'19", long 76°53'56", at bridge on Marshall Road, 3.2 miles southwest of Waterloo, N.Y.	14.1		June 24	*0
Sucker Brook.	....do.....	Lat 42°52'48", long 76°48'56", at bridge on County House Rd., 2.2 miles southwest of Seneca Falls, N. Y.	8.12		June 24	*0

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Ontario--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
West Branch Cayuga inlet.	Cayuga inlet..	Lat 42°22'25", long 76°33'28", at bridge, 0.1 mile above mouth and 0.4 mile north of Nina, N. Y.	9.71		July 13	*0.53
Enfield Creek	....do.....	Lat 42°24'08", long 76°35'23", at bridge at Enfield Falls, N. Y., 300 ft above mouth of Fish Kill.	18.5		July 13	*.86
Fish Kill....	Enfield Creek.	Lat 42°24'06", long 76°35'22", at bridge at Enfield Falls, N. Y., 100 ft above mouth.	8.11		July 13	*.54
Buttermilk Creek.	Cayuga inlet..	Lat 42°24'25", long 76°30'45", in Buttermilk Falls State Park, 1.2 miles above mouth and 1.7 miles south of city line of Ithaca, N. Y.	11.8		July 14	*4.89
Sixmile Creek	....do.....	Lat 42°24'11", long 76°26'07", at German Road Bridge, 3.4 miles southeast of city line of Ithaca, N. Y.	39.3		July 14	*3.93
Cascadilla Creek.	....do.....	Lat 42°26'41", long 76°28'20", at bridge on State Route 13, 0.9 mile east of city line of Ithaca, N. Y.	12.8		July 14	*.25
Virgil Creek.	Fall Creek....	Lat 42°30'39", long 76°11'35", at bridge on State Route 90, at Virgil, N. Y.	2.49	1949,1954	July 14	*0
Do.....	....do.....	Lat 42°30'18", long 76°21'01", at bridge, 0.6 mile southwest of Freeville, N. Y.	40.4		July 14	*5.04
Glenwood Creek.	Cayuga Lake...	Lat 42°29'41", long 76°32'18", at bridge at Glenwood, N. Y., 150 ft above mouth.	1.76		July 13	*0
Salmon Creek.	....do.....	Lat 42°38'12", long 76°32'45", 200 ft above mouth of Little Salmon Creek and 2.2 miles south of Genoa, N. Y.	37.3		July 14	*.36
Little Salmon Creek.	Salmon Creek..	Lat 42°38'08", long 76°32'47", 20 ft above mouth and 2.3 miles south of Genoa, N. Y.	14.3		July 14	*.04
Salmon Creek.	Cayuga Lake...	Lat 42°33'32", long 76°32'12", at bridge, 0.4 mile north of Ludlowville, N. Y.	81.4		July 14	*.57
Taughannock Creek.	....do.....	Lat 42°31'18", long 76°39'36", at bridge 0.2 mile above mouth of Bolter Creek and 1.3 miles northeast of Waterburg, N. Y.	42.7		July 13	*.41
Bolter Creek.	Taughannock Creek.	Lat 42°31'26", long 76°39'45", at bridge 800 ft above mouth and 1.4 miles northeast of Waterburg, N. Y.	13.3		July 13	*0
Trumansburg Creek.	Cayuga Lake...	Lat 42°32'30", long 76°40'07", at Trumansburg, N. Y., 0.25 mile above State Route 96 bridge.	11.5		July 13	*.01
Sheldrake Creek.	....do.....	Lat 42°39'51", long 76°42'00", at mouth at Sheldrake, N. Y.	9.74		July 12	*0
Bloomer Creek	....do.....	Lat 42°41'53", long 76°44'35", at mouth 2.4 miles east of Hayts Corners, N. Y.	2.40		July 12	*0
Mack Creek...	....do.....	Lat 42°41'57", long 76°44'34", at mouth 2.3 miles east of Hayts Corners, N. Y.	5.05		July 12	*0
Big Hollow Creek.	....do.....	Lat 42°43'55", long 76°46'05", at bridge on State Route 89, 0.1 mile above mouth and 2.8 miles northeast of Hayts Corners, N. Y.	2.02		July 12	*0
Paines Creek.	....do.....	Lat 42°43'58", long 76°41'13", at bridge 1.2 miles above mouth and 3.6 miles west of Poplar Ridge, N. Y.	14.1		July 15	*0
Red Creek....	....do.....	Lat 42°47'31", long 76°45'58", at bridge on State Route 89, 150 ft above mouth and 2.7 miles southeast of Fayette, N. Y.	2.70		July 12	*0
Canoga Creek.	....do.....	Lat 42°51'58", long 76°44'50", at culvert on State Route 89, 0.5 mile above mouth and 0.8 mile north of Canoga, N. Y.	1.79		July 12	*1.51
Yawger Creek.	....do.....	Lat 42°53'16", long 76°42'18", at bridge on State Route 90, 0.2 mile above mouth and 3.3 miles north of Union Springs, N. Y.	19.8		July 15	*1.19
Eelpot Creek.	Naples Creek..	Lat 42°36'30", long 77°24'34", at bridge on State Route 21, 0.5 mile southwest of Naples, N. Y.	17.2		June 21	*3.99
Grimes Creek.	....do.....	Lat 42°36'40", long 77°24'25", at bridge on State Route 21, 0.3 mile southwest of Naples, N. Y.	13.8		June 21	*2.42
West River...	Canandaigua inlet.	Lat 42°41'06", long 77°17'17", at bridge 1.6 miles southwest of Middlesex, N. Y.	29.8		June 21	*.20
Bristol Springs Creek.	Canandaigua Lake.	Lat 42°42'19", long 77°21'38", at private bridge 0.1 mile above mouth and 1.0 mile east of Bristol Springs, N. Y.	1.85		June 21	*.19

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to Lake Ontario--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Menteth Gully Creek.	Canandaigua Lake.	Lat 42°47'53", long 77°18'11", at bridge 0.1 mile above mouth, at Menteth, N. Y.	6.03		June 21	*.11
Tichenor Gully Creek.	....do.....	Lat 42°49'05", long 77°17'22", at bridge 0.1 mile above mouth, at Tichenor Point, N. Y.	4.45		June 21	*.03
Deep Run.....	....do.....	Lat 42°49'16", long 77°15'37", at bridge on State Route 364, 1.0 mile north of Cottage City, N.Y.	2.98		June 21	*0
Sucker Brook.	....do.....	Lat 42°53'19", long 77°17'39", west side of Canandaigua, N. Y., 1.4 miles above mouth.	5.54		June 20	*0
Rocky Run....	Canandaigua Outlet.	Lat 42°56'04", long 77°10'01", 2.5 miles southwest of Clifton Springs, N. Y.	11.6		June 20	*0
Flint Creek..	....do.....	Lat 42°56'45", long 77°05'18", at bridge 0.3 mile east of State Route 88, 1.9 miles southwest of Phelps, N. Y.	97.8		June 24	2.67
Fish Creek...	Mud Creek.....	Lat 42°54'42", long 77°25'10", at bridge 0.6 mile north of Holcomb, N.Y., on Holcomb-Victor road.	4.20		June 20	*1.69
Crane Brook..	Seneca River..	Lat 43°00'48", long 76°40'17", at bridge 1.6 miles east of Montezuma, N. Y.	32.8		July 19	*.46
Mill Creek...	Owasco inlet..	Lat 42°42'45", long 76°25'00", at Smith Street Bridge at Moravia, N. Y.	29.9		July 20	*1.86
Owasco inlet.	Owasco Lake...	Lat 42°43'01", long 76°26'18", at bridge on State Route 38, 0.8 mile west of Moravia, N. Y.	108	1949-50	July 20	*8.62
Dutch Hollow Brook.	....do.....	Lat 42°51'50", long 76°30'29", at bridge on State Route 38A, 0.3 mile above mouth and 2.3 miles northwest of Owasco, N. Y.	29.6		July 20	*.19
Sucker Brook.	....do.....	Lat 42°54'03", long 76°31'35", at bridge on State Route 38A, 1.7 miles southeast of State Dam at Auburn, N. Y.	9.66		July 20	*0
North Brook..	Seneca River..	Lat 43°02'23", long 76°35'05", at Hamilton Road Bridge, 1.4 miles southwest of Weedsport, N. Y.	21.4		July 19	*3.32
Skaneateles inlet.	Skaneateles Lake.	Lat 42°45'34", long 76°16'12", at first bridge above lake, 0.7 mile southeast of Glen Haven, N. Y.	9.40		July 21	*5.37
Bear Swamp Creek.	....do.....	Lat 42°48'43", long 76°20'36", at culvert at Carpenter Falls, N.Y.	8.35		July 20	*.49
Unnamed tributary.	....do.....	Lat 42°55'31", long 76°24'23", at culvert on State Route 41, 0.1 mile above mouth and 1.9 miles southeast of Skaneateles, N. Y.	3.83		July 19	*.04
West Branch Onondaga Creek.	Onondaga Creek.	Lat 42°58'36", long 76°15'14", at culvert 0.8 mile north of Cedarvale, N. Y.	2.93		July 22	*.07
Unnamed tributary.	West Branch Onondaga Creek.	Lat 42°57'06", long 76°15'37", at Tanner Road culvert, 4.4 miles southeast of Marcellus, N. Y.	2.06	1954	July 22	*.17
Spafford Creek.	Otisco Lake...	Lat 42°48'47", long 76°13'27", at Church Road Bridge, 1.1 miles southeast of Spafford Valley, N.Y.	6.90		July 21	*2.37
Pudding Mill. Brook.	....do.....	Lat 42°52'29", long 76°19'24", 300 ft below Willowdale Road and 1.4 miles northeast of Borodino, N. Y.	2.41		July 21	*0.01
Amber Creek..	....do.....	Lat 42°53'22", long 76°17'52", at culvert at Amber, N. Y., 0.2 mile above mouth.	4.31		July 21	*.20
Doust Creek..	Ninemile Creek	Lat 42°55'44", long 76°19'36", at culvert 0.2 mile above mouth and 3.8 miles south of Marcellus, N. Y.	1.05	1954	July 21	*.12
Butternut Creek.	Limestone Creek.	Lat 42°56'45", long 76°03'41", at Smith Road Bridge, 3.3 miles south of Jamesville, N. Y.	34.7		May 31 July 13 July 13 Aug. 16	17.1 *5.46 *5.22 9.65
Black River..	Lake Ontario..	Lat 43°40'36", long 75°21'39", at bridge 0.4 mile southwest of Greig, N. Y. and 5.0 miles below mouth of Moose River.	921	1952	Apr. 25 Aug. 16	5,100 *738
Do.....	....do.....	Lat 43°53'37", long 75°30'18", at bridge 0.1 mile below mouth of Beaver River and 0.5 mile northeast of Castorland, N. Y.	1,626	1952	Apr. 26 Aug. 17	7,340 *1,670

* Base flow.

Discharge measurements made at points other than gaging stations in the St. Lawrence River basin during the water year 1955--Continued

Streams tributary to St. Lawrence River, N. Y.

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Grass River..	St. Lawrence River.	Lat 44°56'02", long 74°53'37", at bridge on State Route 37, at Massena.	629		Apr. 27 Aug. 16	2,060 *225
Deer River...	St. Regis River.	Lat 44°53'34", long 74°41'52", at former gaging station at Brasher Iron Works at Ironton, 3.4 miles above mouth.	189	1912-16	Apr. 27 Aug. 16	381 *151
Salmon River.	St. Lawrence River.	Lat 44°50'48", long 74°17'01", at bridge at south side of Malone, 0.4 mile above mouth of Titus Stream.	160		Apr. 28 Aug. 15	538 *204
Little Salmon River.	Salmon River..	Lat 44°56'23", long 74°33'25", at bridge at east side of Bombay.	93.6	1954	Apr. 27 Aug. 16	155 *56.2
Trout River..	St. Lawrence River.	Lat 44°55'44", long 74°18'03", at bridge at Constable.	48.9	1954	Apr. 28 Aug. 15	83.2 *18.8
North Branch Great Chazy River.	Great Chazy River.	Lat 44°53'36", long 73°50'15", at bridge at east side of Ellenburg.	39.4		Apr. 28 Aug. 15	75.1 *14.0

* Base flow.

The following table contains determinations of peak discharge made at crest stage by indirect methods or by current meter or computed from rating curve at points other than regular gaging stations.

Determination of peak discharge during water year October 1954 to September 1955

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Thorn Creek.	Little Calumet River.	In SW¼SW¼ sec. 24, T. 36 N., R. 14 E., at 167th Street Bridge, 2 miles northwest of Lansing, Ill.	-		Oct. 11	3,430
Gamble Creek.	Rifle River...	SE¼ sec. 35, T. 24 N., R. 3 E., ½ mile south of Lupton, Mich.	-	1952-54	May 25	41.8
Wilkins Creek	Houghton Creek.	NE¼ sec. 7, T. 23 N., R. 3 E., 1 mile south of Rose City, Mich.	-	1952-54	May 27	19.3
Ammond Creek.	Prior Creek...	NW¼ sec. 32, T. 23 N., R. 3 E., 3 miles northwest of Selkirk, Mich.	-	1952-53	May 25	21.7
Roller Creek.	Town Creek....	Lat 40°46'15", long 84°38'15", at highway bridge, ¾ mile west of Ohio City, Ohio.	4.94	1946-54	Mar. 4	351
Smoke Creek..	Lake Erie.....	Lat 42°49'23", long 78°48'14", at Abbott Road Bridge, at Lackawanna, N. Y., 1.7 miles above mouth of South Branch.	13.0	1953-54	Mar. 1	2,330
South Branch Smoke Creek	....do.....	Lat 42°48'18", long 78°48'37", at Willet Road Bridge at Lackawanna, N. Y., 1.6 miles above mouth.	13.6	1953-54	Mar. 1	2,120
Beards Creek.	Genesee River.	Lat 42°46'30", long 77°53'51", at a culvert on State Route 36, at Leicester, N. Y.	12.4		Mar. 1	2,260
Oatka Creek..	....do.....	Lat 42°42'57", long 78°07'41", 0.2 mile above mouth of Relyea Creek and 1.7 miles south of Warsaw, N. Y.	22.0		Mar. 1	1,760
Stony Creek..	Oatka Creek...	Lat 42°45'39", long 78°09'49", at bridge 1.8 miles southwest of Warsaw, N. Y. and 1.9 miles above mouth.	8.03		Mar. 1	1,080
Marsh Creek..	Seneca Lake...	Lat 42°52'50", long 76°58'41", at Middle Street Bridge at Geneva, N. Y.	8.02		Mar. 1	360
Sucker Brook.	Canandaigua Lake.	Lat 42°53'19", long 77°17'39", west side of Canandaigua, N. Y., 1.4 miles above mouth.	5.54		Mar. 1	546
Rocky Run....	Canandaigua Outlet.	Lat 42°56'04", long 77°10'01", 2.4 miles southwest of Clifton Springs, N. Y.	11.6		Mar. 1	610
Fish Creek...	Mud Creek.....	Lat 42°54'42", long 77°25'10", at site 0.6 mile north of Holcomb, N. Y.	4.20		Mar. 1	516

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