

1974

Water Resources Data for Michigan

Part 1. Surface Water Records



**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

Prepared in cooperation with the State of Michigan
and with other agencies

CALENDAR FOR WATER YEAR 1974

1973

OCTOBER

S	M	T	W	T	F	S
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1974

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Prepared in cooperation with the State of Michigan
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Prepared in cooperation with

Michigan State Department of Natural Resources
Hydrological Survey Division
Geological Survey Division
Michigan Department of State Highways
Genesee County Drain Commission
Kalamazoo County Board of Supervisors
Macomb County Board of Supervisors
Macomb County Road Commission
Oakland County Department of Public Works
Oakland County Drain Commission
Washtenaw County Drain Commission
Washtenaw County Planning Commission
Huron-Clinton Metropolitan Authority
Township of Ypsilanti
City of Kalamazoo
City of Saline
City of Ypsilanti
City of Milan
Village of Imlay City
Corps of Engineers, U.S. Army
Soil Conservation Service, U.S. Department of Agriculture

Water resources records, 1974, for Michigan are in the following reports of the U.S. Geological Survey:

1. Water Resources Data for Michigan
Part 1: Surface Water Records
2. Water Resources Data for Michigan
Part 2: Water Quality Records

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
2400 Science Parkway
Okemos, Michigan 48864

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WATER RESOURCES DATA FOR MICHIGAN, 1974

PART 1: SURFACE-WATER RECORDS

INTRODUCTION

Surface-water records for the 1974 water year for gaging stations, partial-record stations, and miscellaneous sites within the State of Michigan are given in this report. For convenience there are also included records for a few pertinent gaging stations in bordering States. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey, under the direction of T.R. Cummings, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Michigan.

Records of discharge and stage of streams, and contents and stage of lakes or reservoirs are published in a series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States". Through September 30, 1960, these water-supply papers were in an annual series and since then are in a 5-year series. Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in Michigan are contained in Part 4 of that series.

Beginning with the 1961 water year, streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports is limited and they are designed primarily for rapid release of data shortly after the end of the water year.

COOPERATION

The systematic collection of streamflow records by the U.S. Geological Survey began in 1898 through cooperation with cities, municipalities, and private organizations. Cooperative agreements between the U.S. Geological Survey and organizations of the State of Michigan for the collection of streamflow records began in 1930. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

State Department of Natural Resources, A. G. Gazlay, director, through Environmental Protection Branch, Hydrological Survey Division, D. W. Granger, chief, and Natural Resources Branch, Geological Survey Division, A. E. Slaughter, chief.

State Department of State Highways, J. P. Woodford, director.

State Department of Agriculture, B. D. Ball, director, through Soil and Water Conservation Division, D. J. Schaner, chief.

Assistance in the form of funds or services was given by the Corps of Engineers, U. S. Army, in collecting records for 29 gaging stations published in this report.

Assistance was also furnished by the Weather Bureau, ESSA, U.S. Department of Commerce; and the Soil Conservation Service, U.S. Department of Agriculture.

The following organizations aided in collecting records:

Kalamazoo County Board of Supervisors; Macomb County Board of Supervisors; Macomb County Road Commission; Oakland County Department of Public Works; Oakland County Drain Commission; Genesee County Drain Commission; Washtenaw County Drain Commission; Washtenaw County Planning Commission; Huron-Clinton Metropolitan Authority; Townships of York and Ypsilanti, Cities or villages of Imlay City, Milan, Saline and Ypsilanti; Consumers Power Co.; Cleveland-Cliffs Iron Co.; Hanna Mining Co.; Michigan Power Co.; Michigan Sugar Co.; Upper Peninsula Power Co.; and Wisconsin-Michigan Power Co.

DEFINITION OF TERMS

Terms related to streamflow and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System of units (SI) on page 12.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic metres.

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, approximately 1.9835 acre-feet, or about 646,000 gallons or 2,445 cubic metres. It represents a runoff of 0.0372 inch from 1 square mile or 0.3468 millimetre from 1 square kilometre.

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

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, an artificial structure, or a uniform cross section over a long reach of the channel.

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.

Cubic foot per second (ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second, and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute, or 0.02832 cubic metres per second.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

Mean discharge is the arithmetic average of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

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

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage", although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is obtained.

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

Runoff in inches (IN.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

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.

WRD is used as an abbreviation for "Water-Resources Data" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

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

SPECIAL NETWORKS AND PROGRAMS

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by

natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

DOWNSTREAM ORDER AND STATION NUMBERS

Stations are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the list of gaging stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete 8-digit number for each station such as 04040500 which appears just to the left of the station name includes the 2-digit part number "04" plus the 6-digit downstream order number "040500". All records in this report are in Part 4 (St. Lawrence River basin) and are listed in downstream order. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

EXPLANATION OF DATA

Collection and Computation of Data

The base data collected at gaging stations consist of records of stage and measurements of discharge of streams, and stage, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from direct readings on a nonrecording gage or from a water-stage recorder that gives a continuous graph of the fluctuations or a tape punched at 15-, 30-, or 60-minute intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in standard textbooks, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, Chapter A6.

For stream-gaging stations, 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 express discharge greater than measured, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams or weirs), 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 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 computed 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 in effect the shifting-control method.

At some stream-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 required 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. For such stations, the rate of change in stage is used as a factor in determining discharge.

At some stream-gaging stations the stage-discharge relation is affected by ice in 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 hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. The application of the stage to the capacity table gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, adjoining good record, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of daily and monthly figures. For gaging stations on the streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents is given. Tables of daily mean gage heights are included for some stations. Records are published for the water year, which begins on October 1 and ends on September 30. A calendar for the current water year is shown on the reverse side of the front cover to facilitate finding the day of the week for any date.

The description of the gaging station gives the location, drainage area, period of record, type and history of gages, average discharge, extremes of discharge or contents, general remarks, and notations of revisions of previously published records. 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 or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD". The type of gage currently in use, 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 record are given under "GAGE". In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey, unless otherwise qualified. The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. The maximum discharge (or contents) and the maximum gage height, the minimum discharge if there is little or no regulation (or the minimum contents), and the minimum gage height if it is significant are given under "EXTREMES". The minimum daily discharge is given if there is extensive regulation (also the minimum discharge and gage height if they are abnormally low). In the first paragraph headed "Current year:" the data given are for the complete current water year unless otherwise specified. In the second paragraph under "EXTREMES" headed "Period of record:" the data given are for the period of record given in the PERIOD OF RECORD paragraph. Reliable information concerning major floods that occurred outside the period of record is given in the third or last paragraph under "EXTREMES". Unless otherwise qualified, the maximum discharge (or contents) corresponds to the crest-stage obtained by use of a water-stage recorder (graphic or digital),

a crest-stage gage, 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 (or contents), it is given separately. Information pertaining to the accuracy of the discharge records, to conditions that affect the natural flow at the gaging station, and availability of Water Quality records, is given under "REMARKS"; for reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir, is also 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 or compilation 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 were revised, 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.

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also 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 there is extensive regulation or diversion, or if the drainage area includes large noncontributing areas.

In the yearly summary below the monthly summary, the figures following "MAX" are the maximum daily discharges for the calendar and water years; likewise, those following "MIN" are the minimum daily discharges.

In a general footnote introduced by the word "NOTE" certain periods are indicated for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge

for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage site are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs. Footnotes to reservoir tables may be used to explain the use of new capacity tables or for other special conditions.

Peak discharges and their times of occurrence and corresponding gage heights for many stations are listed below the yearly summary. 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 can be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030 and 1:30 p.m. is 1330.

For reservoir stations the monthly summary gives the elevation (or gage height) at the end of the month and the change in contents during the month. For reservoir stations the yearly summary gives the change in contents for the calendar year and for the water year.

Data collected at partial-record stations and at miscellaneous sites are given in three tables at the end of the surface-water records in this report. The first is a table of discharge measurements at low-flow partial-record stations, the second is a table of annual maximum stage and discharge at crest-stage stations, and the third is a table of discharge measurements at miscellaneous sites. Occasionally, a series of discharge measurements are made within a short time period to investigate the seepage gains or losses along a reach of a stream or to determine the low-flow characteristics of an area. Such measurements are given in special tables after the list of measurements at miscellaneous sites.

Accuracy of data

The accuracy of discharge 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 under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges are within 5 percent; "good" within 10 percent; and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharge of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumptive use, regulation, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, discharge in cubic feet per second per square mile and runoff in inches are not published unless satisfactory adjustments can be made for such effects. 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 if adjustments or unadjusted losses (consumptive use, evaporation, seepage, etc.) are large in comparison with the observed discharge.

Publications

In each water-supply paper entitled, "Surface Water Supply of the United States" there is a list of numbers of preceding water-supply papers containing streamflow information for the area covered by that report. In addition, there is a list of numbers of water-supply papers containing detailed information on major floods in the area. Records for stations in Michigan for the period October 1960 to September 1965 are in Water-Supply Papers 1911 and 1912.

Two series of summary reports entitled, "Compilation of Records of Surface Waters of the United States" have been published; the first series covers the entire period of record through September 1950 and the second series covers the period October 1950 to September 1960. These reports contain summaries of monthly and annual discharge and monthend storage for all previously published records, as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical. The yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station. Records for stations in Michigan are compiled in Water-Supply Papers 1307 through September 1950, and in 1727 for October 1950 to September 1960.

Special reports on major floods or droughts or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

Other Data Available

More detailed information than that published for most of the gaging stations, such as discharge measurements, gage-height records, and rating tables, is on file in the district office. Many gaging-station records in Michigan through 1967 have been analyzed to give several statistical summaries: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

At or near some gaging stations, water-quality records also are collected. Data are obtained on the chemical quality of the stream water, on the water temperature, and on the sediment. These data are given in Part 2 of this report. Under the "REMARKS" paragraph of the gaging-station description, reference is made to water-quality records collected on a regular basis.

HYDROLOGIC CONDITIONS

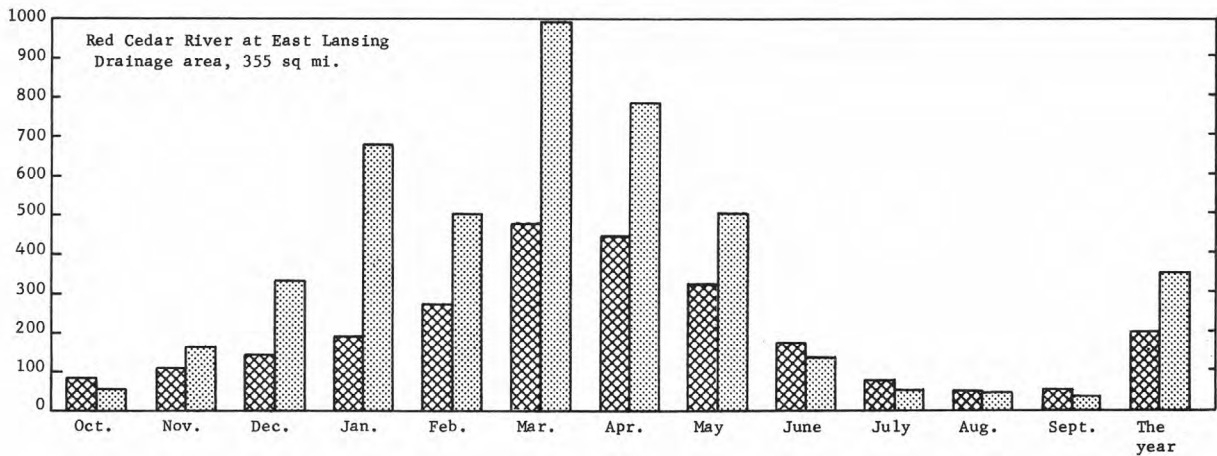
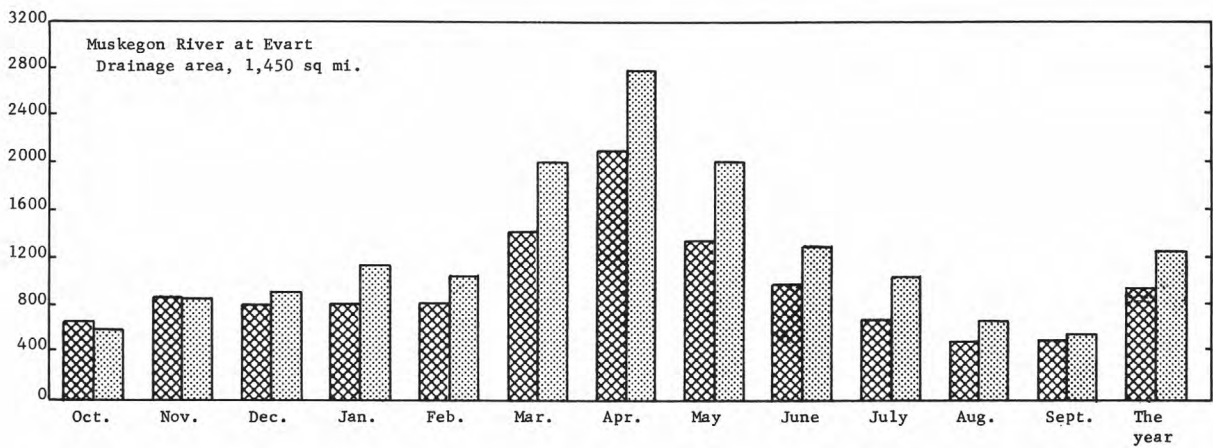
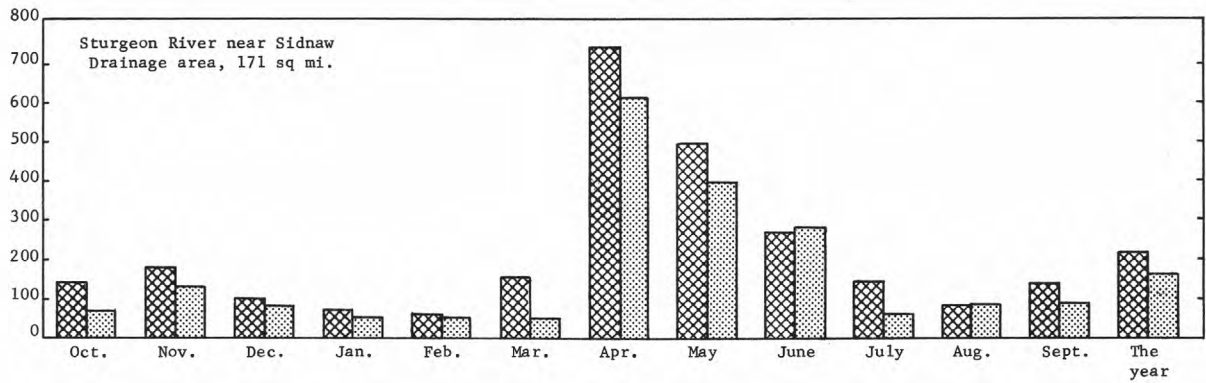
Annual runoff during the 1974 water year was in the normal range in the Upper Peninsula and in the excessive range in the Lower Peninsula.

Runoff for the Upper Peninsula as based on records for the index station, Sturgeon River near Sidnaw, was in the normal range throughout the year. In the northern part of the Lower Peninsula runoff was excessive during eight months as based on records for Muskegon River at Evart. Annual runoff at the Evart gage was the third highest in the 42 year record at the station. In the southern part of the State, runoff was in the excessive range for seven months of the year as reflected in the record for Red Cedar River at East Lansing. Annual runoff at the East Lansing gage was also the third highest in its 44 year record.

Although runoff was significantly above normal in the Lower Peninsula, no flooding occurred except in isolated areas during January. The above normal streamflow continued to keep the Great Lakes at above normal levels.

SELECTED REFERENCES

- Carter, R.W., and Davidian, Jacob, 1968, General procedures for gaging streams: U. S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. A6, 13 p.
- Corbett, D.M., and others, 1943, reprinted 1957, Stream-gaging procedures, a manual describing methods and practices of the Geological Survey: U.S. Geol. Survey Water-Supply Paper 888, 245 p.
- Langbein, W.B., and Iseri, K.T., 1960, General introduction and hydrologic definitions: U. S. Geol. Survey Water Supply Paper 1541-A, 29 p.



Explanation



-  Monthly and yearly mean discharge for period 1931-60.
-  Monthly and yearly mean discharge for 1974 water year.

Figure 1.--Comparison of discharge at three long-term representative gaging stations during 1974 water year with mean discharge for period 1931-60.

Table 1.--Factors for converting English units to
International System (SI) units

The following factors may be used to convert the English units published herein to the International System of Units (SI). Subsequent reports will contain both the English and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply English units	By	To obtain SI units
<i>Length</i>		
inches (in)	25.4	millimeters (mm)
	.0254	meters (m)
feet (ft)	.3048	meters (m)
yards (yd)	.9144	meters (m)
rods	5.0292	meters (m)
miles (mi)	1.609	kilometers (km)
<i>Area</i>		
acres	4047	square meters (m ²)
	.4047	*hectares (ha)
	.4047	square hectometer (hm ²)
	.004047	square kilometers (km ²)
square miles (mi ²)	2.590	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785	**liters (l)
	3.785	cubic decimeters (dm ³)
	3.785x10 ⁻³	cubic meters (m ³)
million gallons (10 ⁶ gal)	3785	cubic meters (m ³)
	3.785x10 ⁻³	cubic hectometers (hm ³)
cubic feet (ft ³)	28.32	cubic decimeters (dm ³)
	.02832	cubic meters (m ³)
cfs-day (ft ³ /s-day)	2447	cubic meters (m ³)
	2.447x10 ⁻³	cubic hectometers (hm ³)
acre-feet (acre-ft)	1233	cubic meters (m ³)
	1.233x10 ⁻³	cubic hectometers (hm ³)
	1.233x10 ⁻⁶	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	28.32	liters per second (l/s)
	28.32	cubic decimeters per second (dm ³ /s)
	.02832	cubic meters per second (m ³ /s)
gallons per minute (gpm)	.06309	liters per second (l/s)
	.06309	cubic decimeters per second (dm ³ /s)
	6.309x10 ⁻⁵	cubic meters per second (m ³ /s)
million gallons per day (mgd)	43.81	cubic decimeters per second (dm ³ /s)
	.04381	cubic meters per second (m ³ /s)
<i>Mass</i>		
ton (short)	.9072	tonne (t)

*The unit hectare is approved for use with the International System (SI) for a limited time. See NBS Special Bulletin 330, p.15, 1972 edition.

**The unit liter is accepted for use with the International System (SI). See NBS Special Bulletin 330, p. 13, 1972 edition.

Figure 3.—Map showing identification number and location of gaging stations in Lower Peninsula of Michigan.

STREAMS TRIBUTARY TO LAKE SUPERIOR

04001000 Washington Creek at Windigo, Mich.
(Hydrologic bench-mark station)

LOCATION.--Lat 47°55'23", long 89°08'42", in NW¼ sec.28, T.64 N., R.38 W., Keweenaw County, Isle Royale National Park, on left bank 0.8 mi (1.3 km) northeast of Windigo, and 35 mi (56 km) southwest of Rock Harbor.

DRAINAGE AREA.--13.2 mi² (34.2 km²).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 605 ft (184.4 m) from topographic map (nearest 5 ft).

AVERAGE DISCHARGE.--10 years, 20.4 ft³/s (0.578 m³/s), 20.99 in/yr (533 mm/yr).

EXTREMES.--Current year: Maximum discharge, 392 ft³/s (11.1 m³/s) Apr. 22 (gage height, 6.59 ft or 2.009 m); minimum, 0.95 ft³/s (0.027 m³/s) Aug. 10 (gage height, 2.70 ft or 0.823 m).

Period of record: Maximum discharge, 480 ft³/s (13.6 m³/s) May 1, 1972 (gage height, 6.82 ft or 2.079 m), from rating curve extended above 160 ft³/s (4.53 m³/s) based on runoff characteristics of nearby stations; minimum, 0.57 ft³/s (0.016 m³/s) Aug. 21, 1970 (gage height, 2.57 ft or 0.783 m).

REMARKS.--Records good except those for winter period, which are fair. Recording rain gage at station and capacity rain gage located near mouth. Records of chemical analyses, water temperatures, and suspended sediment loads for the current year are published in Part 2 of this report. Hydrologic bench-mark stations are installed in specially selected areas where water resources have not yet been affected by works of man. Continuous records of natural hydrologic conditions, such as streamflow and water quality, will make possible assessment of changes which occur as a result of the changes in climate and other natural factors. These data will provide a frame of reference against which hydrologic changes wrought by man may be evaluated.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	3.9	11	3.8	2.6	2.3	2.7	82	14	4.5	1.6	3.5
2	5.9	4.2	10	3.5	2.6	2.4	3.0	76	11	5.2	1.6	2.8
3	5.4	3.6	9.8	3.3	2.5	2.9	3.1	110	10	10	1.7	2.5
4	4.7	3.3	9.0	3.3	2.5	3.3	3.1	73	11	41	1.5	2.3
5	4.4	3.1	7.3	3.1	2.4	3.5	3.0	61	11	23	1.3	2.0
6	4.2	2.7	8.0	3.0	2.4	3.8	3.3	55	8.9	15	1.2	1.8
7	3.7	2.6	7.2	2.9	2.4	4.9	3.5	48	12	10	1.2	1.8
8	3.4	2.8	7.1	2.8	2.3	4.3	3.3	40	28	8.1	1.1	1.8
9	5.6	2.6	7.0	2.7	2.3	4.1	3.5	38	23	7.0	1.1	1.7
10	10	2.4	6.3	2.7	2.2	3.8	4.4	36	56	5.8	1.0	2.5
11	11	2.5	5.9	2.6	2.2	3.7	7.9	50	64	4.9	4.2	75
12	23	3.1	5.8	2.6	2.2	3.5	53	69	42	3.8	2.6	43
13	19	4.0	5.4	2.5	2.2	3.6	107	54	31	3.4	1.7	28
14	14	4.5	5.1	2.5	2.3	3.8	78	55	24	5.9	1.4	18
15	11	4.2	5.2	2.5	2.5	3.6	67	66	25	3.3	1.8	13
16	8.4	3.6	4.9	2.5	2.6	3.4	66	56	20	2.5	2.8	10
17	7.0	3.2	4.9	2.5	2.6	3.4	74	48	20	2.7	1.9	18
18	5.8	3.2	4.7	2.5	2.6	3.4	90	39	17	2.7	1.7	13
19	5.2	3.5	4.6	2.5	2.6	3.3	97	34	14	2.3	1.7	11
20	4.7	3.6	4.5	2.5	2.6	3.2	91	31	12	2.0	1.6	8.2
21	4.1	56	4.4	2.6	2.5	3.2	227	29	10	1.8	6.7	7.5
22	3.8	66	4.4	2.7	2.5	3.1	290	35	8.7	1.8	7.5	6.6
23	3.6	39	4.4	2.7	2.4	2.9	149	31	7.6	1.7	4.6	5.8
24	3.7	28	4.1	2.7	2.3	2.7	133	33	7.0	1.6	3.3	5.5
25	3.7	22	4.3	2.7	2.2	2.6	147	28	5.5	1.5	2.9	6.2
26	3.6	19	4.5	2.6	2.2	2.6	196	24	5.0	1.5	6.8	6.3
27	3.6	24	4.5	2.6	2.3	2.5	211	21	4.5	1.3	4.4	5.7
28	3.4	21	4.6	2.6	2.3	2.6	190	19	4.0	1.2	3.3	5.3
29	3.1	17	4.7	2.6	-----	2.6	129	18	5.2	1.4	3.1	6.0
30	3.1	13	4.4	2.6	-----	2.6	100	18	5.8	2.0	3.2	7.2
31	3.2	-----	4.1	2.6	-----	2.6	-----	19	-----	2.0	4.9	-----
TOTAL	202.0	371.6	182.1	85.3	67.3	100.2	2,535.8	1,396	517.2	180.9	85.4	322.0
MEAN	6.52	12.4	5.87	2.75	2.40	3.23	84.5	45.0	17.2	5.84	2.75	10.7
MAX	23	66	11	3.8	2.6	4.9	290	110	64	41	7.5	75
MIN	3.1	2.4	4.1	2.5	2.2	2.3	2.7	18	4.0	1.2	1.0	1.7
CFSM	4.9	9.4	4.4	2.1	1.8	2.4	6.40	3.41	1.30	4.4	2.1	8.1
IN.	57	1.05	51	24	19	28	7.15	3.93	1.46	51	24	91
CAL YR 1973	TOTAL 4,676.7	MEAN 12.8	MAX 117	MIN 1.3	CFSM .97	IN 13.18						
WTR YR 1974	TOTAL 6,045.8	MEAN 16.6	MAX 290	MIN 1.0	CFSM 1.26	IN 17.04						

PEAK DISCHARGE (BASE, 110 FT³/s)

DATE	TIME	G.H.	DISCHARGE
04-13	0200	4.95	122
04-22	0100	6.59	392
05-03	0400	5.01	127
09-11	0700	4.81	111

STREAMS TRIBUTARY TO LAKE SUPERIOR

04031000 Black River near Bessemer, Mich.

LOCATION.--Lat 46°30'41", long 90°04'28", in NE¼ SE¼ sec.32, T.48 N., R.46 W., Gogebic County, on right bank 450 ft (137 m) downstream from bridge on county highway, 500 ft (152 m) downstream from Powder Mill Creek, and 2.5 mi (4.0 km) northwest of Bessemer.

DRAINAGE AREA.--200 mi² (518 km²).

PERIOD OF RECORD.--October 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,154.3 ft (351.83 m) above mean sea level (levels by registered surveyor).

AVERAGE DISCHARGE.--20 years, 236 ft³/s (6.684 m³/s), 16.02 in/yr (407 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,280 ft³/s (150 m³/s) June 10 (gage height, 9.77 ft or 2.978 m); minimum 19 ft³/s (0.54 m³/s) Aug. 2 (gage height, 0.60 ft or 0.183 m).
Period of record: Maximum discharge, 14,800 ft³/s (419 m³/s) Apr. 24, 1960 (gage height, 14.27 ft or 4.349 m, from flood mark), from rating curve extended above 5,300 ft³/s (150 m³/s) on basis of slope-area measurement of peak flow; minimum, 7.8 ft³/s (0.22 m³/s) Sept. 9, 1970 (gage height, 0.36 ft or 0.110 m).

REMARKS.--Records good except those for winter periods, which are poor. Prior to 1967, some ground water pumped from mines at Bessemer.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	132	143	135	30	46	40	48	395	225	56	21	50
2	120	153	125	28	45	42	52	343	174	53	32	46
3	104	142	114	27	43	50	58	521	143	53	135	43
4	101	126	105	27	42	75	62	460	124	58	304	39
5	99	113	100	27	40	95	66	389	105	50	224	37
6	89	100	90	27	38	125	70	351	88	42	179	34
7	83	85	100	27	37	160	75	295	129	37	138	32
8	75	98	105	26	36	135	80	249	425	34	146	32
9	184	95	115	26	34	125	90	215	401	33	148	45
10	373	92	100	25	33	115	105	192	3,690	34	119	96
11	325	90	95	25	32	110	150	405	2,100	40	101	104
12	299	87	85	25	31	105	400	523	1,160	32	87	108
13	234	108	75	24	30	100	1,050	485	736	30	76	149
14	187	118	68	24	30	92	761	650	534	31	120	150
15	159	112	60	27	31	86	634	713	538	27	140	137
16	132	107	55	27	31	80	784	587	500	24	153	119
17	117	105	50	29	32	75	1,200	485	676	38	143	104
18	107	100	45	30	32	70	1,600	389	599	37	120	89
19	97	95	42	30	32	66	1,560	321	439	32	90	96
20	86	106	38	31	31	62	1,710	264	333	27	74	86
21	80	163	35	35	35	60	2,550	283	251	26	72	77
22	73	225	32	38	43	56	3,060	435	194	44	64	68
23	69	197	30	40	45	52	2,280	339	150	36	56	62
24	65	178	29	40	45	50	1,590	273	117	30	52	59
25	65	176	30	42	44	47	1,200	218	96	29	47	58
26	58	173	31	44	42	45	955	176	80	30	100	56
27	58	190	32	45	42	45	780	159	67	46	102	53
28	111	187	35	44	42	45	682	211	58	26	80	51
29	140	171	40	43	-----	45	565	206	55	22	67	56
30	126	148	37	41	-----	45	475	191	62	22	60	66
31	118	-----	33	42	-----	45	-----	263	-----	22	57	-----
TOTAL	4,066	3,983	2,066	996	1,044	2,343	24,692	10,986	14,249	1,101	3,307	2,202
MEAN	131	133	66.6	32.1	37.3	75.6	823	354	475	35.5	107	73.4
MAX	373	225	135	45	46	160	3,060	713	3,690	58	304	150
MIN	58	85	29	24	30	40	48	159	55	22	21	32
CFSM	.66	.67	.33	.16	.19	.38	4.12	1.77	2.38	.18	.54	.37
IN.	.76	.74	.38	.19	.19	.44	4.59	2.04	2.65	.20	.62	.41
CAL YR 1973	TOTAL 91,877	MEAN 252	MAX 1,830	MIN 19	CFSM 1.26	IN 17.09						
WTR YR 1974	TOTAL 71,035	MEAN 195	MAX 3,690	MIN 21	CFSM .98	IN 13.21						

PEAK DISCHARGE (BASE, 1,500 FT³/S)

DATE	TIME	G.H.	DISCHARGE
04-22	0700	7.39	3,170
06-10	0600	9.77	5,280

STREAMS TRIBUTARY TO LAKE SUPERIOR

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04031500 Presque Isle River at Marenisco, Mich.

LOCATION.--Lat 46°22'20", long 89°41'32", in SE¼ NW¼ sec.21, T.46 N., R.43 W., Gogebic County, on left bank 0.3 mi (0.5 km) upstream from highway bridge in Marenisco, and 1.5 mi (2.4 km) downstream from confluence of East and West Branches.

DRAINAGE AREA.--171 mi² (443 km²).

PERIOD OF RECORD.--February 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,489.30 ft (453.939 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to May 27, 1949, nonrecording gage at site 0.3 mi (0.5 km) downstream at different datum.

AVERAGE DISCHARGE.--29 years, 179 ft³/s (5.069 m³/s), 14.22 in/yr (361 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,390 ft³/s (39.4 m³/s) Apr. 22 (gage height, 7.98 ft or 2.432 m) minimum, 57 ft³/s (1.61 m³/s) Aug. 1, 2 (gage height, 3.50 ft or 1.067 m).

Period of record: Maximum discharge, 3,520 ft³/s (99.7 m³/s) Apr. 25, 1960 (gage height, 11.25 ft or 3.429 m); minimum observed, 13 ft³/s (0.37 m³/s) Sept. 30, 1948 (gage height, 2.25 ft or 0.686 m, site and datum then in use).

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation for lake or pond level control at several places above station.

REVISIONS (WATER YEARS).--WSP 1707: 1954. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	206	140	96	100	90	96	389	202	116	58	104
2	135	207	130	94	98	92	98	341	188	126	78	107
3	120	194	124	90	96	105	105	364	180	125	209	121
4	136	177	120	90	95	115	110	364	173	118	321	83
5	134	152	110	88	94	125	115	322	167	116	290	87
6	115	135	105	86	94	130	130	291	161	97	215	87
7	101	120	110	86	93	135	135	265	177	92	186	86
8	94	130	115	85	92	130	140	258	291	96	150	83
9	204	140	120	85	92	125	145	234	327	76	123	131
10	402	135	115	84	92	125	150	215	486	76	109	264
11	369	130	110	83	92	120	170	292	645	72	106	326
12	294	130	110	82	91	120	210	375	625	70	102	330
13	235	142	105	80	91	115	290	353	507	75	95	326
14	199	147	105	80	90	110	384	389	414	69	148	294
15	176	142	100	84	90	110	344	464	381	66	224	241
16	155	133	98	88	90	105	391	424	357	65	251	209
17	142	130	95	92	90	105	445	295	343	71	249	197
18	134	125	95	94	90	105	601	162	324	75	224	184
19	130	125	95	95	90	100	544	166	289	69	198	159
20	139	123	95	96	90	98	688	164	263	71	162	148
21	133	141	95	96	90	95	576	167	208	70	144	136
22	127	185	95	97	89	93	1,300	284	178	89	126	129
23	121	167	95	98	89	92	1,280	345	172	80	117	123
24	118	149	98	99	89	92	1,020	303	166	75	107	119
25	115	147	100	100	90	92	774	262	161	83	99	126
26	114	143	100	100	90	92	655	244	120	90	142	122
27	125	167	105	100	90	93	599	233	92	69	151	115
28	242	179	105	100	90	94	553	198	96	64	138	106
29	254	157	110	100	-----	95	513	183	112	61	125	107
30	217	154	105	100	-----	95	452	172	114	60	115	106
31	195	-----	100	100	-----	95	-----	198	-----	61	110	-----
TOTAL	5,334	4,512	3,305	2,848	2,567	3,288	13,463	8,716	7,928	2,543	4,862	4,756
MEAN	172	150	107	91.9	91.7	106	449	281	264	82.0	157	159
MAX	402	207	140	100	100	135	1,300	464	645	126	321	330
MIN	94	120	95	80	89	90	96	162	92	60	58	83
CFSM	1.01	.88	.63	.54	.54	.62	2.63	1.64	1.54	.48	.92	.93
IN.	1.10	.98	.72	.62	.56	.72	2.93	1.90	1.72	.55	1.05	1.03

CAL YR 1973 TOTAL 82,112 MEAN 225 MAX 1,020 MIN 61 CFSM 1.32 IN 17.86
WTH YR 1974 TOTAL 64,122 MEAN 176 MAX 1,300 MIN 58 CFSM 1.03 IN 13.95

STREAMS TRIBUTARY TO LAKE SUPERIOR

04033000 Middle Branch Ontonagon River near Paulding, Mich.

LOCATION.--Lat 46°21'25", long 89°04'38", in SE¼ NE¼ sec.29, T.46 N., R.38 W., Ontonagon County, Ottawa National Forest, on right bank 25 ft (8 m) downstream from bridge on Forest Service Road 172, 2.4 mi (3.9 km) upstream from Bond Falls Reservoir, and 5.7 mi (9.2 km) southeast of Paulding.

DRAINAGE AREA.--164 m² (425 km²).

PERIOD OF RECORD.--June 1942 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 1,485.66 ft (452.829 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Sept. 28, 1942, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--32 years, 174 ft³/s (4.928 m³/s), 14.41 in/yr (366 mm/yr).

EXTREMES.--Current year: Maximum discharge, 615 ft³/s (17.4 m³/s) Apr. 22 (gage height, 6.33 ft or 1.929 m); minimum, 97 ft³/s (2.75 m³/s) July 13, 16 (gage height, 3.59 ft or 1.094 m).

Period of record: Maximum discharge, 2,050 ft³/s (58.1 m³/s) Apr. 30, 1951 (gage height, 10.0 ft or 3.048 m, from high-water mark); minimum, 27 ft³/s (0.76 m³/s) Nov. 22, 1946, result of freezeup; minimum gage height, 2.96 ft (0.902 m) Nov. 26, 1942, result of freezeup.

REMARKS.--Records excellent except those for winter periods, which are fair.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	151	189	165	120	120	110	110	291	198	133	106	111
2	144	189	159	120	120	115	110	267	181	139	111	108
3	140	184	159	115	115	120	115	279	167	144	187	105
4	141	171	156	115	115	130	115	277	153	132	288	104
5	144	161	150	110	110	140	115	252	153	126	253	102
6	135	153	145	110	110	150	120	241	151	123	194	100
7	132	150	140	110	110	155	125	222	233	116	161	99
8	142	145	130	105	110	155	130	203	422	112	145	99
9	158	140	140	105	110	150	131	190	447	111	133	114
10	196	145	150	105	110	140	134	180	479	110	124	169
11	195	145	145	100	105	135	152	214	464	105	121	178
12	181	145	140	100	110	140	205	267	404	101	117	167
13	176	146	135	100	110	135	276	252	327	100	112	166
14	164	148	130	105	115	130	251	259	268	103	114	156
15	152	147	130	105	110	125	217	298	252	102	126	141
16	146	145	130	110	105	125	230	281	280	100	133	131
17	142	145	130	115	110	120	273	248	296	115	134	127
18	140	146	125	120	115	120	343	224	286	129	125	123
19	139	143	130	120	115	120	367	209	263	120	132	123
20	139	141	130	120	120	115	375	200	236	113	125	129
21	135	152	130	120	115	110	461	194	214	112	118	126
22	132	193	125	120	110	110	584	202	196	125	119	123
23	131	179	125	125	105	105	580	204	180	125	114	121
24	132	168	130	125	110	105	508	214	168	117	110	119
25	133	169	125	125	110	105	440	202	158	122	108	138
26	135	167	130	125	110	105	399	184	145	125	116	143
27	137	178	130	125	110	105	382	170	136	118	128	136
28	205	195	130	125	110	105	369	164	129	109	124	131
29	219	181	135	125	-----	105	346	160	132	106	119	141
30	191	172	125	125	-----	110	318	152	145	107	114	147
31	177	-----	120	120	-----	110	-----	178	-----	108	113	-----
TOTAL	4,784	4,832	4,224	3,570	3,125	3,805	8,281	6,878	7,263	3,608	4,224	3,877
MEAN	154	161	136	115	112	123	276	222	242	116	136	129
MAX	219	195	165	125	120	155	584	298	479	144	288	178
MIN	131	140	120	100	105	105	110	152	129	100	106	99
CFSM	.94	.98	.83	.70	.68	.75	1.68	1.35	1.48	.71	.83	.79
IN.	1.09	1.10	.96	.81	.71	.86	1.88	1.56	1.65	.82	.96	.88

CAL YR 1973 TOTAL 75,547 MEAN 207 MAX 802 MIN 105 CFSM 1.26 IN 17.14
WTR YR 1974 TOTAL 58,471 MEAN 160 MAX 584 MIN 99 CFSM .98 IN 13.26

STREAMS TRIBUTARY TO LAKE SUPERIOR

19

040335000 Bond Falls Canal near Paulding, Mich.

LOCATION.--Lat 46°23'57", long 89°08'47", in SW¼ NE¼ sec.11, T.46 N., R.39 W., Ontonagon County, on left bank 40 ft (12 m) upstream from intake to pipeline No. 2, 0.8 mi (1.3 km) downstream from Bond Falls Reservoir on Middle Branch Ontonagon River, and 1.6 mi (2.6 km) east of Paulding.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,441.59 ft (439.397 m) above mean sea level. Prior to Oct. 1, 1968, nonrecording gage at datum 3.00 ft (0.914 m) higher.

AVERAGE DISCHARGE.--32 years, 139 ft³/s (3.936 m³/s).

EXTREMES.--Period of record: Maximum discharge, 373 ft³/s (10.6 m³/s) Sept. 23, 1960 (gage height, 6.17 ft or 1.881 m); no flow at times each year since 1961; minimum gage height observed, -0.03 ft (-0.009 m) Apr. 17, 1963, present datum (two drain holes in weir open and canal gate closed).

REMARKS.--Records excellent except those between 0 and 10 ft³/s (0 and 0.28 m³/s), which are poor. Canal diverts water from Bond Falls Reservoir (see sta 04034000) to South Branch Ontonagon River; water is used for power production at Victoria Dam near Rockland.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	65	12	201	206	309	278	.80	4.0	253	158	234
2	28	41	12	200	214	307	273	.80	15	252	87	234
3	28	10	12	200	215	307	268	1.1	17	252	86	233
4	28	9.8	12	200	246	307	228	.90	59	251	86	233
5	28	9.8	12	198	282	305	167	1.0	107	251	57	231
6	28	25	12	198	290	156	177	1.2	108	251	27	230
7	28	85	12	198	300	58	177	1.3	108	250	27	230
8	28	91	42	198	300	189	152	1.3	60	248	27	228
9	28	91	97	198	300	294	128	1.4	15	246	27	228
10	28	92	98	196	300	292	67	1.9	16	246	27	228
11	28	92	100	195	300	163	3.1	2.9	14	245	27	227
12	28	92	125	195	300	56	2.1	3.0	14	245	27	226
13	28	92	156	195	300	56	1.2	3.0	16	244	27	226
14	29	92	156	195	298	129	.80	3.2	16	243	27	130
15	29	92	156	195	298	192	.80	2.8	16	242	142	62
16	29	92	155	195	300	192	.80	.90	17	241	243	62
17	59	92	155	195	300	190	3.6	.70	17	241	248	125
18	100	92	155	195	301	189	4.4	.70	17	240	247	241
19	107	92	155	230	303	239	2.8	.80	17	239	245	260
20	107	92	155	255	305	282	.50	.80	18	238	245	155
21	107	94	154	255	307	289	.60	1.0	66	237	244	79
22	107	92	154	290	305	294	.60	1.3	159	236	243	78
23	107	92	154	305	305	295	.60	1.4	201	230	241	78
24	107	92	153	305	305	295	.40	1.3	232	232	239	78
25	107	94	154	305	305	295	.50	1.2	257	234	239	77
26	107	94	153	303	300	290	.40	1.4	256	233	239	77
27	107	94	154	301	310	289	.40	2.1	256	232	238	133
28	107	94	153	249	312	290	.50	2.9	255	230	236	194
29	107	76	153	206	-----	285	.60	2.5	255	230	236	200
30	89	38	153	206	-----	285	.70	.08	254	229	234	199
31	65	-----	164	206	-----	284	-----	0	-----	228	234	-----
TOTAL	1,946	2,299.6	3,488	6,963	8,107	7,403	1,940.40	45.68	2,862.0	7,469	4,711	5,214
MEAN	62.8	76.7	113	225	290	239	64.7	1.47	95.4	241	152	174
MAX	107	94	164	305	312	309	278	3.2	257	253	248	260
MIN	28	9.8	12	195	206	56	.40	0	4.0	228	27	62

CAL YR 1973 TOTAL 61,910.70 MEAN 170 MAX 312 MIN 0
WTR YR 1974 TOTAL 52,448.68 MEAN 144 MAX 312 MIN 0

STREAMS TRIBUTARY TO LAKE SUPERIOR

04034000 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., Ontonagon County, at Bond Falls Dam on Middle Branch Ontonagon River, 2.5 mi (4.0 km) east of Paulding.

DRAINAGE AREA.--190 mi² (492 km²).

PERIOD OF RECORD.--June 1942 to current year. Prior to October 1950, monthend contents only published in WSP 1307.

GAGE.--Nonrecording gage read once daily. Datum of gage is 1,335.59 ft (407.088 m) above mean sea level.

EXTREMES.--Current year: Maximum contents, 34,300 acre-ft (42.3 hm³) June 22 (gage height, 138.00 ft or 42.062 m); no usable storage Mar. 26 to Apr. 17; minimum gage height, 117.39 ft (35.780 m) Apr. 8-10.
1947 - 74: Maximum contents observed, 42,880 acre-ft (52.9 hm³) July 3, 1953 (gage height, 141.66 ft or 43.178 m), of which 1,610 acre-ft (2.0 hm³) was uncontrolled storage; no usable storage at times during 1961-64, 1967, 1968, 1970, 1972, 1974; minimum gage height observed, 115.98 ft (35.351 m) Mar. 21, 1970.

REMARKS.--Reservoir is formed by earthfill and concrete dam with one taintor gate; dam completed 1937. Usable capacity, 39,720 acre-ft (49.0 hm³) between gage heights of 120 ft (36.6 m) (maximum drawdown) and 141 ft (43.0 m) (full pond). Dead storage unknown. Water diverted to South Branch Ontonagon River through Bond Falls Canal (see sta 04033500); water used for power production at Victoria Dam near Rockland.

COOPERATION.--Gage-height furnished by Upper Peninsula Power Co. and converted to acre-feet by Geological Survey.

REVISIONS.--WSP 1911: Drainage area.

MONTHEND GAGE HEIGHT AND CONTENTS AT 0930, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

Date	Elevation (feet)	Contents (Acre-feet)	Change in contents during month	
			(Acre-feet)	Equivalent in ft ³ /s
Sept. 30	129.9	17,410	-	-
Oct. 31	131.8	21,100	+3,690	+60.0
Nov. 30	133.6	24,700	+3,600	+60.5
Dec. 31	133.7	24,900	+200	+3.3
Calender year 1973	-	-	-1,230	-1.7
Jan. 31	129.6	16,840	-8,060	-131
Feb. 28	123.7	5,860	-10,980	-198
Mar. 31	118.7	0	-5,860	-95.3
Apr. 30	127.1	12,090	+12,090	+203
May 31	133.9	25,300	+13,210	+215
June 30	136.8	31,560	+6,260	+105
July 31	131.9	21,300	-10,260	-167
Aug. 31	130.5	18,550	-2,750	-44.7
Sept. 30	128.8	15,320	-3,230	-54.3
Water year 1973-74	-	-	-2,090	-2.9

STREAMS TRIBUTARY TO LAKE SUPERIOR

21

04034500 Middle Branch Ontonagon River near Trout Creek, Mich.

LOCATION.--Lat 46°28'40", long 89°05'25", in SW¼ sec.8, T.47 N., R.38 W., Ontonagon County, on right bank 0.1 mi (0.2 km) upstream from State Highway 28, 3.8 mi (6.1 km) west of village of Trout Creek, and 7.5 mi (12.1 km) downstream from Bond Falls Reservoir.

DRAINAGE AREA.--203 mi² (526 km²).

PERIOD OF RECORD.--June 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,132.03 ft (345.043 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 4, 1942, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--32 years, 70.8 ft³/s (2.005 m³/s).

EXTREMES.--Current year: Maximum discharge, 175 ft³/s (4.96 m³/s) June 7 (gage height, 2.26 ft or 0.689 m); minimum, 31 ft³/s (0.88 m³/s) Mar. 14 (gage height, 1.48 ft or 0.451 m), result of freezeup; minimum daily 43 ft³/s (1.22 m³/s) Dec. 16, Mar. 20-24.

Period of record: Maximum discharge, 1,750 ft³/s (49.6 m³/s) Nov. 7, 1951 (gage height, 5.05 ft or 1.539 m); minimum, 14 ft³/s (0.40 m³/s) sometime during period Jan. 23 to Feb. 13, 1947 (gage height, 1.14 ft or 0.347 m, from recorded range in stage), caused by ice jams upstream.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Bond Falls Reservoir (see sta 04034000). Diversion to South Branch Ontonagon River by Bond Falls Canal (see sta 04033500).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	52	45	45	45	44	44	46	50	56	55	44
2	46	50	46	45	45	44	44	46	57	57	71	44
3	46	48	46	45	45	47	45	54	57	56	98	44
4	49	48	45	45	45	46	45	50	57	56	78	44
5	46	47	45	45	45	46	45	49	56	55	61	44
6	46	46	45	45	45	48	45	48	58	54	57	44
7	46	47	45	45	45	48	45	48	102	55	55	44
8	47	46	45	45	45	47	45	46	108	54	55	45
9	52	46	45	45	45	46	44	45	80	55	55	52
10	48	46	45	45	45	46	47	45	93	54	54	51
11	47	47	45	45	45	45	49	56	74	54	55	51
12	47	48	45	45	45	45	05	55	64	53	55	48
13	47	48	44	45	45	46	61	51	60	54	55	48
14	46	48	44	45	45	45	56	85	59	54	56	46
15	46	47	44	45	45	45	56	65	60	53	55	45
16	46	47	43	45	45	45	61	54	60	53	59	45
17	47	47	44	45	44	45	73	50	64	58	55	47
18	47	47	45	45	44	45	80	48	61	54	55	45
19	47	47	45	45	44	44	68	47	58	53	55	45
20	46	47	45	45	44	43	71	45	57	53	55	45
21	47	49	45	45	44	43	89	45	56	55	57	45
22	46	49	45	46	44	43	81	47	55	55	56	45
23	47	48	45	46	44	43	65	46	55	55	56	45
24	47	49	45	46	44	43	58	46	55	55	55	47
25	47	49	45	46	45	44	57	45	55	55	55	51
26	46	48	45	46	45	45	53	45	56	55	59	46
27	50	49	45	45	45	44	51	45	55	54	56	46
28	58	48	45	45	45	44	50	48	55	54	55	46
29	50	46	45	45	-----	44	48	47	58	55	55	47
30	49	46	45	45	-----	44	46	46	58	55	55	47
31	51	-----	45	45	-----	44	-----	51	-----	55	52	-----
TOTAL	1,477	1,430	1,391	1,400	1,252	1,391	1,687	1,544	1,893	1,694	1,805	1,386
MEAN	47.6	47.7	44.9	45.2	44.7	44.9	56.2	49.8	63.1	54.6	58.2	46.2
MAX	58	52	46	46	45	48	89	85	108	58	98	52
MIN	46	46	43	45	44	43	44	45	50	53	52	44

CAL YR 1973 TOTAL 28,382 MFAN 77.8 MAX 552 MIN 43
WTR YR 1974 TOTAL 18,350 MFAN 50.3 MAX 102 MIN 43

STREAMS TRIBUTARY TO LAKE SUPERIOR

04035000 East Branch Ontonagon River near Mass, Mich.

LOCATION.--Lat 46°41'24", long 89°04'24", in SW¼ NW¼ sec.33, T.50 N., R.38 W., Ontonagon County, on right bank 700 ft (213 m) downstream from abandoned highway bridge, 1,000 ft (305 m) downstream from Adventure Creek, 5.0 mi (8.0 km) south of Mass, and 7.5 mi (12.1 km) upstream from mouth.

DRAINAGE AREA.--272 mi² (704 km²).

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 873.55 ft (266.258 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 1, 1949, nonrecording gage at site 700 ft (213 m) upstream at same datum.

AVERAGE DISCHARGE.--32 years, 260 ft³/s (7.363 m³/s), 12.98 in/yr (330 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,440 ft³/s (69.1 m³/s) Apr. 21 (gage height, 8.34 ft or 2.542 m); minimum 104 ft³/s (2.95 m³/s) July 30 (gage height, 3.43 ft or 1.045 m).

Period of record: Maximum discharge, 4,590 ft³/s (130 m³/s) July 1, 1953 (gage height, 10.57 ft or 3.222 m); maximum gage height, 10.65 ft (3.246 m) Apr. 24, 1960; minimum discharge, 60 ft³/s (1.70 m³/s) Aug. 25, 1948 (gage height, 3.55 ft or 1.082 m, site then in use).

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	262	195	145	150	145	140	319	286	182	117	117
2	165	290	180	145	150	150	150	278	231	165	139	115
3	157	252	183	145	145	155	155	477	203	166	259	115
4	158	222	183	140	145	170	160	428	200	164	598	114
5	157	200	166	140	145	180	165	331	184	169	532	111
6	153	179	154	135	140	190	175	317	170	156	385	110
7	148	140	140	130	140	200	175	271	439	143	274	110
8	146	181	160	130	140	210	180	241	662	136	199	112
9	408	169	180	130	135	200	190	220	475	132	164	130
10	333	178	175	125	135	190	250	205	1,360	129	146	213
11	247	178	170	125	135	180	320	409	991	126	137	234
12	211	179	160	125	140	175	500	509	579	123	133	263
13	189	230	160	130	140	170	1,000	405	407	123	131	248
14	172	235	160	130	140	165	880	748	290	125	128	222
15	161	221	155	135	140	160	748	742	357	124	128	180
16	154	201	155	140	135	160	894	507	475	121	186	154
17	150	178	155	145	140	155	1,310	393	648	133	170	143
18	148	195	155	150	145	155	1,380	303	533	147	144	146
19	148	199	150	150	140	150	987	254	392	134	131	179
20	148	196	150	150	135	145	1,050	227	292	123	127	161
21	146	215	155	150	135	140	1,680	210	233	117	132	154
22	145	301	155	150	135	140	1,980	301	200	124	141	151
23	144	256	155	150	135	140	1,310	378	179	126	131	144
24	144	223	155	150	140	140	933	324	166	118	125	138
25	145	223	160	155	140	140	832	283	156	117	122	170
26	145	219	160	155	140	140	729	234	147	118	130	200
27	148	238	160	155	140	140	612	207	141	122	149	171
28	206	268	160	155	140	140	531	211	135	118	130	153
29	276	239	155	155	-----	140	449	323	139	112	122	154
30	234	216	150	155	-----	140	379	276	180	113	117	172
31	216	-----	145	155	-----	140	-----	269	-----	117	118	-----
TOTAL	5,681	6,483	4,996	4,430	3,920	4,945	20,244	10,600	10,950	4,123	5,645	4,784
MEAN	183	216	161	143	140	160	675	342	362	133	182	159
MAX	408	301	195	155	150	210	1,980	748	1,360	182	598	263
MIN	144	140	140	125	135	140	140	205	135	112	117	110
CFSM	.67	.79	.59	.53	.51	.59	2.44	1.26	1.33	.49	.67	.58
IN.	.78	.89	.68	.61	.54	.68	2.77	1.45	1.48	.56	.77	.65

CAL YR 1973 TOTAL 108,198 MEAN 296 MAX 2,060 MIN 127 CFSM 1.09 IN 14.80
 WTR YR 1974 TOTAL 86,701 MEAN 238 MAX 1,980 MIN 110 CFSM .88 IN 11.86

PEAK DISCHARGE (BASE, 1,400 FT³/S)

DATE	TIME	G.H.	DISCHARGE
04-21	2200	8.34	2,440
06-10	1300	7.45	1,840

STREAMS TRIBUTARY TO LAKE SUPERIOR

23

04035500 Middle Branch Ontonagon River near Rockland, Mich.

LOCATION.--Lat 46°41'57", long 89°09'36", in SE¼ sec.27, T.50 N., R.39 W., Ontonagon County, on left bank 10 ft (3 m) upstream from bridge on U.S. Highway 45, 700 ft (213 m) downstream from East Branch and 2.8 mi (4.5 km) southeast of Rockland.

DRAINAGE AREA.--671 mi² (1,738 km²).

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 661.1 ft (201.50 m) above mean sea level. Prior to Apr. 1, 1959, nonrecording gage at site 400 ft (122 m) upstream at same datum. Apr. 1, 1959 to Oct. 21, 1968, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--32 years, 530 ft³/s (15.01 m³/s).

EXTREMES.--Current year: Maximum discharge, 6,680 ft³/s (189 m³/s) June 10 (gage height, 9.70 ft or 2.957 m); minimum, 203 ft³/s (5.75 m³/s) Sept. 1-9 (gage height, 4.34 ft or 1.323 m); minimum daily, 203 ft³/s (5.75 m³/s) Sept. 2-8.

Period of record: Maximum discharge, 27,000 ft³/s (765 m³/s) Aug. 22, 1942 (gage height, 21.2 ft or 6.46 m, from floodmarks), from rating curve extended above 7,500 ft³/s (212 m³/s) on basis of slope-area measurement of peak flow; minimum observed, 142 ft³/s (4.02 m³/s) Dec. 3, 1963 (discharge measurement); minimum daily, 145 ft³/s (4.11 m³/s) Dec. 3, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Bond Falls Reservoir (see sta 04034000). Diversion to South Branch Ontonagon River by Bond Falls Canal (see sta 04033500).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	284	503	329	270	275	265	260	700	584	297	229	208
2	270	648	304	265	270	275	265	640	516	277	261	203
3	265	503	304	260	265	290	265	1,050	456	278	501	203
4	274	405	304	255	265	315	268	860	453	271	1,240	203
5	276	335	285	250	265	330	285	750	461	270	817	203
6	266	305	270	245	260	360	307	640	423	262	527	203
7	264	250	275	240	260	390	343	580	1,070	249	396	203
8	259	305	290	235	255	440	350	520	2,930	241	322	203
9	766	280	335	235	250	410	373	480	1,300	235	288	224
10	813	310	330	240	250	370	476	460	5,070	233	274	316
11	503	249	310	235	255	340	800	850	3,020	229	262	327
12	389	286	295	230	255	320	1,700	1,100	1,410	227	249	350
13	323	409	290	240	255	310	3,000	900	837	227	250	333
14	297	434	280	245	250	295	2,100	1,700	564	227	226	307
15	279	380	275	255	250	290	1,740	2,000	724	225	216	267
16	264	337	280	260	255	290	2,170	1,400	974	221	301	247
17	257	322	280	265	265	245	3,810	900	1,280	231	275	234
18	262	315	275	270	260	280	4,080	700	1,050	255	238	234
19	252	321	280	275	260	275	2,560	600	749	243	223	272
20	250	322	280	270	255	270	2,710	510	550	230	217	262
21	249	343	280	270	250	260	4,340	480	451	226	220	255
22	247	560	280	270	250	255	4,750	580	420	237	237	255
23	240	480	280	270	250	255	3,500	650	390	240	229	250
24	236	401	285	275	255	260	2,400	519	356	232	217	250
25	239	410	285	280	255	260	2,100	465	286	227	215	289
26	241	420	290	280	255	260	1,750	371	272	229	225	322
27	240	480	300	285	260	255	1,500	366	255	236	241	285
28	350	540	310	280	260	255	1,200	382	248	238	232	283
29	486	450	305	280	-----	255	1,050	597	247	227	223	256
30	386	383	285	275	-----	255	900	506	308	227	215	278
31	351	-----	275	275	-----	255	-----	522	-----	227	215	-----
TOTAL	10,083	11,726	9,046	8,080	7,210	9,225	51,752	22,778	27,559	7,474	9,781	7,715
MEAN	325	391	292	261	258	298	1,725	735	919	241	316	257
MAX	813	648	335	285	275	440	4,750	2,000	5,070	297	1,240	350
MIN	236	250	270	230	250	255	260	366	247	221	215	203
CAL YR 1973	TOTAL 222,232	MEAN 609	MAX 6,320	MIN 216								
WTR YR 1974	TOTAL 182,419	MEAN 500	MAX 5,070	MIN 203								

NOTE.--No gage-height record Apr. 23 to May 23.

STREAMS TRIBUTARY TO LAKE SUPERIOR

04036000 West Branch Ontonagon River near Bergland, Mich.

LOCATION.--Lat 46°35'15", long 89°32'30", in SW¼ NE¼ sec.3, T.48 N., R.42 W., Ontonagon County, on right bank 0.4 mi (0.6 km) downstream from dam at outlet of Gogebic Lake and 1.5 mi (2.4 km) east of Bergland.

DRAINAGE AREA.--162 mi² (420 km²).

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,290.81 ft (393.439 m) above mean sea level. Prior to Nov. 5, 1942, nonrecording gage 0.4 mi (0.6 km) upstream at different datum.

AVERAGE DISCHARGE.--32 years, 177 ft³/s (5.013 m³/s), 14.84 in/yr (377 mm/yr).

EXTREMES.--Current year: Maximum discharge, 960 ft³/s (27.2 m³/s) June 11 (gage height, 5.00 ft or 1.524 m); minimum daily, 2.7 ft³/s (0.08 m³/s) Sept. 6-13, 16, 17.

Period of record: Maximum discharge, 1,400 ft³/s (39.6 m³/s) Apr. 26, 1960 (gage height, 5.98 ft or 1.823 m); minimum daily, 0.70 ft³/s (0.020 m³/s) Sept. 26 to Oct. 19, 1963; minimum gage height observed, 0.13 ft (0.040 m) Oct. 2, 1963.

REMARKS.--Records good except those below 20 ft³/s (0.6 m³/s), which are poor. Flow regulated by Gogebic Lake (usable capacity, 35,200 acre-ft or 43.4 hm³).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	155	5.2	197	290	151	63	247	88	158	5.5	6.0
2	44	144	4.4	145	282	148	64	148	105	153	5.0	4.7
3	47	96	4.4	195	276	146	64	141	113	155	5.5	4.1
4	46	69	4.2	219	271	146	110	148	170	141	6.0	3.5
5	48	102	4.2	203	261	144	132	152	168	139	7.0	3.5
6	54	135	4.4	195	254	141	129	154	159	139	7.0	2.7
7	44	131	89	206	245	141	127	157	162	126	7.0	2.7
8	43	115	147	219	239	137	126	152	265	53	7.5	2.7
9	64	88	132	217	234	142	124	153	291	21	7.5	2.7
10	39	92	133	212	228	137	124	158	646	19	7.5	2.7
11	5.5	92	132	219	225	135	123	188	897	12	7.5	2.7
12	28	88	161	206	219	134	136	188	901	11	7.5	2.7
13	36	89	180	206	213	132	146	188	866	10	5.5	2.7
14	54	86	174	210	206	131	154	221	839	9.6	5.5	3.1
15	79	81	166	199	201	130	161	255	815	8.9	61	2.9
16	77	86	163	188	194	129	171	271	789	6.0	132	2.7
17	136	93	180	192	194	128	185	269	586	6.0	147	2.7
18	156	86	192	217	190	127	209	260	418	6.5	136	89
19	163	86	184	199	185	125	239	261	397	6.5	128	155
20	201	93	176	190	181	121	276	240	414	6.5	168	73
21	197	106	176	206	179	120	340	181	434	6.5	180	20
22	165	111	190	239	176	93	451	198	325	7.0	159	23
23	127	99	180	260	174	68	527	202	221	7.0	143	54
24	132	93	170	264	169	64	564	137	278	7.0	138	74
25	128	104	186	275	164	63	582	65	233	7.0	148	67
26	137	107	197	283	161	63	592	39	198	7.0	147	64
27	167	107	192	254	157	62	599	31	195	7.0	133	59
28	177	38	221	244	154	62	597	20	186	6.8	58	54
29	188	5.5	239	285	-----	62	460	20	182	6.8	30	81
30	186	5.5	225	312	-----	62	310	52	178	6.5	15	67
31	156	-----	208	305	-----	62	-----	77	-----	6.5	7.5	-----
TOTAL	3,168.5	2,783.0	4,419.8	6,982	5,926	3,506	7,885	4,973	11,519	1,262.1	2,022.0	914.8
MEAN	102	92.8	143	225	212	113	263	160	384	40.7	65.2	30.5
MAX	201	155	239	312	290	151	599	271	901	158	180	155
MIN	5.5	5.5	4.2	186	154	62	63	20	88	6.0	5.0	2.7

CAL YR 1973 TOTAL 71,840.4 MEAN 197 MAX 925 MIN 4.2 CFSM 1.22 IN 16.51

WTR YR 1974 TOTAL 55,361.2 MEAN 152 MAX 901 MIN 2.7 CFSM .94 IN 12.71

NOTE.--No gage-height record July 11 to Aug. 15.

STREAMS TRIBUTARY TO LAKE SUPERIOR

25

04037500 Cisco Branch Ontonagon River at Cisco Lake Outlet, Mich.

LOCATION.--Lat 46°15'12", long 89°27'05", in E½ sec.32, T.45 N., R.41 W., Gogebic County, on left bank 80 ft (24 m) downstream from Cisco Lake Dam, 2.5 mi (4.0 km) upstream from Langford Creek, 5.0 mi (8.0 km) upstream from U. S. Highway 2, and 13 mi (21 km) west of Watersmeet.

DRAINAGE AREA.--50.7 mi² (131.3 km²).

PERIOD OF RECORD.--October 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,672.69 ft (509.836 m) above mean sea level. Prior to Oct. 1, 1968, nonrecording gage at same site and datum 4.00 ft (1.219 m) higher.

AVERAGE DISCHARGE.--30 years, 47.4 ft³/s (1.342 m³/s), 12.70 in/yr (323 mm/yr).

EXTREMES.--Current year: Maximum discharge, 188 ft³/s (5.32 m³/s) June 9 (gage height, 5.59 ft or 1.704 m); minimum daily 0.28 ft³/s (0.008 m³/s) Sept. 6-8; minimum gage height, 3.88 ft (1.183 m) Sept. 5-9.

Period of record: Maximum discharge, 288 ft³/s (8.16 m³/s) May 1-4, 1951 (gage height, 6.10 ft or 1.859 m, present datum); minimum daily, 0.13 ft³/s (0.004 m³/s) Aug. 4-7, Aug. 22 to Sept. 5, 1970.

REMARKS.--Records good except those below 10 ft³/s (0.3 m³/s), which are fair. Flow completely regulated by Cisco Lake (usable capacity, 15,600 acre-ft or 19.2 hm³).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	139	28	62	29	29	58	34	15	2.0	.31	3.4
2	64	135	29	62	30	29	67	.85	18	2.1	.43	3.2
3	64	132	36	46	30	29	67	1.1	29	1.9	102	1.7
4	63	127	46	28	31	30	73	.94	30	1.4	175	.31
5	63	122	62	28	31	30	85	.81	31	1.5	127	.31
6	63	121	75	28	31	49	94	.73	39	1.6	98	.28
7	60	119	74	28	31	65	92	.61	45	1.7	51	.28
8	29	115	74	27	31	65	90	.48	113	1.6	16	.28
9	63	112	71	27	32	64	75	.40	182	1.6	16	50
10	106	110	58	27	32	64	64	.37	181	1.7	16	138
11	104	106	45	27	41	43	64	.55	179	1.8	16	159
12	105	103	45	28	48	24	81	.57	175	1.9	16	100
13	58	101	45	28	48	28	93	.53	168	1.7	15	54
14	26	99	45	24	48	28	92	1.3	127	1.7	94	29
15	14	97	46	30	48	28	91	1.7	100	1.7	161	2.8
16	3.8	95	45	30	47	28	91	1.5	98	1.6	159	2.7
17	3.7	94	45	31	47	29	89	1.4	72	1.9	125	37
18	3.5	92	45	31	47	29	81	1.3	50	1.8	97	59
19	45	90	36	31	46	30	74	1.1	40	1.8	58	58
20	78	90	28	31	46	30	76	.88	33	1.8	29	57
21	77	89	28	49	45	30	78	.83	32	2.1	28	42
22	84	88	28	67	36	30	83	.91	31	29	26	23
23	91	86	28	66	28	30	87	.78	30	46	26	24
24	100	86	28	65	28	30	86	.76	30	46	27	24
25	105	87	29	65	29	30	83	.61	16	67	27	24
26	101	86	30	64	29	30	79	.48	4.0	78	28	25
27	101	84	40	63	29	30	72	.41	3.2	32	28	25
28	104	56	56	62	28	30	77	.40	2.7	1.9	28	24
29	112	29	64	62	-----	30	86	.37	2.2	1.1	27	25
30	129	28	63	43	-----	40	83	.37	2.0	.32	26	24
31	142	-----	63	29	-----	48	-----	.61	-----	.32	13	-----
TOTAL	2,278.0	2,918	1,435	1,293	1,025	1,113	2,411	63.14	1,879.1	338.64	1,655.74	1,020.25
MEAN	73.5	97.3	46.3	41.7	35.5	35.9	80.4	2.04	62.6	10.9	53.4	34.0
MAX	142	139	75	67	44	65	94	34	182	78	175	159
MIN	3.5	28	28	27	28	28	58	.37	2.0	.32	.31	.28
CAL YR 1973	TOTAL 22,732.91	MEAN 62.3	MAX 194	MIN .34	CFSM 1.23	IN 16.68						
WTR YR 1974	TOTAL 17,429.68	MEAN 47.4	MAX 182	MIN .28	CFSM .94	IN 12.79						

04040000 Ontonagon River near Rockland, Mich.

LOCATION.--Lat 46°43'15", long 89°12'25", in NE¼ sec.20, T.50 N., R.39 W., Ontonagon County, on left bank, 50 ft (15 m) downstream from bridge on highway between Rockland and Victoria, 1.8 mi (2.9 km) southwest of Rockland, and 2.4 mi (3.9 km) downstream from confluence of Middle and West Branches.

DRAINAGE AREA.--1,340 mi² (3,470 km²).

PERIOD OF RECORD.--June 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 638.72 ft (194.682 m) above mean sea level. Prior to Nov. 23, 1943, nonrecording gage and Nov. 23, 1943 to Oct. 17, 1967, water-stage recorder at site 50 ft (15 m) upstream at same datum.

AVERAGE DISCHARGE.--32 years, 1,414 ft³/s (40.04 m³/s), 14.33 in/yr (364 mm/yr).

EXTREMES.--Current year. Maximum discharge, 12,500 ft³/s (354 m³/s) June 10 (gage height, 14.54 ft or 4.432 m); maximum gage height, 14.64 ft (4.462 m) Apr. 12 (backwater from ice); minimum discharge, 308 ft³/s (8.72 m³/s) Aug. 14 (gage height 5.26 ft or 1.603 m). Period of record: Maximum discharge, 42,000 ft³/s (1,190 m³/s) Aug. 22, 1942 (gage height, 28.6 ft or 8.73 m, from floodmark), from rating curve extended above 14,000 ft³/s (396 m³/s) on basis of slope-area measurement of peak flow; minimum daily, 192 ft³/s (5.44 m³/s) July 28, 29, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Considerable regulation by powerplant on West Branch 5 mi (8 km) above station; Bond Falls Reservoir 25 mi (40 km) above station (see sta 04034000); Gogebic and Cisco Lakes (combined usable capacity, 50,800 acre-ft or 62.6 km³) in headwaters.

REVISIONS (WATER YEARS).--WSP 1387: 1943, 1946-47. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,010	1,260	803	840	920	920	740	1,600	941	877	463	491
2	805	1,510	641	800	920	840	700	1,410	839	910	607	561
3	667	1,390	638	650	880	1,020	800	1,910	946	880	796	818
4	697	1,010	678	940	940	1,180	780	1,890	892	736	1,400	741
5	697	1,100	743	680	900	1,200	760	1,630	863	923	1,920	774
6	672	930	438	630	900	1,200	940	1,480	728	858	1,330	711
7	656	701	510	780	960	1,180	860	1,330	1,390	600	1,150	606
8	639	881	837	700	880	1,150	900	1,170	3,580	812	1,090	363
9	1,100	788	794	700	980	1,120	1,000	1,000	3,150	783	743	769
10	1,320	815	1,030	710	930	1,120	1,300	919	9,920	684	490	893
11	1,440	863	853	770	870	1,120	1,900	1,550	7,810	637	353	671
12	1,160	883	836	730	1,000	1,100	3,500	1,980	4,970	609	751	797
13	1,030	1,120	778	580	900	950	5,400	1,790	3,490	861	623	915
14	790	937	740	700	850	760	4,700	3,740	2,360	402	502	909
15	830	1,140	820	800	820	1,020	3,980	4,350	2,350	671	607	482
16	853	965	780	760	840	1,050	4,570	3,120	2,650	677	884	843
17	581	912	750	760	920	1,000	6,780	2,050	3,750	712	819	1,110
18	760	886	730	760	860	920	8,350	1,630	2,610	811	780	973
19	629	881	720	840	960	880	6,890	1,460	1,590	760	1,060	1,150
20	542	876	940	800	840	740	6,810	1,380	1,420	422	949	617
21	789	907	860	830	900	920	9,200	1,190	1,330	333	1,030	585
22	746	1,090	820	880	960	840	10,400	1,390	1,270	599	977	680
23	802	1,180	790	940	990	780	7,720	1,480	1,230	670	879	609
24	721	1,100	780	910	710	480	5,900	1,460	1,060	662	773	927
25	758	1,100	700	1,000	870	600	4,690	1,230	852	551	696	785
26	870	920	950	1,200	800	800	3,930	908	957	677	903	612
27	736	1,080	880	920	840	780	3,270	769	847	578	884	543
28	976	1,230	900	920	850	760	2,740	782	781	411	859	369
29	1,250	1,140	960	920	-----	750	2,310	980	839	803	803	365
30	1,150	1,010	890	1,160	-----	760	1,880	898	1,160	757	714	478
31	1,230	-----	820	860	-----	710	-----	809	-----	712	510	-----
TOTAL	26,856	30,605	24,409	25,510	24,990	28,550	113,700	49,285	66,475	21,378	26,854	21,237
MEAN	866	1,020	787	823	893	924	3,790	1,590	2,216	690	866	708
MAX	1,440	1,510	1,030	1,200	1,000	1,200	10,400	4,350	9,920	923	1,920	1,150
MIN	542	701	438	580	710	480	700	769	728	333	353	363

CAL YR 1973 TOTAL 600,656 MEAN 1,646 MAX 11,700 MIN 399 CF5M 1.23 IN 16.67
WTR YR 1974 TOTAL 459,949 MEAN 1,260 MAX 10,400 MIN 333 CF5M .94 IN 12.77

PEAK DISCHARGE (BASE, 9,000 FT³/S)

DATE	TIME	G.H.	DISCHARGE
04-21	2300	14.10	11,600
06-10	1700	14.54	12,500

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LOCATION.--Lat 46°35'03", long 88°34'33", in NE¼ SE¼ sec.5, T.48 N., R.34 W., Baraga County, on right bank 30 ft (9 m) downstream from highway bridge, 3.0 mi (4.8 km) downstream from Rock River, 3.5 mi (5.6 km) northwest of Covington, 6.5 mi (10.5 km) upstream from Perch River, 8.5 mi (13.7 km) northeast of Sidnaw, and at mile 71 (114 km).

PERIOD OF RECORD.--October 1912 to September 1915, April 1943 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 1,214.40 ft (370.149 m) above mean sea level. October 1912 to September 1915, nonrecording gage at site 200 ft (61 m) upstream at different datum. Apr. 2, 1943, to Oct. 1, 1946, nonrecording gage at present site and datum.

EXTREMES.--Current year: Maximum discharge, 1,800 ft³/s (51.0 m³/s) Apr. 23 (gage height, 8.12 ft or 2.475 m); minimum, 16 ft³/s (0.45 m³/s) July 29, 30 (gage height, 3.58 ft or 1.091 m).

Period of record: Maximum discharge, 4,630 ft³/s (131 m³/s) Apr. 24, 1960 (gage height, 11.63 ft or 3.545 m); minimum, 4.6 ft³/s (0.13 m³/s) Oct. 8, 1948; minimum gage height, 3.42 ft (1.042 m) Aug. 30, 1969.

REVISIONS.--WSP 1507: Drainage area.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	135	139	68	54	51	44	582	304	112	18	27
2	86	163	139	65	54	51	45	494	268	117	22	26
3	77	163	131	62	54	57	46	462	232	135	60	23
4	70	149	124	58	54	65	48	442	205	165	232	22
5	71	131	103	55	52	75	50	400	195	159	304	22
6	71	114	95	53	52	80	52	378	185	137	289	20
7	66	98	94	50	52	80	56	334	175	112	225	20
8	64	97	97	48	50	75	62	292	190	94	171	20
9	66	96	100	46	50	68	70	259	195	79	133	26
10	77	97	105	45	50	63	85	232	340	69	107	55
11	70	97	100	45	50	58	137	322	546	60	88	85
12	69	97	95	45	50	56	334	406	478	54	75	122
13	67	108	92	44	52	55	602	392	349	48	66	151
14	64	115	98	45	52	53	538	486	298	44	59	147
15	60	122	85	45	52	53	486	542	268	40	55	126
16	57	117	78	46	52	52	518	486	422	35	61	103
17	55	96	75	47	52	51	690	414	630	36	63	92
18	54	105	72	48	52	51	940	344	634	39	59	82
19	52	105	70	49	52	50	920	292	546	36	55	98
20	51	105	68	51	52	49	1,020	253	430	32	56	105
21	49	117	67	54	52	48	1,320	225	325	27	57	107
22	47	180	65	57	52	47	1,630	550	250	26	56	102
23	46	190	63	60	52	45	1,720	570	210	24	52	94
24	45	171	60	58	52	44	1,390	622	175	22	46	90
25	45	159	61	56	52	43	1,180	570	147	21	42	135
26	44	151	62	56	52	42	1,080	470	128	20	43	175
27	44	165	64	55	52	42	998	382	110	19	42	157
28	51	195	66	55	52	41	910	325	96	18	38	137
29	57	180	67	55	-----	42	815	313	88	16	35	155
30	60	159	69	55	-----	43	695	304	105	16	31	165
31	67	-----	70	55	-----	44	-----	310	-----	18	29	-----
TOTAL	1,902	3,977	2,674	1,631	1,454	1,674	18,481	12,453	8,564	1,830	2,669	2,689
MEAN	61.4	133	86.3	52.6	51.9	54.0	616	402	285	59.0	86.1	89.6
MAX	100	195	139	68	54	80	1,720	622	634	165	304	175
MIN	44	96	60	44	50	41	44	225	88	16	18	20
CFSM	.36	.78	.50	.31	.30	.32	3.60	2.35	1.67	.35	.50	.52
IN.	.41	.87	.58	.35	.32	.36	4.02	2.71	1.86	.40	.58	.58

CAL YR 1973	TOTAL	94,165	MEAN	258	MAX	1,990	MIN	34	CFSM	1.51	IN	20.49
WTR YR 1974	TOTAL	59,998	MEAN	164	MAX	1,720	MIN	16	CFSM	.96	IN	13.05

STREAMS TRIBUTARY TO LAKE SUPERIOR

04041500 Sturgeon River near Alston, Mich.

LOCATION.--Lat 46°43'35", long 88°39'43", in SE¼ sec.15, T.50 N., R.35 W., Baraga County, on right bank in powerhouse of Upper Peninsula Power Co. at Prickett Dam, 4.0 mi (6.4 km) upstream from Clear Creek, 5.0 mi (8.0 km) southeast of Alston, and at mile 45 (72 km).

DRAINAGE AREA.--346 mi² (896 km²).

PERIOD OF RECORD.--February 1932 to June 1941, October 1942 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 710.3 ft (216.50 m) above mean tide at New York City (levels by Corps of Engineers). Prior to Oct. 1, 1963, at datum 40.00 ft (12.192 m) lower.

AVERAGE DISCHARGE.--40 years, (1932-40, 1942-74), 421 ft³/s (11.92 m³/s), 16.52 in/yr (420 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,920 ft³/s (82.7 m³/s) Apr. 22 (gage height, 8.00 ft or 2.438 m); minimum, 1.5 ft³/s (0.04 m³/s) Dec. 4; minimum daily, 3.2 ft³/s (0.09 m³/s) Aug. 25.

Period of record: Maximum discharge, 7,360 ft³/s (208 m³/s) Apr. 24, 1960 (gage height, 13.09 ft or 3.990 m, present datum); minimum daily, 1 ft³/s (0.03 m³/s) Aug. 14-19, 1960.

REMARKS.--Records good except those below 20 ft³/s (0.6 m³/s), which are poor. Flow regulated by powerplant at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	373	380	263	214	196	190	679	635	214	191	8.2
2	219	607	401	224	194	193	189	660	635	338	199	8.2
3	208	322	323	224	14	166	178	560	394	503	226	8.4
4	208	334	221	223	179	292	172	633	386	254	257	8.7
5	190	333	251	184	194	366	181	745	386	253	468	82
6	14	332	355	13	195	449	181	850	382	252	560	84
7	14	293	275	174	141	595	183	750	227	252	560	11
8	14	281	262	200	167	434	189	650	530	398	660	11
9	14	275	249	197	192	446	188	640	575	410	919	86
10	69	278	249	178	14	588	205	480	442	410	872	95
11	185	278	219	195	138	399	305	600	672	372	637	97
12	185	276	238	195	163	385	378	640	854	329	368	102
13	203	263	250	16	169	261	1,160	660	653	331	267	105
14	179	274	198	187	170	169	1,080	900	633	327	231	159
15	161	275	250	147	170	163	924	800	632	326	206	123
16	87	277	248	201	222	154	825	750	634	323	239	193
17	83	275	221	180	216	185	1,160	640	724	323	225	188
18	97	276	191	178	197	184	1,640	630	989	324	210	197
19	97	278	188	145	194	184	1,210	620	944	198	197	196
20	87	276	222	36	182	177	1,140	600	674	195	195	196
21	85	274	211	212	194	186	1,940	450	632	176	207	202
22	97	277	185	243	193	184	2,690	600	635	174	211	204
23	97	279	227	218	144	184	2,570	670	633	173	88	197
24	89	278	206	188	13	182	2,230	916	630	175	3.3	157
25	87	329	206	261	194	187	1,560	808	390	179	3.2	174
26	97	326	164	289	199	185	1,000	674	380	175	6.2	173
27	99	342	184	14	197	188	1,210	640	275	176	14	178
28	17	354	173	220	196	188	1,220	640	227	175	11	180
29	208	354	258	180	-----	189	1,090	640	203	128	6.8	178
30	207	353	262	184	-----	188	794	635	248	185	8.2	186
31	206	-----	263	215	-----	189	-----	635	-----	175	8.2	-----
TOTAL	3,868	9,342	7,530	5,594	4,655	8,036	27,982	20,795	16,154	8,223	8,253.9	3,787.5
MFAN	125	311	243	180	166	259	933	671	538	265	266	126
MAX	265	607	401	289	222	595	2,690	916	989	503	919	204
MIN	14	263	164	13	13	154	172	450	203	128	3.2	8.2
CFSM	.36	.90	.70	.52	.48	.75	2.70	1.94	1.55	.77	.77	.36
IN.	.42	1.00	.81	.60	.50	.86	3.01	2.24	1.74	.88	.89	.41

CAL YR 1973 TOTAL 181,438.0 MEAN 497 MAX 3,270 MIN 14 CFSM 1.44 IN 19.51
WTR YR 1974 TOTAL 124,210.4 MEAN 340 MAX 2,690 MIN 3.2 CFSM .98 IN 13.35

STREAMS TRIBUTARY TO LAKE SUPERIOR

29

04043000 Sturgeon River near Arnheim, Mich.

LOCATION.--Lat 46°55'42", long 88°33'23", in NE¼ SE¼ sec.1, T.52 N., R.34 W., Houghton County, on right bank 0.2 mi (0.3 km) downstream from Otter Lake, 3.5 mi (5.6 km) west of Arnheim, 8.5 mi (13.7 km) northeast of Pelkie, and at mile 11 (18 km).

DRAINAGE AREA.--705 mi² (1,826 km²).

PERIOD OF RECORD.--October 1942 to September 1974 (discontinued). Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 605.98 ft (184.703 m) above mean tide at New York City (Corps of Engineers bench mark).

AVERAGE DISCHARGE.--32 years, 824 ft³/s (23.34 m³/s), 15.87 in/yr (403 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,720 ft³/s (219 m³/s) Apr. 23 (gage height, 13.67 ft or 4.167 m); minimum 182 ft³/s (5.15 m³/s) Sept. 4-6 (gage height, -0.19 ft or -0.058 m).

Period of record: Maximum discharge, 15,500 ft³/s (439 m³/s) Apr. 20, 1952 (gage height, 14.57 ft or 4.441 m, from graph based on gage readings); minimum, 157 ft³/s (4.45 m³/s) July 30, 31, 1963; minimum gage height, -0.19 ft (-0.058 m) Sept. 4-6, 1974.

REMARKS.--Records good. Occasional slight regulation caused by Prickett Dam at mile 45 (72 km). Diversion canal constructed and Sturgeon River diverted away from Otter Lake and gaging station beginning October 1974.

REVISIONS (WATER YEARS).--WSP 1387: 1943-45 (M), 1950-52. WSP 1507: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	624	434	698	475	420	410	419	2,220	1,010	478	329	190
2	560	549	693	480	415	425	423	1,850	983	540	342	188
3	502	701	694	480	405	450	425	1,620	938	746	389	186
4	460	662	651	465	395	500	430	1,600	831	1,020	452	184
5	433	638	593	455	385	556	434	1,520	751	1,090	487	182
6	413	612	541	435	380	623	441	1,440	701	929	529	192
7	361	592	535	415	375	728	450	1,350	671	762	597	218
8	308	572	503	400	375	886	467	1,270	652	642	628	223
9	286	543	490	380	370	918	465	1,190	767	600	689	213
10	332	532	480	365	365	924	482	1,130	1,040	605	835	227
11	375	530	470	365	360	978	551	1,120	1,730	600	926	262
12	413	529	468	370	360	927	748	1,240	2,040	585	874	278
13	423	540	462	370	360	894	1,370	1,340	1,870	552	733	289
14	422	570	460	375	360	778	2,280	1,360	1,560	522	595	293
15	414	602	460	380	360	670	2,540	1,670	1,320	500	501	311
16	395	618	450	380	365	587	2,450	1,810	1,200	488	458	305
17	360	606	445	385	380	539	2,740	1,670	1,150	489	451	329
18	334	586	445	390	410	519	3,520	1,470	1,190	501	437	355
19	321	576	440	400	425	497	4,020	1,300	1,300	493	416	369
20	314	569	430	400	420	482	4,210	1,190	1,270	451	396	378
21	310	573	430	405	390	467	4,360	1,110	1,160	406	387	383
22	303	607	430	413	385	448	5,560	1,070	1,040	378	403	388
23	297	639	425	425	380	434	7,370	1,040	962	358	410	390
24	299	639	425	435	380	420	6,270	1,080	912	346	378	393
25	303	638	425	445	380	408	5,330	1,200	862	343	305	399
26	302	646	430	445	385	405	4,770	1,220	753	345	264	396
27	302	669	430	450	390	405	4,030	1,150	667	341	237	391
28	314	710	430	450	400	410	3,530	1,060	572	332	218	387
29	322	732	440	450	-----	410	3,130	1,010	505	322	208	386
30	339	722	460	445	-----	413	2,640	1,000	499	310	198	388
31	387	-----	465	430	-----	413	-----	1,000	-----	324	194	-----
TOTAL	11,528	18,136	15,198	12,958	10,775	17,924	75,855	41,300	30,906	16,398	14,264	9,073
MEAN	372	605	490	418	385	578	2,529	1,332	1,030	529	460	302
MAX	624	732	698	480	425	978	7,370	2,220	2,040	1,090	926	399
MIN	286	434	425	365	360	405	419	1,000	499	310	194	182
CFSM	.53	.86	.70	.59	.55	.82	3.59	1.89	1.46	.75	.65	.43
IN.	.61	.96	.80	.68	.57	.95	4.00	2.18	1.63	.87	.75	.48

CAL YR 1973 TOTAL 348,339 MEAN 954 MAX 5,680 MIN 286 CFSM 1.35 IN 18.38
 WTR YR 1974 TOTAL 274,317 MEAN 752 MAX 7,370 MIN 182 CFSM 1.07 IN 14.47

STREAMS TRIBUTARY TO LAKE SUPERIOR

04043050 Trap Rock River near Lake Linden, Mich.

LOCATION.--Lat 47°13'43", long 88°23'07", in SE¼ SE¼ sec.20, T.56 N., R.32 W., Houghton County, on right bank, 20 ft (6 m) upstream from bridge on county highway, 2.0 mi (3.2 km) northeast of Lake Linden, and 3.0 mi (4.8 km) upstream from mouth.

DRAINAGE AREA.--28.0 mi² (72.5 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1964 and 1966. October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 621.7 ft (189.49 m) above mean sea level.

AVERAGE DISCHARGE.--8 years, 43.0 ft³/s (1,218 m³/s), 20.86 in/yr (530 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,090 ft³/s (30.9 m³/s) Apr. 22 (gage height, 9.07 ft or 2.765 m); minimum, 9.2 ft³/s (0.26 m³/s) Sept. 19 (gage height, 3.92 ft or 1.195 m).

Period of record: Maximum discharge, 1,180 ft³/s (33.4 m³/s) May 2, 1972 (gage height, 9.30 ft or 2.835 m); minimum, 7.0 ft³/s (0.20 m³/s) Sept. 17, 1971 (gage height, 3.86 ft or 1.177 m).

REMARKS.--Records good except those for winter periods, which are fair. Small diversions for sprinkler irrigation. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	25	26	17	18	15	15	107	36	36	11	12
2	20	26	25	17	18	16	15	85	31	29	17	11
3	19	22	25	17	17	16	15	170	28	79	37	11
4	17	20	24	16	17	20	15	118	26	135	35	11
5	17	19	23	16	16	22	15	87	24	91	24	11
6	16	17	21	16	16	25	15	82	22	49	18	11
7	16	16	20	16	16	30	16	67	23	32	16	11
8	15	16	18	16	16	28	17	57	30	25	13	11
9	22	18	19	17	16	26	17	51	28	22	13	12
10	39	16	19	17	16	35	21	46	72	19	13	13
11	29	16	18	16	16	31	31	82	93	17	13	13
12	25	17	18	15	16	27	60	104	60	16	17	13
13	22	22	18	15	16	24	109	74	44	15	15	14
14	20	31	17	15	16	21	138	105	33	15	13	14
15	18	27	17	15	16	19	118	108	31	14	13	14
16	17	24	16	15	17	19	133	76	29	14	14	13
17	17	21	17	16	17	18	281	67	38	14	13	12
18	17	21	17	16	17	17	374	55	39	14	13	13
19	17	31	18	16	17	17	232	46	31	14	13	13
20	16	27	17	16	17	16	253	42	26	13	12	13
21	16	40	17	17	17	16	654	42	21	12	16	14
22	16	74	17	17	16	16	867	63	19	13	22	15
23	16	51	17	17	15	15	347	54	18	12	17	14
24	16	40	16	17	15	15	203	47	17	12	15	13
25	16	37	17	17	15	15	278	43	15	12	14	15
26	15	32	18	18	15	15	355	37	15	12	15	14
27	15	45	18	19	15	14	312	36	14	11	14	13
28	16	42	18	18	15	14	250	39	14	11	13	12
29	15	34	18	18	-----	14	206	40	16	11	12	13
30	15	30	18	18	-----	14	149	38	52	11	12	14
31	16	-----	18	16	-----	14	-----	40	-----	11	13	-----
TOTAL	571	857	585	512	454	604	5,511	2,108	945	791	496	383
MEAN	18.4	28.6	18.9	16.5	16.2	19.5	184	68.0	31.5	25.5	16.0	12.8
MAX	39	74	26	19	18	35	867	170	93	135	37	15
MIN	15	16	16	15	15	14	15	36	14	11	11	11
CFSM	.66	1.02	.68	.59	.58	.70	6.57	2.43	1.13	.91	.57	.46
IN.	.76	1.14	.78	.68	.60	.80	7.32	2.80	1.26	1.05	.66	.51

CAL YR 1973 TOTAL 15,402 MEAN 42.2 MAX 348 MIN 11 CFSM 1.51 IN 20.46
WTR YR 1974 TOTAL 13,817 MEAN 37.9 MAX 867 MIN 11 CFSM 1.35 IN 18.36

PEAK DISCHARGE (BASE, 380 FT³/s).--Apr. 22 (0300) 1,090 ft³/s (9.07 ft).

STREAMS TRIBUTARY TO LAKE SUPERIOR

31

04044400 Carp River near Negaunee, Mich.

LOCATION.--Lat 46°31'29", long 87°34'25", in SE¼ sec.29, T.48 N., R.26 W., Marquette County, on right bank 30 ft (9m) downstream from bridge on U. S. Highway 41 and 2.0 mi (3.2 km) northeast of Negaunee.

DRAINAGE AREA.--51.4 mi² (133.1 km²).

PERIOD OF RECORD.--July 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,320 ft (402 m) from topographic map (nearest 20 ft). Prior to Aug. 24, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--13 years, 59.3 ft³/s (1.679 m³/s).

EXTREMES.--Current year: Maximum discharge, 333 ft³/s (9.43 m³/s) Apr. 22 (gage height, 4.59 ft or 1.399 m); minimum, 14 ft³/s (0.40 m³/s) May 20, 21 (gage height, 2.28 ft or 0.695 m); minimum daily, 15 ft³/s (0.42 m³/s) May 20.

Period of record: Maximum discharge, 351 ft³/s (9.94 m³/s) June 27, 28, 1968 (gage height, 4.68 ft or 1.426 m); maximum gage height, 5.24 ft (1.597 m) Mar. 2, 1972 (backwater from ice); minimum discharge, 3.7 ft³/s (0.10 m³/s) July 29, 1965; minimum gage height, 1.94 ft (0.591 m) Aug. 1, 1962; minimum daily discharge, 3.9 ft³/s (0.11 m³/s) July 29, 30, 1965.

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by Deer Lake storage reservoir (capacity, 22,500 acre-ft or 27.7 km³) 5 mi (8 km) above station. The city of Ishpeming diverted an average of 2.9 ft³/s (0.08 m³/s) into basin as waste effluent (see sta. 04058200).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	40	108	100	80	72	64	34	33	26	42	43
2	33	31	108	105	80	74	64	24	30	38	43	43
3	33	52	110	110	80	77	64	35	25	38	58	43
4	47	51	110	110	80	81	31	29	23	37	102	43
5	53	50	64	110	80	79	84	25	25	29	84	42
6	42	48	74	110	80	79	89	25	23	26	64	77
7	37	48	146	105	80	80	68	24	24	24	47	49
8	35	46	156	105	74	77	69	25	25	27	28	31
9	36	47	142	100	78	77	64	22	27	50	22	30
10	37	47	122	95	78	77	66	19	39	56	20	39
11	49	48	114	94	78	74	71	41	44	51	20	38
12	46	49	115	92	78	72	87	45	30	49	21	35
13	39	53	109	90	74	76	58	28	27	48	24	33
14	38	94	99	88	74	76	58	30	25	47	41	29
15	36	110	98	86	74	70	51	29	37	47	51	26
16	35	109	98	86	78	70	53	23	173	47	63	25
17	26	110	98	86	78	70	74	19	114	50	68	25
18	22	109	100	86	76	69	95	16	52	50	81	38
19	22	111	100	86	74	69	83	17	39	47	84	78
20	21	111	100	88	72	71	92	15	32	46	82	46
21	21	115	100	90	70	75	172	16	30	45	82	46
22	20	122	105	90	70	74	271	52	27	45	82	87
23	19	114	105	90	68	69	116	37	27	45	82	87
24	19	110	111	90	68	62	68	31	26	44	83	46
25	19	113	127	92	70	65	78	28	25	44	83	91
26	19	112	125	92	70	66	91	27	24	43	86	89
27	20	121	122	90	72	62	86	25	24	42	86	87
28	41	124	116	90	72	60	85	26	23	43	83	86
29	35	115	110	87	-----	61	64	26	24	42	83	92
30	25	110	72	86	-----	64	45	26	32	42	83	91
31	24	-----	90	74	-----	64	-----	38	-----	42	83	-----
TOTAL	982	2,522	3,354	2,909	2,122	2,212	2,465	861	1,179	1,310	1,965	1,935
MEAN	31.7	84.1	108	93.8	75.8	71.4	82.2	27.8	37.0	42.3	63.4	64.5
MAX	53	124	156	110	80	81	271	52	173	56	102	92
MIN	19	31	64	79	68	60	31	15	23	24	20	25

CAL YR 1973 TOTAL 29,646 MEAN 81.2 MAX 228 MIN 18
WTR YR 1974 TOTAL 23,746 MEAN 65.1 MAX 271 MIN 15

STREAMS TRIBUTARY TO LAKE SUPERIOR

04045500 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., Luce County, on left bank 0.7 mi (1.1 km) upstream from Tahquamenon (Big) Falls, 11.5 mi (18.5 km) west of Tahquamenon Paradise, and 19 mi (31 km) northeast of Newberry.

DRAINAGE AREA.--790 mi² (2,046 km²).

PERIOD OF RECORD.--August 1953 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 697 ft (212.4 m) from river-profile map (nearest ft).

AVERAGE DISCHARGE.--21 year, 923 ft³/s (26.14 m³/s), 15.87 in/yr (403 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,980 ft³/s (141 m³/s) Apr. 22 (gage height, 8.92 ft or 2.719 m); minimum, 220 ft³/s (6.23 m³/s) July 29 (gage height, 3.06 ft or 0.933 m).

Period of record: Maximum discharge, 6,990 ft³/s (198 m³/s) May 10, 1960 (gage height 10.26 ft or 3.127 m); minimum, 157 ft³/s (4.45 m³/s) July 26, 1955; minimum gage height, 2.86 ft (0.872 m) July 7, 1963.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	537	561	1,200	357	398	344	447	3,700	1,080	539	281	759
2	515	653	1,150	360	408	361	447	3,530	1,250	549	345	758
3	508	705	1,100	359	413	370	445	3,250	1,410	577	413	734
4	506	731	1,110	350	415	418	539	3,050	1,470	699	503	695
5	527	737	1,130	344	423	462	678	2,830	1,460	809	610	652
6	539	726	1,200	355	423	515	798	2,580	1,410	855	645	603
7	532	716	1,270	333	415	599	886	2,370	1,380	812	631	563
8	521	713	1,290	329	389	659	961	2,160	1,520	755	595	519
9	507	690	1,260	325	371	691	1,030	1,940	1,670	681	560	485
10	498	680	1,190	320	360	703	1,090	1,770	2,200	615	519	563
11	516	680	1,080	318	350	716	1,210	1,600	2,630	567	491	715
12	570	690	1,080	318	340	730	1,400	1,460	2,960	519	508	919
13	581	710	1,030	316	330	738	1,750	1,350	3,070	466	511	1,070
14	622	730	928	313	330	736	2,110	1,280	3,050	420	531	1,150
15	640	750	822	315	330	715	2,440	1,250	2,930	390	547	1,150
16	638	780	739	317	330	692	2,870	1,230	2,790	378	566	1,150
17	646	800	652	320	320	672	3,330	1,180	2,620	363	646	1,130
18	641	800	571	324	310	655	3,830	1,130	2,450	376	718	1,140
19	649	800	514	327	300	634	4,250	1,090	2,240	396	769	1,170
20	653	800	468	328	290	612	4,500	1,020	2,030	397	784	1,240
21	662	880	438	338	280	591	4,710	942	1,830	382	758	1,320
22	652	1,000	404	342	285	572	4,970	851	1,620	352	702	1,370
23	628	1,100	364	348	290	552	4,890	794	1,440	326	741	1,400
24	616	1,200	344	350	295	541	4,880	757	1,260	313	776	1,400
25	599	1,300	329	354	300	526	4,800	735	1,080	309	773	1,330
26	569	1,350	324	357	310	503	4,650	697	901	314	742	1,300
27	556	1,350	334	365	320	489	4,500	664	731	288	725	1,260
28	542	1,350	338	371	330	479	4,330	629	591	246	712	1,190
29	540	1,300	346	382	-----	470	4,130	594	501	231	700	1,110
30	527	1,250	354	386	-----	460	3,930	582	494	233	707	1,070
31	508	-----	357	395	-----	454	-----	734	-----	243	734	-----
TOTAL	17,745	26,532	23,716	10,616	9,655	17,659	80,801	47,749	52,068	14,400	19,243	29,915
MEAN	572	884	765	342	345	570	2,693	1,540	1,736	465	621	997
MAX	662	1,350	1,290	395	423	738	4,970	3,700	3,070	855	784	1,400
MIN	498	561	324	313	280	344	445	582	494	231	281	485
CFSM	.72	1.12	.97	.43	.44	.72	3.41	1.95	2.20	.59	.79	1.26
IN.	.84	1.25	1.12	.50	.45	.83	3.80	2.25	2.45	.68	.91	1.41
CAL YR 1973	TOTAL 351,134	MEAN 962	MAX 3,000	MIN 276	CFSM 1.22	IN 16.53						
WTR YR 1974	TOTAL 350,099	MEAN 959	MAX 4,970	MIN 231	CFSM 1.21	IN 16.49						

STREAMS TRIBUTARY TO LAKE MICHIGAN

33

04046000 Black River near Garnet, Mich.

LOCATION.--Lat 46°07'05", long 85°21'55", in SE¼ sec.13, T.43 N., R.9 W., Mackinac County, on right bank 10 ft (3 m) upstream from highway bridge, 15 ft (5 m) downstream from Peters Creek entering from right, 3.5 mi (5.6 km) upstream from Lake Michigan, and 4 mi (6 km) southwest of Garnet.

DRAINAGE AREA.--28 mi² (73 km²) approximately.

PERIOD OF RECORD.--September 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 629.7 ft (191.933 m) above mean sea level.

AVERAGE DISCHARGE.--23 years, 29.1 ft³/s (0.824 m³/s), 14.11 in/yr (358 mm/yr).

EXTREMES.--Current year: Maximum discharge, 287 ft³/s (8.13 m³/s) June 10 (gage height, 5.38 ft or 1.640 m); minimum daily, 10 ft³/s (0.28 m³/s) Feb. 14 to Mar. 2.

Period of record: Maximum discharge, 860 ft³/s (24.4 m³/s) May 7, 1960 (gage height, 8.55 ft or 2.606m), from rating curve extended above 400 ft³/s (11.3 m³/s); minimum, 4.9 ft³/s (0.14 m³/s) Mar. 11, 1956 (gage height, 2.10 ft or 0.640 m).

REMARKS.--Records fair. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1707: 1959.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	25	29	15	12	10	12	67	73	32	15	22
2	14	25	27	14	12	10	12	62	68	29	16	19
3	14	23	26	14	12	11	12	63	59	42	16	18
4	15	22	25	14	12	15	27	61	50	65	18	17
5	16	21	44	13	12	15	32	55	44	55	34	16
6	15	20	57	13	12	16	28	52	40	46	39	15
7	15	19	48	12	12	19	28	48	43	39	31	15
8	15	20	44	12	12	18	28	44	86	35	25	15
9	15	18	41	12	11	17	29	41	141	32	22	16
10	16	18	39	12	11	16	31	38	277	30	20	39
11	19	17	34	12	11	16	44	38	245	26	23	34
12	20	19	32	12	11	16	100	43	171	24	25	49
13	19	22	28	11	11	17	193	41	124	22	21	46
14	21	23	25	11	10	16	193	44	95	21	20	38
15	19	23	21	11	10	15	167	48	82	20	18	31
16	18	22	19	11	10	14	189	44	80	18	46	27
17	18	20	17	11	10	14	214	41	71	21	43	33
18	17	20	16	11	10	14	232	37	65	30	38	32
19	16	21	15	11	10	14	187	34	60	24	32	51
20	17	21	15	11	10	14	159	30	54	21	29	56
21	16	28	14	11	10	14	163	29	48	19	28	55
22	15	40	14	12	10	14	178	29	43	18	27	45
23	14	35	14	12	10	13	151	29	39	17	25	39
24	14	33	13	12	10	13	117	28	36	16	23	39
25	14	36	13	12	10	13	101	26	31	16	21	45
26	14	34	15	12	10	13	90	24	27	18	25	40
27	14	32	15	12	10	13	84	23	25	17	25	34
28	15	35	15	12	10	13	82	22	24	16	20	31
29	16	34	15	12	-----	13	78	22	23	16	21	29
30	15	31	15	12	-----	12	73	21	35	16	22	27
31	16	-----	15	12	-----	12	-----	77	-----	16	26	-----
TOTAL	497	757	760	374	301	440	3,034	1,261	2,259	817	794	973
MFAN	16.0	25.2	24.5	12.1	10.8	14.2	101	40.7	75.3	26.4	25.6	32.4
MAX	21	40	57	15	12	19	232	77	277	65	46	56
MIN	14	17	13	11	10	10	12	21	23	16	15	15
CFSM	.57	.90	.88	.43	.39	.51	3.61	1.45	2.69	.94	.91	1.16
IN.	.66	1.01	1.01	.50	.40	.58	4.03	1.68	3.00	1.09	1.05	1.29
CAL YR 1973	TOTAL 12,055	MFAN 33.0	MAX 159	MIN 11	CFSM 1.18	IN 16.02						
WTR YR 1974	TOTAL 12,267	MFAN 33.6	MAX 277	MIN 10	CFSM 1.20	IN 16.30						

PEAK DISCHARGE (BASE, 120 FT³/S)

DATE	TIME	G.H.	DISCHARGE
04-18	0300	5.20	256
06-10	1000	5.38	287

STREAMS TRIBUTARY TO LAKE MICHIGAN

04056500 Manistique River near Manistique, Mich.

LOCATION.--Lat 46°01'50", long 86°09'40", in SE¼ sec.15, T.42 N., R.15 W., Schoolcraft County, on left bank 1.0 mi (1.6 km) downstream from West Branch, 6.0 mi (9.7 km) northeast of Manistique, and at mile 19.5 (31.4 km).

DRAINAGE AREA.--1,100 mi² (2,849 km²), approximately.

PERIOD OF RECORD.--March 1938 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 608 ft (185.3 m) from river-profile map (nearest ft). Prior to July 15, 1939, nonrecording gage at site 1,600 ft (487.7 m) upstream at different datum.

AVERAGE DISCHARGE.--36 years, 1,403 ft³/s (39.73 m³/s), 17.32 in/yr (440 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,070 ft³/s (200 m³/s) Apr. 21, 22 (gage height, 10.69 ft or 3.258 m); minimum, 697 ft³/s (19.7 m³/s) Sept. 8 (gage height, 3.02 ft or 0.920 m).

Period of record: Maximum discharge, 16,900 ft³/s (479 m³/s) May 11, 1960 (gage height, 12.85 ft or 3.917 m); minimum, 288 ft³/s (8.16 m³/s) Oct. 4, 1948; minimum gage height, 1.01 ft (0.308 m) Aug. 23, 1941.

REMARKS.--Records good except those for winter periods, which are fair. Since July 1948, slight regulation by dam on outlet of Manistique Lake.

REVISIONS (WATER YEARS).--WSP 1387: 1940-42 (M), 1943, 1945. WSP 1627, 1727: 1938, 1939.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	893	968	1,850	780	820	730	890	3,880	1,500	1,580	740	966
2	857	1,040	1,760	770	820	750	880	3,580	1,700	1,670	760	932
3	827	1,120	1,680	760	820	770	900	3,350	2,000	1,840	897	878
4	797	1,170	1,620	760	810	800	1,100	3,140	2,350	1,990	976	822
5	789	1,190	1,650	760	810	870	1,250	2,960	2,250	2,110	964	771
6	793	1,190	1,780	760	800	950	1,500	2,810	2,200	2,140	928	738
7	813	1,180	1,840	760	800	1,000	1,850	2,650	2,200	2,070	858	713
8	810	1,170	1,790	760	800	1,050	2,100	2,490	2,250	1,930	797	701
9	792	1,130	1,750	760	790	1,100	2,300	2,320	2,350	1,770	757	712
10	808	1,120	1,710	750	780	1,150	2,540	2,170	2,600	1,630	729	860
11	865	1,110	1,580	740	770	1,200	2,810	2,080	3,000	1,520	739	1,130
12	990	1,130	1,570	740	760	1,250	3,040	2,050	3,250	1,470	809	1,290
13	1,050	1,140	1,530	740	750	1,300	3,020	1,980	3,400	1,380	895	1,400
14	1,050	1,180	1,440	740	740	1,300	3,510	1,960	3,500	1,310	931	1,440
15	1,040	1,230	1,300	740	730	1,350	3,970	1,980	3,450	1,250	873	1,400
16	1,020	1,260	1,200	740	720	1,350	4,460	2,000	3,300	1,180	872	1,310
17	986	1,280	1,100	740	720	1,300	4,870	1,970	3,200	1,150	1,100	1,240
18	965	1,280	1,000	740	720	1,300	5,400	1,900	3,100	1,200	1,330	1,220
19	959	1,280	920	750	720	1,250	6,100	1,800	3,090	1,210	1,410	1,230
20	970	1,280	860	760	720	1,200	6,710	1,700	3,000	1,120	1,330	1,410
21	971	1,330	800	770	720	1,100	7,030	1,610	2,880	1,040	1,200	1,630
22	959	1,560	780	780	720	1,050	7,070	1,530	2,680	979	1,100	1,730
23	941	1,780	760	790	720	1,000	6,920	1,490	2,410	933	1,110	1,740
24	918	1,900	740	800	720	950	6,700	1,440	2,120	902	1,220	1,740
25	894	1,990	740	800	720	920	6,390	1,400	1,900	885	1,210	1,810
26	878	2,050	750	800	720	900	5,850	1,360	1,730	867	1,150	1,790
27	857	2,040	760	800	720	900	5,320	1,310	1,580	834	1,140	1,720
28	878	2,010	770	800	720	900	4,920	1,270	1,450	804	1,100	1,630
29	916	1,980	780	800	-----	900	4,520	1,200	1,360	773	1,030	1,530
30	934	1,920	780	810	-----	900	4,190	1,200	1,420	763	995	1,440
31	931	-----	780	820	-----	900	-----	1,350	-----	757	980	-----
TOTAL	28,151	42,008	38,370	23,820	21,160	32,390	118,110	63,930	73,220	41,057	30,930	37,923
MEAN	908	1,400	1,238	768	756	1,045	3,937	2,062	2,441	1,324	998	1,264
MAX	1,050	2,050	1,850	820	820	1,350	7,070	3,880	3,500	2,140	1,410	1,810
MIN	789	968	740	740	720	730	880	1,200	1,360	757	729	701
CFSM	.83	1.27	1.13	.70	.69	.95	3.58	1.87	2.22	1.20	.91	1.15
IN.	.95	1.42	1.30	.81	.72	1.10	3.99	2.16	2.48	1.39	1.05	1.28

CAL YR 1973 TOTAL 593,281 MEAN 1.625 MAX 5,610 MIN 710 CFSM 1.48 IN 20.06
WTR YR 1974 TOTAL 551,069 MEAN 1.510 MAX 7,070 MIN 701 CFSM 1.37 IN 18.64

STREAMS TRIBUTARY TO LAKE MICHIGAN

35

04057510 Sturgeon River near Nahma Junction, Mich.

LOCATION.--Lat 45°56'35", long 86°42'20", in SW¼ Sec.17, T.41 N., R.19 W., Delta County, Hiawatha National Forest, on left bank 30 ft (9 m) upstream from bridge on Forest Service Road 2231, 500 ft (152 m) downstream from Mormon Creek, 0.1 mi (0.2 km) east of Federal Forest Highway 13, and 3.2 mi (5.1 km) north of Nahma Junction.

DRAINAGE AREA.--183 mi² (474 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 610.99 ft (186.230 m) above mean sea level.

AVERAGE DISCHARGE.--8 years, 207 ft³/s (5.862 m³/s), 15.36 in/yr (390 mm/yr).

EXTREMES.--Current year: Maximum discharge, 800 ft³/s (22.7 m³/s) Apr. 22 (gage height, 7.14 ft or 2.176 m); minimum, 65 ft³/s (1.84 m³/s) Aug. 1, 2 (gage height, 3.96 ft or 1.207 m).

Period of record: Maximum discharge, 1,580 ft³/s (44.7 m³/s) Apr. 18, 1971, Apr. 30, 1972 (gage height, 9.85 ft or 3.002 m); minimum, 39 ft³/s (1.10 m³/s) Sept. 20, 1967 (gage height, 3.71 ft or 1.131 m).

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	156	178	96	78	72	94	432	411	199	67	136
2	100	168	168	96	78	74	96	390	348	182	74	126
3	97	157	165	94	78	80	100	378	310	194	86	119
4	97	145	159	90	78	100	110	382	259	212	91	112
5	112	135	169	86	78	110	130	348	220	206	91	106
6	111	124	179	84	78	115	150	361	192	183	91	100
7	106	117	162	80	78	120	170	362	204	164	85	95
8	102	113	156	78	78	125	200	328	207	143	82	94
9	100	111	166	78	76	120	240	299	219	131	77	106
10	111	114	153	76	74	120	278	272	364	131	73	307
11	130	104	141	76	74	115	336	291	383	131	144	339
12	134	103	149	74	74	115	448	358	337	126	221	331
13	124	112	147	74	74	110	574	346	294	120	183	312
14	118	116	144	72	74	105	556	340	253	120	163	260
15	112	117	130	70	74	105	486	354	245	112	142	215
16	104	114	120	70	74	105	516	332	308	104	221	182
17	102	109	110	70	74	100	611	299	444	105	305	168
18	102	109	105	70	74	100	752	266	430	124	285	164
19	105	120	98	70	74	100	756	241	399	114	249	221
20	105	120	94	70	74	100	707	222	375	104	207	298
21	102	189	90	72	74	98	707	206	340	97	172	352
22	98	347	88	74	74	98	776	197	296	92	223	329
23	96	312	86	74	74	96	774	186	256	87	343	312
24	93	279	82	76	72	96	686	178	222	82	286	280
25	91	287	82	76	72	96	625	168	193	80	221	266
26	89	271	88	76	72	96	599	160	171	80	203	234
27	89	249	94	76	72	96	564	150	155	77	204	206
28	120	232	96	76	72	96	531	142	143	71	172	187
29	128	211	96	78	-----	94	506	141	135	67	156	171
30	122	192	96	78	-----	94	476	134	194	68	149	165
31	117	-----	96	78	-----	94	-----	290	-----	71	145	-----
TOTAL	3,323	5,033	3,887	2,408	2,096	3,145	13,554	8,553	8,307	3,777	5,211	6,293
MEAN	107	168	125	77.7	74.9	101	452	276	277	122	168	210
MAX	134	347	179	96	78	125	776	432	444	212	343	352
MIN	89	103	82	70	72	72	94	134	135	67	67	94
CFSM	.58	.92	.68	.42	.41	.55	2.47	1.51	1.51	.67	.92	1.15
IN.	.68	1.02	.79	.49	.43	.64	2.76	1.74	1.69	.77	1.06	1.28
CAL YR 1973	TOTAL 74,704		MEAN 205	MAX 820	MIN 64	CFSM 1.12	IN 15.19					
WTR YR 1974	TOTAL 65,587		MEAN 180	MAX 776	MIN 67	CFSM .98	IN 13.33					

LOCATION.--Lat 46°29'57", long 87°53'11", in SW¼ sec.1, T.47 N., R.29 W., Marquette County, on left bank 15 ft (5 m) upstream from county highway, 0.3 mi (0.5 km) north of Humboldt, and 1.5 mi (2.4 km) downstream from Halfway Creek.

PERIOD OF RECORD.--June 1959 to current year.

GAGE.--Water-stage recorder, V-notch sharp-crested weir since Oct. 3, 1960. Datum of gage is 1,521.20 ft (463.662 m) above mean sea level (Cleveland-Cliffs Iron Co. bench mark). Prior to Sept. 1, 1960, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--15 years, 61.0 ft³/s (1.728 m³/s), 18.01 in/yr (457 mm/yr), adjusted for diversion 1960 to 1972.

EXTREMES.--Current year: Maximum discharge, 639 ft³/s (18.1 m³/s) Apr. 22 (gage height, 5.84 ft or 1.780 m); minimum, 10 ft³/s (0.28 m³/s) Mar. 30 (gage height, 1.68 ft or 0.512 m).

Period of record: Maximum discharge, 1,640 ft³/s (46.4 m³/s) Apr. 24, 1960 (gage height, 8.30 ft or 2.530 m, from flood-mark); minimum, 4.5 ft³/s (0.13 m³/s) Aug. 18, 1961, Aug. 11, 1962; minimum gage height, 1.07 ft (0.326 m) Aug. 24, 1960.

REMARKS.--Records good except those for winter periods, which are fair. From July 1960 to June 1972, some diversion 100 ft (30 m) above station by industry for iron ore processing; figures of runoff adjusted. Records of water temperatures for current year are published in Part 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	49	40	24	13	16	14	126	68	66	14	17
2	24	48	38	23	17	16	14	103	54	92	15	16
3	22	44	39	22	17	19	14	97	54	116	61	16
4	37	38	37	21	17	25	15	90	49	121	167	15
5	40	34	36	20	16	28	17	82	51	89	233	15
6	35	31	34	19	16	28	17	86	52	64	167	14
7	30	28	35	18	16	29	18	79	52	51	81	14
8	30	27	36	17	16	25	17	71	52	45	58	13
9	28	27	38	17	16	24	18	65	51	38	45	27
10	28	26	36	17	16	22	22	61	68	38	36	65
11	39	26	33	17	16	22	31	85	75	35	34	61
12	37	26	33	17	16	21	62	124	69	29	34	75
13	33	29	31	17	16	20	96	114	57	26	33	65
14	35	30	31	18	16	18	114	111	48	24	28	52
15	30	32	31	18	16	19	115	123	57	22	25	39
16	26	31	29	18	16	20	149	104	209	21	86	33
17	24	28	27	18	16	19	193	87	492	25	138	34
18	24	28	26	18	16	18	245	75	403	28	88	38
19	23	31	25	17	16	18	262	67	253	23	73	37
20	22	31	24	17	16	15	275	61	158	21	48	31
21	21	41	24	19	16	14	294	57	106	19	38	27
22	20	56	25	19	16	13	501	112	81	19	34	24
23	20	51	26	19	16	13	548	122	67	18	29	22
24	19	44	26	19	16	12	356	105	58	17	25	22
25	19	44	26	19	16	12	261	86	48	16	24	36
26	19	42	25	20	16	12	238	71	41	16	32	36
27	22	50	25	19	16	13	228	60	37	16	30	30
28	37	56	26	19	16	14	212	55	32	15	24	27
29	39	50	26	18	-----	12	187	58	36	13	21	37
30	34	45	26	18	-----	11	154	55	101	14	19	40
31	34	-----	25	18	-----	14	-----	70	-----	15	19	-----
TOTAL	879	1,123	939	580	453	562	4,687	2,662	2,983	1,152	1,759	978
MEAN	28.4	37.4	30.3	18.7	16.2	18.1	156	85.9	99.4	37.2	56.7	32.6
MAX	40	56	40	24	18	29	548	126	492	121	233	75
MIN	19	26	24	17	16	11	14	55	32	13	14	13
CFSM	.62	.81	.66	.41	.35	.39	3.39	1.87	2.16	.81	1.23	.71
IN.	.71	.91	.76	.47	.37	.45	3.79	2.15	2.41	.93	1.42	.79
CAL YR 1973	TOTAL 26,489	MEAN 72.6	MAX 587	MIN 12	CFSM 1.58	IN 21.42						
WTR YR 1974	TOTAL 18,757	MEAN 51.4	MAX 548	MIN 11	CFSM 1.12	IN 15.17						

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04057811 Greenwood Reservoir near Greenwood, Mich.

LOCATION.--Lat 46°26'32", long 87°48'02", in NW¼ SW¼ sec.27, T.47 N., R.28 W., Marquette County, at downstream side of dam, 3.7 mi (6.0 km) southwest of Greenwood.

DRAINAGE AREA.--67.4 mi² (174.6 km²).

PERIOD OF RECORD.--December 1972 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is 1,400.00 ft (246.720 m) above mean sea level (levels by Cleveland Cliffs Iron Co.). Gage readings have been converted to elevations above mean sea level. Prior to Feb. 20, 1973, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents 24,420 acre-ft (30.1 hm³) Apr. 23 (elevation, 1515.8 ft or 462.02 m); minimum, 19,140 acre-ft (23.6 hm³) Oct. 1 (elevation 1511.7 ft or 460.77 m).
Period of record: Maximum contents, 24,420 acre-ft (30.1 hm³) Apr. 23, 1974 (elevation 1515.8 ft or 462.02 m); minimum since first filling, 18,300 acre-ft (22.6 hm³) Aug. 17, 1973 (elevation, 1511.0 ft or 460.55 m).

REMARKS.--The reservoir is formed by an earth/rockfill main dam and several earthfill dykes surrounding the storage area. Storage began Dec. 22, 1972. The fixed-crest concrete spillway was completed in September 1973. The usable capacity of the reservoir is 23,300 acre-ft (28.7 hm³) at spillway elevation 1515 ft (461.8 m). Above elevation of 1515 ft (461.8 m), water flows over concrete spillway into Middle Branch Escanaba River about 2,000 ft (610 m) below sta 04057814. The main dam is equipped with an outlet structure with 4 valves to control flow to afterbay (conservation pool) which has a capacity of 420 acre-ft (518,000 m³) at elevation 1480 ft (451.1 m). Two outlet systems from the afterbay provide for diversion and release flow. Diverted flow gaged at Greenwood Diversion (see sta 04057813); released flow to Middle Branch Escanaba River gaged at Greenwood Release (see sta 04057814). Reservoir impounds water for diversion to Schweitzer Reservoir (see sta 04058190), for use in iron ore processing.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

Date	Elevation (feet)	Contents (acre- feet)	Change in contents during month	
			(Acre- feet)	Equivalent in ft ³ /s
Sept. 30.	1,511.7	19,140	--	--
Oct. 31.	1,512.7	20,340	+1,200	+19.5
Nov. 30.	1,513.4	21,220	+880	+14.8
Dec. 31.	1,513.5	21,350	+130	+2.1
Calendar year 1973.	--	--	+20,390	+28.2
Jan. 31.	1,512.8	20,460	-890	-14.5
Feb. 28.	1,512.4	19,980	-480	-8.6
Mar. 31.	1,512.2	19,740	-240	-3.9
Apr. 30.	1,515.5	24,000	+4,260	+71.6
May 31.	1,515.2	23,580	-420	-6.8
June 30.	1,515.2	23,580	0	0
July 31.	1,513.5	21,350	-2,230	-36.3
Aug. 31.	1,514.1	22,130	+780	+12.7
Sept. 30.	1,513.9	21,870	-260	-4.4
Water year 1973-74.	--	--	+2,730	+3.8

STREAMS TRIBUTARY TO LAKE MICHIGAN

04057813 Greenwood Diversion near Greenwood, Mich.

LOCATION.--Lat 46°26'04", long 87°46'10", in NW¼ NE¼ sec.35, T.47 N., R.28 W., Marquette County, at downstream end of pipe line, 200 ft (61 m) upstream from Green Creek, 0.7 mi (1.1 km) downstream from Greenwood Afterbay, and 3.6 mi (5.8 km) south of Greenwood.

PERIOD OF RECORD.--December 1972 to current year.

GAGE.--Water-stage recorder. Concrete flume. Altitude of gage is 1,460 ft (445 m) from topographic map (nearest 10 ft). Prior to Aug. 22, 1973, nonrecording gage at same site and datum.

EXTREMES.--Period of record: Maximum daily discharge, 28 ft³/s (0.79 m³/s) Sept. 6-11, 1974; no flow Dec. 27, 1972 to Jan. 6, 1973.

REMARKS.--Records good. Flow completely regulated. A pipeline, 0.7 mi (1.1 km) long, diverts water from Greenwood Reservoir (see sta. 04057811) into Green Creek, tributary to Schweitzer Reservoir (see sta. 04058190). Water is used for iron ore processing and returned to Middle Branch Escanaba River via another Green Creek (tributary to Middle Branch Escanaba River); 27 mi (43 km) below station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	.36	.24	.15	.24	.30	.36	.24	.24	.38	25	14
2	.54	.42	.24	.15	.24	.30	.36	.24	.24	.42	25	14
3	.58	.42	.24	.15	.25	.30	.36	.24	.24	.39	17	18
4	.49	.42	.24	.16	.27	.30	.36	.24	.24	.37	10	20
5	.48	.42	.24	.18	.27	.30	.33	.24	.24	.42	10	24
6	.53	.42	.24	.18	.27	.30	.30	.24	.27	.41	10	24
7	.54	.42	.24	.18	.27	.30	.30	.24	.27	.42	10	24
8	.54	.42	.24	.18	.27	.30	.30	.24	.27	.41	10	24
9	.54	.42	.24	.18	.27	.30	.30	.27	.27	.44	10	28
10	.53	.42	.24	.18	.27	.30	.30	.26	.27	2.5	10	24
11	.44	.42	.24	.18	.27	.30	.30	.25	.27	7.6	10	28
12	.42	.42	.24	.18	.27	.30	.30	.24	.27	9.3	10	26
13	.42	.42	.24	.18	.27	.30	.30	.24	.27	9.3	10	25
14	.42	.42	.24	.18	.27	.30	.30	.24	.27	9.3	10	26
15	.45	.42	.24	.18	.27	.30	.30	.24	.27	12	11	26
16	.47	.42	.23	.18	.26	.30	.30	.24	.27	16	16	26
17	.45	.42	.22	.18	.25	.30	.30	.24	.28	22	19	26
18	.48	.42	.18	.18	.27	.30	.27	.24	.29	24	19	26
19	.44	.36	.15	.18	.27	.30	.27	.24	.29	25	19	17
20	.42	.36	.13	.18	.29	.30	.27	.24	.29	25	21	7.6
21	.42	.36	.12	.18	.30	.30	.27	.24	.30	24	22	.51
22	.42	.36	.12	.18	.30	.30	.27	.24	.30	24	20	.47
23	.42	.30	.13	.20	.30	.30	.24	.24	.30	26	18	.48
24	.42	.30	.14	.21	.30	.30	.24	.24	.30	25	17	.48
25	.42	.30	.14	.24	.30	.33	.24	.24	.30	24	17	.48
26	.42	.30	.12	.23	.30	.33	.24	.24	.30	25	17	.48
27	.42	.27	.12	.24	.30	.33	.24	.24	.30	26	17	.48
28	.37	.27	.13	.24	.30	.33	.24	.24	.31	27	18	.48
29	.36	.26	.15	.24	-----	.30	.24	.24	.36	27	18	.47
30	.36	.27	.15	.24	-----	.35	.24	.24	.36	26	18	.42
31	.36	-----	.15	.24	-----	.36	-----	.24	-----	26	18	-----
TOTAL	14.11	11.21	5.98	5.93	7.71	9.53	8.64	7.50	8.45	445.66	482	476.35
MEAN	.46	.37	.19	.19	.28	.31	.29	.24	.28	14.4	15.5	15.9
MAX	.58	.42	.24	.24	.30	.36	.36	.27	.36	27	25	28
MIN	.36	.26	.12	.15	.24	.30	.24	.24	.24	.37	10	.42

CAL YR 1973 TOTAL 2,295.46 MEAN 6.29 MAX 27 MIN 0
WTR YR 1974 TOTAL 1,483.07 MEAN 4.06 MAX 28 MIN .12

04057814 Greenwood Release near Greenwood, Mich.

LOCATION.--Lat 46°26'22", long 87°47'52", in NW¼ SW¼ sec.27, T.47 N., R.28 W., Marquette County, on left bank of outlet of Greenwood Afterbay releasing to the Middle Branch Escanaba River, 2.6 mi (4.2 km) upstream from Bell Creek and 3.8 mi (6.1 km) southwest of Greenwood.

DRAINAGE AREA.--67.4 mi² (174.6 km²).

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft (451 m) from topographic map (nearest 10 ft). Prior to Nov. 7, 1973, non-recording gage at same site and different datum.

EXTREMES.--Period of record: Maximum daily discharge (prior to regulation), 290 ft³/s (8.21 m³/s) Oct. 1, 1972; maximum daily discharge (since regulation began), 63 ft³/s (1.78 m³/s) July 10, 11, 1974; minimum daily, 10 ft³/s (0.28 m³/s) Dec. 29, 30, 1972, result of construction.

REMARKS.--Records good. Since December 1972, flow from Greenwood Reservoir (see sta 04057811) below spillway elevation 1515 ft (462 m) is completely regulated by the release structure from the afterbay into the Middle Branch Escanaba River. Since January 1973, water is diverted immediately above this station (see sta 04057813) to Green Creek for iron ore processing and returned via another Green Creek to Middle Branch Escanaba River 27 mi (43 km) below this station. During times when reservoir spills, flow bypasses this station and returns to the Middle Branch Escanaba River 0.5 mi (0.8 km) below this station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	22	36	35	30	28	28	28	28	30	26	27
2	25	22	36	35	30	28	28	28	28	30	26	27
3	25	26	36	35	29	28	28	28	28	30	26	27
4	25	26	36	35	29	28	28	27	28	30	27	27
5	25	25	36	35	29	28	28	27	29	29	27	27
6	24	35	36	35	29	28	28	28	30	29	27	27
7	25	40	36	35	29	28	28	28	30	29	27	27
8	24	40	36	35	29	28	28	28	31	36	27	26
9	25	37	36	35	29	28	28	28	31	59	27	26
10	25	38	36	35	28	27	28	28	29	63	27	27
11	25	37	36	34	28	27	28	28	28	63	27	27
12	25	37	36	34	28	28	27	28	30	62	27	27
13	25	37	36	33	28	28	28	28	30	62	27	27
14	25	36	36	33	28	28	28	28	30	62	27	27
15	25	36	36	32	28	28	28	28	29	62	27	27
16	25	36	36	32	28	28	28	28	29	61	27	27
17	25	36	36	32	28	28	29	28	29	59	26	27
18	25	36	36	32	28	28	29	28	29	58	25	28
19	25	35	35	32	28	28	29	28	29	56	26	28
20	25	35	35	31	28	28	29	28	28	45	28	29
21	24	36	35	31	28	28	29	28	28	44	28	27
22	24	36	35	31	28	28	30	28	28	47	28	24
23	24	35	35	31	28	28	30	28	28	43	26	25
24	23	36	35	31	28	28	29	28	28	30	26	26
25	23	36	35	31	28	28	29	28	29	28	26	27
26	23	36	35	30	28	28	29	28	29	26	26	27
27	23	36	35	30	28	28	29	28	29	27	26	27
28	24	36	35	30	28	28	28	28	29	27	26	26
29	24	36	35	31	-----	28	28	28	29	27	26	26
30	22	36	35	31	-----	28	28	28	30	27	26	26
31	21	-----	35	30	-----	28	-----	28	-----	26	26	-----
TOTAL	753	1,031	1,103	1,012	795	866	852	866	870	1,307	824	803
MEAN	24.3	34.4	35.6	32.6	28.4	27.9	28.4	27.9	29.0	42.2	26.6	26.8
MAX	25	40	36	35	30	28	30	28	31	63	28	29
MIN	21	22	35	30	28	27	27	27	28	26	25	24

CAL YR 1973 TOTAL 10,175 MEAN 27.9 MAX 46 MIN 11
WTR YR 1974 TOTAL 11,082 MEAN 30.4 MAX 63 MIN 21

NOTE.--No gage-height record Feb. 14 to Apr. 16, July 9, 10.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04057820 Middle Branch Escanaba River near Greenwood, Mich.

LOCATION (revised).--Lat 46°25'12", long 87°47'50", in NW¼ sec.3, T.46 N., R.28 W., Marquette County, on right bank 10 ft (3 m) downstream from county highway bridge, 100 ft (30 m) downstream from Bell Creek and 5.0 mi (8.0 km) southwest of Greenwood.

DRAINAGE AREA.--73.3 mi² (189.8 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1961-71 and annual maximum, water years 1970-72, October 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,400 ft (427 m) from topographic map (nearest 10 ft). Prior to Sept. 20, 1973, nonrecording gage and crest-stage gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 598 ft³/s (16.9 m³/s) Apr. 23 (gage height, 11.33 ft or 3.453 m); minimum, 12 ft³/s (0.34 m³/s) Nov. 5 (gage height, 7.51 ft or 2.289 m), result of construction upstream.

Period of record: Maximum discharge, 1,060 ft³/s (30.0 m³/s) May 5, 1972 (gage height, 13.35 ft or 4.069 m); minimum daily, 12 ft³/s (0.34 m³/s) Dec. 28, 1972, Jan. 2-4, 1973, result of construction upstream.

A discharge of 8.62 ft³/s (0.24 m³/s) was measured Aug. 22, 1962.

REMARKS.--Records good. Since December 1972, considerable regulation 2.1 mi (3.4 km) above station (see sta. 04057814) and 2.6 mi (4.2 km) above station (see sta. 04057811). Since January 1973, some flow diverted 2.3 mi (3.7 km) above station at Greenwood Afterbay to Green Creek (see sta. 04057813) for iron ore processing and returned to Middle Branch Escanaba River 27 mi (43 km) below station via another Green Creek.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	24	43	40	34	31	32	218	104	84	34	30
2	26	25	43	40	34	31	32	185	100	100	35	30
3	26	30	43	40	34	31	32	173	93	120	41	30
4	30	30	43	40	33	31	33	147	86	150	47	30
5	29	29	43	40	33	31	32	141	77	140	43	30
6	26	39	43	40	33	32	32	137	73	120	39	30
7	27	45	43	40	33	32	32	125	74	100	36	30
8	27	44	43	40	33	32	32	113	73	90	36	31
9	28	41	43	40	33	32	32	103	75	80	36	32
10	32	43	43	40	33	32	32	94	84	76	34	32
11	38	43	42	39	32	32	35	111	85	74	33	32
12	34	43	41	39	32	32	40	143	81	69	33	32
13	31	46	41	38	32	32	41	156	78	68	33	31
14	31	44	41	37	32	31	42	165	77	68	33	30
15	30	44	42	37	32	31	42	170	91	65	32	30
16	29	43	41	37	32	31	44	161	195	62	34	30
17	28	41	41	37	32	31	49	150	329	60	32	30
18	28	42	41	37	32	31	51	132	478	60	32	31
19	28	41	41	36	32	31	50	116	429	60	32	31
20	28	41	40	36	32	31	49	104	325	51	32	32
21	27	44	40	36	32	31	79	97	231	50	33	30
22	27	45	40	36	32	30	277	118	171	49	31	28
23	27	44	40	35	32	30	530	138	128	48	30	29
24	27	44	40	35	32	30	570	148	102	37	29	30
25	27	43	40	35	32	30	480	138	86	34	29	30
26	27	43	40	34	32	32	391	122	80	30	29	30
27	27	44	41	34	32	32	344	105	69	30	29	30
28	26	44	40	33	32	33	320	99	62	30	29	29
29	28	43	41	33	-----	32	284	91	61	31	29	29
30	24	43	40	34	-----	32	250	91	72	30	29	29
31	24	-----	40	34	-----	32	-----	104	-----	31	29	-----
TOTAL	876	1,215	1,283	1,152	909	972	4,291	4,096	4,069	2,097	1,033	908
MEAN	28.3	40.5	41.4	37.2	32.5	31.4	143	132	136	67.6	33.3	30.3
MAX	38	46	43	40	34	33	570	218	478	150	47	32
MIN	24	24	40	33	32	30	32	91	61	30	29	28

CAL YR 1973 TOTAL 24,822 MEAN 68.0 MAX 702 MIN 12
WTR YR 1974 TOTAL 22,901 MEAN 62.7 MAX 570 MIN 24

STREAMS TRIBUTARY TO LAKE MICHIGAN

41

04058000 Middle Branch Escanaba River near Ishpeming, Mich.

LOCATION.--Lat 46°23'40", long 87°45'30", in NW¼ SW¼ sec.12, T.46 N., R.28 W., Marquette County, on left bank 0.5 mi (0.8 km) downstream from County Highway 581, 6 mi (10 km) southwest of Ishpeming, and 10 mi (16 km) east of Republic.

DRAINAGE AREA.--128 mi² (332 km²).

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,389.02 ft (423.373 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--20 years, 141 ft³/s (3,993 m³/s), 14.96 in/yr (380 mm/yr), adjusted for storage and diversion since December 1972.

EXTREMES.--Current year: Maximum discharge, 862 ft³/s (24.4 m³/s) Apr. 24 (gage height, 6.95 ft or 2.118 m); minimum, 29 ft³/s (0.82 m³/s) Mar. 20 (gage height, 1.46 ft or 0.445 m, result of freezeup).

Period of record: Maximum discharge, 2,680 ft³/s (75.9 m³/s) Apr. 25, 1960 (gage height, 12.55 ft or 3.825 m); minimum, 12 ft³/s (0.34 m³/s) Aug. 21-23, 1957; minimum gage height, 1.17 ft (0.357 m) Aug. 22, 23, 1957.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation 6 mi (10 km) above station since December 1972 (see sta 04057814). Since January 1973, some flow diverted 6 mi (10 km) above station for iron ore processing plant (see sta 04057813) and returned 22 mi (35 km) below station by Green Creek. Records of water temperatures for the current year published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	89	99	62	48	47	54	367	194	160	46	41
2	67	95	97	60	47	49	55	314	178	168	47	41
3	64	97	94	56	47	52	56	238	166	211	75	41
4	77	93	92	54	46	56	57	263	151	258	111	41
5	89	87	90	52	45	60	57	237	139	245	121	41
6	84	93	86	50	45	62	57	236	129	205	102	40
7	80	97	84	49	45	64	59	221	126	167	100	39
8	81	98	82	47	45	64	60	200	125	140	82	39
9	77	89	80	47	45	62	61	180	124	131	71	45
10	84	88	80	47	46	62	64	167	141	122	64	62
11	149	87	78	47	46	60	71	190	151	110	61	64
12	143	86	76	47	47	58	94	260	141	101	60	65
13	118	88	74	47	47	57	122	284	129	97	62	67
14	102	89	74	47	47	56	158	286	120	96	58	65
15	91	88	72	47	47	55	176	300	140	92	55	61
16	84	86	72	47	47	54	201	281	319	88	63	56
17	79	80	70	48	47	52	248	250	537	88	59	54
18	75	84	70	48	47	52	326	218	728	88	54	54
19	72	83	68	49	47	50	350	195	689	86	52	55
20	70	83	66	49	47	50	334	173	536	76	51	60
21	67	90	66	50	46	50	343	159	384	72	51	55
22	64	110	66	50	46	49	538	191	279	71	49	51
23	62	112	66	50	46	49	778	233	213	71	46	49
24	60	105	66	50	46	49	847	255	174	56	44	49
25	60	101	68	50	46	49	753	237	146	53	43	50
26	61	99	70	50	46	49	653	204	123	49	45	51
27	65	103	70	50	46	49	576	177	107	48	44	52
28	73	111	70	50	46	49	527	161	95	46	43	52
29	81	111	70	50	-----	50	479	163	91	46	42	55
30	82	100	68	50	-----	50	426	157	142	47	41	56
31	80	-----	66	49	-----	52	-----	182	-----	46	41	-----
TOTAL	2,511	2,822	2,350	1,549	1,296	1,667	8,580	7,029	6,717	3,334	1,883	1,551
MEAN	81.0	94.1	75.8	50.0	46.3	53.8	286	227	224	108	60.7	51.7
MAX	149	112	99	62	48	64	847	367	728	258	121	67
MIN	60	80	66	47	45	47	54	157	91	46	41	39

CAL YR 1973 TOTAL 54,091 MEAN 148 MAX 1,160 MIN 45 MEAN+ 182 CFSM+ 1.42 IN+ 19.31
WTR YR 1974 TOTAL 41,289 MEAN 113 MAX 847 MIN 39 MEAN+ 141 CFSM+ 1.10 IN+ 14.96

*Adjusted for diversion and change in contents in Greenwood Reservoir.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04058100 Middle Branch Escanaba River near Princeton, Mich.

LOCATION.--Lat 46°19'02", long 87°30'07", in NW¼ sec.12, T.45 N., R.26, W., Marquette County, on right bank 400 ft (122 m) downstream from powerplant, 0.3 mi (0.5 km) upstream from Green Creek, and 2.2 mi (3.5 km) northwest of Princeton.

DRAINAGE AREA.--210 mi² (544 km²).

PERIOD OF RECORD.--July 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,100 ft (335 m) from topographic map (nearest 20 ft).

AVERAGE DISCHARGE.--13 years, 221 ft³/s (6.259 m³/s), 14.29 in/yr (363 mm/yr), adjusted for storage and diversion since December 1972.

EXTREMES.--Current year: Maximum discharge, 1,040 ft³/s (29.5 m³/s) Apr. 24 (gage height, 4.77 ft or 1.454 m); minimum, 6.2 ft³/s (0.18 m³/s) Feb. 27, 28, Mar. 1, 2 (gage height, 0.69 ft or 0.210 m); minimum daily, 40 ft³/s (1.13 m³/s) July 29.

Period of record: Maximum discharge, 2,580 ft³/s (73.1 m³/s) May 6, 1972 (gage height, 7.85 ft or 2.393 m); minimum recorded, 2.2 ft³/s (0.062 m³/s) Oct. 5, 1964; minimum daily, 4.1 ft³/s (0.12 m³/s) Feb. 4, 1967.

Flood of Apr. 25 and 26, 1960 reached a stage of 10.5 ft (3.20 m) from floodmark (discharge 3,850 ft³/s or 109 m³/s).

REMARKS.--Records good except those for winter periods, which are fair. Flow regulated by powerplant above station. Since December 1972, additional regulation 27 mi (43 km) above station (see sta 04057814). Since January 1973, some flow diverted to Green Creek 27 mi (43 km) above station (see sta 04057813) by industry for iron ore processing and returned via another Green Creek 0.3 mi (0.5 km) below this station. Records of chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	187	159	177	130	105	88	100	523	290	180	81	89
2	186	159	177	120	105	88	100	467	290	212	46	89
3	170	162	146	110	105	88	100	425	290	194	82	88
4	135	170	164	145	92	100	108	410	287	324	199	87
5	145	154	164	135	130	150	102	404	252	324	249	87
6	153	156	132	135	155	160	102	404	232	324	207	87
7	154	123	82	120	155	150	102	398	214	319	207	87
8	162	120	82	100	125	165	104	431	199	314	156	87
9	132	123	82	90	125	165	102	305	202	189	167	87
10	127	123	84	84	125	150	187	225	202	41	164	89
11	159	125	86	86	120	140	113	227	204	111	164	90
12	199	113	108	96	110	130	104	232	146	194	118	91
13	192	115	113	96	120	125	272	314	267	187	97	158
14	227	127	139	96	100	125	479	362	282	184	97	188
15	297	132	134	98	80	127	434	365	262	184	97	186
16	184	137	156	100	76	123	401	362	269	167	100	120
17	189	137	142	125	70	120	381	257	327	134	100	91
18	177	141	138	125	88	118	378	407	619	123	100	63
19	108	134	135	125	88	106	437	410	820	125	139	99
20	111	115	135	125	88	108	532	398	753	125	149	101
21	113	118	138	125	88	108	562	324	596	123	106	101
22	118	118	138	125	88	108	679	269	455	123	118	141
23	93	120	135	125	88	108	854	257	398	89	105	192
24	111	123	138	125	74	108	1,010	244	344	111	105	119
25	111	123	138	145	88	108	1,010	274	302	91	104	88
26	100	139	135	160	88	102	903	274	254	104	89	95
27	106	192	135	145	88	108	787	295	197	102	88	95
28	108	192	134	145	88	100	703	362	177	102	89	96
29	108	189	135	160	-----	100	643	292	177	40	89	97
30	111	182	140	140	-----	97	584	254	180	46	89	97
31	156	-----	135	120	-----	97	-----	269	-----	63	89	-----
TOTAL	4,629	4,221	4,077	3,756	2,852	3,670	12,373	10,440	9,487	4,949	3,790	3,185
MEAN	149	141	132	121	102	118	412	337	316	160	122	106
MAX	297	192	177	160	155	165	1,010	523	820	324	249	192
MIN	93	113	82	84	70	88	100	225	146	40	46	63

CAL YR 1973 TOTAL 96,183.0 MEAN 264 MAX 2,550 MIN 8.0 MEAN+ 298 CRSM+ 1.42 IN+ 19.28
WTR YR 1974 TOTAL 67,429.0 MEAN 185 MAX 1,010 MIN 40 MEAN+ 193 CRSM+ .92 IN+ 12.48

+Adjusted for diversion and change in contents.

STREAMS TRIBUTARY TO LAKE MICHIGAN

43

04058190 Schweitzer Reservoir near Palmer, Mich.

LOCATION.--Lat 46°25'00", long 87°38'48", in SE¼ NW¼ sec.2, T.46 N., R.27 W., Marquette County, on left bank 120 ft (36 m) upstream from dam on Schweitzer Creek, and 3.0 mi (4.8 km) southwest of Palmer.

DRAINAGE AREA.--23.1 mi² (59.8 km²).

PERIOD OF RECORD.--January 1963 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is 1,300.00 ft (396.240 m) above mean sea level (Cleveland-Cliffs Iron Co. bench mark). Gage readings have been converted to elevations above mean sea level. Prior to Oct. 25, 1967, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents, 5,500 acre-ft (6.78 hm³) June 16, 17 (elevation, 1,338.5 ft or 407.97 m); minimum, 2,920 acre-ft (3.60 hm³) Apr. 10 (elevation, 1,329.7 ft or 405.29 m).

Period of record: Maximum contents recorded, 5,900 acre-ft (7.27 hm³) May 31, 1970 (elevation, 1,339.5 ft or 408.28 m); minimum recorded since first filling, 2,920 acre-ft (3.60 hm³) Apr. 10, 1974 (elevation, 1,329.7 ft or 405.29 m).

REMARKS.--Reservoir is formed by an earthfill dam with fixed crest concrete spillway completed in 1963. Usable capacity of reservoir is 5,300 acre-ft (6.53 hm³) at spillway elevation 1,338.00 ft (407.822 m). The dam includes a discharge pipe equipped with valve to control release flow to Schweitzer Creek (see sta 04058200). An average of 2.9 ft³/s (0.082 m³/s) was diverted from the headwaters of basin by the City of Isheming for municipal supply and the effluent discharged to the Carp River basin. An average of 15 ft³/s (0.41 m³/s) was diverted from reservoir for iron ore processing and returned to the Middle Branch Escanaba River basin by Green Creek. Since January, 1973, controlled diversion from Greenwood Reservoir (see sta 04057811) via Greenwood Diversion (see sta 04057813) into Schweitzer Reservoir. Controlled inflow averaged 4.1 ft³/s (0.12 m³/s) for the year.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

Date	Elevation (feet)	Contents (acre- feet)	Change in contents during month	
			(Acre- feet)	Equivalent in ft ³ /s
Sept. 30.	1,338.0	5,300	--	--
Oct. 31.	1,337.1	4,980	-320	-5.2
Nov. 30.	1,335.2	4,410	-570	-9.6
Dec. 31.	1,334.4	4,170	-240	-3.9
Calendar year 1973.	--	--	-990	-1.4
Jan. 31.	1,332.8	3,700	-470	-7.6
Feb. 28.	1,331.1	3,280	-420	-7.6
Mar. 31.	1,330.0	3,000	-280	-4.6
Apr. 30.	1,338.3	5,420	+2,420	+40.7
May 31.	1,338.2	5,380	-40	-.7
June 30.	1,338.1	5,340	-40	-.7
July 31.	1,337.4	5,090	-250	-4.1
Aug. 31.	1,337.4	5,090	0	0
Sept. 30.	1,337.2	5,020	-70	-1.2
Water year 1973-74.	--	--	-280	-.4

LOCATION.--Lat 46°24'40", long 87°37'27", in SW¼ sec.1, T.46 N., R.27 W., Marquette County, on right bank 10 ft (3 m) upstream from highway bridge, 2.5 mi (4.0 km) southwest of Palmer.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1963. Altitude of gage is 1,270 ft (387 m) from topographic map (nearest 10 ft). Prior to Aug. 21, 1961, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 169 ft³/s (4.79 m³/s) June 16 (gage height, 4.31 ft or 1.314 m); minimum, 2.4 ft³/s (0.068 m³/s) Jan. 29 (gage height, 2.72 ft or 0.829 m), result of freezeup; minimum daily, 3.6 ft³/s (0.10 m³/s) Mar. 26-29.

Period of record: Maximum discharge, 860 ft³/s (24.4 m³/s) May 31, 1970 (gage height, 6.50 ft or 1.981 m); minimum, 0.4 ft³/s (0.011 m³/s) Sept. 6, 1962 (gage height, 1.22 ft or 0.372 m); minimum daily, 1.0 ft³/s (0.028 m³/s) Apr. 9-18, May 5, 6, 1963.

REMARKS.--Records good. Since August 1962, flow completely regulated by Schweitzer Reservoir (see sta 04058190), 1.0 mi (1.6 km) above station. An average of 2.9 ft³/s (0.082 m³/s) was diverted from headwaters of basin by the city of Ishpeming for municipal supply and the effluent discharged to the Carp River basin. An average of 15 ft³/s (0.42 m³/s) was diverted from Schweitzer Reservoir by industry for iron ore processing and returned to the Middle Branch Escanaba River via Green Creek. Diversion into Schweitzer Reservoir from Greenwood Reservoir via Greenwood Diversion (see sta 04057813).

DAY	OCT	NOV	DEC	JAN	FER	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	5.0	4.4	4.0	4.0	4.1	3.8	23	19	14	4.6	4.9
2	5.2	4.9	4.6	4.0	4.0	4.0	3.8	22	17	23	4.7	4.8
3	5.3	4.8	4.7	4.0	4.0	4.1	3.8	23	16	41	13	4.7
4	6.9	4.7	4.6	4.0	4.0	4.2	3.8	22	13	48	70	4.7
5	13	4.7	4.8	4.0	4.0	4.2	4.0	22	9.9	29	56	4.7
6	12	4.7	4.6	4.0	4.0	4.3	4.0	23	8.8	15	18	4.7
7	8.8	4.7	4.5	4.0	4.0	4.3	4.0	21	9.3	9.0	6.4	4.7
8	6.6	4.7	4.5	4.0	4.0	4.2	4.5	19	9.6	6.1	4.8	4.7
9	5.7	4.6	4.6	4.0	4.0	4.2	5.0	16	9.5	5.4	4.7	5.4
10	6.0	4.7	4.5	4.0	4.0	4.2	5.0	14	16	5.4	4.7	5.1
11	39	4.7	4.4	4.0	4.0	4.2	5.4	19	21	5.1	4.8	4.9
12	49	4.7	4.4	4.0	4.0	4.0	5.4	38	18	5.0	4.7	4.7
13	29	4.7	4.4	4.0	4.0	3.8	5.9	43	12	5.0	4.6	4.7
14	17	4.7	4.4	4.0	4.0	3.8	5.4	37	10	4.9	4.6	4.7
15	13	4.6	4.4	4.0	4.0	3.8	5.1	37	21	4.9	4.6	4.7
16	9.9	4.7	4.4	4.0	4.0	4.0	5.1	30	126	4.8	4.8	4.7
17	5.8	4.6	4.3	4.0	4.0	4.0	5.9	23	142	5.4	4.5	4.7
18	5.3	4.7	4.3	4.0	4.0	4.0	6.1	17	78	4.9	5.0	4.7
19	5.1	4.7	4.3	4.0	4.0	4.0	5.7	13	43	4.8	4.7	4.7
20	5.1	4.6	4.3	4.0	4.0	4.0	6.0	13	28	4.8	4.5	4.7
21	4.8	5.0	4.2	4.0	4.0	4.0	7.4	11	19	4.8	4.4	4.7
22	4.7	4.7	4.2	4.0	4.0	4.0	6.9	19	13	4.8	4.7	4.9
23	4.8	4.6	4.2	4.0	4.0	4.0	40	26	9.7	4.8	5.1	4.9
24	4.8	4.7	4.2	4.0	4.0	4.0	68	25	8.0	4.8	5.0	4.7
25	4.6	4.7	4.4	4.0	4.0	3.8	63	19	6.3	4.8	4.9	4.7
26	4.8	4.7	4.4	4.0	4.0	3.6	67	16	6.7	4.7	5.0	4.6
27	4.8	4.7	4.4	4.0	4.0	3.6	61	13	5.9	4.6	4.7	4.6
28	5.0	4.7	4.4	4.0	4.0	3.6	50	11	5.3	4.5	4.7	4.6
29	4.9	4.6	4.3	4.0	-----	3.6	37	10	5.8	4.6	4.7	4.9
30	4.8	4.5	4.2	4.0	-----	3.8	32	9.1	13	4.7	4.7	4.8
31	5.1	-----	4.2	4.0	-----	3.8	-----	16	-----	4.6	4.9	-----
TOTAL	306.9	141.1	136.5	124.0	112.0	123.2	530.0	650.1	719.8	297.2	286.5	143.0
MEAN	9.90	4.70	4.40	4.00	4.00	3.97	17.7	21.0	24.0	9.59	9.24	4.77
MAX	49	5.0	4.8	4.0	4.0	4.3	68	43	142	48	70	5.4
MIN	4.6	4.5	4.2	4.0	4.0	3.6	3.8	9.1	5.3	4.5	4.4	4.6
CAL YR 1973	TOTAL	6,361.0	MEAN	17.4	MAX	244	MIN	4.2				
WTR YR 1974	TOTAL	3,570.3	MEAN	9.78	MAX	142	MIN	3.6				

STREAMS TRIBUTARY TO LAKE MICHIGAN

45

04058300 Warner Creek near Palmer, Mich.

LOCATION.--Lat 46°24'09", long 87°32'39", in NW¼ sec.10, T.46 N., R.26 W., Marquette County, on left bank 10 ft (3 m) upstream from bridge on county highway, 0.1 mi (0.2 km) upstream from confluence with Schweitzer Creek, and 3.5 mi (5.6 km) southeast of Palmer.

DRAINAGE AREA.--14.2 mi² (36.8 km²).

PERIOD OF RECORD.--July 1961 to September 1968, October 1972 to current year. Occasional low-flow measurements, water years 1969-70 and annual maximum, water-years 1971-72.

GAGE.--Water-stage recorder. Altitude of gage is 1,190 ft (363 m) from topographic map (nearest 10 ft). Prior to Aug. 22, 1961, non-recording gage at present site and datum.

AVERAGE DISCHARGE.--9 years (1962-68, 1973-74), 17.5 ft³/s (0.496 m³/s), 16.74 in/yr (425 mm/yr).

EXTREMES.--Current year: Maximum discharge, 215 ft³/s (6.09 m³/s) Apr. 22 (gage height, 4.47 ft or 1.362 m); minimum daily, 4.0 ft³/s (0.11 m³/s) Feb. 10.

Period of record: Maximum discharge, 267 ft³/s (7.56 m³/s) Apr. 14, 1964 (discharge measurement); maximum gage height 5.61 ft (1.710 m) Apr. 14, 1964, May 3, 1973 (backwater from Schweitzer Creek); minimum discharge, 0.5 ft³/s (0.014 m³/s) Sept. 10, 1961 (gage height, 0.79 ft or 0.241 m).

REMARKS.--Records fair except those over 50 ft³/s (1.42 m³/s), which are poor. Headwaters are affected by waste effluent and mine pumpage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	23	11	7.5	5.0	5.0	6.0	40	25	16	10	5.9
2	10	18	10	7.0	5.0	5.0	6.0	34	20	24	9.4	6.3
3	10	14	11	6.5	4.5	5.0	6.0	36	17	34	21	6.3
4	18	12	11	6.0	4.5	6.5	6.5	32	14	48	50	6.1
5	23	10	9.7	6.0	4.5	9.0	7.0	27	13	30	49	5.9
6	16	12	10	6.0	4.2	11	7.5	29	12	21	24	5.2
7	13	9.8	10	5.5	4.2	13	8.0	27	14	18	13	5.0
8	12	11	10	5.5	4.2	15	9.0	30	14	16	10	5.2
9	13	11	10	5.0	4.2	14	10	30	14	19	9.7	7.0
10	14	12	10	5.0	4.0	13	13	24	22	21	10	18
11	17	12	9.7	5.0	4.2	13	17	36	22	23	11	14
12	26	10	9.5	5.0	4.2	12	23	48	18	18	10	11
13	14	9.8	9.4	5.0	4.2	11	35	38	14	13	9.1	12
14	12	9.9	9.5	5.0	4.4	11	45	34	13	11	8.2	8.8
15	11	9.5	9.0	5.0	4.4	10	50	35	21	9.7	8.6	7.6
16	11	9.0	8.5	5.0	4.4	9.5	60	28	96	10	13	7.3
17	10	8.2	8.5	5.0	4.4	9.0	75	25	139	13	14	7.6
18	9.5	8.6	8.0	5.0	4.4	8.5	100	22	98	16	11	7.6
19	9.1	9.3	8.0	5.0	4.4	8.0	129	21	76	12	11	7.9
20	10	9.5	8.0	5.0	4.6	8.0	140	20	34	9.5	9.7	7.9
21	9.0	12	8.0	5.0	4.6	7.5	171	19	26	8.6	8.8	8.2
22	8.8	18	8.0	5.0	4.6	7.0	196	21	22	8.7	7.6	7.9
23	9.7	14	8.0	5.0	4.8	7.0	141	20	20	8.2	7.9	7.6
24	8.8	12	8.0	5.0	4.8	7.0	78	21	17	8.2	7.6	6.8
25	9.0	15	8.5	5.0	4.8	6.5	70	17	15	8.1	6.8	7.9
26	8.9	15	8.5	5.0	4.8	6.5	72	14	13	8.7	9.1	8.2
27	8.8	17	8.5	5.0	4.8	6.0	69	17	12	7.8	9.4	7.4
28	11	17	8.0	5.0	5.0	6.0	54	16	11	6.3	7.6	7.3
29	11	14	8.0	5.0	-----	6.0	52	15	11	7.0	6.8	9.8
30	13	12	8.0	5.0	-----	6.0	44	16	23	7.6	5.9	10
31	18	-----	7.5	5.0	-----	6.0	-----	28	-----	12	7.0	-----
TOTAL	385.6	374.6	279.8	165.0	126.1	268.0	1,700.0	820	866	473.4	396.2	243.7
MEAN	12.4	12.5	9.03	5.32	4.50	8.65	56.7	26.5	28.9	15.3	12.8	8.12
MAX	26	23	11	7.5	5.0	15	196	48	139	48	50	18
MIN	8.8	8.2	7.5	5.0	4.0	5.0	6.0	14	11	6.3	5.9	5.0

CAL YR 1973 TOTAL 9,853.5 MEAN 27.0 MAX 212 MIN 6.7 CFSM 1.90 IN 25.81
WTR YR 1974 TOTAL 6,098.4 MEAN 16.7 MAX 196 MIN 4.0 CFSM 1.18 IN 15.98

LOCATION.--Lat 46°23'36", long 87°29'40", in SE¼ SE¼ sec.12, T.46 N., R.26 W., Marquette County, on left bank 0.8 mi (1.3 km) upstream from mouth, and 3 mi (5 km) west of Sands Station.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,160 ft (354 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--9 years, 33.2 ft³/s (0.940 m³/s), 12.02 in/yr (305 mm/yr).

EXTREMES.--Current year: Maximum discharge, 354 ft³/s (10.0 m³/s) Apr. 22 (gage height, 5.44 ft or 1.658 m); minimum, 7.6 ft³/s (0.22 m³/s) Sept. 9 (gage height, 1.49 ft or 0.454 m).

Period of record: Maximum discharge, 458 ft³/s (13.0 m³/s) May 31, 1970 (gage height, 5.89 ft or 1.795 m); minimum, 6.2 ft³/s (0.18 m³/s) Oct. 12, 13, 1966, Oct. 6, 7, 1967; minimum gage height, 1.45 ft (0.442 m) Oct. 12, 13, 1966.

REMARKS.--Records good except those above 100 ft³/s (2.83 m³/s), which are fair. Some mine water pumped into basin at headwaters.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	20	23	15	12	11	14	94	33	30	12	10
2	16	18	22	14	12	11	15	85	32	39	12	9.6
3	15	19	23	14	12	13	15	82	32	41	27	9.6
4	20	19	22	13	12	14	14	75	30	43	26	9.3
5	17	18	18	13	12	13	15	69	29	41	21	9.1
6	17	17	17	13	11	14	15	69	28	36	20	8.8
7	17	17	18	12	11	14	16	63	28	32	21	8.7
8	16	17	20	12	11	14	16	58	28	29	19	8.7
9	17	15	20	12	11	14	16	54	29	28	19	12
10	17	16	21	11	11	14	18	51	31	27	18	17
11	18	16	20	11	11	14	21	59	32	25	19	13
12	17	16	20	11	11	15	33	60	31	23	19	13
13	17	16	19	11	11	15	40	60	29	22	17	13
14	17	16	19	10	11	16	46	62	30	21	16	13
15	16	16	19	11	11	17	49	60	36	20	15	13
16	16	15	18	11	11	17	68	57	82	19	18	13
17	16	15	18	11	10	18	88	53	99	23	16	13
18	16	16	17	11	11	18	119	50	93	20	16	12
19	15	17	17	11	11	18	196	47	80	19	17	12
20	15	17	17	11	11	17	214	43	69	18	15	12
21	15	20	17	12	11	17	265	40	60	17	14	11
22	15	20	16	11	11	16	340	41	52	16	13	12
23	15	19	16	11	11	16	282	39	46	16	13	11
24	15	19	16	11	11	16	228	39	41	15	13	11
25	15	23	16	12	11	15	193	37	37	15	13	11
26	14	22	16	12	11	15	169	34	34	14	14	11
27	14	25	16	12	11	14	150	33	32	13	13	11
28	16	24	16	12	11	14	132	32	30	12	11	11
29	16	24	16	12	-----	14	117	32	32	12	11	13
30	15	23	16	12	-----	14	103	30	35	12	11	12
31	16	-----	15	12	-----	14	-----	38	-----	12	10	-----
TOTAL	497	555	564	367	312	462	3,007	1,646	1,280	710	499	343.8
MEAN	16.0	18.5	18.2	11.8	11.1	14.9	100	53.1	42.7	22.9	16.1	11.5
MAX	20	25	23	15	12	18	340	94	99	43	27	17
MIN	14	15	15	10	10	11	14	30	28	12	10	8.7
CFSM	.43	.49	.49	.31	.30	.40	2.67	1.42	1.14	.61	.43	.31
IN.	.49	.55	.56	.36	.31	.46	2.98	1.63	1.27	.70	.50	.34
CAL YR 1973	TOTAL 14,600.0			MEAN 40.0	MAX 286	MIN 12	CFSM 1.07	IN 14.48				
WTR YR 1974	TOTAL 10,242.8			MEAN 28.1	MAX 340	MIN 8.7	CFSM .75	IN 10.16				

04058500 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., Marquette County, on right bank in county park at Gwinn, 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--124 mi² (321 km²).

PERIOD OF RECORD.--October 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,079.2 ft (328.94 m) above mean sea level.

AVERAGE DISCHARGE.--20 years, 112 ft³/s (3.172 m³/s), 12.27 in/yr (312 mm/yr), adjusted for storage and diversion.

EXTREMES.--Current year: Maximum discharge, 1,020 ft³/s (28.9 m³/s) Apr. 22 (gage height, 11.75 ft or 3.581 m); minimum not determined; minimum daily, 35 ft³/s (0.99 m³/s) Jan. 13-16, Feb. 6-21, Sept. 4-8.

Period of record: Maximum discharge, 2,390 ft³/s (67.7 m³/s) June 1, 1970 (gage height, 14.97 ft or 4.563 m); minimum, 19 ft³/s (0.54 m³/s) July 30, Oct. 11, 1963 (gage height, 6.48 ft or 1.975 m).

REMARKS.--Records good except those for winter periods and those from Aug. 22 to Sept. 13, which are fair. Since August, 1962 some regulation by Schweitzer Reservoir (see sta 04058190) about 16 mi (26 km) above station. An average of 2.9 ft³/s (0.082 m³/s) was diverted from headwaters of basin by the city of Ishpeming for municipal supply and the effluent discharged to the Carp River Basin. An average of 15 ft³/s (0.42 m³/s) was diverted from Schweitzer Reservoir by industry for iron ore processing and returned to the Middle Branch Escanaba River via Green Creek. Diversion into Schweitzer Reservoir from Greenwood Reservoir via Greenwood Diversion (see sta 04057813). Records of chemical analyses for the current year are published in Part 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	90	72	51	38	36	41	263	146	110	44	39
2	60	87	68	50	37	38	41	222	124	100	45	38
3	66	76	68	48	37	45	41	218	114	140	63	36
4	78	69	68	46	36	56	41	219	102	169	224	35
5	74	64	64	45	36	58	42	188	93	162	209	35
6	70	59	66	44	35	60	47	183	87	126	154	35
7	66	61	63	43	35	68	49	178	87	102	98	35
8	60	56	62	42	35	67	50	171	92	85	74	35
9	59	70	63	40	35	67	52	166	88	77	64	60
10	67	55	63	38	35	64	54	151	119	78	58	95
11	81	55	64	37	35	63	56	159	130	77	58	80
12	108	55	62	36	35	61	79	232	122	72	66	70
13	111	55	59	35	35	58	170	219	105	66	60	62
14	89	55	58	35	35	54	234	202	90	60	56	58
15	74	55	58	35	35	51	222	207	105	56	52	51
16	65	54	58	35	35	51	251	187	255	54	62	49
17	63	55	55	36	35	49	338	168	494	58	71	46
18	57	52	56	36	35	48	477	149	463	77	61	47
19	53	55	55	36	35	47	476	136	334	62	63	47
20	52	57	54	37	35	46	529	124	226	55	61	48
21	52	62	53	37	35	46	643	115	174	51	54	49
22	49	84	52	38	36	45	939	112	144	49	51	49
23	49	80	52	38	37	45	784	119	124	48	49	50
24	50	72	51	38	37	44	570	128	103	46	49	46
25	49	76	52	38	38	43	496	122	97	46	49	49
26	49	80	54	38	37	43	486	107	87	46	50	49
27	49	84	55	38	37	42	450	98	80	44	49	46
28	56	92	55	38	36	42	408	97	75	42	46	45
29	61	83	55	38	-----	42	364	94	72	40	44	49
30	57	76	53	38	-----	41	309	90	108	41	41	56
31	60	-----	53	38	-----	41	-----	116	-----	41	40	-----
TOTAL	2,000	2,024	1,821	1,222	1,002	1,561	8,739	4,940	4,445	2,280	2,165	1,489
MEAN	64.5	67.5	58.7	39.4	35.8	50.4	291	159	148	73.5	69.8	49.6
MAX	111	92	72	51	38	68	939	263	494	169	224	95
MIN	49	52	51	35	35	36	41	90	72	40	40	35

CAL YR 1973 TOTAL 49,423 MEAN 135 MAX 1,080 MIN 44 MEAN+ 142 CFSM+ 1.15 IN+ 15.55
WTR YR 1974 TOTAL 33,688 MEAN 92.3 MAX 939 MIN 35 MEAN+ 105 CFSM+ .85 IN+ 11.50

+Adjusted for diversion and change in contents in Schweitzer Reservoir. Records of diversion furnished by Cleveland Cliffs Iron Co. and Michigan Dept. of Environmental Health.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04059000 Escanaba River at Cornell, Mich.

LOCATION.--Lat 45°54'31", long 87°12'49", in NW¼ sec.32, T.41 N., R.23 W., Delta County, on right bank 50 ft (15 m) downstream from highway bridge, 0.4 mi (0.6 km) downstream from Bobs Creek, 0.7 mi (1.1 km) northeast of Cornell, and 16 mi (26 km) upstream from mouth.

DRAINAGE AREA.--870 mi² (2,253 km²).

PERIOD OF RECORD.--August 1903 to December 1912, January 1913 to November 1915 (gage heights only), October 1950 to current year. Monthly discharge only for some periods, published in WSP 1307. Published as "near Escanaba" 1903-15.

GAGE.--Water-stage recorder. Datum of gage is 749.26 ft (228.374 m) above mean sea level (levels by Michigan Department of Natural Resources). August 1903 to November 1915, nonrecording gage at site 10 mi (16 km) downstream at different datum.

AVERAGE DISCHARGE.--33 years, (1903-12, 1950-74), 897 ft³/s (25.40 m³/s), 14.00 in/yr (356 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,730 ft³/s (134 m³/s) Apr. 24 (gage height, 3.65 ft or 1.11 m, from high-water mark); maximum gage height, 4.00 ft (1.219 m) Feb. 25 (backwater from ice); minimum discharge, 185 ft³/s (5.24 m³/s) Sept. 8, 9 (gage height, 1.30 ft (0.396 m)).

Period of record: Maximum discharge, 10,500 ft³/s (297 m³/s) May 7, 1960 (gage height, 4.90 ft or 1.494 m); maximum gage height, 6.40 ft (1.951 m) Apr. 9, 1971 (backwater from ice); minimum discharge observed, 90 ft³/s (2.55 m³/s) July 5, 1910 (gage height, 1.5 ft or 0.46 m, site and datum then in use), but may have been less during extended periods of no gage-height record during winter periods of 1903-12, or during periods of ice effect in 1959.

REMARKS.--Records good except those for winter periods, and those for period of no gage-height record, which are fair. Diurnal fluctuation and occasional slight regulation caused by Boney Falls powerplant, 7 mi (11 km) above station, since 1950. Since August 1962, some regulation by Schweitzer Reservoir, about 50 mi (80 km) upstream (see sta 04058190). Since December, 1972, some regulation by Greenwood Reservoir, about 60 mi (97 km) upstream (see sta 04057811).

REVISIONS (WATER YEARS).--WSP 1387: 1904.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	528	733	658	350	340	290	380	1,990	1,450	792	213	292
2	538	780	658	330	330	310	390	1,730	1,310	750	278	289
3	473	810	672	320	320	340	400	1,720	1,220	702	425	256
4	579	694	633	300	315	360	430	1,720	956	929	714	288
5	488	635	616	290	310	380	450	1,590	876	947	1,050	289
6	591	566	564	280	300	410	490	1,530	782	845	814	283
7	645	621	510	280	290	440	520	1,590	831	724	614	253
8	426	486	554	270	280	460	560	1,520	833	660	543	252
9	481	557	585	270	270	480	640	1,430	894	664	468	295
10	538	493	495	260	265	490	740	1,090	1,100	604	505	655
11	708	510	500	260	260	500	840	1,220	1,110	445	478	850
12	638	429	530	260	260	500	1,000	1,530	1,020	480	625	762
13	678	459	520	260	260	490	1,500	1,550	812	524	526	728
14	642	513	480	250	260	480	1,600	1,590	853	467	443	677
15	578	480	470	260	255	470	1,550	1,600	784	437	396	629
16	687	491	460	260	250	450	1,500	1,530	1,330	432	479	545
17	497	565	450	260	250	440	1,500	1,410	2,080	440	664	447
18	476	453	440	270	250	420	1,500	1,060	2,320	466	561	405
19	495	538	440	270	250	410	1,600	1,250	2,360	470	545	444
20	441	459	450	280	250	390	2,000	1,090	1,980	377	579	546
21	393	572	450	290	250	380	2,200	1,010	1,570	380	541	571
22	416	795	450	300	250	370	2,800	954	1,280	357	620	564
23	428	814	450	310	250	370	3,800	806	1,010	351	607	578
24	370	744	450	315	255	360	4,200	821	882	342	560	595
25	410	735	450	320	260	360	3,800	856	755	287	482	529
26	412	726	450	325	265	360	3,200	743	657	320	478	455
27	416	872	440	330	270	360	3,000	708	622	377	450	501
28	479	840	420	340	280	360	2,700	747	480	273	384	427
29	516	811	400	340	-----	360	2,480	830	477	273	313	444
30	559	802	380	340	-----	360	2,210	759	666	250	302	496
31	538	-----	360	340	-----	370	-----	1,170	-----	212	295	-----
TOTAL	16,064	18,983	15,385	9,130	7,645	12,520	49,980	39,144	33,300	15,577	15,952	14,345
MEAN	518	633	496	295	273	404	1,666	1,263	1,110	502	515	478
MAX	708	872	672	350	340	500	4,200	1,990	2,360	947	1,050	850
MIN	370	429	360	250	250	290	380	708	477	212	213	252
CFSM	.60	.73	.57	.34	.31	.46	1.91	1.45	1.28	.58	.59	.55
IN.	.69	.81	.66	.39	.33	.54	2.14	1.67	1.42	.67	.68	.61

CAL YR 1973 TOTAL 372,209 MEAN 1,020 MAX 5,670 MIN 305 CFSM 1.17 IN 15.92
WTR YR 1974 TOTAL 248,025 MEAN 680 MAX 4,200 MIN 212 CFSM .78 IN 10.61

NOTE.--No gage-height record Apr. 11-25.

STREAMS TRIBUTARY TO LAKE MICHIGAN

49

04059400 Tenmile Creek at Perronville, Mich.

LOCATION.--Lat 45°48'38", long 87°22'00", in NE¼ NE¼ sec.3, T.39 N., R.25 W., Menominee County, on left bank, 10 ft (3 m) downstream from county bridge, 700 ft (213 m) upstream from County Road 569 and 1.0 mi (1.6 km) northwest of Perronville.

DRAINAGE AREA.--38.4 mi² (99.5 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1969, 1970. April 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 810 ft (247 m) from topographic map (nearest 10 ft). Prior to Sept. 29, 1971, non-recording gage at present site and datum.

EXTREMES.--Current year: Maximum discharge, 372 ft³/s (10.5 m³/s) Apr. 13 (gage height, 4.31 ft or 1.314 m); minimum daily, 2.5 ft³/s (0.071 m³/s) Feb. 14-27; minimum gage height, 2.24 ft (0.683 m) Oct. 23-27.

Period of record: Maximum discharge, 488 ft³/s (13.8 m³/s) May 2, 1972; maximum gage height, 5.06 ft (1.542 m) Mar. 15, 1973 (backwater from ice); minimum discharge, 0.09 ft³/s (0.003 m³/s) Aug. 25, 1970 (discharge measurement).

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.4	34	23	3.7	2.7	2.7	12	85	144	33	14	40
2	6.7	35	21	3.6	2.7	3.0	13	76	121	27	19	32
3	6.1	30	21	3.6	2.7	3.4	15	80	103	30	150	29
4	7.4	27	19	3.6	2.7	4.5	20	82	84	49	141	25
5	12	22	21	3.5	2.7	8.0	25	76	68	47	155	22
6	11	27	21	3.4	2.7	10	35	85	64	37	110	20
7	10	20	15	3.4	2.7	13	45	78	76	28	84	18
8	8.8	13	12	3.3	2.7	15	60	67	76	22	63	18
9	7.7	13	11	3.2	2.7	15	80	59	86	55	48	37
10	7.0	10	9.4	3.2	2.7	15	100	52	139	303	37	259
11	9.8	9.4	8.0	3.1	2.6	14	143	80	130	213	57	240
12	11	9.4	7.2	3.0	2.6	14	247	110	108	138	78	195
13	11	9.4	6.2	2.9	2.6	13	334	97	85	91	68	157
14	11	9.4	5.4	2.9	2.5	13	209	100	67	81	54	123
15	10	10	4.5	2.9	2.5	12	170	106	83	66	41	93
16	8.2	10	4.3	2.9	2.5	12	172	97	181	45	79	71
17	7.3	12	4.0	2.8	2.5	12	185	84	194	55	89	58
18	6.2	10	3.8	2.8	2.5	11	200	70	176	95	63	47
19	5.4	10	3.6	2.8	2.5	11	166	62	152	69	70	53
20	4.4	10	3.5	2.8	2.5	11	174	53	123	49	57	65
21	3.9	19	3.4	2.8	2.5	10	168	46	95	37	50	61
22	3.7	35	3.4	2.8	2.5	10	171	45	74	38	113	52
23	3.6	35	3.4	2.8	2.5	10	169	40	58	36	118	46
24	3.7	33	3.5	2.8	2.5	10	165	37	46	29	100	41
25	3.7	37	3.6	2.8	2.5	10	149	34	36	29	81	37
26	3.7	38	3.6	2.8	2.5	10	137	31	28	37	78	36
27	3.7	38	3.6	2.8	2.5	10	126	27	24	41	81	34
28	17	36	3.7	2.7	2.6	10	117	25	20	34	63	32
29	22	32	3.7	2.7	-----	10	110	24	18	28	54	30
30	21	27	3.7	2.7	-----	11	97	23	33	24	44	28
31	20	-----	3.7	2.7	-----	11	-----	114	-----	21	44	-----
TOTAL	274.4	660.6	263.2	93.8	72.4	324.6	3,834	2,045	2,692	1,887	2,360	1,999
MEAN	8.85	22.0	8.49	3.03	2.59	10.5	128	66.0	89.7	60.9	76.1	66.6
MAX	22	38	23	3.7	2.7	15	334	114	194	303	181	259
MIN	3.6	9.4	3.4	2.7	2.5	2.7	12	23	18	21	18	18
CFSM	.23	.57	.22	.08	.07	.27	3.33	1.72	2.34	1.59	1.98	1.73
IN.	.27	.64	.25	.09	.07	.31	3.71	1.98	2.61	1.83	2.29	1.94

CAL YR 1973 TOTAL 17,576.0 MEAN 48.2 MAX 362 MIN 1.3 CFSM 1.26 IN 17.03
WTR YR 1974 TOTAL 16,506.0 MEAN 45.2 MAX 334 MIN 2.5 CFSM 1.18 IN 15.99

STREAMS TRIBUTARY TO LAKE MICHIGAN

04059500 Ford River near Hyde, Mich.

LOCATION.--Lat 45°45'20", long 87°12'05", in SW¼ sec.19, T.39 N., R.23 W., Delta County, on right bank 40 ft (12 m) downstream from county highway bridge, 1.4 mi (2.3 km) downstream from Tenmile Creek, and 1.5 mi (2.4 km) north of Hyde.

DRAINAGE AREA.--450 mi² (1,166 km²).

PERIOD OF RECORD.--October 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 677.9 ft (206.62 m) above mean sea level.

AVERAGE DISCHARGE.--20 years, 374 ft³/s (10.59 m³/s), 11.29 in/yr (287 mm/yr). 19 years, 372 ft³/s (10.54 m³/s), 11.23 in/yr (285 mm/yr); figure published in Water Resources Data for Michigan, 1973, in error.

EXTREMES.--Current year: Maximum discharge, 2,300 ft³/s (65.1 m³/s) Apr. 18 (gage height, 5.13 ft or 1.564 m); minimum daily, 86 ft³/s (2.44 m³/s) Feb. 17; minimum gage height, 1.96 ft (0.597 m) Sept. 8.
Period of record: Maximum discharge, 7,590 ft³/s (215 m³/s) May 7, 1960 (gage height, 8.27 ft or 2.521 m); minimum, 21 ft³/s (0.595 m³/s) Sept. 1, 2, 1970 (gage height, 1.34 ft or 0.408 m).

REMARKS.--Records good except those for winter periods, which are fair. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	248	441	399	110	100	110	150	925	979	271	165	229
2	214	487	365	110	100	120	150	825	937	303	160	203
3	193	495	334	110	100	140	160	805	904	312	390	182
4	190	479	316	105	98	150	200	801	796	349	587	165
5	205	430	301	100	98	180	250	766	650	342	604	149
6	228	347	230	100	98	200	300	827	568	309	593	136
7	248	248	198	98	96	240	400	801	564	260	536	126
8	256	252	180	96	96	300	460	723	565	209	437	127
9	228	196	170	94	94	290	520	641	597	226	334	160
10	208	205	160	92	94	280	585	570	840	819	267	1,200
11	236	210	150	90	92	270	718	664	835	741	326	1,300
12	284	210	145	90	90	260	1,000	853	744	575	457	1,110
13	304	210	140	90	90	250	1,660	846	640	475	435	921
14	296	211	135	90	88	240	1,760	885	542	423	343	767
15	272	211	130	90	88	230	1,690	938	514	336	282	636
16	236	206	125	92	88	220	1,750	889	863	257	356	523
17	211	163	115	92	86	210	2,090	798	1,120	292	411	440
18	192	205	110	92	88	200	2,160	710	1,170	423	350	372
19	180	203	110	94	88	195	1,990	608	1,100	379	391	380
20	169	195	105	96	90	185	1,930	540	967	347	348	406
21	162	264	105	98	90	180	1,920	480	804	285	297	410
22	155	400	100	100	90	175	1,970	449	618	250	597	392
23	151	464	100	100	92	170	1,980	415	485	229	616	365
24	147	496	105	100	94	165	1,870	412	395	206	492	334
25	144	535	105	105	96	160	1,800	408	325	210	422	313
26	140	519	110	105	98	160	1,710	372	272	224	402	289
27	143	501	110	105	100	155	1,510	335	229	260	405	267
28	199	488	110	105	105	150	1,320	300	194	286	343	254
29	263	471	110	105	-----	150	1,170	290	175	261	306	255
30	317	448	110	105	-----	150	1,040	291	243	225	279	253
31	345	-----	110	105	-----	150	-----	667	-----	187	256	-----
TOTAL	6,764	10,190	5,093	3,064	2,627	6,035	36,213	19,834	19,635	10,271	12,187	12,664
MEAN	218	340	164	98.8	93.8	195	1,207	640	655	331	393	422
MAX	345	535	399	110	105	300	2,160	938	1,170	819	616	1,300
MIN	140	163	100	90	86	110	150	290	175	187	160	126
CFSM	.48	.76	.36	.22	.21	.43	2.68	1.42	1.46	.74	.87	.94
IN.	.56	.84	.42	.25	.22	.50	2.99	1.64	1.62	.85	1.01	1.05

CAL YR 1973 TOTAL 188,096 MEAN 515 MAX 2,990 MIN 100 CFSM 1.14 IN 15.55

WTR YR 1974 TOTAL 144,577 MEAN 396 MAX 2,160 MIN 86 CFSM .88 IN 11.95

LOCATION.--Lat 46°03'31", long 88°37'38", on line between SE $\frac{1}{4}$ and SW $\frac{1}{4}$ sec.1, T.42 N., R.35 W., Iron County, on right bank 10 ft (3 m) downstream from bridge on County Highway 424 in Caspian, 5.0 mi (8.0 km) upstream from mouth.

PERIOD OF RECORD.--March 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,438.78 ft (438.540 m) above mean sea level. Prior to Sept. 25, 1969, nonrecording gage at site 10 ft (3 m) upstream at same datum.

EXTREMES.--Current year: Maximum discharge, 382 ft³/s (10.8 m³/s) Apr. 18 (gage height, 7.10 ft or 2.164 m); minimum, 41 ft³/s (1.16 m³/s) Mar. 21 (gage height, 3.58 ft or 1.091 m), result of freezeup.

Period of record: Maximum discharge, 1,430 ft³/s (40.5 m³/s) July 2, 1953 (gage height, 10.20 ft or 3.109 m); minimum 25 ft³/s (0.71 m³/s) Mar. 29, 1969 (gage height, 3.30 ft or 1.006 m), result of freezeup.

REMARKS.--Records good. The average flow includes mine pumpage and sewage plant effluent. Pumpage rates have diminished over the years due to the closing of most mines. Remaining mine pumpage averages about 12 ft³/s (0.3 m³/s).

REVISIONS.--WSP 1911: Drainage area.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	115	88	82	86	80	77	118	157	81	65	63
2	89	107	85	81	86	82	78	111	123	79	70	61
3	89	100	87	80	85	87	80	111	110	76	100	61
4	93	95	89	79	84	89	86	107	103	75	18A	61
5	93	92	91	78	83	88	85	102	99	72	146	60
6	89	89	92	77	82	90	86	100	97	70	98	60
7	87	87	92	76	81	94	88	97	102	67	82	61
8	86	83	93	75	81	93	86	95	105	67	77	62
9	93	81	92	74	80	91	87	93	110	69	74	79
10	118	79	91	73	79	85	94	92	135	70	72	127
11	101	80	91	72	80	86	102	123	117	68	73	107
12	99	81	90	71	80	84	181	132	104	68	75	89
13	94	83	90	70	81	85	272	112	97	69	72	82
14	95	84	87	72	80	84	265	115	93	71	72	80
15	92	84	86	75	80	83	196	119	104	69	74	74
16	86	82	85	79	79	82	217	108	117	68	79	68
17	85	80	85	79	80	81	286	102	115	81	74	65
18	84	82	86	79	81	81	362	97	106	79	72	63
19	84	82	85	81	84	81	336	96	98	69	73	81
20	83	88	85	82	85	77	267	92	92	66	70	77
21	95	102	85	84	80	70	259	95	87	69	68	74
22	84	117	85	84	79	80	271	269	84	80	67	73
23	81	100	84	84	79	79	238	301	81	72	67	58
24	81	93	83	85	79	78	199	196	79	69	66	66
25	82	93	84	85	79	77	180	156	75	80	66	74
26	81	93	84	85	79	76	167	130	74	77	85	70
27	97	102	84	84	79	76	154	117	71	71	76	64
28	145	104	83	84	80	75	147	115	71	67	66	63
29	122	97	83	86	-----	76	137	110	76	66	65	79
30	101	93	82	86	-----	77	128	105	95	67	65	74
31	102	-----	82	84	-----	76	-----	172	-----	66	66	-----
TOTAL MEAN	2,901 93.6	2,748 91.6	2,689 86.7	2,466 79.5	2,271 81.1	2,543 82.0	5,211 174	3,888 125	2,977 99.2	2,218 71.5	2,463 79.5	2,186 72.9
MAX	145	117	93	86	86	94	362	301	157	81	188	127
MIN	81	79	82	70	79	70	77	92	71	66	65	60
CAL YR 1973	TOTAL 46,797		MEAN 128	MAX 558	MIN 76							
WTR YR 1974	TOTAL 34,561		MEAN 94.7	MAX 362	MIN 60							

STREAMS TRIBUTARY TO LAKE MICHIGAN

04061000 Brule River near Florence, Wis.

LOCATION.--Lat 45°57'31", long 88°15'57", in SE¼ SE¼ sec.11, T.41 N., R.32 W., Michigan meridian, Iron County, on left bank 40 ft (12 m) upstream from highway bridge, 1.0 mi (1.6 km) upstream from Paint River, 2.5 mi (4.0 km) north of Florence, and 5.0 mi (8.0 km) upstream from confluence with Michigamme River.

DRAINAGE AREA.--389 mi² (1,008 km²).

PERIOD OF RECORD.--January 1914 to February 1916, June 1944 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,210 ft (369 m) from topographic map (nearest 10 ft). Prior to Aug. 29, 1944, non-recording gage at bridge 40 ft (12 m) downstream at same datum.

AVERAGE DISCHARGE.--31 years, (1914-15, 1944-74), 361 ft³/s (10.22 m³/s), 12.60 in/yr (320 mm/yr). 30 years, (1914-15, 1944-73), 360 ft³/s (10.20 m³/s), 12.57 in/yr (319 mm/yr); figures published in Water Resources Data for Michigan, 1973, in error.

EXTREMES.--Current year: Maximum discharge, 1,020 ft³/s (28.9 m³/s) Apr. 19, May 23 (gage height, 3.38 ft or 1.030 m); maximum gage height, 7.15 ft (2.179 m) Dec. 15 (backwater from ice); minimum discharge, 233 ft³/s (6.60 m³/s) Sept. 5-8 (gage height, 2.04 ft or 0.622 m).

Period of record: Maximum discharge, 4,700 ft³/s (133 m³/s) July 2, 1953 (gage height, 6.57 ft or 2.003 m); maximum gage height, 8.27 ft (2.521 m) Dec. 26, 1969 (backwater from ice); minimum discharge, 118 ft³/s (3.34 m³/s) Dec. 2, 1963 (discharge measurement); minimum gage height, 1.79 ft (0.546 m) July 24, 1964.

REMARKS.--Records good except those for winter periods, which are fair. Discharge includes some mine pumpage (see sta 04060500).

REVISIONS (WATER YEARS).--WSP 1387: 1914-16. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	336	461	327	310	335	300	305	493	701	370	253	253
2	323	440	329	310	330	305	310	452	587	343	274	263
3	325	405	325	310	320	310	315	433	516	332	344	248
4	368	381	328	310	315	330	315	427	499	326	515	240
5	355	360	310	315	310	355	325	407	466	314	640	238
6	336	367	290	315	305	380	340	390	457	333	513	235
7	325	371	280	310	300	400	350	373	485	288	416	236
8	321	354	300	305	300	410	345	356	500	270	358	239
9	333	250	350	300	300	400	339	344	506	265	323	277
10	382	280	330	295	300	390	338	336	606	267	299	480
11	390	310	300	295	300	380	393	407	578	261	293	468
12	372	320	290	290	300	370	562	502	498	256	296	412
13	358	323	280	285	300	360	815	468	433	257	303	375
14	350	328	275	290	300	355	830	444	392	264	303	351
15	343	325	270	295	300	350	698	460	406	258	359	316
16	325	318	265	300	295	345	678	441	517	248	372	288
17	316	314	270	305	295	340	792	410	511	271	376	269
18	311	317	280	310	290	335	953	388	474	325	335	261
19	315	316	300	320	290	330	1,010	368	425	281	335	283
20	310	314	310	325	290	325	918	350	395	256	303	292
21	313	361	290	325	290	310	909	341	365	246	278	280
22	310	429	300	330	290	260	946	617	344	339	273	273
23	306	413	320	330	290	265	907	994	330	371	260	263
24	304	378	310	340	290	270	788	853	317	319	256	255
25	309	369	310	345	290	285	704	672	304	335	251	264
26	304	359	310	350	290	300	657	565	293	325	302	266
27	336	379	320	350	295	310	617	500	287	324	336	260
28	544	401	335	350	295	310	591	471	277	301	318	254
29	534	375	330	350	-----	315	561	451	287	274	287	284
30	447	351	315	350	-----	315	525	427	387	268	263	293
31	415	-----	305	345	-----	310	-----	600	-----	263	258	-----
TOTAL	10,916	10,669	9,454	9,860	8,405	10,320	18,136	14,740	13,143	9,150	10,292	8,716
MEAN	352	356	305	318	300	333	605	475	438	295	332	291
MAX	544	461	350	350	335	410	1,010	994	701	371	640	480
MIN	304	250	265	285	290	260	305	336	277	246	251	235
CFSM	.90	.92	.78	.82	.77	.86	1.56	1.22	1.13	.76	.85	.75
IN.	1.04	1.02	.90	.94	.80	.99	1.73	1.41	1.26	.88	.98	.83
CAL YR 1973	TOTAL 174,419		MEAN 478	MAX 1,630	MIN 250	CFSM 1.23	IN 16.68					
WTR YR 1974	TOTAL 133,801		MEAN 367	MAX 1,010	MIN 235	CFSM .94	IN 12.80					

STREAMS TRIBUTARY TO LAKE MICHIGAN

53

04061500 Paint River at Crystal Falls, Mich.

LOCATION.--Lat 46°06'21", long 88°20'05", in SE¼ sec.20, T.43 N., R.32 W., Iron County, on right bank 150 ft (46 m) downstream from municipal powerplant at Crystal Falls, and 14.5 mi (23.3 km) upstream from mouth.

DRAINAGE AREA.--597 mi² (1,546 km²).

PERIOD OF RECORD.--August 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,306.1 ft (398.1 m) above mean sea level (Wisconsin-Michigan Power Co. bench mark).

AVERAGE DISCHARGE.--30 years, 594 ft³/s (16.82 m³/s) 13.51 in/yr (343 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,070 ft³/s (86.9 m³/s) Apr. 23 (gage height, 5.18 ft or 1.579 m); minimum, 160 ft³/s (4.53 m³/s) Dec. 1 (gage height, 1.95 ft or 0.594 m); minimum daily, 249 ft³/s (7.05 m³/s) July 29, 31.
Period of record: Maximum discharge, 10,900 ft³/s (309 m³/s) Apr. 25, 1960 (gage height, 9.82 ft or 2.993 m); minimum, 7.7 ft³/s (0.22 m³/s) Sept. 17, 1950 (gage height, 0.89 ft or 0.271 m); minimum daily, 81 ft³/s (2.29 m³/s) Nov. 1, 1947.

REMARKS.--Records good. Diurnal fluctuation caused by powerplant immediately above station.

REVISIONS (WATER YEARS).--WSP 1174: 1947-48 (m). WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	498	617	527	345	351	309	299	1,180	1,060	465	256	324
2	465	654	521	347	345	313	298	1,040	941	442	272	318
3	440	655	490	339	343	317	320	919	804	444	384	305
4	455	620	495	325	334	346	316	897	721	440	770	298
5	455	586	428	330	323	383	315	823	668	422	1,300	293
6	435	501	387	328	324	404	353	760	663	396	1,090	285
7	425	432	389	320	320	420	377	718	654	366	858	284
8	415	461	427	310	316	435	376	674	685	348	735	286
9	420	405	445	302	316	402	371	632	731	338	652	298
10	622	437	425	305	316	390	407	580	902	330	542	456
11	689	449	398	312	306	379	479	598	1,130	317	482	533
12	599	451	390	309	317	395	621	787	1,110	289	448	522
13	544	450	380	291	317	381	1,010	927	966	289	426	515
14	492	448	372	292	317	367	1,190	924	832	289	383	515
15	487	442	369	305	313	352	1,080	1,040	761	297	360	521
16	430	442	372	312	303	345	1,130	1,070	850	289	359	474
17	405	405	345	334	311	341	1,460	995	961	309	364	448
18	390	441	357	343	316	342	2,190	887	981	343	356	427
19	384	432	376	342	324	326	2,390	805	922	313	360	437
20	374	431	369	342	330	321	2,260	734	817	289	365	451
21	370	459	364	351	304	318	2,350	674	736	269	357	441
22	359	567	360	357	301	295	2,770	1,060	666	297	356	421
23	364	593	373	362	301	294	2,930	2,390	565	301	352	388
24	362	562	367	363	305	293	2,700	2,230	519	281	338	371
25	366	549	364	362	303	300	2,340	1,930	458	289	321	395
26	352	532	370	354	307	294	2,060	1,500	430	338	346	420
27	374	538	380	366	308	302	1,840	1,210	401	325	379	424
28	539	618	381	363	308	302	1,670	1,000	374	277	364	424
29	646	617	381	359	-----	298	1,510	898	367	249	349	437
30	599	571	365	356	-----	295	1,330	854	431	253	341	446
31	554	-----	346	359	-----	310	-----	938	-----	249	332	-----
TOTAL	14,309	15,365	12,313	10,385	8,879	10,569	38,742	31,674	22,106	10,143	14,597	12,157
MEAN	462	512	397	335	317	341	1,291	1,022	737	327	471	405
MAX	689	655	527	366	351	435	2,930	2,390	1,130	465	1,300	533
MIN	352	405	345	291	301	293	298	580	367	249	256	284
CFSM	.77	.86	.67	.56	.53	.57	2.16	1.71	1.23	.55	.79	.68
IN.	.89	.96	.77	.65	.55	.66	2.41	1.97	1.38	.63	.91	.76
CAL YR 1973	TOTAL 292,149	MEAN 800	MAX 3,730	MIN 320	CFSM 1.34	IN 18.20						
WTR YR 1974	TOTAL 201,239	MEAN 551	MAX 2,930	MIN 249	CFSM .92	IN 12.54						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04062000 Paint River near Alpha, Mich.

LOCATION.--Lat 46°00'40", long 88°15'30", in NW¼ NW¼ sec.25, T.42 N., R.32 W., Iron County, on right bank 0.6 mi (1.0 km) downstream from Lower Paint Dam, 5.5 mi (8.8 km) upstream from Brule River, and 6.0 mi (9.7 km) southeast of Alpha.

DRAINAGE AREA.--631 mi² (1,634 km²).

PERIOD OF RECORD.--June 1952 to current year. Monthly discharge only for period October 1953 to September 1960, published in WSP 1727.

GAGE.--Water-stage recorder. Altitude of gage is 1,260 ft (384 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--22 years, 172 ft³/s (4.871 m³/s).

EXTREMES.--Current year: Maximum discharge, 710 ft³/s (20.1 m³/s) May 25 (gage height, 4.25 ft or 1.295 m); minimum daily, 84 ft³/s (2.38 m³/s) Dec. 26-30; minimum gage height, 2.79 ft (0.850 m) July 4, 5.

Period of record: Maximum discharge, 8,050 ft³/s (228 m³/s) July 2, 1953 (gage height, 10.50 ft or 3.200 m); minimum daily, 62 ft³/s (1.76 m³/s) Mar. 22, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Flow completely regulated by powerplant and Lower Paint Dam 0.6 mi (1.0 km) above station. Records not adjusted for diversion to Michigamme River by Paint River diversion canal.

REVISIONS.--WSP 1727: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	95	93	86	92	85	90	90	92	92	95	135
2	97	95	93	86	92	85	90	90	92	92	95	134
3	97	95	93	86	92	85	90	89	90	94	95	134
4	100	95	90	86	92	85	90	88	90	89	96	134
5	97	95	90	86	92	85	90	88	90	90	97	134
6	97	95	90	86	90	85	90	88	90	90	97	134
7	97	95	90	86	90	85	90	88	90	90	97	134
8	97	95	90	86	90	85	243	88	90	93	97	134
9	97	94	90	86	90	85	92	105	91	92	96	135
10	97	93	90	86	90	85	105	93	92	92	95	137
11	97	93	90	86	88	85	91	91	92	93	96	139
12	97	93	88	86	88	85	94	90	92	94	96	140
13	97	93	86	86	88	85	95	90	92	94	95	140
14	97	93	85	87	88	85	98	91	92	95	95	138
15	97	93	85	88	88	86	137	90	93	95	116	137
16	97	93	85	89	87	87	94	90	95	95	138	137
17	97	95	85	90	86	87	95	91	94	96	137	137
18	97	93	85	90	86	88	99	90	92	95	137	137
19	97	93	85	90	86	88	182	90	92	95	137	140
20	97	93	85	91	86	88	163	90	92	95	137	140
21	97	94	85	92	86	88	152	90	91	97	137	140
22	97	95	85	92	85	89	330	91	90	97	137	140
23	97	94	85	92	85	89	486	131	90	97	137	140
24	97	94	85	92	85	90	402	181	90	97	137	140
25	97	95	85	92	85	90	233	452	90	97	137	140
26	97	95	84	92	85	90	115	679	90	97	137	122
27	98	95	84	92	85	91	92	664	90	97	137	95
28	98	95	84	92	85	91	92	341	90	97	137	95
29	98	95	84	92	-----	91	91	91	91	97	137	95
30	96	93	84	92	-----	91	90	90	91	96	137	95
31	95	-----	85	92	-----	90	-----	93	-----	95	137	-----
TOTAL	3,010	2,824	2,698	2,755	2,462	2,704	4,301	4,713	2,736	2,925	3,651	3,932
MEAN	97.1	94.1	87.0	88.9	87.9	87.2	143	152	91.2	94.4	119	131
MAX	100	95	93	92	92	91	486	679	95	97	138	140
MIN	95	93	84	86	85	85	90	88	90	89	95	95
CAL YR 1973	TOTAL 100,991	MEAN 277	MAX 2,350	MIN 84								
WTR YR 1974	TOTAL 38,711	MEAN 106	MAX 679	MIN 84								

04062200 Peshekee River near Champion, Mich.

LOCATION.--Lat 46°33'25", long 88°00'09", in NW¼ sec.13, T.48 N., R.30 W., Marquette County, on left bank 10 ft (3 m) downstream from bridge on county highway, 0.6 mi (1.0 km) downstream from West Branch, and 3.5 mi (5.6 km) northwest of Champion.

DRAINAGE AREA.--133 mi² (344 km²).

PERIOD OF RECORD.--July 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,557.49 ft (474.723 m) above mean sea level. Prior to Aug. 15, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--13 years, 213 ft³/s (6.032 m³/s), 21.75 in/yr (552 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,180 ft³/s (61.7 m³/s) Apr. 22 (gage height, 6.11 ft or 1.862 m); minimum, 12 ft³/s (0.34 m³/s) July 28 to Aug. 2, Sept. 7-9; minimum gage height, 1.36 ft (0.415 m) July 28, Aug. 12, Sept. 9.

Period of record: Maximum discharge, 3,610 ft³/s (102 m³/s) May 8, 1965 (gage height, 8.01 ft or 2.441 m); minimum, 4.2 ft³/s (0.12 m³/s) Sept. 10, 1961; minimum gage height, 1.23 ft (0.375 m) Sept. 7, 1969.

REMARKS.--Records good except those for winter periods, which are fair. Records of water temperatures for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	63	115	58	42	36	32	707	277	118	12	23
2	62	86	100	56	40	40	34	547	245	183	14	21
3	53	95	94	52	40	50	38	474	218	266	94	19
4	63	90	90	48	40	62	44	437	198	262	332	17
5	71	79	88	44	40	64	52	390	196	208	559	14
6	65	64	88	42	40	66	66	355	185	161	443	13
7	58	56	90	40	38	68	88	316	171	126	317	13
8	54	48	92	40	38	68	92	280	168	100	247	12
9	49	50	92	40	38	70	94	249	172	86	171	23
10	53	52	90	40	36	62	100	221	223	73	127	71
11	60	54	88	40	36	56	130	273	313	60	99	97
12	63	58	86	40	36	52	200	387	356	51	100	133
13	56	62	82	42	36	50	300	398	309	47	91	139
14	54	67	78	42	36	48	350	415	237	39	75	127
15	46	74	76	42	36	46	400	467	236	34	60	109
16	41	75	74	42	36	46	500	440	650	32	140	91
17	37	72	70	42	36	44	600	376	918	34	158	83
18	35	70	68	40	36	42	750	309	830	37	120	76
19	33	70	64	40	36	40	900	259	642	34	94	68
20	32	70	62	40	36	36	1,050	220	460	30	71	62
21	30	92	60	42	36	34	1,300	209	339	25	57	58
22	30	178	60	42	36	32	2,050	663	247	24	53	51
23	28	190	62	44	36	32	1,970	639	195	22	47	47
24	27	165	64	44	36	30	1,510	551	161	19	40	47
25	26	147	64	44	36	32	1,230	467	135	18	35	103
26	26	131	64	44	36	32	1,220	384	111	17	39	119
27	29	143	66	44	36	34	1,300	317	91	16	43	104
28	40	168	66	44	36	32	1,290	283	76	13	37	90
29	43	153	64	44	-----	32	1,180	283	76	13	33	114
30	42	135	62	42	-----	32	931	268	121	12	28	138
31	44	-----	62	42	-----	32	-----	285	-----	13	26	-----
TOTAL	1,422	2,857	2,381	1,346	1,040	1,400	19,801	11,869	8,556	2,173	3,762	2,082
MEAN	45.9	95.2	76.8	43.4	37.1	45.2	660	383	285	70.1	121	69.4
MAX	72	190	115	58	42	70	2,050	707	918	266	559	139
MIN	26	48	60	40	36	30	32	209	76	12	12	12
CFSM	.35	.72	.58	.33	.28	.34	4.96	2.88	2.14	.53	.91	.52
IN.	.40	.80	.67	.38	.29	.39	5.54	3.32	2.39	.61	1.05	.58

CAL YR 1973 TOTAL 79,480 MEAN 218 MAX 1,910 MIN 15 CFSM 1.64 IN 22.23
WTR YR 1974 TOTAL 58,689 MEAN 161 MAX 2,050 MIN 12 CFSM 1.21 IN 16.42

PEAK DISCHARGE (BASE, 600 FT³/S)

DATE	TIME	G.H.	DISCHARGE
04-22	2300	6.11	2,180
05-22	1500	4.06	730
06-17	1000	4.40	925

04062230 Michigamme River near Michigamme, Mich.

LOCATION.--Lat 46°28'00", long 88°04'28", in SW¼ SW¼ sec.16, T.47 N., R.30 W., Marquette County, on right bank 20 ft (6 m) upstream from Northern Natural Gas Co. pipeline, 0.6 mi (1.0 km) upstream from mouth of Spruce River, 1.2 mi (1.9 km) downstream from Lake Michigamme, and 5.0 mi (8.0 km) southeast of Michigamme.

DRAINAGE AREA.--194 mi² (502 km²).

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,520 ft (463 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--6 years, 295 ft³/s (8.354 m³/s), 20.65 in/yr (525 mm/yr).

EXTREMES.--Current Year: Maximum discharge, 1,420 ft³/s (40.2 m³/s) Apr. 28 (gage height, 6.15 ft or 1.875 m); minimum, 67 ft³/s (1.90 m³/s) Aug. 1, 2 (gage height, 2.81 ft or 0.856 m).

Period of record: Maximum discharge, 2,590 ft³/s (73.3 m³/s) May 7, 8, 1972 (gage height, 7.42 ft or 2.262 m); maximum gage height, 7.54 ft (2.298 m) Apr. 23, 1969; minimum discharge, 36 ft³/s (1.02 m³/s) Sept. 14, 1969 (gage height, 2.39 ft or 0.782 m).

REMARKS.--Records good. Records of chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	82	158	124	86	73	78	1,250	492	287	68	95
2	101	84	155	121	85	73	79	1,150	474	293	69	92
3	99	85	158	119	85	73	79	1,050	450	300	80	88
4	105	87	161	117	85	72	81	950	428	309	98	83
5	104	88	168	115	84	73	81	900	414	309	129	72
6	101	88	168	112	84	74	80	800	400	300	171	71
7	101	86	165	110	83	75	80	700	387	290	198	69
8	101	88	160	109	82	75	79	668	377	275	211	68
9	101	88	158	107	81	77	79	604	369	262	213	72
10	101	88	160	104	81	78	79	548	365	251	207	76
11	103	88	158	103	81	79	80	528	364	231	204	79
12	100	88	157	100	80	79	90	533	369	213	205	84
13	101	88	159	99	79	79	100	534	374	201	201	90
14	99	89	157	97	77	80	114	543	370	190	189	92
15	99	91	155	96	76	81	130	555	367	174	178	95
16	96	91	152	95	77	81	153	558	405	158	197	96
17	93	91	150	93	77	82	191	557	492	151	202	100
18	91	92	147	93	76	81	255	537	589	146	198	99
19	90	94	145	92	76	82	319	509	651	135	194	104
20	88	94	143	91	75	82	420	475	655	123	184	101
21	85	97	140	92	75	82	616	453	624	114	173	101
22	85	103	137	91	77	81	872	527	571	109	167	99
23	84	111	135	91	75	82	1,140	606	515	103	156	97
24	83	121	133	90	75	81	1,310	652	463	97	143	96
25	82	129	133	91	75	80	1,360	656	414	92	132	103
26	81	134	132	89	74	80	1,360	634	377	89	131	103
27	80	139	130	89	74	80	1,370	597	348	84	125	105
28	82	147	130	88	73	79	1,390	567	320	78	118	110
29	82	152	131	88	-----	79	1,380	544	302	75	111	115
30	80	157	128	87	-----	79	1,330	518	304	73	104	117
31	80	-----	126	87	-----	79	-----	512	-----	70	100	-----
TOTAL	2,878	3,060	4,589	3,080	2,208	2,431	14,775	20,215	13,030	5,582	4,856	2,772
MEAN	92.8	102	148	99.4	78.9	78.4	493	652	434	180	157	92.4
MAX	105	157	168	124	86	82	1,390	1,250	655	309	213	117
MIN	80	82	126	87	73	72	78	453	302	70	68	68
CFSM	.48	.53	.76	.51	.41	.40	2.54	3.36	2.24	.93	.81	.48
IN.	.55	.59	.88	.59	.42	.47	2.83	3.88	2.50	1.07	.93	.53

CAL YR 1973 TOTAL 115,070 MEAN 315 MAX 1,740 MIN 69 CFSM 1.62 IN 22.06
WTR YR 1974 TOTAL 79,476 MEAN 218 MAX 1,390 MIN 68 CFSM 1.12 IN 15.24

STREAMS TRIBUTARY TO LAKE MICHIGAN

57

04062300 Michigamme River at Republic, Mich.

LOCATION.--Lat 46°23'03", long 87°58'48", in SE¼ sec.18, T.46 N., R.29 W., Marquette County, on left bank 400 ft (122 m) upstream from county highway bridge, 0.3 mi (0.5 km) upstream from Trout Falls Creek, and 0.6 mi (1.0 km) south of Republic.

DRAINAGE AREA.--240 mi² (622 km²).

PERIOD OF RECORD.--July 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,480 ft (451 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--13 years, 321 ft³/s (9.091 m³/s).

EXTREMES.--Current year: Maximum discharge, 1,590 ft³/s (45.0 m³/s) Apr. 25, 26 (gage height, 4.75 ft or 1.448 m); minimum, 49 ft³/s (1.39 m³/s) Mar. 30 to Apr. 1 (gage height, 0.47 ft or 0.143 m).
Period of record: Maximum discharge, 3,950 ft³/s (112 m³/s) May 10, 1965 (gage height, 8.17 ft or 2.490 m); minimum, 7.0 ft³/s (0.20 m³/s) Mar. 26-28, 1964 (gage height, 0.14 ft or 0.043 m); minimum daily, 7.7 ft³/s (0.22 m³/s) Mar. 26-29, 1964.

REMARKS.--Records good except those for winter periods and those for period of no gage-height record, which are fair. Prior to June 1, 1963, diurnal fluctuation caused by powerplant 0.4 mi (0.6 km) above station; powerplant abandoned and only occasional regulation since. Since June 1, 1963, water diverted 0.5 mi (0.8 km) above station for industrial use and returned to river by Gambles Creek, 5 mi (8 km) downstream. Records are not adjusted for diversion.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	106	181	110	82	78	66	1,450	556	317	79	97
2	112	109	181	112	82	78	72	1,310	535	332	80	97
3	106	108	179	113	80	77	81	1,240	496	356	104	97
4	108	112	179	110	80	77	85	1,100	465	357	210	82
5	111	129	182	110	80	77	85	1,010	443	337	232	70
6	108	126	180	105	80	85	85	929	406	318	222	70
7	107	114	180	105	80	92	84	828	405	309	232	70
8	106	102	182	105	80	92	85	754	419	302	240	70
9	106	102	180	100	80	87	85	644	393	273	241	70
10	107	102	179	100	80	84	86	585	388	254	236	87
11	121	102	179	100	80	84	89	574	391	240	212	125
12	136	98	178	98	78	84	124	587	389	196	213	146
13	137	96	177	96	76	84	210	592	388	175	221	130
14	133	96	177	94	76	84	247	604	382	175	227	114
15	129	96	176	94	74	81	248	625	380	180	225	113
16	111	96	169	94	74	78	270	612	489	160	206	113
17	94	96	137	92	74	78	356	593	645	149	187	114
18	94	96	124	92	74	78	437	586	672	149	206	114
19	95	103	125	90	74	78	590	545	683	142	231	116
20	94	110	127	90	74	78	576	442	766	133	206	117
21	86	113	143	90	74	78	681	482	711	125	174	115
22	75	131	155	90	74	78	1,120	532	631	119	167	114
23	75	149	154	90	74	78	1,380	767	557	103	162	113
24	78	148	153	90	74	81	1,520	820	483	92	155	105
25	81	153	153	88	76	79	1,570	783	410	92	155	100
26	84	171	152	86	76	78	1,590	737	402	85	148	101
27	87	183	150	86	78	77	1,580	674	363	78	134	105
28	96	185	149	86	78	76	1,570	626	323	78	120	120
29	99	183	147	86	-----	76	1,570	613	307	78	111	132
30	100	182	125	84	-----	58	1,540	576	314	78	106	132
31	104	-----	113	84	-----	49	-----	538	-----	78	97	-----
TOTAL	3,206	3,697	4,966	2,970	2,162	2,442	18,082	22,758	14,192	5,860	5,539	3,149
MEAN	103	123	160	95.8	77.2	78.8	603	734	473	189	179	105
MAX	137	185	182	113	82	92	1,590	1,450	766	357	241	146
MIN	75	96	113	84	74	49	66	442	307	78	79	70
CAL YR 1973	TOTAL 134,926	MEAN 370	MAX 2,200	MIN 34								
WTR YR 1974	TOTAL 89,023	MEAN 244	MAX 1,590	MIN 49								

NOTE.--No gage-height record Jan. 15 to Feb. 22.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04062400 Michigamme River near Witch Lake, Mich.

LOCATION.--Lat 46°14'48", long 88°00'45", in NW¼ NW¼ sec.1, T.44 N., R.30 W., Dickinson County, on left bank 20 ft (6 m) upstream from bridge on county highway, 0.4 mi (0.6 km) upstream from Witch Lake Outlet, and 2.0 mi (3.2 km) south of Witch Lake.

DRAINAGE AREA.--316 mi² (818 km²).

PERIOD OF RECORD.--August 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,384.25 ft (421.919 m) above mean sea level.

AVERAGE DISCHARGE.--10 years, 444 ft³/s (12.57 m³/s), 19.08 in/yr (485 mm/yr). 9 years, 458 ft³/s (12.97 m³/s), 19.68 in/yr (500 mm/yr); figure published in Water Resources Data for Michigan, 1973, in error.

EXTREMES.--Current year: Maximum discharge, 1,740 ft³/s (49.3 m³/s) Apr. 26 (gage height, 6.91 ft or 2.106 m); minimum, 96 ft³/s (2.72 m³/s) Sept. 5-9 (gage height, 2.46 ft or 0.750 m).
Period of record: Maximum discharge, 4,360 ft³/s (123 m³/s) May 11, 1965 (gage height, 11.60 ft or 3.536 m); minimum, 44 ft³/s (1.25 m³/s) Sept. 22, 23, 1971 (gage height, 2.13 ft or 0.649 m).

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation caused by dam 14 mi (23 km) above station. Some flow diverted and returned above station by iron ore processing plant. Records of chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	211	192	254	189	120	115	106	1,610	722	403	109	125
2	198	197	248	190	120	115	125	1,490	696	400	113	124
3	177	192	248	180	120	120	130	1,380	661	440	144	122
4	204	185	247	175	115	120	135	1,300	608	458	266	122
5	213	197	229	170	115	125	140	1,170	588	445	340	103
6	197	195	222	160	115	130	140	1,110	529	401	297	96
7	185	191	210	155	115	135	145	1,010	516	390	274	96
8	180	170	215	150	115	140	150	930	533	373	293	96
9	181	162	220	145	115	140	155	841	524	369	292	108
10	195	161	225	140	110	140	160	753	506	322	286	139
11	286	160	225	140	110	145	170	750	508	305	263	168
12	297	160	225	140	110	145	221	782	498	267	252	196
13	276	158	225	135	110	145	326	778	489	221	252	194
14	256	160	225	135	110	145	424	782	480	215	261	164
15	242	160	225	135	110	140	444	811	484	215	257	156
16	226	160	225	135	110	140	438	800	653	204	281	152
17	188	156	225	130	110	140	553	769	847	192	238	154
18	179	162	195	130	110	140	650	754	893	187	234	153
19	173	163	190	130	110	140	810	737	857	181	292	165
20	168	173	189	130	110	140	859	607	910	167	274	168
21	164	188	194	130	115	140	878	596	898	163	223	167
22	146	220	228	130	115	140	1,170	684	809	153	203	161
23	141	238	235	125	115	140	1,460	825	733	149	195	156
24	139	235	229	125	115	140	1,630	979	654	129	183	155
25	138	230	242	125	115	140	1,710	942	533	129	180	156
26	143	237	245	125	115	140	1,730	897	507	130	188	154
27	147	267	241	125	115	139	1,720	834	467	115	172	149
28	168	276	239	120	115	137	1,700	786	420	109	158	153
29	173	268	234	120	-----	135	1,690	761	386	107	144	182
30	168	258	236	120	-----	134	1,670	740	412	107	139	190
31	171	-----	223	120	-----	113	-----	714	-----	109	130	-----
TOTAL	5,930	5,871	7,013	4,359	3,180	4,198	21,639	27,922	18,321	7,555	6,933	4,424
MEAN	191	196	226	141	114	135	721	901	611	244	224	147
MAX	297	276	254	190	120	145	1,730	1,610	910	458	340	196
MIN	138	156	189	120	110	113	106	596	386	107	109	96
CFSM	.60	.62	.72	.45	.36	.43	2.28	2.85	1.93	.77	.71	.47
IN.	.70	.69	.83	.51	.37	.49	2.55	3.29	2.16	.89	.82	.52
CAL YR 1973	TOTAL 171,959		MEAN 471	MAX 2,440	MIN 100	CFSM 1.49	IN 20.24					
WTR YR 1974	TOTAL 117,345		MEAN 321	MAX 1,730	MIN 96	CFSM 1.02	IN 13.81					

STREAMS TRIBUTARY TO LAKE MICHIGAN

59

04062500 Michigamme River near Crystal Falls, Mich.

LOCATION.--Lat 46°06'50", long 88°12'57", in NW¼ sec.20, T.43 N., R.31 W., Iron County, on right bank 400 ft (122 m) upstream from highway bridge, 5.0 mi (8.0 km) downstream from Michigamme Reservoir, 6.0 mi (9.7 km) east of Crystal Falls and 15 mi (24 km) upstream from confluence with Brule River.

DRAINAGE AREA.--656 mi² (1,699 km²).

PERIOD OF RECORD.--August 1944 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft (396 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--30 years, 704 ft³/s (19.94 m³/s).

EXTREMES.--Current year: Maximum discharge, 1,540 ft³/s (43.6 m³/s) Jan. 23 (gage height, 5.41 ft or 1.649 m); minimum, 98 ft³/s (2.78 m³/s) Mar. 20, Sept. 28 (gage height, 1.42 ft or 0.433 m); minimum daily, 117 ft³/s (3.31 m³/s) Nov. 23.

Period of record: Maximum discharge, 7,260 ft³/s (206 m³/s) Apr. 28, 1960 (gage height, 10.73 ft or 3.271 m); minimum daily, 71 ft³/s (2.01 m³/s) Nov. 26, 1950.

REMARKS.--Records excellent. Flow regulated by powerplant and by Michigamme Reservoir (capacity, 119,950 acre-ft or 148 hm³) 5 mi (8 km) above station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	438	434	611	594	1,070	438	249	144	1,170	628	600	595
2	323	628	612	595	1,070	412	180	144	1,160	624	604	595
3	153	624	609	594	1,090	423	156	141	1,150	624	353	595
4	151	621	611	593	1,100	470	151	143	1,150	624	164	637
5	132	618	614	590	1,100	473	186	142	889	672	158	674
6	129	615	609	590	1,110	479	452	404	712	709	149	674
7	127	614	630	990	1,120	514	481	619	709	661	144	672
8	127	613	629	1,190	1,110	491	419	612	708	615	415	642
9	139	611	383	1,190	1,120	468	407	605	718	616	661	644
10	142	610	146	1,190	1,110	447	481	607	950	615	695	652
11	122	610	159	1,200	1,030	457	483	623	1,120	614	696	603
12	145	610	155	1,210	1,050	444	306	621	1,110	614	694	600
13	145	611	423	1,210	1,060	433	187	623	878	614	690	388
14	142	611	608	1,220	1,050	419	193	626	707	614	685	129
15	393	609	527	1,210	1,060	421	192	621	674	614	689	406
16	624	609	603	1,200	1,060	413	198	615	676	612	654	597
17	622	607	603	1,000	1,050	398	226	619	675	623	607	596
18	621	608	602	1,050	1,050	380	269	624	844	619	606	595
19	620	608	602	1,050	1,050	392	300	613	1,120	615	605	601
20	618	606	602	1,070	1,030	372	240	620	1,200	613	604	599
21	618	345	600	1,070	922	379	173	618	1,210	614	604	597
22	618	160	600	929	757	358	179	634	925	613	602	595
23	617	117	599	1,050	780	396	174	922	714	611	601	593
24	615	142	599	773	828	444	155	1,220	712	609	638	596
25	616	141	601	608	952	447	144	1,220	656	610	686	595
26	614	440	592	867	958	369	143	1,210	615	613	691	597
27	619	621	597	1,070	774	351	157	1,220	613	609	684	594
28	395	621	599	1,070	570	350	149	1,210	613	350	684	326
29	158	616	598	1,060	-----	349	147	1,180	598	398	633	149
30	149	614	597	1,070	-----	351	140	1,140	621	604	596	346
31	151	-----	596	1,080	-----	344	-----	1,170	-----	602	596	-----
TOTAL	11,083	15,894	16,916	30,183	28,031	12,882	7,317	21,510	25,597	18,773	17,488	16,482
MEAN	358	530	546	974	1,001	416	244	694	853	606	564	549
MAX	624	628	630	1,220	1,120	514	483	1,220	1,210	709	696	674
MIN	122	117	146	590	570	344	140	141	598	350	144	129

CAL YR 1973 TOTAL 318,878 MEAN 874 MAX 4,190 MIN 117
WTR YR 1974 TOTAL 222,156 MEAN 609 MAX 1,220 MIN 117

04064500 Pine River below Pine River Powerplant, near Florence, Wis.

LOCATION.--Lat 45°50'16", long 88°13'31", in SW¼ sec.22, T.39 N., R.18 E., Florence County, on left bank 60 ft (18 m) upstream from bridge on County Trunk N, 1.9 mi (3.1 km) downstream from powerplant of Wisconsin-Michigan Power Co., 6.0 mi (9.7 km) south of Florence, and 7.0 mi (11.3 km) downstream from Popple River.

DRAINAGE AREA.--528 mi² (1,368 km²).

PERIOD OF RECORD.--October 1923 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,098.84 ft (334.926 m) above mean sea level. Prior to October 1968, record obtained from Pine River powerplant 1.9 mi (3.1 km) upstream, with a drainage area of 528 mi² (1,368 km²).

AVERAGE DISCHARGE.--51 years, 430 ft³/s (12.18 m³/s) 11.06 in/yr (281 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,490 ft³/s (42.2 m³/s) Apr. 22, gage height, 5.12 ft (1.561 m); maximum gage height, 5.26 ft (1.603 m) Dec. 17, backwater from ice; minimum daily discharge, 148 ft³/s (4.19 m³/s) Sept. 6.
Period of record: Maximum daily discharge, 4,380 ft³/s (124 m³/s) Apr. 9, 1929; no flow at times during 1924, 1926-27, 1930-31, 1933, 1940.

REMARKS.--Records good except those for winter months and those for the period of no gage-height record, which are fair. Flow regulated by Pine River powerplant 1.9 mi (3.1 km) upstream; since storage capacity is small, monthly flows are not affected appreciably.

REVISIONS.--WSP 1237: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	367	621	356	250	260	240	216	715	721	320	170	174
2	379	613	413	280	240	230	219	642	635	280	177	189
3	362	572	362	240	240	250	231	633	523	260	177	205
4	287	487	365	220	240	270	317	564	498	250	522	170
5	351	476	317	220	240	290	323	514	412	230	551	152
6	290	390	218	220	240	310	362	538	334	210	631	148
7	312	304	309	240	240	300	323	502	363	190	620	173
8	353	357	378	220	240	310	451	367	467	260	531	169
9	353	310	391	180	220	300	472	396	504	150	489	215
10	466	262	345	160	200	330	437	370	738	200	432	576
11	368	287	349	180	240	330	482	470	771	200	325	655
12	371	403	344	220	220	330	824	588	705	190	358	721
13	372	310	293	200	220	330	1,250	638	586	200	341	677
14	320	374	260	220	220	330	1,260	606	540	170	223	600
15	372	319	250	220	210	310	1,160	590	490	200	288	531
16	336	342	240	220	200	300	1,070	619	620	190	332	454
17	350	281	230	200	220	280	1,150	550	640	210	396	405
18	258	314	250	220	220	270	1,270	430	620	230	333	317
19	278	293	250	230	220	270	1,330	483	580	180	329	313
20	327	336	250	230	210	230	1,280	403	500	190	300	302
21	281	369	250	240	210	220	1,290	373	410	150	279	276
22	237	469	260	250	220	220	1,400	488	320	230	229	258
23	282	527	280	220	200	220	1,430	531	330	280	212	255
24	247	478	280	260	200	200	1,240	667	300	275	212	210
25	281	461	290	260	220	220	1,170	682	230	264	212	257
26	244	500	300	260	220	210	1,080	643	250	352	234	195
27	268	471	270	260	220	220	975	542	210	303	275	207
28	514	476	270	260	220	220	887	484	200	272	286	194
29	627	467	270	240	-----	210	844	389	190	199	242	231
30	631	458	280	260	-----	194	771	377	320	194	213	230
31	632	-----	260	250	-----	215	-----	568	-----	175	188	-----
TOTAL	11,116	12,327	9,180	7,130	6,250	8,159	25,514	16,362	14,007	7,004	10,107	9,459
MEAN	359	411	296	230	223	263	850	528	467	226	326	315
MAX	632	621	413	280	260	330	1,430	715	771	352	631	721
MIN	237	262	218	160	200	194	216	367	190	150	170	148
CFSM	.68	.78	.56	.44	.42	.50	1.61	1.00	.88	.43	.62	.60
IN.	.78	.87	.65	.50	.44	.57	1.80	1.15	.99	.49	.71	.67
CAL YR 1973	TOTAL 220,595	MEAN 604	MAX 2,230	MIN 192	CFSM 1.14	IN 15.54						
WTR YR 1974	TOTAL 136,615	MEAN 374	MAX 1,430	MIN 148	CFSM .71	IN 9.63						

NOTE.--No gage-height record June 14 to July 23.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04065300 West Branch Sturgeon River near Randville, Mich.

LOCATION.--Lat 46°00'45", long 87°58'41", in NE¼ sec.30, T.42 N., R.29 W., Dickinson County, on right bank 500 ft (152 m) downstream from county highway bridge, 3.0 mi (4.8 km) downstream from Tom Kings Creek, and 4.0 mi (6.4 km) northeast of Randville.

DRAINAGE AREA.--56.1 mi² (145.3 km²).

PERIOD OF RECORD.--August 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,170 ft (357 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--16 years, 43.3 ft³/s (1.226 m³/s), 10.48 in/yr (266 mm/yr), adjusted for diversion.

EXTREMES.--Current year: Maximum discharge, 247 ft³/s (7.00 m³/s) Apr. 14 (gage height, 5.08 ft or 1,548); minimum daily, 7.0 ft³/s (0.20 m³/s) Aug. 1, 24.

Period of record: Maximum discharge, 570 ft³/s (16.1 m³/s) May 7, 1960 (gage height, 6.40 ft or 1.951 m); minimum, 1.5 ft³/s (0.042 m³/s) July 22, 1964 (gage height, 1.35 ft or 0.411 m); minimum daily, 3.4 ft³/s (0.096 m³/s) July 22, 1964.

REMARKS.--Records fair except those for July to September, which are poor. Since December 1958, diversion above station for industrial use; figures of runoff adjusted thereafter. Small diversions for sprinkler irrigation.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	70	38	14	17	15	18	60	88	36	7.0	11
2	20	95	34	14	17	15	18	52	69	28	8.0	9.0
3	21	75	31	14	17	16	22	50	51	25	23	8.5
4	40	60	28	14	16	17	27	49	43	35	70	8.0
5	58	52	26	13	16	18	36	43	36	43	55	9.5
6	52	45	25	13	16	20	45	41	32	32	35	8.0
7	40	41	24	13	16	24	54	38	37	23	20	9.0
8	36	38	23	12	15	29	48	34	40	16	14	8.5
9	47	35	22	12	15	29	44	31	43	16	11	16
10	97	33	21	12	15	28	60	29	67	20	12	53
11	88	30	19	12	14	27	84	55	70	19	13	52
12	67	28	19	12	14	26	113	88	57	14	14	39
13	50	26	18	12	13	25	199	81	44	12	15	29
14	42	25	17	12	13	23	241	73	34	14	16	21
15	37	25	17	12	13	23	210	78	41	12	16	14
16	29	25	16	12	13	22	177	68	104	12	22	9.5
17	28	26	16	12	13	22	183	56	153	18	22	11
18	28	26	15	13	13	21	198	47	140	30	17	9.0
19	28	26	15	13	14	20	192	42	99	22	15	23
20	28	27	15	13	14	20	158	38	62	14	14	26
21	26	28	14	14	14	20	137	37	42	12	12	24
22	24	32	14	14	14	19	140	41	28	20	10	22
23	22	45	14	14	14	19	146	44	22	18	8.0	19
24	21	84	14	15	15	19	133	46	19	14	7.0	17
25	20	82	14	15	15	19	110	41	18	19	9.0	19
26	20	78	14	16	15	18	98	35	16	19	17	21
27	21	70	14	16	15	18	89	30	16	16	22	17
28	25	62	14	17	15	18	82	30	14	17	15	14
29	33	54	14	17	-----	18	76	32	22	13	12	16
30	43	45	14	18	-----	18	69	32	37	10	9.0	22
31	55	-----	14	18	-----	18	-----	68	-----	8.0	10	-----
TOTAL	1,165	1,388	593	428	411	644	3,207	1,489	1,544	607.0	550.0	565.0
MEAN	37.6	46.3	19.1	13.8	14.7	20.8	107	48.0	51.5	19.6	17.7	18.8
MAX	97	95	38	18	17	29	241	88	153	43	70	53
MIN	19	25	14	12	13	15	18	29	14	8.0	7.0	8.0
+	4.9	5.1	5.5	5.8	5.8	5.6	4.8	5.5	5.4	5.5	4.9	5.1
MEAN†	42.5	51.4	24.6	19.6	20.5	26.4	112	53.5	56.9	25.1	22.6	23.9
CFSM†	.76	.92	.44	.35	.37	.47	2.00	.95	1.01	.45	.40	.43
IN†	.87	1.02	.51	.40	.38	.54	2.23	1.10	1.13	.52	.47	.48

CAL YR 1973 TOTAL 18,977.7 MEAN 52.0 MAX 340 MIN 8.8 MEAN† 57.5 CFSM† 1.02 IN† 13.91
WTR YR 1974 TOTAL 12,591.0 MEAN 34.5 MAX 241 MIN 7.0 MEAN† 39.8 CFSM† 0.71 IN† 9.64

+ Average monthly diversion, equivalent in cubic feet per second, for industrial use; furnished by Hanna Mining Co.
† Adjusted for diversion.

STREAMS TRIBUTARY TO LAKE MICHIGAN

63

04065393 East Branch Sturgeon River below Skunk Creek, near Felch, Mich.

LOCATION.--Lat 46°01'34", long 87°49'56", in NW¼ NE¼ sec.20, T.42 N., R.28 W., Dickinson County, on right bank 50 ft (15 m) downstream from Skunk Creek, 2.2 mi (3.5 km) north of Felch.

DRAINAGE AREA.--61.8 mi² (160 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1972, 1973. October 1973 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,069.53 ft (325.993 m) above mean sea level. Prior to December 20, 1973, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 476 ft³/s (13.5 m³/s) Apr. 14, 15 (gage height, 3.75 ft or 1.143 m); minimum daily, 9.0 ft³/s (0.25 m³/s) Sept. 6; minimum gage height recorded, 0.30 ft (0.091 m) June 29.

Period of record: Maximum discharge, 476 ft³/s (13.5 m³/s) Apr. 14, 15, 1974 (gage height, 3.75 ft or 1.143 m); minimum daily, 9.0 ft³/s (0.25 m³/s) Sept. 6, 1974; minimum gage height, recorded, 0.30 ft (0.091 m) June 29, 1974.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	90	46	20	22	19	27	101	108	23	18	13
2	26	119	42	20	22	20	29	80	97	21	18	12
3	30	99	38	19	22	21	35	81	75	18	36	11
4	50	75	37	19	21	22	45	82	55	25	119	10
5	70	64	35	19	21	24	55	69	41	28	147	9.4
6	62	55	33	18	20	28	70	66	34	22	124	9.0
7	50	51	31	18	20	32	82	59	32	19	74	10
8	45	47	30	18	19	40	78	53	33	18	43	14
9	70	44	29	17	19	39	76	47	36	15	36	30
10	120	42	27	17	19	38	100	42	51	25	30	60
11	100	39	26	17	18	37	142	67	60	30	28	70
12	80	35	24	16	18	36	187	116	70	30	32	54
13	60	32	23	16	18	35	295	123	59	31	29	46
14	50	30	22	16	17	35	450	109	45	26	24	38
15	45	30	22	16	17	33	393	134	44	19	20	33
16	37	30	21	16	17	32	315	131	90	13	23	32
17	36	30	21	17	17	31	296	101	138	15	24	30
18	33	31	20	17	17	30	316	78	151	23	22	27
19	30	32	20	17	18	30	302	56	119	24	20	28
20	31	33	19	18	18	29	273	42	90	17	19	31
21	28	34	19	18	18	28	245	35	56	18	22	33
22	27	42	19	18	18	28	244	35	43	24	24	32
23	26	59	19	19	18	28	253	36	34	21	21	30
24	25	107	18	20	19	27	244	36	26	17	19	28
25	26	103	19	20	19	27	215	35	20	23	23	26
26	25	97	19	20	19	27	187	34	16	27	25	24
27	26	89	19	21	19	27	163	44	14	43	25	23
28	33	78	19	22	19	27	143	42	12	44	18	22
29	44	70	20	22	-----	27	129	34	9.5	35	17	23
30	55	52	20	23	-----	27	116	31	20	25	15	24
31	72	-----	20	23	-----	27	-----	65	-----	21	14	-----
TOTAL	1,436	1,739	777	577	529	911	5,505	2,064	1,678.5	740	1,109	832.4
MEAN	46.3	58.0	25.1	18.6	18.9	29.4	184	66.6	56.0	23.9	35.8	27.7
MAX	120	119	46	23	22	40	450	134	151	44	147	70
MIN	24	30	18	16	17	19	27	31	9.5	13	14	9.0
CFSM	.75	.94	.41	.30	.31	.48	2.98	1.08	.91	.39	.58	.45
IN.	.86	1.05	.47	.35	.32	.55	3.31	1.24	1.01	.45	.67	.50
WTR YR 1974	TOTAL 17,897.9	MEAN 49.0	MAX 450	MIN 9.0	CFSM .79	IN 10.77						

NOTE.--No gage-height record Jan. 13 to Mar. 7.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04065500 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., Dickinson County, on left bank 30 ft (9 m) downstream from bridge on County Highway 569, 1.8 mi (2.9 km) downstream from confluence of East and West Branches, and 4.0 mi (6.4 km) south of Foster City.

DRAINAGE AREA.--237 mi² (614 km²).

PERIOD OF RECORD.--October 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 966.6 ft (294.620 m) above mean sea level.

AVERAGE DISCHARGE.--20 years, 183 ft³/s (5.183 m³/s), 10.49 in/yr (266 mm/yr), adjusted for diversion.

EXTREMES.--Current year: Maximum discharge, 1,120 ft³/s (31.7 m³/s) Apr. 16 (gage height, 7.40 ft or 2.256 m); minimum, 50 ft³/s (1.42 m³/s) Sept. 8 (gage height, 2.65 ft or 0.808 m).

Period of record: Maximum discharge, 2,570 ft³/s (72.8 m³/s) May 8, 1960 (gage height, 10.35 ft or 3.155 m); minimum, 15 ft³/s (0.42 m³/s) July 24, 1964; minimum gage height, 1.96 ft (0.597 m) Aug. 21, 1970.

REMARKS.--Records good except those for winter periods, which are fair. Since December 1958, diversion above station for industrial use, figures of runoff adjusted thereafter. Small diversions for sprinkler irrigation. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	281	192	74	84	86	100	354	410	124	83	88
2	113	297	173	74	84	90	100	316	405	124	77	79
3	105	287	160	72	82	94	105	302	357	118	90	73
4	106	268	153	70	80	100	120	309	297	130	227	68
5	131	237	144	68	78	110	150	287	239	132	334	63
6	152	191	135	68	76	115	175	269	196	134	325	57
7	160	152	130	68	74	125	210	248	178	118	290	53
8	148	149	125	66	72	135	250	228	174	99	259	51
9	142	136	120	64	72	145	280	206	180	94	215	55
10	156	134	110	64	70	150	325	190	240	120	154	110
11	212	122	105	62	68	150	411	211	265	123	121	277
12	246	117	98	62	68	140	483	297	257	114	112	320
13	241	121	94	62	66	135	777	328	229	101	118	281
14	231	124	90	62	66	130	982	338	202	99	111	232
15	209	125	86	62	66	125	1,070	352	192	93	98	183
16	179	123	82	62	66	120	1,110	342	298	81	108	144
17	154	113	80	62	66	120	1,060	319	432	81	156	124
18	138	115	76	62	66	115	1,020	289	490	107	144	111
19	126	123	74	64	66	110	994	252	499	112	125	126
20	118	119	72	66	68	110	933	215	445	107	118	141
21	113	138	70	68	68	105	859	184	363	91	102	146
22	109	216	68	70	70	105	833	173	278	92	109	142
23	106	255	70	72	70	105	843	167	201	97	122	130
24	106	263	70	74	72	105	789	171	159	96	111	119
25	105	262	72	76	74	100	712	170	134	110	97	109
26	100	256	72	78	78	100	633	158	117	131	90	103
27	102	253	74	80	80	100	545	143	103	132	134	99
28	155	247	74	82	84	100	478	141	92	128	137	94
29	221	239	74	84	-----	100	432	147	87	122	118	99
30	247	221	74	86	-----	100	392	143	107	114	103	108
31	245	-----	74	86	-----	100	-----	261	-----	98	93	-----
TOTAL	4,806	5,684	3,091	2,170	2,034	3,525	17,171	7,510	7,626	3,422	4,481	3,785
MEAN	155	189	99.7	70.0	72.6	114	572	242	254	110	145	126
MAX	247	297	192	86	84	150	1,110	354	499	134	334	320
MIN	100	113	68	62	66	86	100	141	87	81	77	51
+	4.9	5.1	5.5	5.8	5.8	5.6	4.8	5.5	5.4	5.5	4.9	5.1
MEAN†	160	194	105	75.8	78.4	120	577	248	259	116	150	131
CFSM†	.68	.82	.44	.32	.33	.51	2.43	1.05	1.09	.49	.63	.55
IN†	.78	.92	.51	.37	.34	.58	2.72	1.21	1.22	.56	.73	.62

CAL YR 1973 TOTAL 89,661 MEAN 246 MAX 1,270 MIN 68 MEAN† 252 CFSM† 1.06 IN† 14.39
WTR YR 1974 TOTAL 65,305 MEAN 179 MAX 1,110 MIN 51 MEAN† 184 CFSM† .78 IN† 10.56

+Average monthly diversion, equivalent in cubic feet per second, for industrial use; furnished by Hanna Mining Co.
†Adjusted for diversion.

STREAMS TRIBUTARY TO LAKE MICHIGAN

65

04065600 Pine Creek near Iron Mountain, Mich.

LOCATION.--Lat 45°55'51", long 87°58'18", in SE¼ SE¼ sec.19, T.41 N., R.29 W., Dickinson County, on left bank 20 ft (6 m) upstream from bridge on County Road 866, 1.2 mi (1.9 km) downstream from Steel Creek, and 9.0 mi (14.5 km) northeast of Iron Mountain.

DRAINAGE AREA.--16.8 mi² (43.5 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water year 1971. October 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,034 ft (315.16 m) above mean sea level, from topographic leveling (nearest 0.5 ft). Prior to Nov. 23, 1971, nonrecording gage 20 ft (6 m) downstream at same datum.

EXTREMES.--Current year: Maximum discharge, 200 ft³/s (5.66 m³/s) Apr. 13 (gage height, 5.52 ft or 1.682 m); minimum, 3.0 ft³/s (0.085 m³/s) Aug. 20, 21 (gage height, 1.68 ft or 0.512 m).

Period of record: Maximum discharge, 200 ft³/s (5.66 m³/s) Apr. 13, 1974 (gage height, 5.52 ft or 1.682 m); minimum, 1.8 ft³/s (0.051 m³/s) Aug. 6, 1972 (gage height, 1.54 ft or 0.469 m).

REMARKS.--Records good except those for winter periods, which are fair. Flow includes an average of 5.3 ft³/s (0.15 m³/s) diverted from West Branch Sturgeon River Basin. Some regulation by mine tailings ponds in headwaters. Records of water temperatures and chemical analyses for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	22	15	12	13	11	16	20	39	11	3.4	6.4
2	12	22	14	12	12	12	20	19	28	17	4.9	5.7
3	11	20	14	11	12	12	25	23	18	15	12	5.3
4	13	19	14	10	11	13	30	24	14	12	22	4.5
5	15	17	14	9.5	10	15	40	22	12	10	19	4.1
6	19	16	14	9.0	10	18	50	21	11	8.6	18	3.8
7	18	13	14	8.5	9.6	21	45	18	12	7.8	16	3.7
8	15	12	14	8.0	9.3	22	40	16	14	6.4	20	3.9
9	16	10	14	7.6	9.3	21	38	15	16	6.4	16	6.9
10	22	10	14	7.4	9.3	20	45	13	22	7.6	11	28
11	24	9.9	13	7.0	9.2	19	87	24	22	7.2	10	26
12	23	9.9	13	6.4	9.2	18	143	29	17	6.9	10	22
13	20	10	13	6.2	9.3	18	180	26	12	6.4	8.9	20
14	19	10	12	5.6	9.3	18	150	26	10	6.7	4.6	18
15	18	10	12	5.2	9.4	18	94	28	14	5.4	3.4	15
16	15	11	12	4.7	9.5	18	72	24	48	4.9	3.9	14
17	13	10	12	4.3	9.6	18	66	22	59	9.0	4.0	13
18	12	10	12	4.0	9.7	17	64	19	52	12	3.3	13
19	11	10	12	4.0	9.8	16	55	17	36	10	3.3	19
20	11	11	11	4.0	10	14	44	16	29	8.7	3.1	21
21	10	17	11	4.0	10	12	63	15	24	6.9	3.1	21
22	10	24	11	4.6	10	11	75	17	20	9.4	3.5	19
23	10	22	11	6.0	11	9.8	44	15	17	8.3	3.5	18
24	11	10	11	8.0	11	8.8	37	13	14	6.4	4.0	17
25	12	20	11	10	11	8.2	35	12	11	9.9	4.0	15
26	12	20	11	11	11	8.0	33	10	9.8	9.5	9.6	14
27	12	21	11	12	11	8.4	28	10	8.0	6.8	11	14
28	22	20	11	13	11	9.0	26	9.9	6.4	5.1	7.1	13
29	22	18	11	13	-----	10	24	10	6.0	4.0	7.1	16
30	20	17	12	13	-----	11	22	10	12	4.0	6.9	15
31	20	-----	12	13	-----	13	-----	36	-----	3.8	6.9	-----
TOTAL	481	451.8	386	254.0	286.5	448.2	1,691	579.9	613.2	253.1	263.5	415.3
MEAN	15.5	15.1	12.5	8.19	10.2	14.5	56.4	18.7	20.4	8.16	8.50	13.8
MAX	24	24	15	13	13	22	180	36	59	17	22	28
MIN	10	9.9	11	4.0	9.2	8.0	16	9.9	6.0	3.8	3.1	3.7

CAL YR 1973 TOTAL 8,021.4 MEAN 22.0 MAX 158 MIN 4.5
WTR YR 1974 TOTAL 6,123.5 MEAN 16.8 MAX 180 MIN 3.1

STREAMS TRIBUTARY TO LAKE MICHIGAN

04066000 Menominee River near Pembine, Wis.

LOCATION.--Lat 45°35'56", long 87°46'32", in sec.16, T.37 N., R.28 W., Michigan meridian, Menominee County, Mich., on left bank 0.6 mi (1.0 km) upstream from Pemene Creek, 4.0 mi (6.4 km) west of Nathan, Mich., 15 mi (24 km) southeast of Pembine, and at mile 65.8 (105.9 km).

DRAINAGE AREA.--3,240 mi² (8,390 km²), approximately.

PERIOD OF RECORD.--October 1949 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Altitude of gage is 770 ft (235 m), from river-profile map. Prior to Oct. 28, 1972, at site 0.5 mi (0.8 km) downstream at datum 15 ft (4.6 m) lower.

AVERAGE DISCHARGE.--25 years, 3,008 ft³/s (85.19 m³/s).

EXTREMES.--Current year: Maximum discharge, 8,640 ft³/s (245 m³/s) Apr. 23, gage height, 12.30 ft (3.749 m); minimum, 1,330 ft³/s (37.7 m³/s) Mar. 31, gage height, 7.15 ft (2.179 m).

Period of record: Maximum discharge, 26,900 ft³/s (762 m³/s) May 8, 1960, gage height, 13.90 ft (4.237 m); minimum, 694 ft³/s (19.7 m³/s) Sept. 3, 1969, gage height, 1.66 ft (0.506 m).

REMARKS.--Records good except those for winter months, which are fair. Flow regulated by powerplants and by Michigamme Reservoir, capacity, 119,950 acre-ft (148 hm³), and Peavy Pond, capacity, 33,860 acre-ft (41.7 hm³), on the Michigamme River, and many smaller reservoirs above station.

REVISIONS (WATER YEARS).--WSP 1277: 1952.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,270	3,230	3,300	1,800	2,500	1,900	1,500	3,540	5,260	2,260	1,820	2,140
2	2,070	3,710	3,100	1,900	2,600	2,100	1,680	3,320	4,570	2,420	1,980	1,910
3	2,270	3,500	2,900	2,000	2,400	1,900	2,110	3,160	3,770	2,350	2,330	1,750
4	2,170	3,630	2,900	2,100	2,300	2,000	3,170	2,800	3,840	2,600	2,440	1,820
5	2,230	3,030	3,300	1,700	2,300	2,300	3,050	2,600	3,560	2,440	3,010	1,770
6	2,190	3,010	2,700	2,100	2,400	2,810	2,920	2,740	3,390	2,030	3,460	1,830
7	1,800	3,260	2,500	1,900	2,400	3,110	3,950	2,820	3,240	1,790	3,210	1,690
8	1,870	3,070	2,400	2,100	2,300	3,200	4,030	2,980	3,240	2,080	3,260	1,630
9	2,370	2,500	2,100	2,300	2,200	3,210	3,590	2,890	2,980	2,200	3,090	1,780
10	2,190	2,700	1,800	2,000	2,600	3,140	3,910	2,750	3,690	2,360	2,830	3,150
11	2,810	2,400	2,000	2,200	2,200	3,200	4,670	2,870	4,070	2,420	2,790	4,080
12	2,490	2,300	2,200	2,000	2,300	3,120	4,780	3,260	3,900	2,140	2,410	3,800
13	2,310	2,300	2,300	2,500	2,400	2,850	5,790	3,280	3,800	2,040	2,480	3,500
14	2,200	3,000	2,400	2,500	2,400	2,840	6,910	3,640	3,610	2,070	2,320	3,290
15	2,240	2,900	2,300	2,300	2,300	2,730	6,760	3,650	3,560	1,970	2,120	2,800
16	2,240	2,600	2,000	2,600	2,500	2,650	6,830	3,720	4,030	1,850	2,690	2,650
17	2,360	2,400	2,200	2,500	2,400	2,690	6,380	3,510	4,780	1,940	2,970	2,460
18	2,270	2,200	2,000	2,300	2,400	2,620	6,350	3,600	4,650	2,160	2,800	2,170
19	2,260	2,600	2,100	2,300	2,400	2,370	6,500	3,160	4,190	2,310	2,380	2,190
20	2,440	2,800	2,200	2,500	2,300	2,250	6,280	2,740	4,100	2,080	2,400	1,980
21	2,250	3,200	2,100	2,300	2,200	2,040	6,650	2,800	3,860	1,660	2,370	2,200
22	2,080	3,400	2,000	2,500	2,300	1,900	6,080	3,120	3,340	1,630	2,830	2,070
23	2,260	3,400	2,000	2,400	2,400	1,800	7,030	3,440	2,940	1,900	2,710	2,160
24	2,250	3,300	2,100	2,200	2,200	1,700	6,070	4,150	2,650	2,100	2,320	2,240
25	2,310	3,000	1,900	2,500	2,100	1,700	5,270	4,410	2,360	2,200	2,150	2,160
26	2,290	3,100	2,100	2,400	2,100	1,790	4,570	4,200	2,090	2,400	2,160	2,230
27	2,370	3,300	2,400	2,400	2,300	1,950	4,520	4,370	2,120	2,340	2,850	2,350
28	2,590	2,900	2,400	2,100	2,100	2,210	4,090	3,960	2,030	1,810	2,520	1,800
29	3,050	3,100	2,300	2,300	-----	2,600	4,120	3,660	2,090	1,700	2,000	1,800
30	3,680	3,300	2,200	2,600	-----	2,110	3,770	3,310	2,210	1,970	2,230	1,770
31	3,460	-----	2,000	2,400	-----	1,360	-----	3,690	-----	1,890	2,230	-----
TOTAL	73,640	89,140	72,200	69,700	65,300	74,150	143,330	104,140	103,920	65,110	79,160	69,170
MEAN	2,375	2,971	2,329	2,248	2,132	2,392	4,778	3,359	3,464	2,100	2,554	2,306
MAX	3,680	3,710	3,300	2,600	2,600	3,210	7,030	4,410	5,260	2,600	3,460	4,080
MIN	1,800	2,200	1,800	1,700	2,100	1,360	1,500	2,600	2,030	1,630	1,820	1,630

CAL YR 1973 TOTAL 1,453,280 MEAN 3,982 MAX 16,000 MIN 1,480

WTR YR 1974 TOTAL 1,008,960 MEAN 2,764 MAX 7,030 MIN 1,360

NOTE.--No gage-height record Nov. 9 to Dec. 14.

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LOCATION.--Lat 45°21'16", long 87°38'55", in sec.9, T.34 N., R.27 W., Michigan Meridian, Menominee County, on left bank at powerplant of Wisconsin Public Service Corp., 0.5 mi (0.8 km) upstream from Little Cedar River, 3.6 mi (5.8 km) southeast of Koss, and at mile 24.7 (39.7 km).

PERIOD OF RECORD.--July 1907 to March 1909 (published as "At Koss"), July 1913 to current year.

AVERAGE DISCHARGE.--62 years (1907-8, 1913-74), 3,151 ft³/s (89.24 m³/s).

EXTREMES.--Current year: Maximum daily discharge, 7,800 ft³/s (221 m³/s) April 15; minimum daily, 1,600 ft³/s (45.3 m³/s) Aug. 2.
Period of record: Maximum daily discharge, 33,000 ft³/s (935 m³/s) May 10, 1960; minimum daily, 162 ft³/s (4.59 m³/s) 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 (148 hm³), and Peavy Pond, capacity, 33,860 acre-ft (41.7 hm³) on Michigamme River, and by many smaller reservoirs above station.

COOPERATION.--Records of daily discharge furnished by Wisconsin Public Service Corp., since 1913.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,130	3,450	3,220	1,770	2,400	2,100	1,860	4,740	5,530	2,500	2,280	2,500
2	2,160	3,500	3,120	1,870	2,580	1,970	1,870	3,630	5,820	2,500	1,600	2,280
3	2,080	3,940	3,000	1,870	2,500	2,130	2,210	3,440	4,830	2,500	2,450	2,160
4	2,040	3,480	2,800	2,000	2,350	2,080	2,880	3,440	4,310	2,650	2,930	1,920
5	1,970	3,360	2,800	2,020	2,220	2,080	2,810	3,120	3,920	2,480	3,070	1,910
6	2,030	3,320	3,280	1,720	2,300	2,380	3,000	3,000	3,480	2,500	3,720	1,730
7	2,000	3,400	2,620	1,910	2,450	2,920	3,240	3,060	3,400	2,090	4,060	1,970
8	1,800	2,680	2,400	1,870	2,380	3,160	3,120	3,300	3,480	1,940	3,740	1,930
9	2,020	2,210	2,400	2,050	2,300	3,300	3,080	3,120	3,710	2,120	3,740	1,690
10	2,680	2,690	2,140	2,160	2,300	3,240	3,360	3,000	3,790	2,350	3,240	2,830
11	2,380	2,500	1,670	2,090	2,300	3,240	3,480	3,120	5,070	2,400	2,940	5,370
12	2,880	2,280	2,000	2,090	2,400	3,530	3,720	3,710	4,780	2,570	2,820	5,320
13	2,500	2,280	2,210	2,160	2,360	3,080	5,460	3,880	4,160	2,220	2,700	5,440
14	2,600	2,220	2,190	2,300	2,280	3,070	7,500	4,150	4,070	2,160	2,770	4,780
15	2,210	2,880	2,300	2,500	2,220	2,880	7,800	4,420	3,770	2,050	2,620	3,760
16	2,110	2,770	2,250	2,400	2,300	3,000	7,580	4,070	4,700	2,060	2,090	3,190
17	2,120	2,430	1,980	2,300	2,310	3,060	7,610	4,360	4,700	1,900	4,330	3,120
18	2,440	2,290	2,110	2,500	2,450	2,980	6,890	4,170	4,800	2,050	3,050	2,660
19	2,110	2,120	1,930	2,400	2,400	2,990	6,560	3,840	4,940	2,080	3,190	2,500
20	2,300	2,670	2,080	2,520	2,450	2,920	7,220	3,240	4,500	1,840	2,620	2,450
21	2,400	2,720	2,160	2,450	2,260	2,450	6,780	3,280	4,520	1,980	3,000	2,280
22	2,110	3,210	2,030	2,220	2,200	2,200	6,290	3,360	4,300	1,640	3,870	2,380
23	2,280	3,360	1,930	2,350	2,150	2,060	7,420	3,600	3,360	1,720	4,720	2,400
24	2,300	3,360	2,120	2,380	2,380	1,790	7,440	3,600	2,760	2,020	3,360	2,300
25	2,210	3,210	2,120	2,310	2,120	1,840	6,060	4,450	3,140	2,280	3,000	2,430
26	2,160	2,890	2,180	2,440	2,110	1,940	5,550	4,450	2,550	2,500	2,780	2,300
27	2,310	2,920	2,330	2,400	2,050	1,870	4,610	5,010	2,040	2,500	2,950	2,400
28	2,800	3,300	2,500	2,320	2,150	2,160	4,900	4,580	2,260	2,220	3,440	2,440
29	2,900	2,810	2,330	2,360	-----	2,460	5,060	4,030	2,160	1,800	2,760	2,120
30	3,360	3,110	2,320	2,420	-----	2,780	4,850	4,160	2,220	1,730	2,310	1,810
31	3,840	-----	2,020	2,500	-----							

STREAMS TRIBUTARY TO LAKE MICHIGAN

04096400 St. Joseph River near Burlington, Mich.

LOCATION.--Lat 42°06'10", long 85°02'25", in SW¼ SW¼ sec.20, T.4 S., R.6 W., Calhoun County, on right bank 10 ft (3 m) upstream from bridge on 13 Mile Rd., 2.0 mi (3.2 km) east of Burlington, 4.0 mi (6.4 km) downstream from Tekonsha Creek, and at mile 164 (264 km).

DRAINAGE AREA.--201 mi² (521 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 920 ft (280 m) (from topographic map), nearest 10 ft.

AVERAGE DISCHARGE.--12 years, 155 ft³/s (4.390 m³/s), 10.47 in/yr (266 mm/yr).

EXTREMES.--Current year: Maximum discharge, 910 ft³/s (25.8 m³/s) Mar. 10 (gage height, 5.31 ft or 1.618 m); minimum, 46 ft³/s (1.30 m³/s) Sept. 28, 29; minimum gage height, 1.62 ft (0.494 m) Sept. 29.

Period of record: Maximum discharge, 1,000 ft³/s (28.3 m³/s) Feb. 5, 1968 (gage height, 5.51 ft or 1.679 m); minimum, 8.0 ft³/s (0.23 m³/s) Aug. 9, 10, 11, 1964; minimum gage height, 1.62 ft (0.494 m) Sept. 29, 1974.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	146	100	199	240	400	472	428	255	237	157	61	48
2	140	112	184	230	370	460	452	247	228	144	65	48
3	132	117	168	210	360	451	445	246	219	142	68	49
4	123	113	163	210	340	490	509	238	208	132	64	50
5	115	105	174	200	320	685	545	230	194	135	62	50
6	104	97	167	200	290	772	530	224	185	128	60	50
7	100	92	157	200	260	686	542	216	174	125	59	50
8	97	88	146	190	240	658	563	227	203	120	57	49
9	94	85	138	170	240	772	554	251	194	113	57	48
10	90	82	131	160	240	890	532	249	192	109	55	48
11	88	81	123	170	240	881	510	269	187	104	56	48
12	86	83	116	180	240	834	496	383	180	100	57	52
13	90	84	128	180	240	792	480	384	164	96	57	55
14	96	83	144	160	240	766	458	359	170	93	56	61
15	95	86	142	160	230	734	436	402	184	88	56	60
16	89	85	130	160	220	701	411	430	177	83	56	57
17	84	82	120	170	220	653	386	536	174	79	63	54
18	81	81	110	180	210	604	367	595	175	77	62	53
19	79	79	105	180	210	569	367	555	176	75	60	52
20	77	77	105	200	200	533	354	516	180	73	56	51
21	76	80	105	240	230	505	337	479	210	70	54	51
22	74	82	110	330	260	484	324	446	214	69	54	50
23	74	82	110	380	320	467	313	409	214	69	51	53
24	73	85	120	410	350	444	300	364	210	69	51	51
25	72	99	130	450	370	390	287	327	205	69	51	50
26	71	112	160	450	416	394	277	297	204	67	50	49
27	70	114	210	440	425	381	266	271	191	64	49	49
28	73	147	240	440	456	364	260	249	177	61	50	49
29	74	205	270	430	-----	363	265	255	168	63	49	49
30	78	204	250	430	-----	394	261	256	164	63	49	53
31	84	-----	240	420	-----	438	-----	245	-----	62	48	-----
TOTAL	2,825	3,022	4,795	8,170	8,137	18,027	12,255	10,410	5,758	2,899	1,743	1,537
MEAN	91.1	101	155	264	291	582	409	336	192	93.5	56.2	51.2
MAX	146	205	270	450	456	890	563	595	237	157	68	61
MIN	70	77	105	160	200	363	260	216	164	61	48	48
CFSM	.45	.50	.77	1.31	1.45	2.90	2.03	1.67	.96	.47	.28	.25
IN.	.52	.56	.89	1.51	1.51	3.34	2.27	1.93	1.07	.54	.32	.28

CAL YR 1973 TOTAL 78,231 MEAN 214 MAX 540 MIN 58 CFSM 1.06 IN 14.48
WTR YR 1974 TOTAL 79,578 MEAN 218 MAX 890 MIN 48 CFSM 1.08 IN 14.73

NOTE.--No gage-height record Dec. 21 to Feb. 26.

STREAMS TRIBUTARY TO LAKE MICHIGAN

69

04096515 Hog Creek near Allen, Mich.

LOCATION.--Lat 41°56'55", long 84°49'40", in NE¼ SE¼ sec.13, T.6 S., R.5 W., Branch County, on left bank 12 ft (4 m) downstream from bridge on U.S. Highway 12, 1.0 mi (1.6 km) downstream from Little Hog Creek, and 3.1 mi (5.0 km) west of Allen.

DRAINAGE AREA.--48.7 mi² (126.1 km²).

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,010 ft (308 m) from topographic map. Prior to May 23, 1970, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--5 years, 39.5 ft³/s (1.119 m³/s), 11.01 in/yr (280 mm/yr).

EXTREMES.--Current year: Maximum discharge, 240 ft³/s (6.80 m³/s) Mar. 10 (gage height, 4.86 ft or 1.481 m); minimum, 3.3 ft³/s (0.093 m³/s) Sept. 8, 10; minimum gage height, 1.44 ft (0.439 m) Sept. 10.

Period of record: Maximum discharge, 240 ft³/s (6.80 m³/s) Mar. 10, 1974 (gage height, 4.86 ft or 1.481 m); maximum gage height, 5.73 ft (1.747 m) Feb. 20, 1971 (backwater from ice); minimum discharge, 1.2 ft³/s (0.034 m³/s) Aug. 20, 21, 1971, (gage height, 1.35 ft or 0.411 m).

REMARKS.--Records fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	14	21	69	120	90	83	57	50	34	7.3	4.1
2	8.4	12	18	56	95	84	86	53	45	30	7.7	4.3
3	8.0	12	17	50	85	84	96	50	40	27	7.7	6.2
4	8.3	11	19	45	75	94	127	47	37	26	7.5	5.4
5	8.5	10	23	40	70	130	171	44	34	27	7.3	4.7
6	8.0	9.7	21	36	65	169	178	43	32	23	6.6	4.5
7	8.2	9.5	19	33	60	171	163	41	32	21	5.1	4.3
8	8.3	9.3	17	31	55	163	153	47	37	19	4.7	4.1
9	8.3	9.0	17	29	50	200	142	66	40	18	4.9	4.1
10	8.2	8.7	16	27	45	237	130	69	36	17	4.3	4.0
11	7.9	8.6	15	25	42	229	120	70	34	16	4.5	4.1
12	7.8	8.5	14	24	40	204	114	91	35	15	6.8	11
13	9.4	8.3	15	23	37	179	110	104	34	14	6.4	12
14	11	8.4	15	22	36	159	106	103	31	13	7.1	10
15	9.2	8.7	14	22	35	144	104	117	30	12	7.1	8.6
16	8.5	9.5	13	21	34	134	100	129	31	11	6.6	7.9
17	8.0	8.8	12	21	33	127	94	132	28	11	8.2	7.7
18	7.9	8.6	11	21	32	118	84	135	28	10	7.7	7.5
19	7.7	8.7	11	21	33	110	84	130	40	10	7.1	6.9
20	7.7	8.4	11	22	35	103	82	119	66	9.6	6.8	6.6
21	7.5	10	11	60	58	95	77	105	78	9.1	6.4	6.6
22	7.4	11	12	149	98	89	71	92	86	9.2	6.0	6.6
23	7.4	8.6	12	179	145	84	67	80	88	9.8	5.8	6.2
24	7.2	9.7	14	184	168	78	62	68	81	9.8	5.6	6.3
25	7.2	14	15	176	144	68	57	58	71	9.1	5.6	6.1
26	7.4	15	23	151	129	63	54	51	61	8.6	5.1	5.7
27	8.1	14	35	157	107	61	51	45	53	8.4	5.1	5.8
28	11	25	50	167	93	59	50	41	49	7.7	5.1	6.9
29	13	34	70	162	-----	60	55	45	44	9.3	4.7	7.3
30	15	27	85	146	-----	68	59	54	39	8.9	4.7	7.2
31	15	-----	80	135	-----	80	-----	55	-----	7.7	4.3	-----
TOTAL	274.7	360.0	726	2,304	2,019	3,734	2,930	2,341	1,390	461.2	189.8	192.7
MEAN	8.86	12.0	23.4	74.3	72.1	120	97.7	75.5	46.3	14.9	6.12	6.42
MAX	15	34	85	184	168	237	178	135	88	34	8.2	12
MIN	7.2	8.3	11	21	32	59	50	41	28	7.7	4.3	4.0
CFSM	.18	.25	.48	1.53	1.48	2.46	2.01	1.55	.95	.31	.13	.13
IN.	.21	.27	.55	1.76	1.54	2.85	2.24	1.79	1.06	.35	.14	.15

CAL YR 1973 TOTAL 17,378.2 MEAN 47.6 MAX 195 MIN 4.1 CFSM .98 IN 13.27
WTR YR 1974 TOTAL 16,922.4 MEAN 46.4 MAX 237 MIN 4.0 CFSM .95 IN 12.93

STREAMS TRIBUTARY TO LAKE MICHIGAN

04096600 Coldwater River near Hodunk, Mich.

LOCATION.--Lat 42°01'45", long 85°06'25", in NW¼ NE¼ sec.22, T.5 S., R.7 W., Branch County, on upstream side of bridge on Girard Rd., 2.5 mi (4.0 km) northwest of Hodunk, and 3.5 mi (5.6 km) upstream from mouth.

DRAINAGE AREA.--293 mi² (759 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft (274 m) from topographic map (nearest 10 ft). Prior to July 26, 1963, non-recording gage and crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--12 years, 223 ft³/s (6.315 m³/s), 10.34 in/yr (263 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,230 ft³/s (63.2 m³/s) Mar. 8, 9 (gage height, 7.69 ft or 2.344 m); minimum, 45 ft³/s (1.27 m³/s) Sept. 11 (gage height, 2.69 ft or 0.820 m).

Period of record: Maximum discharge, 2,230 ft³/s (63.2 m³/s) Mar. 8, 9, 1974 (gage height, 7.69 ft or 2.344 m); minimum, 6.2 ft³/s (0.18 m³/s) Sept. 26, 1964; minimum gage height, 2.28 ft (0.695 m) Oct. 4-14, 1964.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair. Diurnal fluctuation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	118	187	350	700	538	530	324	340	217	61	47
2	96	123	172	330	600	524	550	310	316	202	67	48
3	90	123	159	290	500	679	570	300	292	189	70	51
4	88	119	160	260	450	1,030	600	288	254	182	66	51
5	84	115	167	240	420	1,290	640	276	213	178	64	50
6	80	112	166	230	380	1,120	740	267	204	169	62	49
7	101	119	158	220	350	1,250	890	260	193	157	60	48
8	97	113	150	200	320	1,910	910	265	211	150	60	47
9	92	109	145	190	290	2,150	900	286	220	135	58	47
10	89	107	140	190	280	1,850	830	296	222	88	57	46
11	85	106	133	180	270	1,570	730	252	216	84	58	46
12	81	103	127	180	270	1,400	690	310	207	81	62	54
13	84	100	138	180	270	1,300	670	342	189	81	60	58
14	88	98	148	180	270	1,200	650	346	188	79	58	59
15	85	99	144	180	270	1,100	620	384	191	77	56	56
16	80	96	130	180	270	1,000	600	466	199	72	58	53
17	79	97	130	180	284	900	580	792	201	70	69	52
18	78	96	130	186	296	850	560	932	204	69	67	51
19	80	94	125	186	326	800	540	890	214	68	62	50
20	80	94	125	218	437	750	520	787	240	68	58	50
21	80	97	125	409	634	700	510	684	263	68	54	50
22	82	95	130	755	854	650	490	606	275	67	53	50
23	84	102	130	1,020	849	620	480	548	282	69	53	50
24	86	143	140	992	800	580	460	493	283	69	52	49
25	90	144	159	950	800	550	440	452	286	65	51	48
26	92	150	198	926	710	540	430	419	283	64	50	48
27	95	145	285	1,000	638	500	410	395	269	63	49	47
28	102	156	355	1,060	576	500	400	375	250	63	49	49
29	104	190	401	1,020	-----	500	380	366	235	64	48	51
30	107	203	380	908	-----	500	310	371	227	67	48	52
31	114	-----	370	827	-----	520	-----	362	-----	64	47	-----
TOTAL	2,778	3,566	5,607	14,217	13,114	29,371	17,630	13,444	7,167	3,139	1,787	1,507
MEAN	89.6	119	181	459	468	947	588	434	239	101	57.6	50.2
MAX	114	203	401	1,060	854	2,150	910	932	340	217	70	59
MIN	78	94	125	180	270	500	310	252	188	63	47	46
CFSM	.31	.41	.62	1.57	1.60	3.23	2.01	1.48	.82	.34	.20	.17
IN.	.35	.45	.71	1.81	1.66	3.73	2.24	1.71	.91	.40	.23	.19

CAL YR 1973 TOTAL 105,727 MEAN 290 MAX 953 MIN 54 CFSM .99 IN 13.42
WTR YR 1974 TOTAL 113,327 MEAN 310 MAX 2,150 MIN 46 CFSM 1.06 IN 14.39

NOTE.--No gage-height record Mar. 12 to Apr. 30.

STREAMS TRIBUTARY TO LAKE MICHIGAN

71

04096900 Nottawa Creek near Athens, Mich.

LOCATION.--Lat 42°03'20", long 85°18'30", in NW¼ sec.12, T.5 S., R.9 W., St. Joseph County, on right bank at downstream side of bridge on Shorts Road, 4.2 mi (6.8 km) southwest of Athens, and 5.0 mi (8.0 km) downstream from Pine Creek.

DRAINAGE AREA.--162 mi² (420 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--8 years, 146 ft³/s (4.135 m³/s) 12.24 in/yr (311 mm/yr).

EXTREMES.--Current year: Maximum discharge, 596 ft³/s (16.9 m³/s) Mar. 10 (gage height, 4.57 ft or 1.393 m); minimum discharge, 42 ft³/s (1.19 m³/s) Sept. 26, 27; minimum gage height, 0.78 ft (0.238 m) Sept. 27.
Period of record: Maximum discharge, 596 ft³/s (16.9 m³/s) Mar. 10, 1974 (gage height, 4.57 ft or 1.393 m); maximum gage height, 4.66 ft (1.420 m) Feb. 3, 1968; minimum daily discharge, 28 ft³/s (0.79 m³/s) Aug. 24, 25, 1971; minimum gage height, 0.37 ft (0.113 m) Oct. 16, 18, 20, 21, Nov. 8, 1971.

REMARKS.--Records fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	101	140	300	376	344	379	208	206	123	82	51
2	127	111	120	247	378	355	412	207	197	115	84	51
3	131	118	110	214	353	368	437	203	188	110	86	56
4	133	118	110	180	305	412	458	197	179	110	87	56
5	128	115	110	170	260	485	474	190	172	115	89	57
6	121	109	110	160	240	545	463	185	169	112	88	56
7	115	104	100	140	220	561	440	178	165	108	84	55
8	108	100	100	130	210	554	420	187	177	107	82	56
9	102	97	95	130	190	572	400	202	185	109	79	56
10	98	93	90	120	190	592	378	214	194	112	77	56
11	92	91	90	120	180	578	355	221	197	112	80	58
12	90	90	85	120	180	538	339	253	199	110	83	67
13	95	91	80	120	180	491	338	292	197	109	83	72
14	104	93	80	120	170	449	330	291	190	109	80	67
15	110	97	75	120	170	413	325	313	185	108	75	64
16	109	116	75	120	170	388	313	345	181	103	77	62
17	106	127	75	120	160	372	298	425	175	98	90	58
18	102	131	75	120	160	359	281	502	171	94	90	55
19	96	130	75	120	170	347	269	521	168	91	86	52
20	91	122	80	157	180	335	262	499	164	88	80	49
21	86	122	85	308	234	322	252	457	191	85	73	47
22	83	120	90	411	321	313	245	411	212	84	68	46
23	81	118	100	471	412	310	234	369	213	87	65	45
24	80	120	124	519	451	303	221	328	205	87	62	45
25	79	120	145	492	449	281	214	292	197	88	60	44
26	77	120	194	447	427	268	205	261	187	86	59	44
27	76	130	260	437	365	263	197	236	172	85	56	44
28	79	140	296	442	337	260	194	217	157	82	55	47
29	81	150	309	432	-----	269	201	209	144	87	56	51
30	84	150	312	412	-----	307	206	208	132	85	56	50
31	89	-----	320	394	-----	352	-----	211	-----	83	55	-----
TOTAL	3,072	3,444	4,110	7,793	7,438	12,306	9,540	8,832	5,469	3,082	2,327	1,617
MEAN	99.1	115	133	251	266	397	318	285	182	99.4	75.1	53.9
MAX	133	150	320	519	451	592	474	521	213	123	90	72
MIN	76	90	75	120	160	260	194	178	132	82	55	44
CFSM	.61	.71	.82	1.55	1.64	2.45	1.96	1.76	1.12	.61	.46	.33
IN.	.71	.79	.94	1.79	1.71	2.83	2.19	2.03	1.26	.71	.53	.37
CAL YR 1973	TOTAL 68,360	MEAN 187	MAX 501	MIN 69	CFSM 1.15	IN 15.70						
WTR YR 1974	TOTAL 69,030	MEAN 189	MAX 592	MIN 44	CFSM 1.17	IN 15.85						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04097170 Portage River near Vicksburg, Mich.

LOCATION.--Lat 42°06'53", long 85°29'08", in SW¼ sec.16, T.4 S., R.10 W., Kalamazoo County, on right bank 15 ft (5 m) upstream from bridge on W Avenue, 2.4 mi (3.9 km) east of Vicksburg.

DRAINAGE AREA.--68.2 mi² (176.6 km²).

PERIOD OF RECORD.--March 1946 to September 1951, October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 839.94 ft (256.014 m) above mean sea level. Mar. 13, 1946 to Sept. 30, 1951, non-recording gage at same site and datum.

AVERAGE DISCHARGE.--15 years, 61.6 ft³/s (1.745 m³/s), 12.27 in/yr (312 mm/yr).

EXTREMES.--Current year: Maximum discharge, 257 ft³/s (7.28 m³/s) Mar. 9, May 17; maximum gage height, 5.21 ft (1.588 m) Mar. 9; minimum discharge, 20 ft³/s (0.57 m³/s) Sept. 8, 9, 10.

Period of record: Maximum discharge, 356 ft³/s (10.1 m³/s) Apr. 7, 1947 (gage height, 5.66 ft or 1.725 m); minimum, 10 ft³/s (0.28 m³/s) on many days during July and August, 1965; minimum gage height, 3.08 ft (0.939 m) July 17, 1946, Aug. 14, 1946, July 30, 31, 1965.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT
1	56	53	63	94	174	150	130	91	93	52	28	21
2	56	53	60	92	162	146	140	87	87	50	29	21
3	58	54	59	90	151	145	144	85	82	48	29	22
4	58	52	61	86	140	163	165	83	77	48	29	22
5	58	52	72	84	130	225	173	81	73	49	29	22
6	56	51	74	82	115	228	171	80	75	47	28	21
7	56	48	72	80	110	220	166	78	73	45	27	21
8	56	47	69	76	100	219	167	82	75	44	27	21
9	55	47	68	73	94	247	161	88	75	43	27	21
10	54	46	66	71	90	249	151	86	74	42	26	21
11	53	44	64	68	86	227	144	87	73	40	27	21
12	52	43	62	66	85	209	141	103	71	39	27	22
13	57	42	60	65	86	192	138	104	68	38	26	23
14	65	43	57	64	83	173	136	100	66	37	26	24
15	64	54	54	64	78	161	133	110	65	37	25	23
16	62	60	51	63	77	156	128	131	64	36	25	23
17	60	58	48	63	78	150	122	220	63	35	26	22
18	58	58	46	61	78	140	116	247	62	34	25	22
19	56	57	44	60	82	135	115	229	62	33	25	22
20	55	57	43	70	86	130	109	214	61	32	25	22
21	54	57	44	135	91	125	104	204	75	32	24	22
22	52	58	46	160	135	119	101	187	76	31	24	22
23	52	58	48	186	192	115	100	171	75	31	23	21
24	50	58	52	195	183	111	96	154	74	31	23	21
25	49	60	59	187	172	105	92	139	70	30	23	21
26	49	59	73	183	143	101	88	128	63	30	22	21
27	48	58	99	199	127	99	85	117	61	29	22	21
28	49	62	105	210	139	98	82	108	59	29	22	22
29	49	67	105	200	-----	104	87	106	56	30	22	25
30	49	64	100	189	-----	118	92	103	54	30	21	25
31	49	-----	96	182	-----	131	-----	97	-----	29	21	-----
TOTAL	1,695	1,620	2,020	3,498	3,267	4,891	3,777	3,900	2,102	1,161	783	658
MEAN	54.7	54.0	65.2	113	117	158	126	126	70.1	37.5	25.3	21.9
MAX	65	67	105	210	192	249	173	247	93	52	29	25
MIN	48	42	43	60	77	98	82	78	54	29	21	21
CFSM	.80	.79	.96	1.66	1.72	2.32	1.85	1.85	1.03	.55	.37	.32
IN.	.92	.88	1.10	1.91	1.78	2.67	2.06	2.13	1.15	.63	.43	.36

CAL YR 1973 TOTAL 26,124 MEAN 71.6 MAX 165 MIN 24 CFSM 1.05 IN 14.25
WTR YR 1974 TOTAL 29,372 MEAN 80.5 MAX 249 MIN 21 CFSM 1.18 IN 16.02

STREAMS TRIBUTARY TO LAKE MICHIGAN

73

04097500 St. Joseph River at Three Rivers, Mich.

LOCATION.--Lat 41°56'25", long 85°38'00", in SW¼ SE¼ sec.18, T.6 S., R.11 W., St. Joseph County, on right bank in Scidmore Park at Three Rivers, 250 ft (76 m) downstream from Rocky River, and at mile 112 (180 km).

DRAINAGE AREA.--1,350 mi² (3,496 km²).

PERIOD OF RECORD.--May 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 781.34 ft (238.152 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--21 years, 1068 ft³/s (30.25 m³/s), 10.74 in/yr (273 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,570 ft³/s (158 m³/s) Mar. 11 (gage height, 8.91 ft or 2.716 m); minimum, 356 ft³/s (10.1 m³/s) Sept. 26 (gage height, 2.59 ft or 0.789 m); minimum daily discharge, 367 ft³/s (10.4 m³/s) Sept. 26.
Period of record: Maximum discharge, 5,570 ft³/s (158 m³/s) Mar. 11, 1974 (gage height, 8.91 ft or 2.716 m); minimum daily, 78 ft³/s (2.21 m³/s) Sept. 12, 1964.
Maximum discharge since at least 1918, 8,260 ft³/s (234 m³/s) Apr. 27, 1950 (gage height, 10.6 ft or 3.23 m).

REMARKS.--Records good. Flow regulated by powerplant above station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	712	617	1,230	1,880	3,380	2,790	2,960	1,900	2,000	1,260	478	412
2	1,000	643	1,210	1,700	3,070	2,790	2,960	1,910	1,900	1,160	534	415
3	1,030	611	1,150	1,560	2,980	2,740	3,260	1,780	1,790	1,110	561	439
4	891	664	1,110	1,590	2,790	2,930	3,390	1,770	1,680	1,160	590	438
5	755	926	1,190	1,550	2,530	3,320	3,550	1,730	1,660	1,160	689	430
6	909	959	1,240	1,530	2,270	3,870	3,520	1,700	1,680	1,130	625	425
7	984	929	1,200	1,490	1,830	4,260	3,500	1,720	1,660	1,100	595	467
8	888	786	1,150	1,470	1,690	4,260	3,490	1,760	1,630	997	559	601
9	862	570	1,120	1,290	2,030	5,070	3,380	1,800	1,690	966	559	592
10	863	580	966	1,180	2,010	5,520	3,240	1,850	1,780	1,000	543	557
11	846	600	900	1,340	1,920	5,530	3,140	1,930	1,700	972	543	521
12	697	606	964	1,350	1,900	5,380	3,130	1,970	1,630	933	547	476
13	765	705	1,000	1,400	1,960	5,150	3,100	2,130	1,660	904	561	412
14	849	732	1,010	1,170	1,940	4,810	2,970	2,270	1,530	869	556	432
15	866	602	1,030	1,190	1,800	4,440	2,870	2,490	1,490	862	530	428
16	853	634	1,000	1,220	1,760	4,100	2,820	2,750	1,490	767	572	434
17	831	775	850	1,260	1,700	3,800	2,660	3,180	1,460	644	685	451
18	818	784	832	1,360	1,660	3,640	2,630	3,800	1,440	563	602	450
19	867	815	852	1,320	1,680	3,410	2,470	4,110	1,530	569	613	468
20	834	765	632	1,520	1,520	3,280	2,400	4,150	1,460	600	671	502
21	637	668	712	1,970	1,770	3,110	2,320	3,900	1,460	616	728	439
22	629	832	842	2,620	2,120	3,080	2,280	3,590	1,690	649	651	430
23	639	808	863	3,160	2,670	2,970	2,220	3,280	1,640	638	555	487
24	704	704	871	3,480	2,930	2,800	2,120	3,010	1,610	588	493	468
25	806	892	1,100	3,820	3,000	2,750	2,050	2,700	1,590	650	457	404
26	791	1,030	1,280	3,720	3,100	2,520	1,940	2,470	1,570	635	455	367
27	459	817	1,660	3,630	3,110	2,480	1,910	2,360	1,500	556	471	503
28	660	973	1,940	3,680	2,900	2,410	1,840	2,270	1,450	536	456	471
29	955	1,100	2,080	3,710	-----	2,430	1,890	2,120	1,420	527	563	439
30	916	1,060	1,970	3,630	-----	2,490	1,920	1,950	1,340	520	429	585
31	789	-----	1,900	3,500	-----	2,710	-----	1,940	-----	512	405	-----
TOTAL	25,105	23,187	35,854	65,290	64,020	110,840	81,930	76,290	48,130	25,153	17,276	13,943
MEAN	810	773	1,157	2,106	2,286	3,575	2,731	2,461	1,604	811	557	465
MAX	1,030	1,100	2,080	3,820	3,380	5,530	3,550	4,150	2,000	1,260	728	601
MIN	459	570	632	1,170	1,520	2,410	1,840	1,700	1,340	512	405	367
CFSM	.60	.57	.86	1.56	1.69	2.65	2.02	1.82	1.19	.60	.41	.34
IN.	.69	.64	.99	1.80	1.76	3.05	2.26	2.10	1.33	.69	.48	.38

CAL YR 1973 TOTAL 566,063 MEAN 1,551 MAX 3,790 MIN 320 CFSM 1.15 IN 15.60
WTR YR 1974 TOTAL 587,018 MEAN 1,608 MAX 5,530 MIN 367 CFSM 1.19 IN 16.18

STREAMS TRIBUTARY TO LAKE MICHIGAN

04097540 Prairie River near Nottawa, Mich.

LOCATION.--Lat 41°53'18", long 85°24'34", in NW¼ SW¼ sec.6, T.7 S., R.9 W., St. Joseph County, on left bank 10 ft (3 m) upstream from bridge on State Highway 66, 3.0 mi (4.8 km) upstream from unnamed tributary, and 3.0 mi (4.8 km) southeast of Nottawa.

DRAINAGE AREA.--106 mi² (275 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--12 years, 85.0 ft³/s (2.407 m³/s), 10.89 in/yr (277 mm/yr)

EXTREMES.--Current year: Maximum discharge, 454 ft³/s (12.9 m³/s) Feb. 25 (gage height, 5.45 ft or 1.661 m); minimum, 29 ft³/s (0.82 m³/s) Sept. 1, 2 (gage height, 2.21 ft or 0.674 m).
Period of record: Maximum discharge, 467 ft³/s (13.2 m³/s) Feb. 4, 1968 (gage height, 5.49 ft or 1.673 m); minimum, 11 ft³/s (0.31 m³/s) Aug. 9, 10, Sept. 8, 9, 10, 1964; minimum gage height, 1.77 ft (0.539 m) Aug. 9, 10, 1964.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	51	74	160	237	173	169	130	110	75	35	30
2	47	52	71	150	223	167	174	130	106	70	37	30
3	48	53	67	130	208	167	179	120	100	65	38	32
4	48	52	67	120	194	179	196	120	95	65	39	32
5	47	52	70	110	180	216	214	120	91	65	40	33
6	47	50	70	100	160	243	240	120	93	65	39	32
7	46	47	68	95	140	261	250	120	92	63	38	31
8	45	45	65	90	140	269	245	120	97	60	37	31
9	44	43	62	90	130	283	232	125	104	60	36	30
10	44	42	60	85	120	288	220	130	108	58	35	30
11	43	42	57	85	120	286	210	135	106	55	36	31
12	42	42	55	80	120	273	210	140	101	55	38	43
13	45	42	58	80	122	252	210	150	96	55	38	48
14	47	42	61	80	120	232	200	156	93	50	38	50
15	47	42	63	80	120	218	195	178	90	50	38	49
16	45	43	61	80	120	210	190	195	88	46	37	46
17	44	43	60	80	121	203	180	241	85	43	40	44
18	42	43	60	80	118	199	175	251	82	40	41	41
19	42	44	55	80	124	196	170	241	90	40	42	39
20	41	44	55	96	133	189	165	227	93	40	41	37
21	40	46	55	155	146	185	160	208	96	40	39	36
22	40	47	60	210	196	180	160	189	96	42	38	35
23	40	46	65	256	240	176	150	173	96	42	36	34
24	40	47	70	271	303	169	150	159	93	42	35	33
25	40	49	80	266	313	160	140	147	91	40	34	31
26	40	51	96	256	261	154	135	135	91	40	33	30
27	40	52	136	262	199	149	130	126	89	40	32	30
28	42	59	162	267	183	146	130	120	86	38	32	31
29	44	68	176	271	-----	148	130	119	82	38	31	33
30	46	74	170	265	-----	156	130	116	80	37	31	34
31	48	-----	174	252	-----	162	-----	114	-----	36	30	-----
TOTAL	1,359	1,453	2,503	4,682	4,791	6,289	5,439	4,755	2,820	1,555	1,134	1,066
MEAN	43.8	48.4	80.7	151	171	203	181	153	94.0	50.2	36.6	35.5
MAX	48	74	176	271	313	288	250	251	110	75	42	50
MIN	40	42	55	80	118	146	130	114	80	36	30	30
CFSM	.41	.46	.76	1.42	1.61	1.92	1.71	1.44	.89	.47	.35	.33
IN.	.48	.51	.88	1.64	1.68	2.21	1.91	1.67	.99	.55	.40	.37

CAL YR 1973 TOTAL 37,464 MEAN 103 MAX 280 MIN 37 CFSM .97 IN 13.15
WTR YR 1974 TOTAL 37,846 MEAN 104 MAX 313 MIN 30 CFSM .98 IN 13.28

NOTE.--No gage-height record Apr. 9 to May 14, June 24 to July 29.

STREAMS TRIBUTARY TO LAKE MICHIGAN

75

04097970 Lime Lake Outlet at Panama, Ind.

LOCATION.--Lat 41°42'46", long 85°07'10", in NW¼NW¼ sec.35, T.38 N., R.12 E., Steuben County, on right bank 10 ft (3 m) downstream from dam for Lime Lake, 30 ft (9 m) upstream from bridge on Orland Road, and 0.7 mile (1.1 km) northwest of Panama.

DRAINAGE AREA.--17.5 mi² (45.3 km²), of which 3.68 mi² (9.53 km²) does not contribute directly to surface runoff.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 950.00 ft (289.560 m) above mean sea level.

AVERAGE DISCHARGE.--5 years, 6.79 ft³/s (0.192 m³/s), 5.27 in/yr (134 mm/yr).

EXTREMES.--Current year: Maximum discharge, 29 ft³/s (0.82 m³/s) Apr. 3, gage height, 4.54 ft (1.384 m); minimum daily discharge, 0.04 ft³/s (0.001 m³/s) Aug. 8.

Period of record: Maximum discharge 29 ft³/s (0.82 m³/s) Apr. 3, 1974, gage height, 4.54 ft (1.384 m); no flow at times most years.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.4	5.8	9.8	14	15	22	12	17	6.1	.15	.15
2	1.6	1.6	5.9	9.5	14	15	24	12	16	6.0	.21	.14
3	2.0	1.6	5.5	9.2	14	16	25	12	16	2.9	.26	.24
4	2.2	1.6	5.6	9.0	14	18	28	12	15	.91	.19	.22
5	1.9	1.5	5.9	8.7	14	21	27	12	14	1.0	.12	.21
6	1.7	1.4	5.1	8.6	15	21	26	11	14	1.2	.10	.19
7	1.6	1.3	4.9	8.4	15	23	26	11	14	1.3	.07	.17
8	1.6	3.9	4.7	8.2	15	23	26	12	16	1.3	.04	.19
9	1.6	6.9	4.6	8.9	14	24	25	12	16	.85	.10	.19
10	1.6	6.3	4.4	9.0	14	25	24	12	15	.76	.14	.23
11	1.4	5.8	4.2	9.0	14	25	24	13	14	.68	.27	.31
12	1.7	5.4	4.2	9.0	14	24	25	14	14	.67	.26	1.5
13	2.2	5.1	4.6	8.8	13	24	25	14	13	1.1	.13	1.6
14	2.0	5.0	4.8	8.2	14	24	25	19	12	1.6	.12	1.4
15	1.4	4.8	4.7	8.1	14	24	24	24	11	1.5	.13	1.2
16	.95	4.5	4.7	8.0	13	24	23	24	10	1.3	.19	1.0
17	.76	4.4	4.4	7.8	13	23	23	26	9.8	1.0	.42	.97
18	.61	4.3	4.4	7.8	13	24	22	26	9.4	.18	.43	.83
19	.61	4.2	4.9	7.8	13	24	23	24	9.9	.16	.45	.84
20	.45	4.1	6.3	9.0	14	23	22	24	10	.29	.49	.68
21	.45	5.2	6.4	11	14	23	23	24	10	.56	.50	.60
22	.40	5.2	6.4	11	17	23	21	24	9.8	.56	.46	.49
23	.40	4.9	6.1	11	17	22	18	24	9.2	.66	.41	.42
24	.50	5.2	6.2	11	17	22	16	23	8.7	.73	.35	.41
25	.50	5.3	7.9	11	16	22	13	22	8.2	.82	.33	.29
26	.40	5.4	8.8	11	16	21	13	20	8.1	.75	.36	.34
27	.40	5.2	11	13	16	21	12	19	7.9	.62	.32	.39
28	.55	6.3	11	14	15	21	12	19	7.6	.40	.26	.50
29	.50	6.4	10	15	-----	21	13	19	7.1	.34	.23	.47
30	.55	6.3	10	15	-----	22	13	19	6.8	.22	.22	.41
31	.76	-----	10	14	-----	22	-----	18	-----	.16	.19	-----
TOTAL	34.49	130.5	193.4	309.8	406	680	643	557	349.5	36.62	7.90	16.58
MEAN	1.11	4.35	6.24	9.99	14.5	21.9	21.4	18.0	11.7	1.18	.25	.55
MAX	2.2	6.9	11	15	17	25	28	26	17	6.1	.50	1.6
MIN	.40	1.3	4.2	7.8	13	15	12	11	6.8	.16	.04	.14
CFSM	.06	.25	.36	.57	.83	1.25	1.22	1.03	.67	.07	.01	.03
IN.	.07	.28	.41	.66	.86	1.45	1.37	1.18	.74	.08	.02	.04
CAL YR 1973	TOTAL 3,634.33	MEAN 9.96	MAX 24	MIN .40	CFSM .57	IN 7.73						
WTR YR 1974	TOTAL 3,364.79	MEAN 9.22	MAX 28	MIN .04	CFSM .53	IN 7.15						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04098500 Fawn River near White Pigeon, Mich.

LOCATION.--Lat 41°46'56", long 85°35'00", in SW¼ sec.10, T.8 S., R.11 W., St. Joseph County, on right bank 0.3 mi (0.5 km) downstream from bridge on county highway, 3.1 mi (5.0 km) east of White Pigeon, and 3.5 mi (5.6 km) upstream from Sherman Mill Creek.

DRAINAGE AREA.--192 mi² (497 km²).

PERIOD OF RECORD.--July 1903 to July 1904 (gage heights and discharge measurements only), October 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 805.4 ft (245.49 m) above mean sea level.

AVERAGE DISCHARGE.--17 years, 157 ft³/s (4.446 m³/s), 11.10 in/yr (282 mm/yr).

EXTREMES.--Current year: Maximum discharge, 449 ft³/s (12.7 m³/s) Feb. 26 (gage height, 4.32 ft or 1.317 m); minimum, 60 ft³/s (1.70 m³/s) Aug. 31, Sept. 1 (gage height, 2.09 ft or 0.637 m).

Period of record: Maximum daily discharge, 600 ft³/s (17.0 m³/s) Jan. 30, 1969; minimum discharge, 26 ft³/s (0.74 m³/s) Aug. 5, 1964; minimum gage height, 1.72 ft (0.524 m) Jan. 10, Sept. 10, 1964.

A daily mean discharge of 750 cfs (21.2 m³/s) occurred Mar. 15, 1904.

REMARKS.--Records good. Small diurnal fluctuation caused by powerplants above station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	103	110	154	237	328	300	285	233	266	176	79	75
2	98	108	154	212	317	287	287	238	258	172	78	69
3	107	125	158	187	309	285	293	248	252	168	85	71
4	115	118	160	196	298	295	311	232	240	152	109	80
5	122	98	160	189	302	315	317	223	239	165	78	79
6	111	114	144	187	252	344	335	220	227	164	85	86
7	107	110	152	189	231	358	349	207	225	147	73	88
8	110	106	155	177	248	356	360	218	233	143	81	77
9	105	107	157	147	244	392	355	228	242	141	80	74
10	103	107	135	175	250	397	341	226	254	137	65	63
11	103	114	136	182	256	397	331	244	246	121	67	77
12	88	103	129	172	278	399	329	252	242	125	86	101
13	107	87	134	158	280	402	327	254	233	111	92	124
14	112	102	142	158	268	402	320	274	227	110	75	135
15	106	123	144	170	248	392	315	298	212	118	89	137
16	125	110	146	177	239	390	310	322	203	94	90	131
17	105	123	108	184	233	381	306	337	205	100	84	128
18	110	112	119	187	222	370	300	346	207	104	102	117
19	129	107	94	198	220	365	296	360	212	100	95	97
20	88	108	101	198	214	363	290	353	210	93	102	109
21	116	103	108	250	231	358	281	353	212	95	102	111
22	114	118	119	287	264	349	269	349	208	81	81	117
23	106	115	132	302	285	340	262	349	218	86	91	105
24	103	119	144	310	311	331	261	340	207	87	88	92
25	103	114	150	319	324	320	259	324	199	90	77	93
26	92	121	182	313	365	304	253	311	194	97	79	87
27	116	130	212	327	315	295	248	300	189	87	69	103
28	97	134	240	326	315	291	240	291	199	82	87	91
29	105	146	242	335	-----	287	230	285	196	75	69	102
30	123	149	233	335	-----	289	232	278	181	86	84	104
31	105	-----	229	335	-----	285	-----	274	-----	75	65	-----
TOTAL	3,334	3,441	4,773	7,119	7,647	10,639	8,892	8,767	6,636	3,582	2,587	2,923
MEAN	108	115	154	230	273	343	296	283	221	116	83.5	97.4
MAX	129	149	242	335	365	402	360	360	266	176	109	137
MIN	88	87	94	147	214	285	230	207	181	75	65	63
CFSM	.56	.60	.80	1.20	1.42	1.79	1.54	1.47	1.15	.60	.43	.51
IN.	.65	.67	.92	1.38	1.48	2.06	1.72	1.70	1.29	.69	.50	.57

CAL YR 1973 TOTAL 71,428 MEAN 196 MAX 351 MIN 78 CFSM 1.02 IN 13.84
 WTR YR 1974 TOTAL 70,340 MEAN 193 MAX 402 MIN 63 CFSM 1.01 IN 13.63

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04099000 St. Joseph River at Mottville, Mich.

LOCATION.--Lat 41°48'03", long 85°45'22", in SW¼ sec.6, T.8 S., R.12 W., Michigan meridian, St. Joseph County, on right bank 500 ft (152 m) upstream from bridge on U.S. Highway 12 at Mottville, 0.4 mi (0.6 km) downstream from Michigan Power Co. hydroelectric plant, 4 mi (6 km) upstream from Pigeon River, and at mile 96 (154 km).

DRAINAGE AREA.--1,866 mi² (4,833 km²).

PERIOD OF RECORD.--October 1923 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 755.3 ft (230.22 m) above mean sea level (Michigan Power Co. benchmark). Prior to Oct. 1, 1951, at site 0.4 mi (0.6 km) upstream at datum 4.2 ft (1.28 m) higher.

AVERAGE DISCHARGE.--51 years, 1,522 ft³/s (43.10 m³/s), 11.08 in/yr (281 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,640 ft³/s (188 m³/s) Mar. 10 (gage height, 7.87 ft or 2.399 m); minimum, 132 ft³/s (3.74 m³/s) Aug. 17 (gage height, 1.09 ft or 0.332 m); minimum daily, 438 ft³/s (12.4 m³/s) Aug. 31.

Period of record: Maximum discharge, 10,700 ft³/s (303 m³/s) Apr. 27, 1950 (gage height, 6.56 ft or 1.999 m, site and datum then in use); minimum daily, 39 ft³/s (1.10 m³/s) Oct. 19, 1963.

REMARKS.--Records good. Flow regulated by powerplants above station.

REVISIONS (WATER YEARS).--WSP 1387: 1930, 1932, 1938, 1940-42, 1945. WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,290	1,260	1,690	2,590	4,500	3,700	3,660	2,700	2,710	1,810	860	685
2	1,180	1,230	1,570	2,560	4,070	3,740	3,840	2,640	2,700	1,840	663	618
3	1,660	685	1,560	2,360	3,830	3,660	3,940	2,620	2,620	1,920	670	932
4	1,480	1,150	1,790	2,230	3,870	3,780	4,270	2,510	2,390	1,670	640	836
5	1,670	1,350	1,720	2,230	3,430	4,200	4,430	2,460	2,390	1,780	958	860
6	1,070	1,420	1,690	2,210	3,070	4,660	4,450	2,430	2,400	1,640	1,260	852
7	1,280	1,290	1,770	2,250	2,910	5,220	4,420	2,380	2,510	1,660	820	565
8	1,680	1,520	1,530	2,230	2,660	5,260	4,440	2,510	2,310	1,530	994	508
9	1,220	1,040	1,620	2,010	2,730	5,650	4,380	2,530	2,320	1,710	994	884
10	1,260	908	1,610	1,930	2,870	6,400	4,280	2,570	2,480	1,210	618	976
11	1,390	924	1,600	1,940	2,700	6,480	4,110	2,690	2,620	1,670	663	924
12	1,380	1,260	1,400	2,000	2,700	6,450	4,080	2,790	2,280	1,160	1,180	994
13	1,040	958	1,500	2,290	2,710	6,200	4,120	2,840	2,380	1,330	967	1,110
14	1,040	1,320	1,460	1,930	2,740	5,970	3,940	3,060	2,390	1,160	1,080	678
15	1,580	1,020	1,600	1,840	2,690	5,610	3,830	3,350	1,980	1,420	1,250	678
16	1,430	1,280	1,440	1,840	2,580	5,340	3,700	3,630	2,200	1,350	1,620	916
17	1,140	1,070	1,370	1,870	2,530	4,960	3,620	3,990	2,300	1,250	618	958
18	1,270	860	1,230	1,920	2,320	4,690	3,440	4,530	2,100	1,020	588	985
19	1,720	1,530	1,540	2,000	2,430	4,530	3,360	5,070	2,200	1,030	565	884
20	1,120	1,200	1,350	2,020	2,460	4,260	3,140	5,170	2,210	693	487	1,050
21	1,170	1,280	1,020	2,720	2,170	4,140	3,150	5,030	2,190	685	595	804
22	1,130	700	860	3,360	2,940	3,950	3,120	4,750	2,420	1,360	1,280	625
23	1,030	1,790	1,420	4,090	3,270	3,950	3,060	4,420	2,330	1,350	1,160	924
24	1,080	949	1,490	4,280	3,540	3,790	2,880	4,090	2,190	985	932	844
25	958	788	1,520	4,520	3,980	3,380	2,850	3,680	2,260	958	740	796
26	1,280	1,460	1,970	4,740	3,950	3,730	2,760	3,470	2,240	1,130	994	828
27	1,050	1,600	2,160	4,560	3,980	3,120	2,680	3,260	2,130	708	932	844
28	603	1,380	2,570	4,690	3,950	3,330	2,650	3,110	2,100	655	852	640
29	1,290	1,490	2,730	4,720	-----	3,130	2,560	3,070	1,970	976	852	648
30	1,390	1,800	2,880	4,710	-----	3,240	2,780	2,810	2,010	1,120	756	952
31	1,360	-----	2,710	4,620	-----	3,370	-----	2,710	-----	655	438	-----
TOTAL	39,241	36,512	52,370	89,260	87,580	139,890	107,940	102,870	69,330	39,435	27,026	24,798
MEAN	1,266	1,217	1,689	2,879	3,128	4,513	3,598	3,318	2,311	1,272	872	827
MAX	1,720	1,800	2,880	4,740	4,500	6,480	4,450	5,170	2,710	1,920	1,620	1,110
MIN	603	685	860	1,840	2,170	3,120	2,560	2,380	1,970	655	438	508
CFSM	.68	.65	.91	1.54	1.68	2.42	1.93	1.78	1.24	.68	.47	.44
IN.	.78	.73	1.04	1.75	1.75	2.79	2.15	2.05	1.38	.79	.54	.49
CAL YR 1973	TOTAL 784,541		MEAN 2,149	MAX 4,700	MIN 603	CFSM 1.15	IN 15.64					
WTR YR 1974	TOTAL 816,252		MEAN 2,236	MAX 6,480	MIN 438	CFSM 1.20	IN 16.27					

STREAMS TRIBUTARY TO LAKE MICHIGAN

04099750 Pigeon River near Scott, Ind.

LOCATION.--Lat 41°44'56", long 85°34'35", in SE¼NW¼ sec.14, T.38 N., R.8 E., Lagrange County, on right bank 20 ft (6 m) downstream from bridge on County Road 750 North, 1,200 ft (366 m) downstream from Page ditch, 0.7 mile (1.1 km) south of Indiana-Michigan state line, and 1.2 miles (1.9 km) northwest of Scott.

DRAINAGE AREA.--361 mi² (935 km²), of which 53.9 mi² (139.6 km²) does not contribute directly to surface runoff.

PERIOD OF RECORD.--June 1968 to current year.

GAGE.--Water-stage recorder. Datum of gage is 815.00 ft (248.412 m) above mean sea level.

AVERAGE DISCHARGE.--6 years, 332 ft³/s (9.40 m³/s), 12.49 in/yr (317 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,090 ft³/s (30.9 m³/s) Mar. 11, gage height, 5.59 ft (1.704 m); minimum daily, 114 ft³/s (3.23 m³/s) Sept. 2.

Period of record: Maximum discharge, 1,450 ft³/s (41.1 m³/s) Feb. 1, 1969, gage height, 6.34 ft (1.932 m); minimum daily, 42 ft³/s (1.19 m³/s) Oct. 21, 1971.

REMARKS.--Records good.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	174	227	430	940	660	562	439	406	255	129	115
2	178	180	215	400	922	659	583	423	389	247	138	114
3	179	171	212	380	882	653	616	411	388	243	147	126
4	188	162	232	360	857	678	657	395	377	238	140	132
5	181	158	265	370	788	780	733	382	364	234	135	128
6	171	153	261	380	780	908	716	374	373	225	131	123
7	163	152	248	380	784	963	677	364	372	214	133	121
8	163	152	238	350	752	1,010	670	390	393	209	142	119
9	161	150	233	320	754	1,060	678	449	430	204	164	117
10	159	150	228	290	685	1,070	669	459	402	198	145	116
11	157	150	220	260	658	1,080	663	447	380	199	150	117
12	154	150	218	250	592	1,070	663	514	387	192	177	160
13	169	150	230	270	569	1,040	670	586	369	183	180	239
14	190	150	258	300	529	1,010	663	562	342	179	161	206
15	181	153	249	320	513	987	636	572	331	173	183	170
16	165	156	239	320	463	973	613	632	325	167	129	153
17	155	157	220	315	445	954	581	675	320	161	190	146
18	151	159	210	302	433	915	554	734	314	159	242	141
19	148	157	200	296	448	881	547	768	335	161	160	137
20	146	156	200	335	489	842	540	694	344	159	154	130
21	146	160	200	545	501	807	517	641	340	151	148	129
22	146	163	205	718	620	762	496	616	331	149	144	126
23	146	163	210	757	784	724	478	616	326	154	139	122
24	147	161	230	732	806	680	460	610	316	158	137	120
25	163	171	342	714	704	635	446	574	300	157	138	119
26	147	190	394	711	669	612	433	541	299	154	129	116
27	142	190	485	808	664	592	423	515	308	148	118	115
28	143	205	537	938	661	573	421	491	296	143	120	122
29	151	255	507	982	-----	562	449	492	279	139	121	130
30	154	253	498	944	-----	569	458	481	266	133	119	131
31	158	-----	448	934	-----	573	-----	454	-----	130	117	-----
TOTAL	4,982	5,051	8,659	15,411	18,692	25,282	17,272	16,301	10,402	5,616	4,560	4,040
MEAN	161	168	279	497	668	816	576	526	347	181	147	135
MAX	190	255	537	982	940	1,080	733	768	430	255	242	239
MIN	142	150	200	250	433	562	421	364	266	130	117	114
CFSM	.45	.47	.77	1.38	1.85	2.26	1.60	1.46	.96	.50	.41	.37
IN.	.51	.52	.89	1.59	1.93	2.61	1.78	1.68	1.07	.58	.47	.42

CAL YR 1973 TOTAL 138,540 MEAN 380 MAX 914 MIN 142 CFSM 1.05 IN 14.28
WTR YR 1974 TOTAL 136,268 MEAN 373 MAX 1,080 MIN 114 CFSM 1.03 IN 14.04

LOCATION.--Lat 41°28'54", long 85°28'32", in NE¼NW¼ sec.22, T.35 N., R.9 E., Noble County, on right bank at downstream side of bridge on County Road 900 North, 1,300 ft (396 m) downstream from Boyd ditch, 1.7 miles (2.7 km) upstream from Hustin ditch, and 3.1 miles (5.0 km) downstream from Waldron Lake.

PERIOD OF RECORD.--October 1971 to current year. October 1950 to September 1971 at site 3.1 miles (5.0 km) upstream, published as North Branch Elkhart River near Cosperville. Records may not be equivalent.

EXTREMES.--Current year: Maximum discharge, 569 ft³/s (16.1 m³/s) Mar. 10, gage height, 6.84 ft (2.085 m) Mar. 10; minimum daily, 12 ft³/s (0.34 m³/s) Sept. 25.

Period of record: Maximum discharge, 569 ft³/s (16.1 m³/s) Mar. 10, 1974, gage height, 6.84 ft (2.085 m) Mar. 10, 1974; minimum daily, 2.4 ft³/s (0.068 m³/s) Nov. 21, 1971.

REMARKS.--Records good except those for December, January and February, which are fair. Flow regulated at times by dam at Waldron Lake.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	36	76	185	400	296	253	122	128	67	35	19
2	33	41	67	165	390	288	247	115	116	68	37	18
3	33	38	60	150	370	280	253	106	107	69	36	24
4	32	34	66	150	350	302	271	102	103	64	32	21
5	30	30	71	150	330	367	277	97	101	61	32	19
6	28	27	68	150	310	403	277	92	110	57	31	17
7	27	28	67	150	300	482	274	91	112	53	25	16
8	27	26	62	145	280	516	286	111	134	50	16	15
9	27	25	58	135	270	555	289	139	140	51	14	16
10	26	27	51	125	260	567	281	141	140	51	13	17
11	25	26	51	115	240	569	274	143	138	49	16	17
12	25	25	50	110	230	567	274	175	134	56	19	43
13	32	25	58	115	220	555	266	181	125	95	14	51
14	32	27	65	125	210	538	247	175	114	130	17	39
15	28	29	62	130	190	520	242	193	116	142	36	29
16	24	28	57	130	176	508	236	200	118	139	48	24
17	22	30	52	125	165	489	220	214	112	128	77	21
18	20	29	51	125	157	468	201	224	104	122	60	20
19	20	30	50	130	159	450	192	223	94	138	44	19
20	20	31	50	150	172	428	177	216	87	145	37	18
21	20	36	50	220	185	426	161	207	88	138	34	17
22	19	38	51	300	253	382	150	201	102	126	31	16
23	18	39	54	330	313	362	139	207	112	117	31	14
24	18	39	60	340	333	337	132	201	102	94	31	14
25	18	47	86	340	321	316	121	194	91	59	31	12
26	18	55	121	350	313	297	113	184	93	42	30	18
27	20	51	174	374	305	284	107	172	87	41	29	20
28	23	66	208	400	299	272	106	163	81	59	29	29
29	24	89	217	400	-----	260	124	155	74	64	26	29
30	27	87	215	400	-----	257	127	146	70	57	22	30
31	29	-----	200	400	-----	254	-----	137	-----	42	19	-----
TOTAL	779	1,139	2,628	6,614	7,501	12,595	6,317	5,027	3,233	2,574	952	662
MEAN	25.1	38.0	84.8	213	268	406	211	162	108	83.0	30.7	22.1
MAX	34	89	217	400	400	569	289	224	140	145	77	51
MIN	18	25	50	110	157	254	106	91	70	41	13	12
CFSM	.18	.27	.60	1.50	1.89	2.86	1.49	1.14	.76	.58	.22	.16
IN.	.20	.30	.69	1.73	1.97	3.30	1.65	1.32	.85	.67	.25	.17

CAL YR 1973	TOTAL 56,228	MEAN 154	MAX 422	MIN 18	CFSM 1.08	IN 14.73
WTR YR 1974	TOTAL 50,021	MEAN 137	MAX 569	MIN 12	CFSM .96	IN 13.10

STREAMS TRIBUTARY TO LAKE MICHIGAN

04100500 Elkhart River at Goshen, Ind.

LOCATION.--Lat 41°35'36", long 85°50'55", in NE¼NE¼ sec.8, T.36 N., R.6 E., Elkhart County, on right bank 20 ft (6 m) downstream from River Avenue bridge at Goshen and 0.5 mile (0.8 km) upstream from Rock Run.

DRAINAGE AREA.--594 mi² (1,538 km²).

PERIOD OF RECORD.--April 1931 to current year.

GAGE.--Water-stage recorder. Datum of gage is 769.43 ft (234.522 m) above mean sea level. Prior to Nov. 20, 1931, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--43 years, 502 ft³/s (14.2 m³/s), 11.48 in/yr (292 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,550 ft³/s (72.2 m³/s) Mar. 8, gage height, 6.69 ft (2.039 m); minimum daily, 117 ft³/s (3.31 m³/s) Sept. 1.

Period of record: Maximum discharge, 5,440 ft³/s (154 m³/s) Apr. 4, 1950, gage height, 10.15 ft (3.094 m); maximum gage height, 10.33 ft (3.149 m) July 10, 1951; minimum daily discharge, 7.0 ft³/s (0.20 m³/s) Aug. 11, 1964, result of extreme regulation.

REMARKS.--Records good. The flow is regulated by three powerplants upstream from station.

REVISIONS (WATER YEARS).--WSP 1337: 1939(M). WSP 1557: 1954. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	223	191	344	600	1,730	1,120	891	602	562	411	191	117
2	242	203	334	540	1,540	1,080	934	579	532	396	198	119
3	243	202	326	500	1,410	1,070	957	568	513	385	190	139
4	229	198	337	480	1,310	1,170	1,180	557	489	378	183	136
5	219	191	358	490	1,140	1,720	1,360	541	494	371	180	132
6	209	193	353	500	1,090	1,950	1,240	531	569	343	169	127
7	205	178	343	480	1,080	2,040	1,120	507	585	328	164	122
8	204	172	335	450	1,060	2,440	1,060	578	597	323	164	120
9	202	173	327	420	980	2,500	1,030	730	617	298	165	120
10	199	172	319	450	980	2,420	980	734	571	308	160	118
11	188	170	297	350	915	2,190	954	762	539	305	167	123
12	185	171	286	350	862	2,010	952	1,070	523	286	169	185
13	203	171	328	380	862	1,890	965	1,110	503	269	155	214
14	210	173	333	408	811	1,780	959	950	492	276	144	216
15	201	174	319	424	740	1,710	913	1,020	552	299	138	191
16	191	174	300	415	707	1,660	870	1,160	543	308	148	172
17	184	172	271	410	693	1,590	835	1,050	516	310	178	162
18	176	172	243	402	661	1,500	808	1,140	507	305	199	153
19	175	174	279	409	716	1,430	798	1,050	503	299	197	148
20	166	178	206	525	869	1,370	757	937	490	293	180	140
21	165	199	248	1,550	906	1,300	722	872	495	299	166	135
22	165	204	250	2,150	1,420	1,230	691	855	511	306	156	130
23	167	204	250	1,980	2,160	1,150	659	889	535	313	154	127
24	166	206	280	1,780	1,830	1,080	630	925	521	300	154	124
25	160	213	358	1,580	1,380	1,010	604	824	497	278	148	120
26	160	223	506	1,460	1,210	968	579	749	486	244	144	119
27	160	241	732	1,680	1,200	933	558	693	485	209	139	120
28	162	315	893	2,020	1,160	898	557	653	470	189	138	139
29	162	346	824	1,850	-----	884	626	629	448	191	137	156
30	186	348	682	1,650	-----	884	624	613	431	200	132	157
31	177	-----	640	1,670	-----	881	-----	593	-----	199	123	-----
TOTAL	5,884	6,101	11,901	28,353	31,422	45,858	25,813	24,471	15,576	9,219	5,030	4,281
MEAN	190	203	384	915	1,122	1,479	860	789	519	297	162	143
MAX	243	348	893	2,150	2,160	2,500	1,360	1,160	617	411	199	216
MIN	160	170	206	350	661	881	557	507	431	189	123	117
CFSM	.32	.34	.65	1.54	1.89	2.49	1.45	1.33	.87	.50	.27	.24
IN.	.37	.38	.75	1.78	1.97	2.87	1.62	1.53	.98	.58	.32	.27

CAL YR 1973 TOTAL 218,906 MEAN 600 MAX 2,810 MIN 157 CFSM 1.01 IN 13.71
WTR YR 1974 TOTAL 213,909 MEAN 586 MAX 2,500 MIN 117 CFSM .99 IN 13.40

PEAK DISCHARGE (BASE, 1,800 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-22	1500	6.19	2,250
01-28	1300	5.88	2,070
02-23	1700	6.25	2,290
03-08	2300	6.69	2,550

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04101000 St. Joseph River at Elkhart, Ind.

LOCATION.--Lat 41°41'30", long 85°58'30", in SW¼NE¼ sec.5, T.37 N., R.5 E., Elkhart County, on left bank 200 ft (61 m) downstream from mouth of Elkhart River, 200 ft (61 m) upstream from Main Street bridge in Elkhart, 2,000 ft (610 m) downstream from Christiana Creek, and 0.5 mile (0.8 km) downstream from Elkhart Hydroelectric Plant.

DRAINAGE AREA.--3,370 mi² (8,728 km²).

PERIOD OF RECORD.--August 1947 to current year. Gage heights at site 0.8 mile (1.3 km) downstream at different datum from September 1924 to March 1926 are available in the district office.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft (213.360 m) above mean sea level.

AVERAGE DISCHARGE.--27 years, 3,062 ft³/s (86.7 m³/s), 12.34 in/yr (313 mm/yr).

EXTREMES.--Current year: Maximum discharge, 11,600 ft³/s (329 m³/s) Mar. 10, gage height, 24.33 ft (7.416 m); minimum daily, 799 ft³/s (22.6 m³/s) Aug. 31.

Period of record: Maximum discharge, 18,400 ft³/s (521 m³/s) Apr. 5, 1950, gage height, 27.82 ft (8.480 m); minimum daily, 336 ft³/s (9.52 m³/s) Aug. 5, 1964.

REMARKS.--Records good. The flow is regulated by Elkhart Hydroelectric Plant and by a hydroelectric plant on Elkhart River at Goshen.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SFP
1	1,140	2,020	2,870	4,270	8,040	6,520	6,400	4,750	4,730	3,310	1,580	1,310
2	1,940	1,850	2,350	3,970	7,350	6,380	6,820	4,570	4,560	3,200	1,440	1,240
3	2,080	1,460	2,450	3,700	5,460	6,340	6,890	4,520	4,350	3,030	1,430	1,540
4	2,250	1,750	2,810	3,940	5,890	6,660	7,490	4,370	4,080	3,370	1,400	1,520
5	2,240	2,200	2,680	3,570	5,840	7,770	7,940	4,230	3,980	2,800	1,680	1,470
6	1,970	2,100	2,830	3,840	5,520	8,550	7,940	4,200	4,280	2,840	1,880	1,460
7	1,910	1,800	2,310	3,600	5,290	9,220	7,780	4,070	4,330	2,860	1,650	1,070
8	2,210	2,200	2,530	3,630	4,680	9,920	7,650	4,320	4,300	2,860	1,700	968
9	2,010	1,800	2,530	2,860	4,930	10,200	7,560	4,590	4,220	2,900	1,700	1,400
10	1,880	1,700	2,620	3,030	5,030	11,000	7,320	4,620	4,440	2,310	1,360	1,540
11	1,920	1,800	2,330	3,300	5,090	11,100	7,180	4,850	4,450	2,590	1,310	1,540
12	1,910	2,000	2,380	3,490	4,740	10,800	7,090	5,450	4,250	2,300	1,870	1,850
13	2,040	1,500	2,460	3,810	5,020	10,400	7,180	5,600	4,130	2,140	1,670	1,830
14	1,690	2,000	2,420	3,010	4,890	10,100	7,030	5,730	4,150	2,280	1,670	1,630
15	2,040	1,700	2,420	3,570	4,620	9,460	6,750	6,250	3,840	2,350	1,780	1,470
16	2,090	2,100	2,460	3,330	4,460	9,380	6,540	6,850	3,920	2,470	2,170	1,650
17	1,970	1,800	2,040	3,000	4,400	9,080	6,380	7,180	4,020	2,130	1,630	1,700
18	1,880	1,700	2,240	3,540	4,180	8,370	6,130	7,710	3,840	1,950	1,400	1,670
19	1,910	2,200	2,000	3,360	4,380	8,260	5,950	8,130	3,920	1,950	1,380	1,560
20	1,760	1,800	2,220	3,320	4,720	7,870	5,670	8,240	3,950	1,570	1,180	1,560
21	1,780	1,900	1,890	5,780	4,560	7,630	5,530	8,130	3,890	1,530	1,150	1,630
22	1,740	1,800	1,510	7,040	5,740	7,160	5,380	7,860	4,070	2,100	1,820	1,230
23	1,610	2,500	1,960	7,790	7,310	7,200	5,350	7,490	4,170	2,170	1,950	1,570
24	1,670	1,600	2,600	7,880	7,280	6,980	5,030	7,090	4,020	2,100	1,670	1,430
25	1,560	1,800	2,680	7,810	6,900	6,470	4,870	6,590	3,940	1,870	1,420	1,430
26	1,610	2,100	3,390	7,900	6,830	6,540	4,750	6,130	3,840	1,720	1,660	1,400
27	1,780	2,600	4,280	8,160	6,950	6,040	4,590	5,780	3,800	1,610	1,620	1,480
28	1,260	2,380	4,760	8,610	6,810	6,020	4,610	5,330	3,800	1,370	1,480	1,290
29	1,690	2,360	4,870	8,500	-----	5,820	4,680	5,290	3,740	1,670	1,460	1,510
30	1,930	2,350	4,500	8,290	-----	6,040	4,730	5,040	3,200	1,820	1,370	2,000
31	2,010	-----	4,510	8,170	-----	6,120	-----	4,850	-----	1,400	799	-----
TOTAL	57,480	58,870	85,900	156,070	156,910	249,400	189,210	179,810	122,210	70,570	48,279	44,948
MEAN	1,854	1,962	2,771	5,035	5,604	8,045	6,307	5,800	4,074	2,276	1,557	1,498
MAX	2,250	2,600	4,870	8,610	8,040	11,100	7,940	8,240	4,730	3,370	2,170	2,000
MIN	1,140	1,460	1,510	2,860	4,180	5,820	4,590	4,070	3,200	1,370	799	968
CFSM	.55	.58	.82	1.49	1.66	2.39	1.87	1.72	1.21	.68	.46	.44
IN.	.63	.65	.95	1.72	1.73	2.75	2.09	1.98	1.35	.78	.53	.50

CAL YR 1973 TOTAL 1,361,930 MEAN 3,731 MAX 8,880 MIN 1,140 CFSM 1.11 IN 15.03
WTR YR 1974 TOTAL 1,419,657 MEAN 3,889 MAX 11,100 MIN 799 CFSM 1.15 IN 15.67

STREAMS TRIBUTARY TO LAKE MICHIGAN

04101500 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., Berrien County, on right bank 100 ft (30 m) upstream from Main Street Bridge at Niles, 0.6 mi (1.0 km) downstream from dam at French Paper Co., 1 mi (2 km) upstream from Dowagiac River, and at mile 44 (71 km).

DRAINAGE AREA.--3,666 mi² (9,495 km²).

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE--Water-stage recorder. Datum of gage is 633.02 ft (192.944 m) above mean sea level. Prior to Oct. 1, 1968, at datum 2.00 ft (0.610 m) higher. Oct. 1, 1930 to Feb. 11, 1931, nonrecording gage on Main Street Bridge, and Feb. 12 to June 30, 1931, nonrecording gage 50 ft (15 m) upstream from present site (gage heights referred to mean sea level). Since Apr. 13, 1970, auxiliary water-stage recorder 1.1 mi (1.8 km) downstream from base gage at same datum. Oct. 1, 1943, to Apr. 12, 1970, auxiliary gage was headwater gage at hydroelectric plant at Buchanan Dam, 8 mi (13 km) downstream from base gage at different datum.

AVERAGE DISCHARGE.--44 years, 3,137 ft³/s (88.84 m³/s), 11.62 in/yr (295 mm/yr).

EXTREMES.--Current year: Maximum discharge, 12,100 ft³/s (343 m³/s) Mar. 10 (gage height, 11.15 ft or 3.399 m); minimum daily, 1,190 ft³/s (33.7 m³/s) Sept. 1.

Period of record: Maximum discharge, 20,200 ft³/s (572 m³/s) Apr. 5, 1950 (gage height, 15.10 ft or 4.602 m, present datum); minimum daily, 420 ft³/s (11.9 m³/s) Aug. 30, 1931.

REMARKS.--Records good except those for the winter period and those for periods of no gage-height record, which are fair. Flow regulated by powerplants above station.

REVISIONS(WATER YEARS).--WSP 1387: 1931, 1933-36, 1940-43, 1945-46 (M), 1949 (M). WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,650	2,210	2,890	4,500	8,520	7,000	7,000	5,000	5,000	3,500	1,620	1,190
2	2,090	2,290	2,730	4,200	8,270	7,000	7,400	5,000	5,000	3,500	1,890	1,360
3	2,250	2,090	2,570	4,000	6,490	6,800	7,400	4,900	4,700	3,300	1,740	1,520
4	2,770	1,760	2,920	4,100	6,720	7,200	8,000	4,700	4,300	3,600	1,650	1,700
5	2,190	1,970	2,890	3,800	6,070	7,950	8,600	4,600	4,300	3,000	1,630	1,670
6	2,690	2,440	2,920	4,000	5,800	9,290	8,500	4,500	4,500	3,000	1,860	1,680
7	2,010	2,270	2,700	4,000	5,600	9,450	8,300	4,400	4,600	3,100	2,070	1,650
8	2,340	1,910	2,840	3,800	5,200	10,700	8,000	4,700	4,700	3,100	1,680	1,340
9	2,430	2,430	2,640	3,100	5,400	10,800	8,000	5,000	4,500	3,100	1,900	1,240
10	2,160	1,810	2,660	3,200	5,500	11,400	7,800	5,000	4,800	2,500	1,860	1,660
11	2,180	1,850	2,450	3,500	5,300	11,700	7,600	5,500	4,800	2,800	1,630	1,710
12	2,180	1,820	2,740	3,700	5,200	11,200	7,600	6,000	4,500	2,500	1,950	2,320
13	2,670	2,190	2,570	4,000	5,400	10,700	7,600	6,000	4,500	2,400	2,040	2,460
14	1,890	1,590	2,760	3,500	5,200	10,400	7,500	6,000	4,300	2,400	1,840	2,140
15	2,280	2,220	2,540	3,800	5,000	9,760	7,400	7,000	4,100	2,500	1,900	1,740
16	2,370	1,720	2,820	3,500	4,800	9,800	7,200	7,400	4,300	2,600	2,030	1,470
17	2,240	2,260	1,950	3,200	4,700	9,600	6,800	8,000	4,300	2,200	2,260	1,730
18	2,030	1,880	2,250	3,700	4,600	9,000	6,600	8,500	4,100	2,100	2,000	1,830
19	2,150	1,780	2,490	3,600	4,800	9,000	6,400	8,800	4,200	2,100	1,880	1,800
20	2,120	2,420	2,280	3,770	5,000	8,500	6,200	9,000	4,100	1,700	1,560	1,740
21	2,070	1,860	2,230	6,130	5,000	8,000	6,000	8,600	4,100	1,700	1,390	2,040
22	2,170	2,090	1,730	8,300	5,600	7,800	6,000	8,400	4,300	2,100	1,630	1,460
23	2,190	1,820	1,900	9,160	7,000	7,800	5,700	8,000	4,500	2,300	1,980	1,480
24	1,530	2,750	2,630	8,700	7,800	7,500	5,500	7,500	4,300	2,200	1,790	1,620
25	1,790	1,540	3,060	8,480	7,500	7,000	5,300	7,000	4,000	1,970	1,690	1,660
26	1,780	2,050	3,500	8,190	7,400	7,000	5,200	6,500	4,100	2,000	1,550	1,610
27	2,220	2,360	4,200	8,640	7,500	6,500	5,000	6,000	4,100	2,180	1,820	1,590
28	1,760	2,730	5,000	9,430	7,200	6,500	5,000	5,700	4,000	1,610	1,680	1,700
29	1,540	2,500	5,200	9,300	-----	6,400	5,000	5,700	4,000	1,610	1,720	1,620
30	2,140	2,650	4,800	8,670	-----	6,500	5,000	5,400	3,500	1,860	1,580	2,210
31	2,410	-----	4,800	8,870	-----	6,500	-----	5,200	-----	1,890	1,710	-----
TOTAL	66,290	63,260	91,660	168,840	168,570	264,750	203,600	194,000	130,500	76,420	55,530	50,940
MEAN	2,138	2,109	2,957	5,446	6,020	8,540	6,787	6,258	4,350	2,465	1,791	1,698
MAX	2,770	2,750	5,200	9,430	8,520	11,700	8,600	9,000	5,000	3,600	2,260	2,460
MIN	1,530	1,540	1,730	3,100	4,600	6,400	5,000	4,400	3,500	1,610	1,390	1,190
CFSM	.58	.58	.81	1.49	1.64	2.33	1.85	1.71	1.19	.67	.49	.46
IN.	.67	.64	.93	1.71	1.71	2.69	2.07	1.97	1.32	.78	.56	.52

CAL YR 1973 TOTAL 1,434,610 MEAN 3,930 MAX 10,600 MIN 1,490 CFSM 1.07 IN 14.56
WTR YR 1974 TOTAL 1,534,360 MEAN 4,204 MAX 11,700 MIN 1,190 CFSM 1.15 IN 15.57

NOTE.--No gage-height record Mar. 16 to July 24.

STREAMS TRIBUTARY TO LAKE MICHIGAN

83

04101800 Dowagiac River at Summerville, Mich.

LOCATION.--Lat 41°54'57", long 86°12'47", in SE¼ sec.30, T.6 S., R.16 W., Cass County, on right bank 30 ft (9 m) upstream from bridge on Indian Lake Road, 0.3 mi (0.5 km) west of Summerville.

DRAINAGE AREA.--255 mi² (660 km²).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 692.62 ft (211.111 m) above mean sea level.

AVERAGE DISCHARGE.--14 years, 268 ft³/s (7.590 m³/s), 14.27 in/yr (362 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,000 ft³/s (28.3 m³/s) May 17 (gage height, 7.65 ft or 2.332 m); minimum, 145 ft³/s (4.11 m³/s) Sept. 2 (gage height, 3.16 ft or 0.963 m).
Period of record: Maximum discharge, 1,280 ft³/s (36.2 m³/s) June 26, 1968 (gage height, 8.78 ft or 2.676 m); minimum, 86 ft³/s (2.44 m³/s) Sept. 10, 1964; minimum gage height, 2.57 ft (0.783 m) Aug. 8, 9, 1964.

REMARKS.--Records excellent. Flow regulated by millpond and lake-level control dam above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	236	273	305	338	440	419	491	366	350	255	175	146
2	248	280	291	306	403	413	489	340	333	246	186	147
3	268	282	279	307	374	416	481	328	320	238	189	158
4	254	277	292	296	359	461	677	319	308	247	182	157
5	238	265	360	279	345	615	652	308	299	288	189	154
6	222	252	356	280	336	588	570	315	321	265	178	153
7	220	244	336	273	331	519	518	305	317	249	173	151
8	229	239	319	250	316	491	503	371	325	236	175	149
9	223	233	304	271	320	803	462	421	397	227	182	149
10	216	232	292	272	314	894	431	386	411	220	177	148
11	210	231	283	271	313	746	422	378	393	218	177	153
12	206	230	275	267	311	631	443	448	378	213	181	191
13	258	228	321	249	317	547	468	420	350	207	175	261
14	335	227	372	272	312	492	464	413	331	201	170	240
15	315	241	330	267	301	468	465	503	497	196	166	209
16	282	271	298	270	294	483	427	646	474	190	165	203
17	262	281	268	277	290	467	399	943	413	187	182	195
18	248	274	257	276	293	443	380	947	391	187	176	186
19	236	265	248	282	347	442	383	786	402	192	170	180
20	223	257	252	398	400	424	369	630	394	186	167	176
21	217	264	248	785	401	414	355	558	455	184	164	175
22	215	268	250	824	620	413	345	653	435	185	158	178
23	212	258	250	807	671	416	331	580	398	213	157	176
24	209	260	251	711	565	396	323	505	364	207	152	173
25	206	268	324	597	471	373	318	449	339	197	151	171
26	203	261	460	531	413	377	316	413	320	195	150	169
27	202	257	508	613	390	379	310	387	305	188	149	169
28	211	309	497	608	406	380	304	372	290	182	152	176
29	216	367	449	542	-----	400	353	372	277	177	149	203
30	219	335	398	488	-----	435	389	370	265	174	147	214
31	224	-----	363	474	-----	492	-----	363	-----	176	146	-----
TOTAL	7,263	7,929	10,036	12,681	10,653	15,237	12,838	14,595	10,852	6,526	5,210	5,310
MEAN	234	264	324	409	380	492	428	471	362	211	168	177
MAX	335	367	508	824	671	894	677	947	497	288	189	261
MIN	202	227	248	249	290	373	304	305	265	174	146	146
CFSM	.92	1.04	1.27	1.60	1.49	1.93	1.68	1.85	1.42	.83	.66	.69
IN.	1.06	1.16	1.46	1.85	1.55	2.22	1.87	2.13	1.58	.95	.76	.77

CAL YR 1973 TOTAL 118,432 MEAN 324 MAX 910 MIN 156 CFSM 1.27 IN 17.28
WTR YR 1974 TOTAL 119,130 MEAN 326 MAX 947 MIN 146 CFSM 1.28 IN 17.38

STREAMS TRIBUTARY TO LAKE MICHIGAN

04102500 Paw Paw River at Riverside, Mich.

LOCATION.--Lat 42°11'10", long 86°22'06", in SW¼ SE¼ sec.23, T.3 S., R.18 W., Berrien County, on left bank 40 ft (12 m) upstream from bridge on Coloma Road, 0.8 mi (1.3 km) east of Riverside.

DRAINAGE AREA.--390 mi² (1,010 km²).

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.80 ft (179.466 m) above mean sea level. May 10, 1966, to July 11, 1967, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--23 years, 417 ft³/s (11.81 m³/s), 14.52 in/yr (369 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,610 ft³/s (45.6 m³/s) Jan. 26 (gage height, 9.03 ft or 2.752 m); minimum, 236 ft³/s (6.68 m³/s) Sept. 19 (gage height, 3.98 ft or 1.213 m).

Period of record: Maximum discharge, 2,140 ft³/s (60.6 m³/s) Feb. 6, 1968 (gage height, 9.32 ft or 2.841 m); minimum, 99 ft³/s (2.80 m³/s) July 5, 1964 (gage height, 2.66 ft or 0.811 m).

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation, principally during low flow, caused by paper mill above station.

REVISIONS.--WSP 1337: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	395	406	564	640	1,050	950	769	562	595	381	268	255
2	412	417	556	620	994	876	800	562	572	369	269	254
3	438	425	554	600	911	808	857	563	551	360	275	260
4	460	432	564	570	820	790	956	566	530	358	277	269
5	473	440	591	550	760	847	1,080	569	506	370	277	268
6	474	445	631	530	700	868	1,030	567	491	362	274	268
7	470	469	635	510	670	831	1,030	548	498	360	263	265
8	456	486	624	500	650	829	1,060	549	512	356	263	263
9	434	479	619	490	630	897	1,060	562	591	352	261	262
10	418	464	623	480	620	1,050	1,010	568	673	335	259	261
11	408	446	629	470	610	975	958	565	638	305	262	244
12	396	431	619	470	590	933	922	577	608	306	265	253
13	406	421	611	460	575	898	899	614	593	306	265	266
14	437	427	613	460	531	873	878	627	589	306	266	273
15	452	425	609	450	507	841	860	659	587	301	268	280
16	449	440	577	450	496	814	824	747	574	295	288	274
17	451	450	583	450	488	770	778	1,090	553	291	291	245
18	455	454	575	460	480	728	758	1,310	543	289	289	239
19	460	458	530	465	498	703	753	1,150	532	287	286	236
20	462	463	500	518	533	688	732	1,260	524	284	284	240
21	457	474	490	803	563	681	706	1,420	550	282	277	244
22	439	483	489	1,160	660	673	677	1,430	550	291	270	245
23	419	485	480	1,040	824	670	651	1,290	536	313	266	254
24	403	491	480	1,160	831	657	625	1,110	521	298	275	290
25	390	498	480	1,490	823	636	601	974	506	291	269	306
26	381	500	543	1,600	881	617	577	864	488	290	263	296
27	374	496	670	1,550	937	605	554	783	460	289	257	285
28	378	514	716	1,500	962	598	535	722	430	287	255	289
29	377	543	709	1,290	-----	602	540	689	405	283	256	314
30	378	570	718	1,150	-----	634	554	649	393	280	252	319
31	382	-----	670	1,080	-----	706	-----	619	-----	269	257	-----
TOTAL	13,184	13,932	18,252	23,966	19,594	24,048	24,034	24,765	16,099	9,746	8,347	8,017
MEAN	425	464	589	773	700	776	801	799	537	314	269	267
MAX	474	570	718	1,600	1,050	1,050	1,080	1,430	673	381	291	319
MIN	374	406	480	450	480	598	535	548	393	269	252	236
CFSM	1.09	1.19	1.51	1.98	1.79	1.99	2.05	2.05	1.38	.81	.69	.68
IN.	1.26	1.33	1.74	2.29	1.87	2.29	2.29	2.36	1.54	.93	.80	.76

CAL YR 1973 TOTAL 200,648 MEAN 550 MAX 1,990 MIN 259 CFSM 1.41 IN 19.14
WTR YR 1974 TOTAL 203,984 MEAN 559 MAX 1,600 MIN 236 CFSM 1.43 IN 19.46

STREAMS TRIBUTARY TO LAKE MICHIGAN

85

04102700 Black River near Bangor, Mich.

LOCATION.--Lat 42°21'15", long 86°11'15", in NW¼ sec.28, T.1 S., R.16 W., Van Buren County, on left bank 50 ft (15 m) upstream from bridge on 66th Street, 4.9 mi (7.9 km) northwest of Bangor.

DRAINAGE AREA.--83.6 mi² (216.5 km²).

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (186 m) revised (from topographic map) nearest 10 ft.

AVERAGE DISCHARGE.--8 years, 99.7 ft³/s (2.824 m³/s), 16.20 in/yr (411 mm/yr).

EXTREMES.--Current year: Maximum discharge, 719 ft³/s (20.4 m³/s) Jan. 21 (gage height, 10.27 ft or 3.130 m); minimum discharge, 24 ft³/s (0.68 m³/s) Sept. 26; minimum gage height, 1.97 ft (0.600 m) Aug. 27.

Period of record: Maximum discharge, 880 ft³/s (24.9 m³/s) Dec. 31, 1972 (gage height, 11.15 ft or 3.399 m); minimum, 20 ft³/s (0.57 m³/s) Sept. 28, 1966 (gage height, 1.83 ft or 0.558 m).

REMARKS.--Records fair except those for the winter period and those for periods of no gage-height record, which are poor. Occasional regulation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	76	138	120	170	201	324	129	76	44	31	30
2	83	86	112	110	126	188	288	111	70	43	34	30
3	85	89	96	106	115	177	268	101	65	42	36	32
4	67	84	95	100	105	199	368	98	61	42	36	32
5	60	75	181	95	95	350	371	91	58	46	38	31
6	54	68	213	90	90	345	302	92	61	43	36	30
7	50	63	190	85	85	277	260	87	63	42	34	30
8	51	60	165	82	82	264	281	97	88	40	33	29
9	48	58	142	80	78	363	247	139	283	39	33	28
10	46	57	125	80	75	342	205	128	286	39	32	28
11	42	57	115	80	72	282	179	110	163	41	32	29
12	40	58	110	80	72	238	184	129	121	38	33	28
13	64	58	105	79	72	201	202	136	97	37	32	32
14	95	57	105	82	72	169	208	135	83	36	32	33
15	80	67	100	88	72	150	251	175	83	35	31	31
16	65	100	102	92	72	152	212	208	79	36	30	30
17	57	112	100	92	72	173	177	343	77	36	31	29
18	52	114	100	85	72	163	154	388	81	34	31	28
19	48	111	98	80	78	184	149	319	82	34	31	28
20	46	98	96	350	125	181	139	252	80	33	30	27
21	44	88	95	700	170	161	123	190	86	32	29	28
22	43	87	95	630	300	155	113	144	89	32	28	29
23	42	84	92	580	520	156	106	118	79	35	28	29
24	42	88	92	550	400	144	98	102	70	34	28	28
25	41	126	120	440	270	127	92	89	64	34	28	27
26	40	125	195	362	190	121	88	81	59	34	28	26
27	41	109	157	398	150	126	83	74	54	33	35	26
28	46	125	151	470	190	133	79	70	51	32	35	27
29	50	195	145	350	-----	180	98	79	48	32	33	48
30	51	172	140	300	-----	259	128	82	46	32	31	45
31	51	-----	127	220	-----	346	-----	79	-----	32	31	-----
TOTAL	1,714	2,747	3,897	7,056	3,990	6,507	5,777	4,376	2,703	1,142	990	908
MEAN	55.3	91.6	126	228	143	210	193	141	90.1	36.8	31.9	30.3
MAX	95	195	213	700	520	363	371	388	286	46	38	48
MIN	40	57	92	79	72	121	79	70	46	32	28	26
CFSM	.66	1.10	1.51	2.73	1.71	2.51	2.31	1.69	1.08	.44	.38	.36
IN.	.76	1.22	1.73	3.14	1.78	2.90	2.57	1.95	1.20	.51	.44	.40
CAL YR 1973	TOTAL 40,943	MEAN 112	MAX 673	MIN 30	CFSM 1.34	IN 18.22						
WTR YR 1974	TOTAL 41,807	MEAN 115	MAX 700	MIN 26	CFSM 1.38	IN 18.60						

PEAK DISCHARGE (BASE, 400 FT³/S)

NOTE.--No gage-height record Jan. 14-24.

DATE	TIME	G.H.	DISCHARGE
01-21	unknown	10.27	719
01-28	0700	8.35	480
02-23	unknown	8.78	547
04-04	2200	7.34	402
05-18	0800	7.32	401

STREAMS TRIBUTARY TO LAKE MICHIGAN

04102850 South Branch Kalamazoo River near Albion, Mich.

LOCATION.--Lat 42°12'11", long 84°47'39", in SE¼ SE¼ sec.17, T.3 S., R.4 W., Calhoun County, on right bank at downstream side of bridge on F Drive South, 3.6 mi (5.8 km) southwest of Albion.

DRAINAGE AREA.--146 mi² (378 km²).

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 950 ft (290 m) from topographic map.

EXTREMES.--Current year: Maximum daily discharge, 420 ft³/s (11.9 m³/s) Mar. 10; maximum gage height, 4.61 ft (1.405 m) Feb. 6 (backwater from ice); minimum discharge, 52 ft³/s (1.47 m³/s) Aug. 16; minimum gage height, 2.00 ft (0.610 m) Nov. 20, 21.
Period of record: Maximum daily discharge, 420 ft³/s (11.9 m³/s) Mar. 10, 1974; maximum gage height, 4.61 ft (1.405 m) Feb. 6, 1974 (backwater from ice); minimum daily discharge, 36 ft³/s (1.02 m³/s) Aug. 16, 1972; minimum gage height, 1.60 ft (0.488 m) Dec. 2, 1971, result of freezeup.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	99	153	146	227	210	270	190	164	108	80	55
2	143	103	133	130	211	220	300	180	152	103	92	59
3	134	103	124	130	194	240	290	170	141	103	94	68
4	127	99	122	120	180	260	300	170	133	103	90	71
5	118	96	127	120	173	280	320	170	127	108	96	70
6	108	90	125	110	160	320	320	160	118	105	87	71
7	106	87	118	110	150	370	320	160	122	103	82	71
8	99	87	113	100	150	380	320	170	131	103	78	71
9	96	85	108	100	140	380	300	180	129	99	76	70
10	90	83	105	100	140	420	290	190	129	98	73	68
11	87	83	101	100	135	400	280	200	125	99	73	70
12	85	85	98	100	130	360	260	230	124	94	75	82
13	85	85	110	100	130	310	250	250	117	90	70	87
14	87	87	118	100	130	280	240	240	115	83	63	89
15	87	92	117	105	130	260	230	250	124	78	61	85
16	87	92	100	103	125	260	230	270	127	78	63	82
17	83	90	90	105	125	260	220	346	131	80	90	80
18	85	89	90	101	130	260	210	365	129	78	80	75
19	82	87	90	101	130	260	210	350	131	82	75	71
20	80	85	90	124	140	250	210	304	140	89	66	70
21	80	90	90	252	180	250	200	262	150	83	59	66
22	80	92	95	313	230	240	200	230	146	80	57	66
23	78	90	95	343	300	230	190	210	143	82	57	66
24	78	90	100	315	260	220	190	194	134	82	61	66
25	78	105	117	286	250	210	180	182	129	80	57	68
26	78	113	160	255	230	200	180	173	124	80	55	64
27	78	113	208	280	220	190	175	164	118	76	55	64
28	80	138	211	288	210	190	170	155	115	75	57	70
29	83	171	204	273	-----	190	175	171	113	80	59	70
30	85	168	182	250	-----	230	190	176	110	87	57	68
31	89	-----	168	239	-----	250	-----	169	-----	85	57	-----
TOTAL	2,906	2,977	3,862	5,299	4,910	8,380	7,220	6,631	3,891	2,774	2,195	2,133
MEAN	93.7	99.2	125	171	175	270	241	214	130	89.5	70.8	71.1
MAX	150	171	211	343	300	420	320	365	164	108	96	89
MIN	78	83	90	100	125	190	170	155	110	75	55	55
CFSM	.64	.68	.86	1.17	1.20	1.85	1.65	1.47	.89	.61	.48	.49
IN.	.74	.76	.98	1.35	1.25	2.14	1.84	1.69	.99	.71	.56	.54

CAL YR 1973 TOTAL 53,860 MEAN 148 MAX 330 MIN 78 CFSM 1.01 IN 13.72
WTR YR 1974 TOTAL 53,178 MEAN 146 MAX 420 MIN 55 CFSM 1.00 IN 13.55

NOTE.--No gage-height record Feb. 14 to May 16.

STREAMS TRIBUTARY TO LAKE MICHIGAN

87

04103500 Kalamazoo River at Marshall, Mich.

LOCATION.--Lat 42°15'55", long 84°57'55", in line between sec. 25 and 26, T.2 S., R.6 W., Calhoun County, on left bank at upstream side of bridge on U.S. Highway 27 at Marshall.

DRAINAGE AREA.--449 mi² (1,163 km²).

PERIOD OF RECORD.--October 1948 to current year. Monthly discharge only for October 1948, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 877.09 ft (267.337 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 11, 1948, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--26 years, 306 ft³/s (8.666 m³/s), 9.25 in/yr (235 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,260 ft³/s (35.7 m³/s) Mar. 10 (gage height, 6.86 ft or 2.091 m); minimum, 41 ft³/s (1.16 m³/s) Aug. 24; minimum gage height, 3.49 ft (1.064 m) Sept. 26; minimum daily discharge, 111 ft³/s (3.14 m³/s) Aug. 29.
Period of record: Maximum discharge, 2,130 ft³/s (60.3 m³/s) Mar. 29, 1950 (gage height, 8.20 ft or 2.499 m); minimum, 12 ft³/s (0.34 m³/s) Aug. 2, 1967; minimum gage height, 3.00 ft (0.914 m) May 16, 1963; minimum daily discharge, 31 ft³/s (0.88 m³/s) Aug. 16, 1964.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	580	351	561	546	755	680	829	572	582	316	257	197
2	569	361	527	449	683	700	905	551	548	397	299	274
3	548	363	485	470	650	750	887	523	520	341	300	300
4	398	354	470	451	620	800	957	520	492	301	330	171
5	499	336	471	410	600	900	972	502	484	303	317	353
6	437	324	470	409	570	1,000	958	492	478	423	291	297
7	382	312	447	389	550	1,100	972	492	481	319	291	173
8	428	299	428	350	520	1,100	972	502	492	384	290	278
9	317	295	401	344	500	1,100	922	548	506	308	375	312
10	402	292	384	389	490	1,250	863	582	509	291	281	344
11	380	287	373	374	480	1,200	815	618	502	290	166	184
12	300	283	359	354	470	1,000	772	726	478	331	417	298
13	306	284	367	324	450	900	750	787	375	286	260	318
14	308	292	385	359	440	850	716	764	498	272	129	317
15	397	382	378	356	430	800	716	807	484	263	262	318
16	292	392	359	357	420	750	694	851	478	328	332	321
17	294	377	306	361	420	750	656	1,020	333	299	409	424
18	344	368	316	357	430	750	635	1,100	467	361	474	139
19	327	360	319	356	440	720	642	1,100	495	253	301	308
20	293	349	254	429	460	710	638	1,020	488	261	265	332
21	305	351	296	687	490	681	624	895	498	226	248	264
22	221	360	326	871	550	702	600	783	492	385	371	272
23	278	352	336	977	600	673	590	698	484	265	273	113
24	276	358	329	1,000	700	651	572	638	356	265	203	316
25	275	388	381	957	840	611	548	596	481	356	219	300
26	291	408	488	896	800	611	530	565	484	249	354	183
27	296	411	625	916	750	578	523	537	359	272	248	287
28	283	492	674	927	700	565	523	520	341	223	215	320
29	287	578	662	888	-----	582	537	562	446	381	111	355
30	229	583	634	837	-----	677	572	618	478	273	369	217
31	319	-----	597	791	-----	792	-----	607	-----	222	287	-----
TOTAL	10,861	10,942	13,408	17,581	15,808	24,933	21,890	21,096	14,109	9,444	8,944	8,285
MEAN	350	365	433	567	565	804	730	681	470	305	289	276
MAX	580	583	674	1,000	840	1,250	972	1,100	582	423	474	424
MIN	221	283	254	324	420	565	523	492	333	222	111	113
CFSM	.78	.81	.96	1.26	1.26	1.79	1.63	1.52	1.05	.68	.64	.61
IN.	.90	.91	1.11	1.46	1.31	2.07	1.81	1.75	1.17	.78	.74	.69

CAL YR 1973 TOTAL 162,142 MEAN 444 MAX 950 MIN 186 CFSM .99 IN 13.43
WTR YR 1974 TOTAL 177,301 MEAN 486 MAX 1,250 MIN 111 CFSM 1.08 IN 14.69

NOTE.--No gage-height record Feb. 2 to Mar. 20.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04105000 Battle Creek at Battle Creek, Mich.

LOCATION.--Lat 42°19'55", long 85°09'15", in NW¼ sec.5, T.2 S., R.7 W., Calhoun County, on right bank 350 ft (107 m) upstream from Emmett Street Bridge at Battle Creek, and 3.0 mi (4.8 km) upstream from mouth.

DRAINAGE AREA.--241 mi² (624 km²).

PERIOD OF RECORD.--October 1930 to September 1931, October 1932 to July 1933, January 1934 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 823.24 ft (250.924 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to May 14, 1951, nonrecording gage, at same site and datum.

AVERAGE DISCHARGE.--41 years (1930-31, 1934-74) 195 ft³/s (5.522 m³/s), 10.99 in/yr (279 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,940 ft³/s (54.9 m³/s) Mar. 10 (gage height, 3.05 ft or 0.930 m); minimum, 60 ft³/s (1.70 m³/s) Sept. 27; minimum gage height, 0.64 ft (0.195 m) Aug. 26, 27, Sept. 1, 2.
Period of record: Maximum discharge, 3,640 ft³/s (103 m³/s) Apr. 7, 1947 (gage height, 4.48 ft or 1.366 m, from floodmark); minimum, 22 ft³/s (0.62 m³/s) Aug. 14, 1934; minimum gage height, about -0.5 ft (-.152 m) in July 1936 and on Aug. 31, 1939, due to opening of gates at dam forming control.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair. Occasional slight regulation prior to November 1943.

REVISION (WATER YEARS).--WSP 1387: 1931, 1944. WSP 1507: 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	156	483	505	700	712	795	280	289	131	81	65
2	234	172	514	500	576	766	976	270	278	124	87	68
3	234	184	472	460	568	829	986	270	252	120	90	75
4	220	192	431	370	528	892	1,060	260	232	121	92	72
5	192	194	408	300	415	1,030	1,050	250	213	123	93	72
6	171	191	404	270	370	1,190	1,080	250	198	123	86	72
7	159	184	399	250	330	1,300	976	250	198	121	80	72
8	151	175	398	240	310	1,300	884	250	218	115	80	66
9	144	165	381	230	294	1,290	852	260	223	108	96	66
10	138	158	356	220	294	1,770	828	270	257	104	101	66
11	132	151	329	210	289	1,830	736	280	289	102	97	66
12	127	146	296	200	284	1,510	643	300	305	100	97	67
13	138	142	257	200	273	1,220	598	320	289	96	91	80
14	165	138	212	200	257	1,030	550	340	268	93	87	81
15	185	164	237	200	247	867	500	360	242	90	84	81
16	200	195	234	200	242	759	480	450	223	87	89	78
17	211	216	202	200	228	690	450	550	210	82	97	78
18	208	250	183	210	223	638	420	650	200	78	99	75
19	190	292	165	230	237	618	400	780	192	78	93	71
20	169	307	154	300	257	584	390	820	197	77	89	69
21	154	294	159	450	316	550	370	650	216	75	82	68
22	144	269	159	700	360	509	350	600	250	77	77	68
23	137	251	161	1,100	520	485	330	500	290	82	74	68
24	132	259	168	1,200	721	452	320	440	287	84	72	69
25	126	268	202	1,100	1,140	392	310	400	249	81	71	69
26	124	281	249	1,000	991	399	290	350	209	84	70	69
27	122	303	317	950	775	371	280	310	181	95	71	66
28	120	344	474	950	739	352	280	290	164	84	74	70
29	126	373	803	950	-----	345	280	290	151	86	75	83
30	133	403	909	900	-----	391	280	294	140	85	74	92
31	142	-----	835	800	-----	500	-----	294	-----	84	70	-----
TOTAL	5,044	6,817	10,951	15,595	12,484	25,571	17,744	11,878	6,910	2,990	2,619	2,162
MEAN	163	227	353	503	446	825	591	383	230	96.5	84.5	72.1
MAX	234	403	909	1,200	1,140	1,830	1,080	820	305	131	101	92
MIN	120	138	154	200	223	345	280	250	140	75	70	65
CFSM	.68	.94	1.46	2.09	1.85	3.42	2.45	1.59	.95	.40	.35	.30
IN.	.78	1.05	1.69	2.41	1.93	3.95	2.74	1.83	1.07	.46	.40	.33

CAL YR 1973 TOTAL 117,810 MEAN 323 MAX 1,500 MIN 53 CFSM 1.34 IN 18.18
WTR YR 1974 TOTAL 120,765 MEAN 331 MAX 1,830 MIN 65 CFSM 1.37 IN 18.64

NOTE.--No gage-height record Apr. 14 to May 29.

STREAMS TRIBUTARY TO LAKE MICHIGAN

89

04105500 Kalamazoo River near Battle Creek, Mich.

LOCATION.--Lat 42°19'26", long 85°11'51", in SW¼ sec.1, T.2 S., R.8 W., Calhoun County, on left bank 20 ft (6 m) upstream from bridge on Kendall Street in Battle Creek.

DRAINAGE AREA.--824 mi² (2,134 km²).

PERIOD OF RECORD.--July 1937 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Altitude of gage is 815 ft (248 m) from topographic map (nearest 5 ft). Prior to Oct. 1, 1957, water stage recorder at site 4.7 mi (7.6 km) downstream at different datum. Oct. 1, 1957, to June 15, 1959, nonrecording gage at bridge 1,800 ft (549 m) upstream at different datum. June 16, 1959 to Oct. 13, 1960, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--37 years, 642 ft³/s (18.18 m³/s), 10.58 in/yr (269 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,230 ft³/s (91.5 m³/s) Mar. 11 (gage height, 6.39 ft or 1.948 m); minimum daily, 370 ft³/s (10.5 m³/s) Aug. 31, Sept. 25.

Period of record: Maximum discharge, 7,290 ft³/s (206 m³/s) Apr. 7, 1947 (gage height, 9.13 ft or 2.783 m, site and datum then in use); minimum, 50 ft³/s (1.42 m³/s) Sept. 22, 1939, site then in use; minimum daily, 86 ft³/s (2.44 m³/s) Aug. 5, 1964.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Diurnal fluctuation, below 1,500 ft³/s (42 m³/s), caused by powerplants above station.

REVISIONS (WATER YEARS).--WSP 924: 1938-39. WSP 1387: 1938, 1945-46, 1948.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,160	620	1,170	1,610	1,910	1,650	1,960	1,160	1,180	750	430	390
2	1,110	659	1,190	1,450	1,580	1,680	2,280	1,120	1,100	700	380	420
3	1,060	651	1,120	1,180	1,530	1,780	2,340	1,070	1,030	650	500	450
4	937	643	1,090	1,070	1,440	1,970	2,460	1,050	989	600	530	500
5	827	628	1,080	984	1,260	2,390	2,490	935	989	640	590	480
6	890	605	1,040	907	1,090	2,640	2,420	1,010	980	640	550	450
7	707	605	1,010	890	950	2,810	2,390	971	984	600	500	440
8	783	575	979	780	950	2,740	2,330	1,020	1,070	640	460	450
9	667	553	927	706	1,000	2,680	2,200	1,060	1,070	560	520	470
10	620	525	879	773	1,070	3,010	2,110	1,090	1,060	550	550	420
11	667	518	840	806	1,040	3,200	1,960	1,170	1,060	530	540	450
12	635	504	782	759	1,030	2,920	1,830	1,300	1,050	500	520	480
13	620	504	776	740	1,010	2,550	1,720	1,380	1,050	530	480	480
14	635	511	730	738	958	2,220	1,660	1,400	930	520	480	580
15	659	715	737	746	916	1,980	1,580	1,400	900	520	450	550
16	724	774	708	758	884	1,830	1,550	1,660	900	500	440	520
17	582	740	609	767	861	1,750	1,460	1,990	920	450	450	500
18	732	724	615	765	848	1,680	1,380	2,360	850	460	580	500
19	732	740	554	755	920	1,650	1,320	2,630	850	480	650	500
20	605	758	434	919	978	1,580	1,310	2,560	900	460	470	440
21	553	766	532	1,410	1,060	1,530	1,310	2,240	920	470	450	400
22	504	732	636	1,810	1,410	1,510	1,310	1,910	900	500	450	400
23	525	715	648	2,520	1,650	1,490	1,260	1,660	920	460	450	450
24	504	733	664	2,920	1,790	1,410	1,160	1,460	950	440	400	400
25	490	768	797	2,980	2,070	1,300	1,130	1,340	900	430	450	370
26	484	803	1,030	2,740	2,140	1,270	1,030	1,250	850	460	460	400
27	497	830	1,250	2,590	1,860	1,340	1,070	1,160	800	460	420	430
28	511	975	1,330	2,520	1,680	1,300	1,050	1,090	800	430	450	468
29	497	1,100	1,550	2,460	-----	1,310	1,090	1,150	600	450	450	518
30	490	1,150	1,750	2,350	-----	1,510	1,160	1,210	550	440	400	505
31	518	-----	1,680	2,170	-----	1,710	-----	1,230	-----	430	370	-----
TOTAL	20,925	21,124	29,137	44,573	35,885	60,390	50,320	44,036	28,052	16,250	14,820	13,811
MEAN	675	704	940	1,438	1,282	1,948	1,677	1,421	935	524	478	460
MAX	1,160	1,150	1,750	2,980	2,140	3,200	2,490	2,630	1,180	750	650	580
MIN	484	504	434	706	848	1,270	1,030	935	550	430	370	370
CFSM	.82	.85	1.14	1.75	1.56	2.36	2.04	1.72	1.13	.64	.58	.56
IN.	.94	.95	1.32	2.01	1.62	2.73	2.27	1.99	1.27	.73	.67	.62

CAL YR 1973 TOTAL 354,223 MEAN 970 MAX 2,560 MIN 248 CFSM 1.18 IN 15.99
WTR YR 1974 TOTAL 379,323 MEAN 1,039 MAX 3,200 MIN 370 CFSM 1.26 IN 17.12

NOTE.--No gage-height record June 14 to Sept. 27.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04105700 Augusta Creek near Augusta, Mich.

LOCATION.--Lat 42°21'12", long 85°21'14", in SW¼ sec.27, T.1 S., R.9 W., Kalamazoo County, on left bank 15 ft (5 m) downstream from bridge on EF Road, and 1.3 mi (2.1 km) north of Augusta.

DRAINAGE AREA.--38.9 mi² (100.8 km²).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 815 ft (248 m) (from topographic map). Prior to June 15, 1965, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--10 years, 40.5 ft³/s (1.47 m³/s), 14.14 in/yr (359 mm/yr).

EXTREMES.--Current year: Maximum discharge, 125 ft³/s (3.54 m³/s) May 17 (gage height, 2.22 ft or 0.677 m); minimum, 21 ft³/s (0.59 m³/s) Dec. 21 (gage height, 0.85 ft or 0.259 m, result of freezeup).

Period of record: Maximum discharge, 125 ft³/s (3.54 m³/s) Feb. 3, 1968, May 17, 1974; maximum gage height, 2.39 ft (0.728 m) Feb. 3, 1968; minimum discharge, 9.5 ft³/s (0.27 m³/s) Dec. 30, 1970, result of freezeup; minimum gage height, 0.65 ft (0.198 m) Jan. 19, 1970.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	50	52	48	61	72	97	77	61	42	31	33
2	60	51	48	41	55	73	96	71	59	44	34	36
3	54	51	46	44	57	75	92	68	56	43	35	40
4	49	48	49	42	54	84	101	65	54	45	36	38
5	45	45	58	38	48	100	100	64	53	49	37	37
6	42	43	59	40	47	99	91	63	55	46	37	36
7	41	41	55	39	47	88	89	62	55	44	36	35
8	41	40	50	38	45	86	91	66	61	41	35	35
9	40	39	47	38	45	90	88	70	78	40	34	35
10	38	38	46	39	45	98	83	68	71	39	33	34
11	37	38	44	39	45	94	79	72	72	39	36	33
12	37	37	43	38	45	83	80	76	70	38	39	53
13	52	37	43	37	45	75	80	75	63	37	37	56
14	67	38	41	39	45	70	79	73	60	36	36	51
15	67	53	41	40	43	68	77	81	65	35	35	46
16	59	60	39	40	42	72	74	98	67	34	34	43
17	52	57	35	42	45	73	73	118	66	33	35	43
18	47	52	37	41	49	72	71	118	63	33	34	37
19	44	49	36	40	54	73	74	102	61	32	33	35
20	42	46	36	54	59	72	74	89	59	32	32	32
21	40	45	35	90	62	71	72	79	71	31	31	33
22	40	45	37	100	90	69	71	75	67	31	30	36
23	39	43	38	102	97	69	69	71	63	32	30	36
24	39	49	38	92	89	66	68	66	59	32	30	35
25	38	55	49	81	77	62	66	63	55	32	29	35
26	37	55	62	73	68	64	65	61	51	32	29	34
27	36	52	74	81	66	63	64	59	49	31	37	34
28	37	57	72	83	68	67	64	58	48	30	37	39
29	38	60	67	78	-----	75	71	67	41	33	36	46
30	41	57	60	71	-----	91	84	66	39	33	34	47
31	43	-----	55	67	-----	99	-----	63	-----	32	33	-----
TOTAL	1,409	1,431	1,492	1,735	1,593	2,413	2,383	2,304	1,792	1,131	1,055	1,163
MEAN	45.5	47.7	48.1	56.0	56.9	77.8	79.4	74.3	59.7	36.5	34.0	38.8
MAX	67	60	74	102	97	100	101	118	78	49	39	56
MIN	36	37	35	37	42	62	64	58	39	30	29	32
CFSM	1.17	1.23	1.24	1.44	1.46	2.00	2.04	1.91	1.53	.94	.87	1.00
IN.	1.35	1.37	1.43	1.66	1.52	2.31	2.28	2.20	1.71	1.08	1.01	1.11
CAL YR 1973	TOTAL 18,310		MEAN 50.2		MAX 115	MIN 23	CFSM 1.29	IN 17.51				
WTR YR 1974	TOTAL 19,901		MEAN 54.5		MAX 118	MIN 29	CFSM 1.40	IN 19.03				

STREAMS TRIBUTARY TO LAKE MICHIGAN

91

04106000 Kalamazoo River at Comstock, Mich.

LOCATION.--Lat 42°17'05", long 85°30'50", in NE¼ sec.19, T.2 S., R.10 W., Kalamazoo County, on left bank at downstream side of bridge on River Street, in Comstock, 0.2 mi (0.3 km) downstream from Comstock Creek.

DRAINAGE AREA.--1,010 mi² (2,620 km²), approximately.

PERIOD OF RECORD.--April to August 1931, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 759.12 ft (231.380 m) above mean sea level. Prior to November 1945, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--42 years (1932-74), 832 ft³/s (23.56 m³/s), 11.19 in/yr (284 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,830 ft³/s (108 m³/s) Mar. 12 (gage height, 5.44 ft or 1.658 m); minimum, 395 ft³/s (11.2 m³/s) Aug. 31 (gage height, 1.04 ft or 0.317 m).

Period of record: Maximum discharge, 6,910 ft³/s (196 m³/s) Apr. 8, 1947 (gage height, 7.94 ft or 2.420 m); minimum, 119 ft³/s (3.37 m³/s) May 29, 1958 (gage height, 0.09 ft or 0.027 m); minimum daily, 185 ft³/s (5.24 m³/s) Aug. 7, 1934.

REMARKS.--Records good. Flow regulated by powerplants above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 824: 1933-36. WSP 1387: 1933, 1934 (M), 1935, 1936 (M), 1938 (M), 1940 (M), 1941.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,420	771	1,410	1,920	2,660	2,230	2,100	1,520	1,420	1,090	608	537
2	1,350	883	1,480	1,550	2,410	2,060	2,250	1,500	1,430	980	524	579
3	1,310	931	1,440	1,310	2,190	2,090	2,550	1,450	1,410	841	728	656
4	1,220	944	1,450	1,420	1,940	2,280	2,930	1,400	1,300	796	752	704
5	1,100	908	1,430	1,400	1,750	2,510	2,920	1,370	1,260	868	814	680
6	964	860	1,410	1,290	1,440	2,750	2,940	1,320	1,280	877	787	593
7	980	837	1,360	1,210	1,190	3,200	2,960	1,250	1,240	814	704	632
8	913	859	1,310	1,090	1,250	3,320	2,960	1,310	1,230	922	640	640
9	886	876	1,260	1,000	1,350	3,460	2,860	1,360	1,630	778	728	656
10	841	782	1,220	1,010	1,490	3,390	2,760	1,400	1,590	760	769	579
11	760	745	1,170	1,130	1,410	3,490	2,640	1,450	1,590	720	769	608
12	760	736	1,070	1,180	1,400	3,790	2,540	1,530	1,390	696	744	672
13	823	719	1,070	1,040	1,520	3,720	2,410	1,630	1,320	744	664	698
14	964	704	1,060	982	1,450	3,370	2,190	1,670	1,280	712	680	823
15	1,020	816	1,010	1,070	1,300	3,020	2,050	1,840	1,200	736	624	786
16	972	1,040	981	1,140	1,250	2,560	1,880	2,060	1,190	656	600	756
17	972	1,130	791	1,170	1,240	2,440	1,860	2,420	1,300	616	632	709
18	896	1,080	667	1,120	1,160	2,280	1,820	2,590	1,190	656	814	716
19	928	1,050	821	1,070	1,200	2,160	1,740	2,800	1,140	672	913	664
20	934	1,080	664	1,180	1,310	2,110	1,610	3,150	1,240	632	648	549
21	861	1,090	665	1,640	1,390	1,930	1,590	3,100	1,310	650	632	565
22	831	1,040	724	1,940	1,680	1,870	1,570	2,830	1,250	688	616	556
23	694	1,020	856	2,300	1,930	1,890	1,550	2,550	1,300	632	616	638
24	735	1,010	959	2,750	2,020	1,850	1,520	2,110	1,340	600	544	530
25	724	1,080	1,050	3,300	2,060	1,770	1,440	1,850	1,230	593	648	513
26	703	1,080	1,250	3,520	2,290	1,580	1,370	1,740	1,120	648	586	580
27	665	1,080	1,410	3,470	2,510	1,580	1,370	1,550	1,160	648	565	611
28	698	1,140	1,570	3,250	2,440	1,600	1,370	1,440	1,090	593	624	580
29	749	1,260	1,690	3,100	-----	1,580	1,400	1,450	796	632	616	666
30	734	1,410	1,800	2,990	-----	1,670	1,480	1,530	778	608	565	832
31	751	-----	1,870	2,800	-----	1,830	-----	1,530	-----	593	506	-----
TOTAL	28,158	28,961	36,918	55,342	47,230	75,380	62,630	56,700	38,004	22,451	20,660	19,308
MEAN	908	965	1,191	1,785	1,687	2,432	2,088	1,829	1,267	724	666	644
MAX	1,420	1,410	1,870	3,520	2,660	3,790	2,960	3,150	1,630	1,090	913	832
MIN	665	704	664	982	1,160	1,580	1,370	1,250	778	593	506	513
CFSM	.90	.96	1.18	1.77	1.67	2.41	2.07	1.81	1.25	.72	.66	.64
IN.	1.04	1.07	1.36	2.04	1.74	2.78	2.31	2.09	1.40	.83	.76	.71
CAL YR 1973	TOTAL 461,428	MEAN 1,264	MAX 3,160	MIN 448	CFSM 1.25	IN 17.00						
WTR YR 1974	TOTAL 491,742	MEAN 1,347	MAX 3,790	MIN 506	CFSM 1.33	IN 18.11						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04106300 Portage Creek near Kalamazoo, Mich.

LOCATION.--Lat 42°14'46", long 85°34'33", in SE¼ sec.34, T.2 S., R.11 W., Kalamazoo County, on left bank 25 ft (8m) upstream from bridge on Lovers Lane, and 3.0 mi (4.8 km) south of Kalamazoo.

DRAINAGE AREA.--22.4 mi² (58.0 km²).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 814.88 ft (248.375 m) above mean sea level.

AVERAGE DISCHARGE.--10 years, 40.6 ft³/s (1.150 m³/s), 24.61 in/yr (625 mm/yr).

EXTREMES.--Current year: Maximum discharge, 126 ft³/s (3.57 m³/s) May 16 (gage height, 3.11 ft or 0.948 m); minimum, 30 ft³/s (0.85 m³/s) Sept. 27; minimum gage height, 1.64 ft (0.500 m) Dec. 16, 17, July 22.

Period of record: Maximum discharge, 180 ft³/s (5.10 m³/s) June 25, 1968 (gage height, 3.60 ft or 1.097 m); minimum, 8.0 ft³/s (0.23 m³/s) Jan. 19, 1965 (gage height, 0.88 ft or 0.268 m), result of bridge construction upstream.

REMARKS.--Records good. Flow includes water which is pumped from ground water sources by industry and discharged into stream two miles above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	42	43	40	48	51	54	50	49	44	38	35
2	47	40	39	41	45	51	57	49	46	46	41	38
3	42	38	39	41	43	53	60	49	48	46	38	40
4	41	37	44	41	45	68	75	47	49	52	38	39
5	39	38	42	39	45	72	57	46	54	46	40	38
6	37	37	39	39	46	59	51	46	56	43	39	38
7	40	36	37	38	45	55	54	46	52	42	39	37
8	41	36	36	36	44	58	55	57	55	46	43	36
9	40	35	35	37	44	63	51	53	77	46	47	38
10	39	34	36	37	43	53	49	49	58	49	41	38
11	38	33	36	37	44	52	52	63	54	45	41	39
12	38	35	36	36	46	50	58	60	52	43	41	46
13	50	35	40	34	45	48	54	53	50	38	41	49
14	43	34	37	37	43	48	52	53	52	37	41	39
15	41	55	34	39	43	49	51	66	63	37	40	37
16	38	43	32	39	43	52	49	90	45	36	51	37
17	38	39	34	38	41	47	49	102	48	37	48	38
18	37	36	34	37	45	49	51	74	49	37	38	36
19	36	36	35	37	52	52	53	59	53	38	38	36
20	35	38	36	61	48	48	50	56	52	35	38	36
21	34	41	35	85	51	49	48	55	73	34	37	35
22	35	37	34	69	98	50	50	56	52	36	37	33
23	36	35	34	71	64	48	47	53	47	38	37	34
24	36	40	34	57	49	44	47	51	49	38	36	34
25	37	37	48	52	48	46	48	48	47	37	36	35
26	35	37	50	54	47	48	49	45	48	38	37	34
27	34	38	58	67	48	48	47	46	47	37	39	35
28	36	57	47	57	52	53	48	49	46	35	38	35
29	36	49	45	51	-----	52	56	62	45	40	36	37
30	37	45	42	51	-----	64	56	55	43	38	37	33
31	38	-----	41	50	-----	54	-----	53	-----	38	36	-----
TOTAL	1,197	1,173	1,212	1,448	1,355	1,634	1,578	1,741	1,559	1,252	1,227	1,115
MEAN	38.6	39.1	39.1	46.7	48.4	52.7	52.6	56.2	52.0	40.4	39.6	37.2
MAX	50	57	58	85	98	72	75	102	77	52	51	49
MIN	34	33	32	34	41	44	47	45	43	34	36	33

CAL YR 1973 TOTAL 15,674 MEAN 42.9 MAX 88 MIN 31

TR YR 1974 TOTAL 16,491 MEAN 45.2 MAX 102 MIN 32

PEAK DISCHARGE (BASE, 85 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
1-21	0500	2.83	100	05-16	1300	3.11	126
1-22	2300	2.68	88	06-09	0300	2.89	105
2-22	0300	2.89	105	06-15	1400	2.95	110
3-04	2400	2.69	88	06-20	2400	2.78	95
4-03	2400	2.89	105	08-16	2100	2.66	86
5-11	2000	2.81	98				

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04106320 West Fork Portage Creek near Oshtemo, Mich.

LOCATION.--Lat 42°14'07", long 85°38'54", in SE¼ sec.1, T.3 S., R.12 W., Kalamazoo County, on right bank at upstream side of bridge on 12th Street, 2.1 mi (3.4 km) southeast of Oshtemo.

DRAINAGE AREA.--13.0 mi² (33.7 km²).

PERIOD OF RECORD.--May 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 868.86 ft (264.829 m) above mean sea level (Kalamazoo County Road Commission bench mark).

EXTREMES.--Current year: Maximum discharge, 14 ft³/s (0.40 m³/s) Oct. 1, May 17; maximum gage height, 1.83 ft (0.558 m) Nov. 10; minimum discharge, 4.6 ft³/s (0.13 m³/s) July 20, 21 (gage height, 1.25 ft or 0.381 m).

Period of record: Maximum discharge, 19 ft³/s (0.54 m³/s) May 31, 1973 (gage height, 1.90 ft or 0.579 m); minimum, 4.6 ft³/s (0.13 m³/s) July 20, 21, 1974 (gage height, 1.25 ft or 0.381 m).

REMARKS.--Records good except those for period of no gage-height record, which is poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	11	8.9	7.0	8.7	8.6	10	8.6	8.4	6.6	5.2	7.7
2	12	10	8.7	7.0	8.2	8.6	10	8.2	7.8	6.6	5.5	7.8
3	11	9.8	8.7	7.0	8.2	8.9	9.8	8.0	7.5	6.2	5.7	8.2
4	10	9.3	8.9	7.0	8.0	9.6	11	7.8	7.3	6.6	6.0	8.2
5	10	8.9	9.8	7.0	7.8	11	11	7.7	7.1	6.6	6.2	8.0
6	9.5	8.6	9.5	7.0	7.7	10	10	7.8	7.7	6.4	6.2	7.8
7	9.6	8.0	8.9	7.0	7.7	9.8	10	7.7	7.8	6.0	6.2	7.8
8	9.6	8.0	8.7	7.0	7.7	9.5	10	8.0	8.6	5.9	6.6	7.8
9	9.3	7.5	8.6	7.0	7.6	10	9.8	8.9	9.5	5.9	7.1	7.8
10	9.1	6.0	8.6	7.0	7.5	10	9.1	8.7	8.5	6.0	7.1	8.0
11	8.7	7.0	8.4	7.0	7.4	9.6	8.9	8.9	8.0	6.0	7.3	8.6
12	8.6	7.5	8.2	7.0	7.3	9.1	9.6	9.5	7.5	5.9	7.3	9.6
13	10	8.4	8.7	7.0	7.3	8.7	9.8	9.3	7.0	5.9	7.1	10
14	12	8.4	9.1	7.0	7.3	8.6	9.5	9.3	7.0	5.7	6.8	10
15	11	10	7.0	7.0	7.5	8.4	9.1	9.6	7.5	5.5	6.6	10
16	9.8	11	6.5	7.0	7.5	8.9	8.7	10	7.5	5.3	6.9	9.6
17	9.1	10	6.0	7.0	7.3	8.9	8.6	13	8.0	5.2	7.8	9.3
18	8.6	9.5	6.0	7.0	7.5	8.7	8.2	13	8.0	5.2	7.8	8.9
19	8.2	8.7	6.0	8.0	8.4	9.1	8.6	12	8.0	5.0	7.7	8.6
20	8.0	8.2	6.0	9.0	8.7	8.9	8.4	11	8.2	4.8	7.7	8.2
21	8.0	8.9	6.0	10	9.1	8.7	8.4	10	10	4.8	7.7	8.0
22	7.8	9.1	6.0	12	12	8.9	8.0	9.8	10	5.0	7.5	7.8
23	7.8	8.9	6.0	12	12	8.7	7.7	9.5	9.5	5.2	7.5	7.7
24	7.8	8.9	6.0	11	10	8.6	7.3	8.7	8.7	5.3	7.5	7.5
25	7.7	9.1	7.0	9.8	9.5	8.2	7.1	8.4	8.2	5.3	7.5	7.3
26	7.7	8.9	9.0	9.3	8.6	8.2	7.1	7.8	7.7	5.3	7.7	7.3
27	7.7	8.7	10	10	8.2	8.0	6.9	7.7	7.3	5.3	7.8	7.5
28	8.2	9.8	9.0	10	8.6	8.2	7.1	7.7	6.9	5.2	7.8	7.8
29	8.2	10	8.5	9.8	-----	8.9	8.0	8.7	6.8	5.2	7.7	8.6
30	8.4	9.8	8.0	9.5	-----	10	8.9	8.9	6.8	5.2	7.7	8.7
31	9.3	-----	7.5	9.3	-----	10	-----	8.7	-----	5.2	7.7	-----
TOTAL	286.7	267.9	244.2	255.7	233.3	281.3	266.6	282.9	238.8	174.3	218.9	250.1
MEAN	9.25	8.93	7.88	8.25	8.33	9.07	8.89	9.13	7.96	5.62	7.06	8.34
MAX	14	11	10	12	12	11	11	13	10	6.6	7.8	10
MIN	7.7	6.0	6.0	7.0	7.3	8.0	6.9	7.7	6.8	4.8	5.2	7.3
CFSM	.71	.69	.61	.63	.64	.70	.68	.70	.61	.43	.54	.64
IN.	.82	.77	.70	.73	.67	.80	.76	.81	.68	.50	.63	.72

CAL YR 1973 TOTAL 3,664.8 MEAN 10.0 MAX 18 MIN 6.0 CFSM .77 IN 10.49
WTR YR 1974 TOTAL 3,000.7 MEAN 8.22 MAX 14 MIN 4.8 CFSM .63 IN 8.59

NOTE.--No gage-height record Dec. 15 to Jan. 24.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04106400 West Fork Portage Creek at Kalamazoo, Mich.

LOCATION.--Lat 42°14'40", long 85°36'50", in NE¼ sec.5, T.3 S., R.11 W., Kalamazoo County, on right bank 30 ft (9 m) upstream from culvert on Oakland Drive, 2.5 mi (4.0 km) upstream from mouth, and 3.7 mi (6.0 km) southwest of main business district of Kalamazoo.

DRAINAGE AREA.--18.7 mi² (48.4 km²).

PERIOD OF RECORD.--September 1959 to current year.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 858.09 ft (261.546 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--15 years, 12.7 ft³/s (0.360 m³/s), 7.02 in/yr (178 mm/yr).

EXTREMES.--Current year: Maximum discharge, 26 ft³/s (0.74 m³/s) May 17 (gage height, 2.99 ft or 0.911 m); minimum daily, 8.0 ft³/s (0.23 m³/s) Dec. 17-22, July 24.

Period of record: Maximum discharge, 39 ft³/s (1.10 m³/s) Dec. 8, 1966; maximum gage height, 3.12 ft (0.951 m) Mar. 20, 1963; minimum discharge, 1.0 ft³/s (0.028 m³/s) Aug. 9, 1964; minimum gage height, 0.88 ft (0.268 m) July 30, 1963, caused by construction.

REMARKS.--Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	14	13	11	13	12	15	13	14	11	9.1	11
2	19	14	12	11	13	13	15	13	13	11	9.2	11
3	18	14	12	11	13	13	15	13	13	11	9.6	12
4	16	14	12	11	13	14	18	12	12	11	10	11
5	16	13	13	11	13	17	17	12	12	12	10	12
6	15	13	13	11	12	16	16	12	13	12	10	12
7	15	12	12	11	12	15	16	12	13	11	10	12
8	15	11	11	11	12	15	16	13	14	11	10	11
9	15	9.9	11	11	12	15	15	13	16	11	11	11
10	14	8.3	10	11	12	15	14	13	15	11	11	11
11	14	9.2	10	11	12	14	14	14	13	12	12	11
12	13	11	10	11	12	14	14	15	13	11	12	14
13	15	11	11	11	12	13	15	14	12	11	12	16
14	18	11	11	11	12	13	14	14	12	10	11	16
15	16	14	10	11	12	12	14	16	13	10	11	16
16	15	15	9.0	11	12	12	13	18	13	9.9	11	15
17	14	15	8.0	11	12	12	13	23	14	9.5	13	14
18	13	13	8.0	11	12	12	13	23	14	9.0	12	14
19	12	12	8.0	11	13	13	14	21	14	9.0	12	13
20	11	12	8.0	13	14	12	13	19	14	8.5	11	13
21	11	12	8.0	18	16	12	13	18	18	9.0	11	12
22	11	12	8.0	19	19	12	13	17	18	9.0	11	12
23	10	12	8.1	19	19	12	12	16	17	9.5	11	12
24	10	12	10	18	16	12	11	15	15	8.0	11	11
25	9.9	13	12	17	15	12	11	14	15	8.8	11	11
26	9.8	12	14	16	14	11	10	13	14	10	11	11
27	9.5	12	16	17	13	11	10	13	13	10	11	10
28	9.9	14	15	16	13	11	10	13	12	10	11	11
29	10	14	14	15	-----	12	12	14	12	10	11	13
30	11	14	13	14	-----	14	14	14	12	10	11	14
31	12	-----	12	13	-----	15	-----	14	-----	10	11	-----
TOTAL	419.1	373.4	342.1	404	373	406	410	464	413	316.2	337.9	373
MEAN	13.5	12.4	11.0	13.0	13.3	13.1	13.7	15.0	13.8	10.2	10.9	12.4
MAX	21	15	16	19	19	17	18	23	18	12	13	16
MIN	9.5	8.3	8.0	11	12	11	10	12	12	8.0	9.1	10
CFSM	.72	.66	.59	.70	.71	.70	.73	.80	.74	.55	.58	.66
IN.	.83	.74	.68	.80	.74	.81	.82	.92	.82	.63	.67	.74
CAL YR 1973	TOTAL 4,462.6	MEAN 12.2	MAX 24	MIN 7.3	CFSM .65	IN 8.88						
WTR YR 1974	TOTAL 4,631.7	MEAN 12.7	MAX 23	MIN 8.0	CFSM .68	IN 9.21						

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04108500 Kalamazoo River near Fennville, Mich.

LOCATION.--Lat 42°35'36", long 85°59'03", in NE¼ sec.5, T.2 N., R.14 W., Allegan County, on left bank 40 ft (12 m) upstream from bridge on State Highway 89, 2.1 mi (3.4 km) downstream from Swan Creek, 4.0 mi (6.4 km) downstream from Calkins Dam, and 6.1 mi (9.8 km) east of Fennville.

DRAINAGE AREA.--1,600 mi² (4,144 km²), approximately.

PERIOD OF RECORD.--April 1929 to September 1936, October 1937 to current year. Monthly discharge only for some periods, published in WSP 1307. 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 (178.768 m) above mean sea level (levels by Michigan Department of Natural Resources). April 1929 to September 1936 at bridge and October 1937 to September 1950 in powerplant, 4.0 mi (6.4 km) upstream at mean sea level datum (levels by City of Allegan).

AVERAGE DISCHARGE.--44 years, 1,362 ft³/s (38.57 m³/s), 11.56 in/yr (294 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,170 ft³/s (146 m³/s) Mar. 11 (gage height, 12.63 ft or 3.850 m); minimum daily, 700 ft³/s (19.8 m³/s) Sept. 12, 19.

Period of record: Maximum discharge, 17,500 ft³/s (496 m³/s) Apr. 11, 1947 (gage height, 606.76 ft or 184.940 m, site and datum then in use); minimum daily, 73 ft³/s (2.07 m³/s) Aug. 31, 1941.

REMARKS.--Records good. Flow regulated at low and medium stages by powerplants above station and since June 1936, by Calkins Dam and powerplant, 4.0 mi (6.4 km) above station.

REVISIONS (WATER YEARS).--WSP 1387: 1929 (M), 1930, 1933, 1934-36 (M), 1938 (M), 1939-40, 1942.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,270	1,500	2,210	2,900	3,550	3,560	3,840	2,240	2,370	1,800	1,400	864
2	2,710	1,700	2,250	2,700	2,770	3,610	3,460	2,320	2,370	1,190	1,000	868
3	2,460	1,500	2,290	2,400	3,470	3,540	3,140	2,330	2,320	1,420	1,250	1,000
4	2,010	1,300	2,250	2,200	3,880	3,110	4,040	2,320	2,240	1,840	1,250	1,300
5	1,940	1,500	2,430	2,000	3,600	3,380	4,320	2,310	2,000	1,270	1,250	1,300
6	1,900	1,400	2,690	2,000	3,200	3,920	3,960	2,270	1,900	1,300	1,250	900
7	1,780	1,400	2,600	2,100	2,700	4,050	4,210	2,170	1,930	1,600	1,200	900
8	1,760	1,600	2,340	2,000	2,300	4,090	4,160	2,220	2,230	1,450	1,230	1,000
9	1,750	1,400	2,110	2,000	2,400	4,970	4,140	2,370	2,420	1,540	1,000	1,100
10	1,400	1,200	1,940	2,200	2,400	5,080	4,130	1,910	2,420	1,090	893	1,000
11	1,500	1,700	2,130	2,000	2,500	5,150	3,980	2,120	2,420	1,440	905	1,100
12	1,900	1,500	2,140	1,600	2,500	4,770	3,720	2,160	2,420	1,480	1,110	700
13	1,300	1,400	2,130	1,700	2,400	4,170	3,680	2,220	2,410	1,110	1,290	1,300
14	1,100	1,300	1,730	2,000	2,300	4,490	3,850	2,320	2,360	1,110	1,310	1,100
15	1,800	1,570	1,530	1,900	2,300	4,660	3,680	2,350	2,290	1,110	1,190	1,000
16	1,800	1,940	1,450	1,770	2,200	4,290	3,130	2,720	2,180	1,100	1,250	1,100
17	1,760	1,900	1,600	1,700	2,200	4,160	3,150	3,510	1,950	1,100	1,100	1,200
18	1,750	1,870	1,670	1,710	2,200	3,770	2,740	3,560	1,930	1,100	1,100	1,400
19	1,200	1,900	1,700	1,530	2,100	3,580	2,990	3,670	2,080	1,100	1,240	700
20	1,380	1,910	1,600	1,800	2,100	3,380	2,740	3,600	2,130	1,100	1,450	900
21	1,410	1,910	1,400	2,320	2,110	3,710	2,710	3,470	1,950	1,410	1,280	900
22	996	1,870	1,200	3,130	2,390	3,460	2,700	3,560	2,070	850	1,080	900
23	1,200	1,870	1,300	4,610	3,020	2,900	2,600	3,880	2,250	830	1,090	1,100
24	1,500	1,890	1,500	4,000	3,370	2,860	2,430	3,210	2,250	1,750	1,080	1,200
25	1,300	1,890	1,800	3,640	3,420	2,910	2,390	3,090	2,240	2,000	1,080	1,060
26	1,100	1,990	2,100	3,630	3,150	3,140	2,370	2,760	2,100	830	1,080	882
27	1,200	2,180	2,500	4,060	2,980	3,150	2,310	2,580	1,900	750	791	881
28	1,300	2,040	2,700	4,530	3,050	2,660	2,210	2,720	1,520	800	1,080	884
29	1,400	2,010	2,800	4,500	-----	2,750	2,210	2,140	1,400	820	1,380	1,150
30	1,400	2,200	2,900	4,180	-----	3,210	2,210	2,250	1,850	900	1,010	1,280
31	1,400	-----	3,000	4,100	-----	3,620	-----	2,310	-----	1,000	866	-----
TOTAL	49,676	51,340	63,990	82,910	76,560	116,100	97,200	82,660	63,900	38,190	35,485	30,969
MEAN	1,602	1,711	2,064	2,675	2,734	3,745	3,240	2,666	2,130	1,232	1,145	1,032
MAX	2,710	2,200	3,000	4,610	3,880	5,150	4,320	3,880	2,420	2,000	1,450	1,400
MIN	996	1,200	1,200	1,530	2,100	2,660	2,210	1,910	1,400	750	791	700
CFSM	1.00	1.07	1.29	1.67	1.71	2.34	2.03	1.67	1.33	.77	.72	.65
IN.	1.15	1.19	1.49	1.93	1.78	2.70	2.26	1.92	1.49	.89	.83	.72

CAL YR 1973 TOTAL 704,103 MEAN 1,929 MAX 4,550 MIN 624 CFSM 1.21 IN 16.37
WTR YR 1974 TOTAL 788,980 MEAN 2,162 MAX 5,150 MIN 700 CFSM 1.35 IN 18.34

STREAMS TRIBUTARY TO LAKE MICHIGAN

04108600 Rabbit River near Hopkins, Mich.

LOCATION.--Lat 42°38'32", long 85°43'19", in SE¼ sec.16, T.3 N., R.12 W., Allegan County, on left bank at downstream side of bridge on 18th Street, 2.5 mi (4.0 km) northeast of Hopkins.

DRAINAGE AREA.--71.4 mi² (184.9 km²).

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 700 ft (213 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--9 years, 54.9 ft³/s (1.555 m³/s), 10.44 in/yr (265 mm/yr).

EXTREMES.--Current year: Maximum discharge, 683 ft³/s (19.3 m³/s) Jan. 21 (gage height, 8.20 ft or 2.499 m); minimum, 20 ft³/s (0.57 m³/s) Aug. 29, Sept. 26, 27; minimum gage height, 2.36 ft (0.719 m) Aug. 29.

Period of record: Maximum discharge, 683 ft³/s (19.3 m³/s) Jan. 21, 1974; maximum gage height, 8.66 ft (2.640 m) Dec. 31, 1972; minimum discharge not determined; minimum daily, 9.2 ft³/s (0.26 m³/s) Aug. 27, 28, 1970, Sept. 18, 1971; minimum gage height, 1.93 ft (0.588 m) Sept. 20, 26, 27, 1966.

REMARKS.--Records fair except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	67	86	70	100	274	245	65	45	32	23	24
2	70	68	71	65	78	265	160	60	42	31	35	24
3	89	68	65	62	75	259	139	61	41	32	53	28
4	84	61	75	60	70	251	219	60	40	35	47	27
5	66	54	167	58	70	376	149	60	39	38	49	25
6	55	49	154	56	68	326	154	62	45	34	40	24
7	48	45	123	56	68	226	181	57	54	31	35	23
8	45	43	96	56	67	222	133	75	150	30	34	23
9	47	41	82	55	67	311	104	90	160	29	34	23
10	46	40	76	54	67	302	98	70	80	29	32	23
11	41	38	73	54	68	218	111	80	60	29	32	23
12	38	38	70	54	68	156	120	95	50	27	32	22
13	60	37	62	54	67	127	148	80	45	26	31	24
14	99	37	59	54	65	110	123	80	42	26	30	24
15	88	108	57	58	63	102	98	113	45	27	29	23
16	65	163	56	60	62	104	85	269	43	25	29	24
17	53	133	56	64	62	131	84	206	47	25	31	23
18	46	89	65	57	62	119	83	115	54	25	31	22
19	42	69	64	53	94	112	82	83	54	25	29	22
20	41	60	64	143	122	108	78	72	50	24	28	22
21	40	59	65	585	129	98	74	57	75	23	27	23
22	38	59	65	451	238	96	72	53	58	23	27	23
23	37	53	66	398	359	94	70	50	43	25	26	22
24	36	139	58	310	298	89	67	45	40	25	24	22
25	35	260	96	217	195	78	65	43	37	24	24	21
26	35	185	285	164	135	84	63	43	36	24	23	21
27	34	115	283	287	104	87	62	43	35	23	24	21
28	38	125	231	305	171	90	61	50	35	22	25	22
29	45	154	156	237	-----	113	69	80	34	23	24	29
30	48	119	107	154	-----	249	72	60	33	24	23	34
31	47	-----	85	126	-----	333	-----	50	-----	24	24	-----
TOTAL	1,636	2,576	3,118	4,477	3,092	5,510	3,269	2,427	1,612	840	955	711
MEAN	52.8	85.9	101	144	110	178	109	78.3	53.7	27.1	30.8	23.7
MAX	99	260	285	585	359	376	245	269	160	38	53	34
MIN	34	37	56	53	62	78	61	43	33	22	23	21
CFSM	.74	1.20	1.41	2.02	1.54	2.49	1.53	1.10	.75	.38	.43	.33
IN.	.85	1.34	1.62	2.33	1.61	2.87	1.70	1.26	.84	.44	.50	.37

CAL YR 1973 TOTAL 26,610 MEAN 72.9 MAX 295 MIN 19 CFSM 1.02 IN 13.86
WTR YR 1974 TOTAL 30,223 MEAN 82.8 MAX 585 MIN 21 CFSM 1.16 IN 15.75

PEAK DISCHARGE (BASE, 300 FT³/s)

NOTE.--No gage-height record May 23 to July 15.

DATE	TIME	G.H.	DISCHARGE
12-26	1600	7.16	311
01-21	1000	8.20	683
01-27	1700	7.18	324
02-23	1000	7.41	374
03-01	0400	6.94	300
03-05	0600	7.49	398
03-09	2300	7.15	334
03-30	2100	7.17	343

STREAMS TRIBUTARY TO LAKE MICHIGAN

97

04108800 Black River near Zeeland, Mich.

LOCATION.--Lat 42°46'40", long 86°01'06", in NW¼ sec. 31, T.5 N., R.14 W., Ottawa County, on left bank 20 ft (6 m) upstream from bridge on State Road, 0.2 mi (0.3 km) downstream from South Branch, and 2.5 mi (4.0 km) south of Zeeland.

DRAINAGE AREA.--65.8 mi² (170.4 km²).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 590 ft (180 m) revised (from topographic map).

AVERAGE DISCHARGE.--14 years, 58.7 ft³/s (1.662 m³/s), 12.11 in/yr (308 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,570 ft³/s (72.8 m³/s) Jan. 21 (gage height, 12.10 ft or 3.688 m); minimum, 2.0 ft³/s (0.057 m³/s) Sept. 26; minimum gage height, 1.99 ft (0.607 m) July 30, 51.
Period of record: Maximum discharge, 3,710 ft³/s (105 m³/s) Dec. 30, 1972 (gage height, 13.20 ft or 4.023 m); minimum, 0.9 ft³/s (0.025 m³/s) Aug. 24, 1962; minimum gage height, 1.79 ft (0.546 m) Sept. 30, Oct. 3, 1969.

REMARKS.--Record fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	67	52	38	47	757	243	37	19	10	3.6	2.6
2	18	50	39	33	35	396	114	29	17	10	6.7	2.9
3	22	63	35	30	30	269	103	29	16	11	6.4	3.1
4	18	34	119	27	28	292	613	29	15	9.7	5.1	2.4
5	13	22	641	25	26	1,040	162	26	14	10	4.7	2.8
6	11	17	327	24	26	291	76	26	16	8.9	4.0	2.6
7	10	14	164	24	25	94	144	22	18	8.2	3.7	2.7
8	10	14	100	23	25	282	168	25	27	7.4	3.8	2.7
9	10	12	76	23	25	541	68	31	42	6.8	3.7	2.5
10	11	11	62	23	25	252	51	26	26	6.6	3.4	2.6
11	9.7	11	50	23	24	91	46	25	19	6.4	3.8	2.8
12	8.9	11	40	23	24	64	78	29	15	6.1	4.2	2.7
13	42	12	35	23	24	49	90	25	13	5.8	3.7	3.0
14	115	13	31	23	23	43	153	26	12	5.6	3.3	3.0
15	38	287	30	24	23	43	121	238	12	5.3	3.5	2.5
16	22	309	30	25	22	152	55	511	11	4.9	3.1	2.2
17	17	127	30	26	22	177	42	1,310	13	4.9	3.4	2.4
18	14	85	30	28	23	75	37	366	14	4.9	3.2	2.3
19	12	58	29	30	35	111	38	89	25	5.1	3.0	2.4
20	11	41	29	200	80	66	34	49	29	4.8	3.0	2.3
21	10	46	29	1,880	208	57	30	37	440	4.2	3.0	2.3
22	9.9	66	29	1,640	641	62	29	34	154	4.7	2.9	2.6
23	8.8	40	30	1,260	805	65	27	29	34	5.4	3.0	2.5
24	8.7	305	30	572	339	52	25	25	23	4.9	3.1	2.3
25	8.3	503	212	250	142	46	25	23	19	4.6	2.9	2.3
26	7.9	138	1,120	253	86	49	22	20	18	4.2	2.9	2.3
27	8.1	71	953	993	75	82	21	19	15	3.9	3.2	2.3
28	10	244	525	721	507	98	23	19	13	3.8	2.9	3.0
29	12	274	217	169	-----	172	131	37	13	4.0	2.8	19
30	11	82	105	90	-----	692	68	26	11	3.3	3.0	8.1
31	14	-----	60	90	-----	624	-----	22	-----	3.4	3.1	-----
TOTAL	548.3	3,027	5,259	8,613	3,395	7,084	2,837	3,239	1,113	188.8	112.0	99.7
MEAN	17.7	101	170	278	121	229	94.6	104	37.1	6.09	3.61	3.32
MAX	115	503	1,120	1,880	805	1,040	613	1,310	440	11	6.7	19
MIN	7.9	11	29	23	22	43	21	19	11	3.3	2.8	2.2
CFSM	.27	1.54	2.58	4.22	1.84	3.48	1.44	1.58	.56	.09	.05	.05
IN.	.31	1.71	2.97	4.87	1.92	4.00	1.60	1.83	.63	.11	.06	.06

CAL YR 1973 TOTAL 28,866.1 MEAN 79.1 MAX 1,140 MIN 2.3 CFSM 1.20 IN 16.32
WTR YR 1974 TOTAL 35,515.8 MEAN 97.3 MAX 1,880 MIN 2.2 CFSM 1.48 IN 20.08

PEAK DISCHARGE (BASE, 900 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-26	1600	10.51	1,260	03-01	0400	9.81	968
01-21	1700	12.10	2,570	03-05	0800	10.42	1,240
01-27	1800	10.58	1,300	03-30	2100	9.58	942
02-23	0200	9.69	928	05-17	0200	11.16	1,770

STREAM TRIBUTARY TO LAKE MICHIGAN

04109000 Grand River at Jackson, Mich.

LOCATION.--Lat 42°17'05", long 84°24'30", in sec.22, T.2 S., R.1 W., Jackson County, on left bank of sewage-treatment plant, 1 mi (2 km) north of Jackson, 2.2 mi (3.5 km) upstream from Portage River, and at mile 216 (348 km).

DRAINAGE AREA.--174 mi² (451 km²).

PERIOD OF RECORD.--April 1935 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.00 ft (274.320 m) above mean sea level (Fargo Engineering Co. bench mark). Prior to Sept. 24, 1935, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--39 years, 118 ft³/s (3.342 m³/s), 9.21 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 777 ft³/s (22.0 m³/s) Mar. 4 (gage height, 13.62 ft or 4.151 m); minimum, 24 ft³/s (0.68 m³/s) Aug. 31 (gage height, 8.16 ft or 2.487 m).

Period of record: Maximum discharge, 1,070 ft³/s (30.3 m³/s) June 25, 1937 (gage height, 13.50 ft or 4.115 m); maximum gage height, 15.44 ft (4.706 m) June 25, 1968; minimum discharge, 9.2 ft³/s (0.26 m³/s) Aug. 22, 1936.

REMARKS.--Records good. Slight regulation by mills above station. Flow includes about 17 ft³/s (0.48 m³/s) as sewage effluent from the city of Jackson which originates from ground water sources.

REVISIONS (WATER YEARS).--WSP 974: 1937 (M). WSP 1387: 1936. WSP 1727: 1950 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	154	133	189	202	419	336	337	150	232	73	45	54
2	133	88	174	188	374	337	362	145	196	77	75	47
3	153	83	182	191	349	342	438	183	193	110	44	54
4	92	76	222	187	343	469	506	180	192	72	40	48
5	93	91	224	174	315	582	493	175	182	71	47	47
6	128	157	212	166	259	560	487	179	173	103	52	47
7	117	124	136	165	203	563	515	175	131	57	91	43
8	80	86	117	155	208	621	523	204	171	62	63	40
9	82	82	106	113	223	660	512	230	167	63	58	47
10	121	77	120	110	204	658	494	233	177	69	75	47
11	115	71	183	108	200	646	472	245	176	109	43	48
12	72	76	184	97	200	632	432	264	173	104	50	72
13	71	76	171	91	192	614	416	273	159	54	50	55
14	95	76	157	102	185	595	384	278	120	49	49	45
15	104	126	146	114	176	577	354	342	112	61	47	42
16	65	173	137	194	162	561	335	405	142	60	101	50
17	62	148	133	197	118	533	322	445	145	58	113	51
18	61	131	96	189	126	511	318	449	111	56	83	51
19	60	137	79	151	198	491	315	432	124	55	56	51
20	56	139	67	205	200	463	294	431	181	46	54	49
21	49	159	90	259	205	443	278	422	182	40	50	44
22	57	153	91	305	356	402	274	387	152	49	49	39
23	61	81	84	339	323	357	230	352	135	48	47	44
24	118	106	132	366	343	326	211	323	103	48	45	55
25	103	152	190	395	367	312	177	264	98	48	40	48
26	64	157	209	418	337	301	200	229	100	47	37	54
27	61	186	215	463	328	290	196	212	138	41	31	46
28	63	231	236	441	331	293	216	209	134	36	32	49
29	84	188	268	424	-----	302	224	242	80	57	31	45
30	123	212	237	451	-----	349	168	247	68	46	30	45
31	137	-----	231	461	-----	320	-----	249	-----	45	69	-----
TOTAL	2,834	3,775	5,018	7,421	7,244	14,446	10,483	8,554	4,447	1,914	1,697	1,497
MEAN	91.4	126	162	239	259	466	349	276	148	61.7	54.7	49.9
MAX	154	231	268	463	419	660	523	449	232	110	113	86
MIN	49	71	67	91	118	290	168	145	68	36	30	39
CFSM	.53	.71	.93	1.37	1.49	2.68	2.01	1.59	.85	.35	.31	.29
IN.	.61	.81	1.07	1.59	1.55	3.09	2.24	1.83	.95	.41	.36	.32
CAL YR 1973	TOTAL 61,682	MEAN 169	MAX 417	MIN 40	CFSM .97	IN 13.19						
WTR YR 1974	TOTAL 69,330	MEAN 190	MAX 660	MIN 30	CFSM 1.09	IN 14.82						

STREAMS TRIBUTARY TO LAKE MICHIGAN

99

04111000 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., Eaton County, on right bank 400 ft (122 m) upstream from bridge on Petrieville Highway, 2 mi (3 km) northeast of Eaton Rapids, 2.5 mi (4.0 km) downstream from Spring Brook, 25 mi (40 km) upstream from Red Cedar River at mile-178 (286 km).

DRAINAGE AREA.--661 mi² (1,712 km²).

PERIOD OF RECORD.--October 1950 to current year. Gage-height record 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 (259.897 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--24 years, 450 ft³/s (12.74 m³/s), 9.25 in/yr (235 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,970 ft³/s (84.1 m³/s) Mar. 9 (gage height, 7.86 ft or 2.396 m); minimum, 35 ft³/s (0.99 m³/s) Sept. 24 (gage height, 1.01 ft or 0.308 m); minimum daily, 46 ft³/s (1.30 m³/s) July 28.

Period of record: Maximum discharge, 3,500 ft³/s (99.1 m³/s) Feb. 21, 1971; maximum gage height, 8.19 ft (2.496 m) June 28, 1968; minimum discharge, 14 ft³/s (0.40 m³/s) Dec. 20, 1962, Oct. 14, 1966; minimum gage height, 0.67 ft (0.204 m) Dec. 20, 1962; minimum daily discharge, 21 ft³/s (0.59 m³/s) Oct. 12, 1964.

Flood of Apr. 4, 1950 reached a stage of 8.15 ft (2.484 m), discharge, 3,860 ft³/s (109 m³/s).

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by powerplant at Smithville and mills at Eaton Rapids. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1707: 1951 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	496	344	884	1,040	1,500	1,440	2,070	888	911	328	132	78
2	520	384	861	1,020	1,300	1,500	2,220	866	866	292	166	150
3	500	404	825	950	1,200	1,620	2,170	798	834	212	171	204
4	412	400	807	830	1,100	1,740	2,340	780	708	209	104	166
5	404	376	816	790	1,000	2,310	2,310	744	681	266	171	161
6	396	344	802	750	1,000	2,570	2,210	726	650	249	171	119
7	308	332	794	720	1,000	2,560	2,070	690	609	222	117	150
8	312	336	771	700	1,000	2,520	2,070	704	623	229	163	147
9	372	344	735	650	1,100	2,870	2,040	731	592	219	166	152
10	215	324	686	620	1,150	2,930	1,970	771	568	204	168	119
11	259	296	636	600	1,100	2,730	1,860	839	572	201	163	119
12	336	273	580	600	1,000	2,510	1,760	1,040	568	199	168	130
13	284	263	568	560	920	2,310	1,700	1,120	560	215	183	161
14	312	259	540	550	880	2,150	1,640	1,180	544	215	168	154
15	300	340	560	540	850	2,040	1,570	1,330	528	199	161	156
16	288	488	500	540	790	2,000	1,470	1,520	508	173	117	117
17	284	524	430	530	740	1,970	1,390	1,940	480	180	173	156
18	270	540	400	560	700	1,940	1,310	2,100	464	173	277	113
19	252	544	400	580	700	1,920	1,300	2,010	456	136	288	117
20	212	528	400	672	720	1,850	1,270	1,790	448	173	252	154
21	212	520	400	1,230	762	1,750	1,230	1,570	432	171	168	102
22	219	512	400	1,550	1,060	1,670	1,150	1,440	440	168	128	143
23	183	504	400	2,000	1,490	1,620	1,130	1,330	448	161	168	143
24	207	536	400	2,050	1,600	1,540	1,070	1,240	444	104	159	102
25	207	560	500	1,960	1,600	1,390	996	1,150	424	190	154	140
26	212	560	620	1,820	1,500	1,320	965	1,070	448	168	156	140
27	209	556	800	1,910	1,390	1,280	893	987	300	161	132	104
28	219	686	950	1,950	1,360	1,240	879	924	316	46	166	152
29	222	812	1,000	1,940	-----	1,240	879	942	328	159	119	111
30	249	848	1,090	1,800	-----	1,490	888	974	360	190	108	154
31	292	-----	1,070	1,670	-----	1,880	-----	947	-----	134	113	-----
TOTAL	9,163	13,737	20,625	33,682	30,512	59,900	46,820	35,141	16,110	5,946	5,050	4,114
MEAN	296	458	665	1,087	1,090	1,932	1,561	1,134	537	192	163	137
MAX	520	848	1,090	2,050	1,600	2,930	2,340	2,100	911	328	288	204
MIN	183	259	400	530	700	1,240	879	690	300	46	104	78
CFSM	.45	.69	1.01	1.64	1.65	2.92	2.36	1.72	.81	.29	.25	.21
IN.	.52	.77	1.16	1.90	1.72	3.37	2.63	1.98	.91	.33	.28	.23

CAL YR 1973 TOTAL 248,231 MEAN 680 MAX 2,290 MIN 90 CFSM 1.03 IN 13.97
WTR YR 1974 TOTAL 280,800 MEAN 769 MAX 2,930 MIN 46 CFSM 1.16 IN 15.80

STREAMS TRIBUTARY TO LAKE MICHIGAN

04111500 Deer Creek near Dansville, Mich.

LOCATION.--Lat 42°36'30", long 84°19'15", in E½ sec.33, T.3 N., R.1 E., Ingham County, on right bank 15 ft (5 m) upstream from bridge on Clark Road, 3.5 mi (5.6 km) north of Dansville, and 7.2 mi (11.6 km) upstream from mouth.

DRAINAGE AREA.--16.3 mi² (42.2 km²).

PERIOD OF RECORD.--May 1954 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 889.08 ft (270.992 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--20 years, 10.3 ft³/s (0.292 m³/s), 8.58 in/yr (218 mm/yr).

EXTREMES.--Current year: Maximum discharge, 238 ft³/s (6.74 m³/s) Mar. 5 (gage height 6.97 ft or 2.124 m); minimum 0.35 ft³/s (0.010 m³/s) Sept. 19, 20, 26, 27 (gage height, 2.67 ft or 0.814 m).
Period of record: Maximum discharge, 570 ft³/s (16.1 m³/s) May 13, 1956 (gage height, 8.83 ft or 2.691 m); minimum, 0.06 ft³/s (0.002 m³/s) Jan. 10, 1970, result of freezeup.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1727: 1954 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	5.8	16	20	23	56	85	8.5	7.2	2.0	.46	.48
2	1.8	5.3	13	20	21	72	148	7.5	6.4	1.8	.77	.80
3	1.7	5.2	12	14	18	88	84	7.4	5.8	1.8	.87	1.3
4	1.5	4.6	14	12	15	118	182	7.4	5.2	1.7	.67	.96
5	1.5	3.9	23	11	14	193	95	7.2	4.7	2.5	.65	.78
6	1.4	3.4	17	10	12	96	53	7.9	4.5	1.8	.54	.67
7	1.4	2.9	13	8.6	12	58	45	7.3	4.4	1.5	.46	.67
8	1.4	2.8	11	8.2	12	116	55	7.4	5.1	1.5	.56	.64
9	1.3	2.6	11	7.8	11	172	35	9.6	5.0	1.4	.61	.57
10	1.3	2.5	9.9	7.6	10	110	29	8.6	5.2	1.5	.56	.52
11	1.2	2.4	8.8	7.6	10	57	24	9.6	4.8	1.8	.60	.55
12	1.2	2.5	8.1	7.4	10	39	24	23	4.3	1.4	.66	.70
13	1.8	2.5	8.0	7.4	9.5	30	23	16	3.5	1.2	1.1	.77
14	3.2	2.3	7.4	7.5	9.0	25	20	13	3.3	1.1	1.4	.71
15	2.5	6.8	6.8	7.6	8.5	24	19	36	3.2	.96	.89	.61
16	2.1	10	6.1	7.8	9.0	25	16	95	2.9	.83	.91	.52
17	1.8	7.1	5.9	8.0	8.0	26	14	170	3.0	.83	3.9	.51
18	1.7	6.1	5.5	8.2	8.0	22	13	92	3.2	.79	1.7	.42
19	1.6	5.4	5.3	8.5	11	24	13	46	3.2	.73	1.1	.40
20	1.7	4.9	5.3	26	15	19	12	29	3.2	.68	.85	.39
21	1.5	5.9	5.2	205	20	19	11	22	2.8	.64	.71	.43
22	1.5	6.8	5.2	156	132	18	11	17	2.5	.68	.61	.44
23	1.5	6.0	5.4	161	134	17	11	14	2.3	.90	.62	.41
24	1.5	11	5.6	88	69	13	9.2	11	2.2	.88	.57	.41
25	1.5	16	25	56	31	12	8.7	9.4	2.1	.81	.55	.41
26	1.5	12	71	52	21	11	8.3	8.5	2.0	.75	.51	.39
27	1.4	10	138	123	21	11	7.9	7.8	1.9	.64	.66	.43
28	2.1	42	99	73	42	12	7.6	7.7	1.9	.51	.76	.83
29	3.6	46	59	44	-----	14	8.8	11	1.8	.72	.64	.96
30	4.4	23	36	35	-----	62	9.5	10	2.3	.55	.57	1.1
31	4.2	-----	27	35	-----	107	-----	8.2	-----	.50	.51	-----
TOTAL	59.0	267.7	683.5	1,243.2	715.0	1,666	1,082.0	735.0	109.9	35.40	25.87	18.78
MEAN	1.90	8.92	22.0	40.1	25.5	53.7	36.1	23.7	3.66	1.14	.83	.63
MAX	4.4	46	138	205	134	193	182	170	7.2	2.5	3.9	1.3
MIN	1.2	2.3	5.2	7.4	8.0	11	7.6	7.2	1.8	.50	.46	.39
CFSM	.12	.55	1.35	2.46	1.56	3.29	2.21	1.45	.22	.07	.05	.04
IN.	.13	.61	1.56	2.84	1.63	3.80	2.47	1.68	.25	.08	.06	.04

CAL YR 1973 TOTAL 5,533.52 MEAN 15.2 MAX 140 MIN .34 CFSM .93 IN 12.63
WTR YR 1974 TOTAL 6,641.35 MEAN 18.2 MAX 205 MIN .39 CFSM 1.12 IN 15.16

PEAK DISCHARGE (BASE, 100 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	0800	5.24	146	03-09	0800	6.04	186
01-21	1400	6.91	235	03-30	2400	4.89	128
01-23	0600	5.95	182	04-02	0600	5.75	172
01-27	0800	5.06	136	04-04	0700	6.51	211
02-22	1900	5.98	183	05-17	0800	6.00	184
03-05	0400	6.97	238				

04112000 Sloan Creek near Williamston, Mich.

LOCATION.--42°40'33", long 84°21'50", in SE¼ NE¼ sec.1, T.3 N., R.1 W., Ingham County, on left bank 30 ft (9 m) downstream from bridge on Meridian Road, 2.1 mi (3.4 km) upstream from mouth, and 4.2 mi (6.8 km) west of Williamston.

DRAINAGE AREA.--9.34 mi² (24.19 km²).

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder and concrete control with V-notch sharp-crested weir. Datum of gage is 862.12 ft (262.774 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--20 years, 5.49 ft³/s (0.155 m³/s), 7.98 in/yr (203 mm/yr).

EXTREMES.--Current year: Maximum discharge, 238 ft³/s (6.74 m³/s) Mar. 5 (gage height, 4.68 ft or 1.426 m); minimum, 0.06 ft³/s (0.002 m³/s) Sept. 26, 27; minimum gage height, 1.28 ft (0.390 m) Aug. 30, 31.

Period of record: Maximum discharge, 773 ft³/s (21.9 m³/s) June 25, 1968 (gage height, 7.84 ft or 2.390 m); minimum, 0.01 ft³/s (<0.001 m³/s) Sept. 11, 1954, Jan. 18, 1957 (gage height, 1.10 ft or 0.335 m), caused by unusual regulation; minimum natural discharge, 0.02 ft³/s (0.001 m³/s) July 27, 1965 (gage height, 1.18 ft or 0.360 m).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.43	1.2	9.3	9.3	12	42	60	2.8	3.0	.67	.21	.12
2	.38	1.1	6.7	6.0	8.6	47	100	2.7	2.6	.74	.35	.19
3	.37	1.3	5.6	5.4	7.2	55	45	2.6	2.4	.78	.30	.26
4	.36	1.1	7.4	4.5	6.0	62	65	2.3	2.2	.62	.23	.22
5	.34	.91	15	3.8	5.5	129	34	2.3	2.0	.62	.22	.18
6	.31	.76	8.3	3.5	4.9	53	24	2.5	2.0	.54	.19	.16
7	.30	.69	5.9	3.2	4.9	36	26	2.2	1.9	.50	.17	.16
8	.30	.65	5.0	2.7	4.6	62	29	2.3	2.1	.50	.19	.14
9	.29	.59	4.5	2.8	4.3	74	18	2.5	1.8	.43	.14	.12
10	.29	.56	4.2	2.7	4.1	46	14	2.2	1.7	.44	.18	.11
11	.27	.54	3.6	2.6	3.9	30	11	3.4	1.6	.42	.20	.10
12	.26	.50	3.4	2.4	3.8	21	9.5	12	1.5	.39	.19	.20
13	.91	.50	3.3	2.2	3.9	15	9.0	7.1	1.3	.37	.60	.16
14	.87	.50	3.0	2.5	3.6	13	8.0	5.5	1.3	.34	.39	.14
15	.51	4.0	2.6	2.7	3.1	9.9	7.1	22	1.3	.31	.26	.11
16	.44	5.0	2.5	2.6	3.2	10	6.3	5.8	1.2	.31	.25	.10
17	.40	3.2	2.4	2.7	3.1	11	5.6	90	1.2	.31	.31	.09
18	.38	2.4	2.1	2.7	2.9	9.0	5.2	42	1.2	.30	.26	.09
19	.36	1.9	1.9	2.7	4.0	9.3	5.0	26	1.2	.27	.19	.08
20	.36	1.6	1.8	10	5.6	8.0	4.5	17	1.1	.25	.16	.08
21	.35	2.0	1.8	152	8.5	7.7	4.3	11	1.1	.24	.15	.09
22	.34	2.3	1.8	73	84	7.8	4.2	8.4	.91	.29	.13	.08
23	.34	1.9	1.8	93	65	8.0	4.0	6.4	.85	.36	.13	.08
24	.33	13	1.9	44	32	6.4	3.6	5.2	.81	.33	.17	.08
25	.32	15	13	32	18	5.2	3.3	4.3	.77	.28	.20	.07
26	.32	7.3	46	30	11	5.1	3.1	3.8	.70	.29	.16	.06
27	.32	5.4	82	65	9.7	4.7	2.9	3.4	.67	.28	.28	.05
28	.49	36	45	36	29	4.8	2.9	3.3	.63	.25	.17	.11
29	.87	31	30	24	-----	5.0	3.2	5.4	.59	.23	.18	.22
30	.88	16	21	19	-----	41	3.2	4.8	.82	.19	.13	.20
31	.79	-----	14	19	-----	63	-----	3.7	-----	.19	.11	-----
TOTAL	13.50	158.90	356.8	664.0	356.4	900.9	520.9	367.1	42.45	12.04	6.84	3.86
MEAN	.44	5.30	11.5	21.4	12.7	29.1	17.4	11.8	1.42	.39	.22	.13
MAX	.91	36	82	152	84	129	100	90	3.0	.78	.60	.26
MIN	.27	.50	1.8	2.2	2.9	4.7	2.9	2.2	.59	.19	.11	.06
CFSM	.05	.57	1.23	2.29	1.36	3.12	1.86	1.26	.15	.04	.02	.01
IN.	.05	.63	1.42	2.64	1.42	3.59	2.07	1.46	.17	.05	.03	.02

CAL YR 1973 TOTAL 3,037.32 MEAN 8.32 MAX 83 MIN .12 CFSM .89 IN 12.10
WTR YR 1974 TOTAL 3,403.69 MEAN 9.33 MAX 152 MIN .06 CFSM 1.00 IN 13.56

PEAK DISCHARGE (BASE, 120 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-21	0900	4.53	210
01-23	0400	3.98	132
02-22	1800	3.98	136
03-05	0200	4.68	238
04-02	0200	4.28	180
05-16	1800	4.03	141

STREAMS TRIBUTARY TO LAKE MICHIGAN

04112500 Red 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., Ingham County, in left downstream bridge abutment of Farm Lane Bridge on Michigan State University Campus in East Lansing, 4.0 mi (6.4 km) upstream from Sycamore Creek, and 5.6 mi (9.0 km) upstream from mouth.

DRAINAGE AREA.--355 mi² (919 km²).

PERIOD OF RECORD.--August 1902 to December 1903, March 1931 to current year. Monthly discharge only for some periods, published in WSP 1307. Published as Red Cedar River at Agricultural College August 1902 to December 1903 and as Cedar River at East Lansing March 1931 to September 1965. 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 (251.274 m) above mean sea level. August 1902 to December 1903 nonrecording gage at site 0.8 mi (1.3 km) downstream at different datum. March 1931 to November 1940 water-stage recorder at site 250 ft (76 m) upstream at present datum.

AVERAGE DISCHARGE.--44 years, 204 ft³/s (5.777 m³/s), 7.80 in/yr (198 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,110 ft³/s (59.8 m³/s) Mar. 10 (gage height, 7.40 ft or 2.256 m); minimum, 26 ft³/s (0.74 m³/s) Sept. 24-27 (gage height, 3.15 ft or 0.960 m).
Period of record: Maximum discharge, 5,920 ft³/s (168 m³/s) Apr. 7, 1947 (gage height, 11.58 ft or 3.530 m); minimum, 3 ft³/s (0.08 m³/s) July 31, 1931.
Flood of Mar. 24, 1904, reached a stage of 13.4 ft or 4.08 m (discharge, 8,000 ft³/s or 277 m³/s).

REMARKS.--Records good. Occasional regulation at low flow by mill at Williamston, 16 mi (26 km) above station.

REVISIONS (WATER YEARS).--WSP 1307: 1936 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	92	403	590	890	895	1,190	254	275	82	31	34
2	69	97	347	431	620	985	1,470	247	244	92	42	42
3	65	102	315	379	560	1,060	1,660	240	226	92	42	47
4	60	100	307	371	500	1,200	1,710	230	198	87	40	44
5	57	95	343	319	410	1,600	1,920	222	180	84	38	42
6	55	87	347	307	375	2,040	1,730	222	163	79	36	38
7	53	82	311	272	363	1,930	1,420	226	156	72	32	36
8	51	77	268	219	363	1,690	1,330	230	163	65	31	34
9	49	74	247	205	351	1,880	1,240	233	160	60	31	34
10	49	72	233	202	335	2,090	1,040	236	160	55	31	34
11	47	72	216	194	299	1,960	895	254	166	51	34	31
12	42	72	194	188	287	1,640	790	363	163	49	32	42
13	57	72	184	174	291	1,320	730	395	146	49	88	38
14	72	72	142	174	275	1,070	665	387	132	47	72	36
15	69	114	142	177	244	895	605	435	117	47	53	36
16	65	177	146	184	240	800	545	640	111	44	47	34
17	57	180	123	191	236	740	485	1,140	108	42	44	32
18	53	160	135	194	219	680	440	1,540	105	40	49	29
19	51	146	135	194	230	625	423	1,570	105	38	53	29
20	49	129	108	268	261	580	399	1,270	105	38	51	28
21	47	120	111	840	299	535	367	1,000	105	36	42	28
22	47	126	126	1,470	610	510	343	820	102	36	38	28
23	44	138	129	1,950	1,010	490	323	680	89	36	34	28
24	44	198	146	1,930	1,210	448	303	545	84	38	32	26
25	42	291	180	1,690	1,140	371	275	440	82	38	32	26
26	42	279	415	1,430	905	363	264	375	79	38	31	26
27	42	240	775	1,390	785	335	258	323	77	36	53	26
28	49	335	1,030	1,530	750	327	247	279	77	36	42	36
29	72	530	1,100	1,430	-----	327	244	303	77	36	38	51
30	79	500	870	1,180	-----	462	250	319	87	34	36	49
31	82	-----	730	1,000	-----	915	-----	303	-----	32	36	-----
TOTAL	1,737	4,829	10,258	21,073	14,058	30,763	23,561	15,721	4,042	1,609	1,291	1,044
MEAN	56.0	161	331	680	502	992	785	507	135	51.9	41.6	34.8
MAX	82	530	1,100	1,950	1,210	2,090	1,920	1,570	275	92	88	51
MIN	42	72	108	174	219	327	244	222	77	32	31	26
CFSM	.16	.45	.93	1.92	1.41	2.79	2.21	1.43	.38	.15	.12	.10
IN.	.18	.51	1.07	2.21	1.47	3.22	2.47	1.65	.42	.17	.14	.11

CAL YR 1973 TOTAL 117,095 MEAN 321 MAX 2,400 MIN 21 CFSM .90 IN 12.27
WTR YR 1974 TOTAL 129,986 MEAN 356 MAX 2,090 MIN 26 CFSM 1.00 IN 13.62

04113000 Grand River at Lansing, Mich.

LOCATION.--Lat 42°45'02", long 84°33'19", in NW¼ sec.9, T.4 N., R.2 W., Ingham County, on right bank 30 ft (9 m) upstream from bridge on North Grand River Avenue in Lansing, 2.0 mi (3.2 km) downstream from Red Cedar River, and at mile 152 (245 km).

DRAINAGE AREA.--1,230 mi² (3,180 km²), approximately.

PERIOD OF RECORD.--March 1901 to September 1906, October 1934 to current year. Monthly discharge only for some periods, published in WSP 1307. 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 (245.526 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to August 1906, nonrecording gage at same site at different datum. November 1934 to June 1949 water-stage recorder at site 1.8 mi (2.9 km) downstream at datum 2.42 ft (0.738 m) lower.

AVERAGE DISCHARGE.--45 years, 823 ft³/s (23.31 m³/s), 9.09 in/yr (231 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,330 ft³/s (208 m³/s) Mar. 10 (gage height, 11.87 ft or 3.618 m); minimum, 24 ft³/s (0.68 m³/s) Sept. 1, 22; minimum gage height, 1.45 ft (0.442 m) Sept. 22; minimum daily discharge, 84 ft³/s (2.38 m³/s) Aug. 31. Period of record: Maximum discharge, 24,500 ft³/s (694 m³/s) Mar. 26, 1904 (gage height, 18.60 ft or 5.669 m, datum then in use), from rating curve, extended above 15,000 ft³/s (425 m³/s) by logarithmic plotting; minimum, 2.8 ft³/s (0.079 m³/s) Sept. 9, 1963 (gage height, 0.85 ft or 0.259 m); minimum daily, 20 ft³/s (0.57 m³/s) Aug. 25, 1941. Maximum discharge since at least 1901, that of Mar. 26, 1904.

REMARKS.--Records good. Large diurnal fluctuation at medium and low flows caused by powerplants above station.

REVISIONS (WATER YEARS).--WSP 1174: 1949. WSP 1387: 1901, 1903-4, 1935, 1937, 1942.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	527	544	1,570	2,000	3,130	2,940	3,960	1,170	1,280	421	257	148
2	611	539	1,510	1,570	2,440	3,180	4,720	1,170	1,150	567	302	231
3	626	608	1,270	1,450	2,230	3,440	5,070	1,120	1,040	350	278	244
4	562	566	1,430	1,350	2,350	3,820	5,290	981	1,050	375	223	318
5	505	546	1,450	1,200	2,050	5,020	5,480	984	805	341	217	225
6	439	468	1,440	1,200	1,530	6,000	5,100	989	874	408	256	223
7	472	502	1,260	1,130	1,570	5,970	4,510	940	835	366	233	190
8	292	402	1,230	920	1,370	5,840	4,140	906	969	342	209	207
9	469	509	1,150	888	1,550	6,220	3,980	981	831	316	250	222
10	348	488	1,100	919	1,710	7,160	3,660	996	809	309	235	232
11	313	373	936	894	1,530	6,740	3,330	1,110	814	316	269	169
12	403	428	931	860	1,340	5,570	3,100	1,450	785	284	295	233
13	524	380	886	761	1,530	4,710	2,840	1,520	787	350	612	215
14	483	397	689	809	1,410	4,040	2,780	1,730	711	323	392	218
15	393	739	742	768	1,180	3,510	2,540	1,870	723	343	280	230
16	420	718	789	764	1,170	3,260	2,270	2,650	656	259	378	187
17	388	836	530	795	1,170	3,160	2,240	3,760	607	266	272	231
18	380	823	597	840	1,010	3,020	2,060	4,440	652	324	300	184
19	367	751	658	862	1,130	2,980	1,990	4,310	602	257	385	180
20	338	749	562	1,390	1,160	2,860	1,880	3,770	629	193	409	190
21	317	820	504	3,030	1,260	2,770	1,920	3,110	555	283	308	179
22	281	694	592	4,020	2,460	2,570	1,730	2,680	573	253	241	156
23	277	757	535	5,230	3,160	2,490	1,560	2,290	571	303	222	234
24	311	1,090	632	5,480	3,420	2,330	1,550	1,950	568	248	194	144
25	281	1,010	767	5,070	3,370	2,080	1,460	1,740	528	186	209	153
26	296	977	1,420	4,380	3,150	1,950	1,310	1,570	562	339	220	207
27	312	988	2,300	4,410	2,880	1,820	1,270	1,410	501	261	431	208
28	368	1,520	2,790	4,480	2,670	1,810	1,190	1,260	393	218	232	233
29	396	1,640	2,990	4,270	-----	1,820	1,190	1,350	423	143	270	340
30	395	1,740	2,740	3,980	-----	2,360	1,200	1,390	558	259	204	222
31	426	-----	2,220	3,500	-----	3,300	-----	1,310	-----	181	84	-----
TOTAL	12,520	22,602	38,220	69,220	54,930	114,740	85,320	56,907	21,841	9,414	8,667	6,383
MEAN	404	753	1,233	2,233	1,962	3,701	2,844	1,836	728	304	280	213
MAX	626	1,740	2,990	5,480	3,420	7,160	5,480	4,440	1,280	567	612	340
MIN	277	373	504	761	1,010	1,810	1,190	906	393	143	84	148
CFSM	.33	.61	1.00	1.82	1.60	3.01	2.31	1.49	.59	.25	.23	.17
IN.	.38	.68	1.16	2.09	1.66	3.47	2.58	1.72	.66	.28	.26	.19
CAL YR 1973	TOTAL 438,989	MEAN 1,203	MAX 5,920	MIN 165	CFSM .98	IN 13.28						
WTR YR 1974	TOTAL 500,764	MEAN 1,372	MAX 7,160	MIN 84	CFSM 1.12	IN 15.15						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04114000 Grand River at Portland, Mich.

LOCATION.--Lat 42°51'20", long 84°54'45", in NW¼ sec. 4, T.5 N., R.5 W., Ionia County, on left bank at downstream side of bridge on Kent Street, 1.0 mi (1.6 km) south of Portland, 1.9 mi (3.1 km) upstream from Lookingglass River, and at mile 115 (185 km).

DRAINAGE AREA.--1,385 mi² (3,587 km²).

PERIOD OF RECORD.--August 1952 to current year. 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 (214.884 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to July 6, 1953, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--22 years, 889 ft³/s (25.18 m³/s), 8.72 in/yr (221 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,490 ft³/s (212 m³/s) Mar. 11 (gage height, 10.93 ft or 3.331 m); minimum, 150 ft³/s (4.25 m³/s) Sept. 2 (gage height, 4.30 ft or 1.311 m); minimum daily, 165 ft³/s (4.67 m³/s) Sept. 2.

Period of record: Maximum discharge, 9,100 ft³/s (258 m³/s) May 13, 1956; maximum gage height 11.77 ft (3.587 m) Feb. 12, 1968 (backwater from ice); minimum discharge, 38 ft³/s (1.08 m³/s) Oct. 10, 1963; minimum daily, 58 ft³/s (1.64 m³/s) Oct. 9, 1963.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair. Slight diurnal fluctuation caused by powerplants above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	623	576	1,800	2,400	3,600	3,470	4,480	1,490	1,560	652	285	228
2	617	647	1,620	1,850	3,000	3,750	5,300	1,440	1,500	545	350	165
3	677	669	1,490	1,700	2,750	4,130	5,630	1,430	1,380	697	398	345
4	696	706	1,830	1,500	2,600	4,470	6,110	1,340	1,240	489	348	353
5	603	644	1,760	1,420	2,300	5,620	6,040	1,260	1,240	519	325	389
6	573	634	1,530	1,400	1,850	6,220	5,830	1,260	969	451	263	314
7	497	559	1,480	1,250	1,700	6,420	5,330	1,240	1,090	520	312	300
8	524	588	1,420	1,080	1,700	6,380	4,940	1,190	1,230	437	333	238
9	389	500	1,330	1,080	1,900	6,930	4,570	1,240	1,170	435	272	279
10	521	592	1,230	1,080	2,000	7,210	4,270	1,260	1,130	411	326	294
11	442	560	1,120	1,080	1,800	7,320	3,930	1,280	1,040	413	311	309
12	367	459	1,120	1,000	1,600	6,510	3,640	1,550	1,080	405	322	310
13	512	520	1,120	930	1,800	5,530	3,420	1,880	967	365	402	306
14	658	478	925	950	1,650	4,860	3,160	1,870	931	406	762	375
15	555	675	990	940	1,400	4,200	3,000	2,110	895	383	471	335
16	477	1,030	900	950	1,380	3,890	2,800	2,510	872	398	378	289
17	487	898	650	960	1,320	3,650	2,460	4,470	820	326	521	273
18	460	964	740	1,000	1,220	3,510	2,440	4,940	777	324	383	240
19	451	897	780	1,100	1,320	3,420	2,350	5,110	812	382	362	277
20	438	856	620	2,000	1,420	3,280	2,200	4,580	779	319	456	248
21	412	898	660	4,000	1,600	3,190	2,150	3,880	824	240	480	253
22	385	917	700	5,400	3,520	3,010	2,100	3,260	708	322	375	257
23	355	800	660	6,400	4,110	2,870	1,950	2,810	704	337	343	222
24	378	953	800	6,200	4,210	2,740	1,860	2,450	701	356	295	282
25	366	1,620	1,000	5,600	4,200	2,530	1,780	2,170	680	308	252	303
26	356	1,290	2,000	5,300	3,770	2,280	1,670	1,980	651	267	271	215
27	380	1,180	3,260	5,300	3,330	2,200	1,590	1,790	683	387	309	267
28	425	1,360	3,470	5,300	3,140	2,140	1,510	1,650	607	297	532	307
29	518	2,210	3,290	5,000	-----	2,130	1,520	1,700	509	277	330	379
30	531	2,040	2,870	4,500	-----	2,560	1,480	1,660	545	224	343	480
31	511	-----	2,480	4,200	-----	3,830	-----	1,650	-----	270	300	-----
TOTAL	15,184	26,720	45,645	82,870	66,190	130,250	99,510	68,450	28,094	12,162	11,410	8,832
MEAN	490	891	1,472	2,673	2,364	4,202	3,317	2,208	936	392	368	294
MAX	696	2,210	3,470	6,400	4,210	7,320	6,110	5,110	1,560	697	762	480
MIN	355	459	620	930	1,220	2,130	1,480	1,190	509	224	252	165
CFSM	.35	.64	1.06	1.93	1.71	3.03	2.39	1.59	.68	.28	.27	.21
IN.	.41	.72	1.23	2.23	1.78	3.50	2.67	1.84	.75	.33	.31	.24

CAL YR 1973 TOTAL 523,692 MEAN 1,435 MAX 6,780 MIN 169 CFSM 1.04 IN 14.07
WTR YR 1974 TOTAL 595,317 MEAN 1,631 MAX 7,320 MIN 165 CFSM 1.18 IN 15.99

NOTE.--No gage-height record Jan. 15 to Feb. 21.

STREAMS TRIBUTARY TO LAKE MICHIGAN

105

04114500 Lookingglass River near Eagle, Mich.

LOCATION.--Lat 42°49'45", long 84°46'40", in sec.10, T.5 N., R.4 W., Clinton County, on right bank at upstream side of highway bridge, 1.5 mi (2.4 km) northeast of Eagle and 10 mi (16 km) upstream from mouth.

DRAINAGE AREA.--281 mi² (728 km²).

PERIOD OF RECORD.--August 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 747.09 ft (227.713 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to June 2, 1962, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--30 years, 170 ft³/s (4.814 m³/s), 8.22 in/yr (209 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,420 ft³/s (40.2 m³/s) Mar. 9 (gage height 5.56 ft or 1.707 m); maximum gage height, 6.24 ft (1.902 m) Jan. 23 (backwater from ice); minimum discharge, 36 ft³/s (1.02 m³/s) Sept. 23 (gage height, 1.39 ft or 0.424 m).
Period of record: Maximum discharge, 2,860 ft³/s (81.0 m³/s) Apr. 5, 1947 (gage height, 7.70 ft or 2.347 m, from graph based on gage readings), from rating curve extended above 1,900 ft³/s (53.8 m³/s) by logarithmic plotting; maximum gage height, 9.9 ft (3.02 m) Mar. 7, 1956 (backwater from ice), from high water mark; minimum discharge, 10 ft³/s (0.28 m³/s) July 28, 1965 (gage height, 1.01 ft or 0.308 m).

REMARKS.--Records good except those for the winter period, which are poor. Small intermittent diversion at times into Lake Geneva when discharge is above 50 ft³/s (1.42 m³/s).

REVISIONS (WATER YEARS).--WSP 1387: 1946-47.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	72	259	350	1,050	722	592	259	391	86	44	44
2	52	72	249	350	960	727	702	242	349	96	60	46
3	50	77	248	350	900	837	650	230	313	108	57	52
4	48	74	267	340	840	957	859	216	277	111	53	48
5	46	70	307	335	740	1,260	781	205	242	125	54	47
6	44	68	297	320	620	1,120	759	204	212	106	51	47
7	42	66	278	295	520	1,040	785	192	187	95	50	46
8	42	64	263	260	470	1,080	848	189	225	84	49	44
9	42	62	254	215	430	1,370	849	197	195	77	48	42
10	40	59	248	200	390	1,360	833	196	176	71	46	41
11	41	58	236	185	370	1,290	811	199	169	70	48	41
12	40	56	230	180	350	1,220	803	220	163	67	48	45
13	51	55	200	180	330	1,180	787	217	148	64	80	47
14	58	55	175	180	310	1,140	728	218	134	61	67	44
15	54	118	168	180	295	1,120	667	254	127	58	60	42
16	50	133	160	185	285	1,100	614	370	119	57	56	41
17	46	124	150	190	280	1,050	567	692	115	56	55	41
18	46	120	140	200	270	969	530	648	114	55	56	41
19	43	120	132	210	260	901	520	596	117	54	58	41
20	42	122	127	250	270	818	481	572	118	53	56	40
21	42	128	120	500	286	749	446	601	115	51	51	40
22	40	121	120	800	734	686	420	652	113	51	47	39
23	42	112	120	1,000	814	632	398	710	107	55	45	37
24	42	168	128	800	691	564	378	738	101	54	44	37
25	41	206	160	650	571	523	362	742	95	54	41	38
26	39	187	280	600	514	473	347	721	90	55	40	39
27	37	178	550	800	482	438	329	667	87	52	45	39
28	42	279	530	1,040	562	411	311	592	83	50	46	44
29	52	322	450	1,040	-----	390	300	561	79	48	44	53
30	57	287	370	1,040	-----	517	279	501	82	46	44	53
31	60	-----	375	1,070	-----	610	-----	443	-----	45	45	-----
TOTAL	1,427	3,633	7,591	14,295	14,594	27,254	17,736	13,044	4,843	2,115	1,588	1,313
MEAN	46.0	121	245	461	521	879	591	421	161	68.2	51.2	43.8
MAX	60	322	550	1,070	1,050	1,370	859	742	391	125	80	63
MIN	37	55	120	180	260	390	279	189	79	45	40	37
CFSM	.16	.43	.87	1.64	1.85	3.13	2.10	1.50	.57	.24	.14	.16
IN.	.19	.48	1.00	1.89	1.93	3.61	2.35	1.73	.64	.28	.21	.17

CAL YR 1973 TOTAL 99,880 MEAN 274 MAX 1,070 MIN 30 CFSM .98 IN 13.22
WTR YR 1974 TOTAL 109,433 MEAN 300 MAX 1,370 MIN 37 CFSM 1.07 IN 14.49

STREAMS TRIBUTARY TO LAKE MICHIGAN

04115000 Maple River at Maple Rapids, Mich.

LOCATION.--Lat 43°06'35", long 84°41'35", in sec.5, T.8 N., R.3 W., Clinton County, on right bank at downstream side of bridge on Maple Road at Maple Rapids, 50 ft (15 m) upstream from Pine Creek, and 0.8 mi (1.3 km) upstream from Hayworth Creek. Records include flow of Pine Creek.

DRAINAGE AREA.--434 mi² (1,124 km²).

PERIOD OF RECORD.--August 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 642.58 ft (195.858 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 4, 1968, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--30 years, 244 ft³/s (6.910 m³/s), 7.63 in/yr (194 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,740 ft³/s (77.6 m³/s) Mar. 5 (gage height, 9.38 ft or 2.859 m); minimum, 22 ft³/s (0.62 m³/s) Sept. 26 (gage height, 2.76 ft or 0.841 m).

Period of record: Maximum daily discharge, 6,500 ft³/s (184 m³/s) Mar. 20, 1948; maximum gage height, 11.22 ft (3.420 m) Mar. 20, 1948, from floodmark (backwater from ice); minimum discharge, 4.4 ft³/s (0.12 m³/s) Aug. 13, 1965 (gage height, 1.62 ft or 0.494 m). Flood in March 1904 reached a stage of 13.8 ft (4.21 m), from information by local resident.

REMARKS.--Records fair except those for the winter period, which are poor.

REVISIONS (WATER YEAR).--WSP 1707: 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	57	339	606	1,500	665	790	280	434	145	43	35
2	33	66	358	590	1,150	685	1,010	269	397	149	46	36
3	33	69	366	540	1,000	856	1,150	255	364	154	49	37
4	34	70	376	470	900	1,420	1,300	247	333	158	53	37
5	35	72	377	420	800	2,540	1,390	234	299	202	57	37
6	34	74	384	370	700	2,270	1,360	231	267	222	55	36
7	34	80	389	330	620	2,050	1,290	227	244	216	53	35
8	33	80	384	290	550	1,910	1,220	226	234	202	62	34
9	32	82	377	250	480	1,940	1,110	229	261	185	70	33
10	31	90	363	230	450	1,800	1,010	224	323	169	68	33
11	30	90	350	220	410	1,590	930	224	351	154	64	32
12	29	88	333	210	380	1,420	861	229	344	139	60	32
13	32	89	319	210	360	1,240	827	236	327	126	60	31
14	35	87	296	210	340	1,090	790	244	304	115	75	31
15	36	91	271	210	320	965	785	262	298	106	73	30
16	36	93	250	220	300	864	752	308	295	98	70	30
17	35	98	232	226	290	791	684	671	280	90	68	29
18	35	103	214	210	280	746	638	1,350	267	82	64	29
19	33	107	199	198	275	722	580	1,720	254	75	61	28
20	33	109	191	205	273	695	528	1,810	238	68	58	28
21	32	110	179	352	277	648	489	1,750	221	62	54	27
22	31	111	168	617	359	611	455	1,620	204	59	51	26
23	31	113	158	1,060	538	593	434	1,430	195	54	48	25
24	31	122	151	1,350	568	588	415	1,230	183	57	45	25
25	30	148	151	1,500	500	588	385	1,010	171	55	42	25
26	31	180	174	1,690	520	532	363	848	158	54	40	24
27	32	203	237	2,160	560	496	338	711	147	52	39	24
28	36	229	343	2,330	593	480	317	604	137	50	38	27
29	44	270	453	2,170	-----	460	304	552	125	48	37	28
30	51	310	541	1,940	-----	465	291	509	129	46	36	30
31	53	-----	590	1,720	-----	552	-----	468	-----	44	36	-----
TOTAL	1,069	3,491	9,513	23,104	15,293	32,272	22,796	20,208	7,788	3,440	1,684	914
MEAN	34.5	116	307	745	546	1,041	760	652	260	111	54.3	30.5
MAX	53	310	590	2,330	1,500	2,540	1,390	1,810	434	222	75	37
MIN	29	57	151	198	273	460	291	224	125	44	36	24
CFSM	.08	.27	.71	1.72	1.26	2.40	1.75	1.50	.60	.26	.13	.07
IN.	.09	.30	.82	1.98	1.31	2.77	1.95	1.73	.67	.29	.14	.08

CAL YR 1973 TOTAL 142,466 MEAN 390 MAX 2,180 MIN 20 CFSM .90 IN 12.21
 WTR YR 1974 TOTAL 141,572 MEAN 388 MAX 2,540 MIN 24 CFSM .89 IN 12.13

STREAMS TRIBUTARY TO LAKE MICHIGAN

107

04116000 Grand River at Ionia, Mich.

LOCATION.--Lat 42°58'20", long 85°04'13", in NW¼ sec.30, T.7 N., R.6 W., Ionia County, on left bank 15 ft (5 m) downstream from bridge on State Highway 66 at Ionia, 2.7 mi (4.3 km) downstream from Prairie Creek, and at mile 87 (140 km).

DRAINAGE AREA.--2,840 mi² (7,360 km²), approximately.

PERIOD OF RECORD.--March to June 1931, July and September 1931 (fragmentary), July 1951 to current year. 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 (187.568 m) above mean sea level. Mar. 19 to Sept. 24, 1931, nonrecording gage at site 1.5 mi (2.4 km) upstream at different datum.

AVERAGE DISCHARGE.--23 years (1951-74), 1,834 ft³/s (51.94 m³/s) 8.77 in/yr (223 mm/yr).

EXTREMES.--Current year: Maximum discharge, 14,800 ft³/s (419 m³/s) Mar. 6 (gage height, 21.00 ft or 6.401 m); minimum, 236 ft³/s (6.68 m³/s) Sept. 22 (gage height, 6.88 ft or 2.097 m); minimum daily, 342 ft³/s (9.69 m³/s) Sept. 21.
Period of record: Maximum discharge, 21,500 ft³/s (609 m³/s) Apr. 1, 1960 (gage height, 25.43 ft or 7.141 m); minimum, 40 ft³/s (1.13 m³/s) May 13, 1968 (gage height, 5.61 ft or 1.710 m); minimum daily, 115 ft³/s (3.26 m³/s) Aug. 27, 1953.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation below about 5,000 ft³/s (142 m³/s) caused by powerplants above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	988	1,100	3,500	4,300	9,760	6,200	7,550	2,790	3,120	1,140	512	493
2	1,060	1,090	3,000	3,500	8,500	6,700	8,590	2,760	2,800	1,220	627	546
3	896	1,130	2,700	3,000	7,000	7,200	9,490	2,670	2,590	1,230	682	538
4	908	1,230	3,300	2,800	5,500	9,720	10,200	2,600	2,570	1,370	699	502
5	1,060	1,230	3,200	2,600	4,500	12,100	11,000	2,360	2,370	1,320	758	638
6	1,060	1,110	3,000	2,500	3,700	14,600	10,900	2,400	1,730	1,200	679	575
7	844	947	2,700	2,300	3,200	14,600	10,300	2,270	2,050	1,190	587	653
8	820	1,030	2,600	2,000	3,100	13,600	9,730	2,370	2,020	1,130	632	579
9	683	971	2,400	2,000	3,300	13,600	9,140	2,370	2,490	1,090	677	578
10	729	986	2,300	2,000	3,600	14,200	8,570	2,270	2,140	1,060	586	504
11	689	910	2,000	2,000	3,300	13,900	7,980	2,490	1,990	995	556	493
12	736	920	2,000	1,900	2,900	13,000	7,440	2,480	2,150	960	591	532
13	923	919	2,000	1,800	3,200	11,600	7,150	2,900	2,110	829	929	579
14	977	944	1,700	1,900	3,000	10,200	6,820	3,070	2,030	831	1,440	503
15	957	1,190	1,800	1,900	2,500	9,160	6,450	3,260	1,940	838	1,270	477
16	939	1,680	1,600	1,900	2,500	8,380	5,940	3,720	1,840	883	846	589
17	901	1,830	1,200	1,900	2,500	7,860	5,370	6,800	1,690	897	967	564
18	855	1,540	1,300	1,900	2,300	7,350	4,880	8,830	1,630	841	975	543
19	694	1,570	1,400	2,200	2,400	6,980	5,040	9,830	1,570	714	711	535
20	694	1,610	1,100	2,600	2,500	6,680	4,660	9,690	1,890	832	837	456
21	692	1,470	1,200	5,390	3,490	6,380	4,290	8,820	1,460	497	702	342
22	738	1,490	1,300	8,730	4,030	5,940	4,170	7,930	1,490	522	683	358
23	684	1,570	1,200	11,100	6,740	5,640	3,980	6,840	1,320	696	680	564
24	646	1,620	1,500	13,700	7,360	5,240	3,560	5,890	1,350	715	652	665
25	667	2,360	1,800	13,800	7,200	5,050	3,400	5,240	1,340	649	611	656
26	661	2,600	3,600	12,400	6,800	4,630	3,210	4,580	1,340	695	431	1,270
27	653	2,430	5,800	11,400	6,000	4,270	3,220	4,160	1,230	726	500	884
28	673	2,370	6,200	12,400	5,700	4,110	2,890	3,730	1,230	561	612	759
29	974	3,410	6,000	12,500	-----	3,950	2,910	3,550	1,020	553	726	935
30	1,010	3,950	5,500	11,700	-----	4,460	2,870	3,430	1,010	642	544	900
31	994	-----	4,500	10,600	-----	6,300	-----	3,350	-----	560	564	-----
TOTAL	25,805	47,207	83,400	170,720	126,580	263,600	191,700	135,450	55,510	27,386	22,266	18,110
MEAN	832	1,574	2,690	5,507	4,521	8,503	6,390	4,369	1,850	883	718	604
MAX	1,060	3,950	6,200	13,800	9,760	14,600	11,000	9,830	3,120	1,370	1,440	1,270
MIN	646	910	1,100	1,800	2,300	3,950	2,870	2,270	1,010	497	431	342
CFSM	.29	.55	.95	1.94	1.59	2.99	2.25	1.54	.65	.31	.25	.21
IN.	.34	.62	1.09	2.24	1.66	3.45	2.51	1.77	.73	.36	.29	.24
CAL YR 1973	TOTAL 1,097,037	MEAN 3,006	MAX 15,000	MIN 356	CFSM 1.06	IN 14.37						
WTR YR 1974	TOTAL 1,167,734	MEAN 3,199	MAX 14,600	MIN 342	CFSM 1.13	IN 15.30						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04116500 Flat River at Smyrna, Mich.

LOCATION.--Lat 43°03'10", long 85°15'50", in NW¼ sec.28, T.8 N., R.8 W., Ionia County, on right bank at downstream side of highway bridge, 600 ft (183 m) downstream from dam and inactive powerplant, and 0.5 mi (0.8 km) south of Smyrna.

DRAINAGE AREA.--528 mi² (1,368 km²).

PERIOD OF RECORD.--October 1950 to current year. Monthly discharge only for some periods, published in WSP 1727.

GAGE.--Water-stage recorder. Datum of gage is 729.53 ft (222.361 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--24 years, 422 ft³/s (11.95 m³/s), 10.85 in/yr (276 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,120 ft³/s (60.0 m³/s) May 19 (gage height, 6.40 ft or 1.951 m); maximum gage height, 8.26 ft (2.518 m) Feb. 6 (backwater from ice); minimum discharge, 210 ft³/s (5.95 m³/s) July 31 (gage height, 3.34 ft or 1.018 m).
Period of record: Maximum discharge, 3,100 ft³/s (87.8 m³/s) Apr. 22, 1967 (gage height, 7.27 ft or 2.216 m), caused by momentary release of water from storage above station; maximum gage height, 8.26 ft (2.518 m) Feb. 6, 1974 (backwater from ice); minimum discharge, 7.4 ft³/s (0.21 m³/s) Sept. 9, 1953; minimum daily, 70 ft³/s (1.98 m³/s) Sept. 6, 1964.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are poor. Diurnal fluctuation caused by powerplants above station prior to September 1956; occasional diurnal fluctuation since.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	277	532	642	650	1,080	798	998	708	773	519	239	315
2	259	425	495	620	847	837	1,170	745	660	504	312	337
3	325	462	625	570	800	938	1,190	702	544	573	359	353
4	250	473	520	540	750	1,150	1,480	746	546	520	357	342
5	336	428	628	500	720	1,560	1,560	711	556	562	434	337
6	416	417	664	460	670	1,740	1,520	687	527	544	501	346
7	224	445	675	430	650	1,670	1,490	706	606	442	367	336
8	234	338	611	410	640	1,630	1,400	707	661	403	328	324
9	251	410	601	390	620	1,720	1,280	717	845	433	377	252
10	306	326	603	380	600	1,580	1,160	718	827	387	402	253
11	301	324	567	380	600	1,470	1,120	671	754	409	299	293
12	248	337	497	380	600	1,450	948	728	904	364	340	273
13	327	389	500	380	600	1,260	1,080	730	850	382	415	320
14	334	287	450	380	580	1,110	1,060	756	731	366	414	384
15	382	455	400	380	570	1,090	1,060	866	745	346	477	357
16	356	594	370	400	560	1,020	1,100	963	687	283	411	315
17	281	474	360	410	560	1,010	1,140	1,450	649	271	408	226
18	378	568	360	420	560	929	1,080	1,690	640	281	480	231
19	247	539	360	450	570	937	1,070	2,000	632	265	462	234
20	337	491	350	550	600	954	1,070	1,860	624	297	439	234
21	328	538	350	780	600	818	967	1,620	643	285	312	264
22	308	495	350	788	703	899	923	1,460	619	290	275	366
23	233	456	360	944	738	869	897	1,330	543	315	291	311
24	297	536	400	758	740	800	788	1,140	473	288	445	219
25	331	656	450	991	691	689	779	887	507	281	278	226
26	239	665	500	903	738	776	771	913	474	281	276	233
27	241	657	600	1,090	746	728	737	835	465	267	286	233
28	371	589	700	1,170	744	759	681	749	437	267	327	253
29	460	681	750	1,320	-----	685	776	833	413	340	335	366
30	396	589	800	1,240	-----	864	696	691	436	253	295	450
31	329	-----	750	1,350	-----	896	-----	729	-----	232	325	-----
TOTAL	9,602	14,576	16,288	20,414	18,877	33,636	31,991	30,048	18,871	11,250	11,266	8,983
MEAN	310	486	525	659	674	1,085	1,066	969	629	363	363	299
MAX	460	681	800	1,350	1,080	1,740	1,560	2,000	904	573	501	450
MIN	224	287	350	380	560	685	681	671	413	232	239	219
CFSM	.59	.92	.99	1.25	1.28	2.05	2.02	1.84	1.19	.69	.69	.57
IN.	.68	1.03	1.15	1.44	1.33	2.37	2.25	2.12	1.33	.79	.79	.63

CAL YR 1973 TOTAL 228,513 MEAN 626 MAX 1,950 MIN 224 CFSM 1.19 IN 16.10
WTR YR 1974 TOTAL 225,802 MEAN 619 MAX 2,000 MIN 219 CFSM 1.17 IN 15.91

NOTE.--No gage-height record Dec. 13 to Jan. 20.

STREAMS TRIBUTARY TO LAKE MICHIGAN

109

04117000 Quaker Brook near Nashville, Mich.

LOCATION.--Lat 42°33'57", long 85°05'37", in NW¼ sec.13, T.2 N., R.7 W., Barry County, on left bank 150 ft (46 m) upstream from culvert on county road, 500 ft (152 m) upstream from small tributary, and 2.5 mi (4.0 km) south of Nashville.

DRAINAGE AREA.--7.60 mi² (19.68 km²).

PERIOD OF RECORD.--August 1954 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 821.89 ft (250.512 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--20 years, 6.35 ft³/s (0.180 m³/s), 11.35 in/yr (288 mm/yr).

EXTREMES.--Current year: Maximum discharge, 189 ft³/s (5.35 m³/s) Mar. 9 (gage height, 5.79 ft or 1.765 m); minimum, 2.6 ft³/s (0.074 m³/s) Aug. 23, 26, 27, Sept. 23, 25, 26, 27; minimum gage height, 1.75 ft (0.533 m) Sept. 26, 27.

Period of record: Maximum discharge, 294 ft³/s (8.33 m³/s) Oct. 4, 1954 (gage height, 5.47 ft or 1.667 m), from rating curve extended above 140 ft³/s (3.96 m³/s); maximum gage height, 5.79 ft (1.765 m) Mar. 9, 1974; minimum discharge, 0.44 ft³/s (0.012 m³/s) Nov. 3, 1966 (gage height, 1.40 ft or 0.427 m), result of snow dam.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	13	8.6	7.6	9.5	28	25	11	8.1	4.9	3.7	3.1
2	8.4	9.9	7.6	6.4	9.1	25	30	9.5	7.5	4.9	5.9	4.6
3	9.0	10	7.5	7.2	9.0	25	22	9.5	7.1	4.9	5.1	6.2
4	7.5	7.8	10	7.0	8.5	31	41	9.5	6.9	5.6	4.4	4.3
5	7.6	6.9	19	6.3	8.1	52	23	9.5	6.6	6.1	4.4	3.7
6	6.3	6.4	12	6.5	7.8	22	17	10	8.6	5.1	3.8	3.7
7	5.9	6.1	9.3	6.6	8.0	18	19	8.4	9.1	4.8	3.7	3.6
8	5.7	6.1	8.3	6.3	8.0	53	27	11	23	4.6	4.0	3.5
9	5.6	5.8	7.7	6.4	8.1	100	17	14	25	4.5	4.0	3.4
10	5.4	5.5	7.7	6.9	8.1	42	15	11	14	4.5	3.9	3.4
11	5.3	5.4	7.2	7.0	8.4	23	14	11	10	4.5	4.8	3.4
12	5.2	5.5	6.8	6.6	8.4	18	13	16	8.9	4.2	5.4	12
13	13	5.5	6.4	6.4	8.8	15	19	11	7.7	4.1	5.1	8.4
14	21	5.5	6.0	6.8	8.1	14	14	10	7.3	4.0	4.5	5.2
15	10	18	5.5	6.9	7.5	14	14	21	7.8	3.9	3.7	4.2
16	6.9	18	5.3	7.1	7.5	17	12	35	7.3	3.8	3.7	3.9
17	6.4	9.7	5.2	7.7	7.5	19	11	48	8.1	3.9	4.0	3.8
18	6.0	7.6	5.2	7.2	7.3	19	11	24	9.5	3.9	3.6	3.7
19	5.7	7.1	5.3	7.1	11	19	12	16	9.3	3.8	3.3	3.6
20	5.8	6.7	5.5	19	14	16	11	12	8.2	3.7	3.2	3.5
21	5.0	8.1	5.8	10.3	14	15	11	9.8	13	3.6	3.0	3.7
22	5.2	7.8	6.3	38	72	15	11	9.5	8.5	3.8	3.0	3.6
23	5.4	6.9	6.6	46	44	14	10	8.8	7.4	4.4	2.9	2.8
24	5.3	14	6.8	22	21	11	10	7.5	7.0	4.2	2.9	2.9
25	5.2	20	13	16	14	9.2	9.5	7.5	6.6	4.0	2.9	2.8
26	5.1	11	28	16	11	11	9.8	7.3	6.2	4.1	2.9	2.7
27	5.1	8.5	40	30	12	12	9.5	7.3	5.8	3.7	5.0	2.8
28	6.8	19	25	22	22	12	9.5	7.8	5.5	3.5	4.3	5.2
29	7.9	22	16	15	-----	17	14	18	5.4	5.7	3.7	8.9
30	9.0	12	12	12	-----	50	14	12	5.1	4.2	3.3	8.0
31	8.5	-----	9.3	14	-----	38	-----	9.5	-----	3.8	3.2	-----
TOTAL	226.2	295.8	324.9	483.0	382.7	774.2	480.3	412.4	269.9	134.7	121.3	134.6
MFAN	7.30	9.86	10.5	15.6	13.7	25.0	16.0	13.3	9.00	4.35	3.91	4.44
MAX	21	22	40	103	72	100	41	48	25	6.1	5.9	12
MIN	5.0	5.4	5.2	6.3	7.3	9.2	9.5	7.3	5.1	3.5	2.9	2.7
CFSM	.96	1.30	1.38	2.05	1.80	3.29	2.11	1.75	1.18	.57	.51	.59
IN.	1.11	1.45	1.59	2.36	1.87	3.79	2.35	2.02	1.32	.66	.59	.66

CAL YR 1973 TOTAL 3,838.9 MEAN 10.5 MAX 92 MIN 3.4 CFSM 1.38 IN 18.79
WTR YR 1974 TOTAL 4,040.0 MEAN 11.1 MAX 103 MIN 2.7 CFSM 1.46 IN 19.77

PEAK DISCHARGE (BASE, 50 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-21	0600	5.15	139	03-09	0700	5.79	189
01-23	0700	3.06	58	03-30	1500	3.49	76
02-22	1500	4.31	102	04-04	0500	3.02	56
03-05	0300	3.48	75	05-16	2000	3.14	62

STREAMS TRIBUTARY TO LAKE MICHIGAN

04117500 Thornapple River near Hastings, Mich.

LOCATION.--Lat 42°36'57", long 85°14'11", in SE¼ sec.27, T.3 N., R.8 W., Barry County, on downstream side of highway bridge, 0.6 mi (1.0 km) downstream from Cedar Creek, 2.0 mi (3.2 km) downstream from Thornapple Lake, and 3.2 mi (5.1 km) southeast of Hastings.

DRAINAGE AREA.--385 mi² (997 km²).

PERIOD OF RECORD.--October 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 786.71 ft (239.789 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 1, 1965, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--30 years, 305 ft³/s (8.638 m³/s), 10.76 in/yr (273 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,940 ft³/s (83.3 m³/s) Jan. 25 (gage height, 7.44 ft or 2.268 m); minimum, 90 ft³/s (2.55 m³/s) Aug. 26 (gage height, 2.96 ft or 0.902 m).

Period of record: Maximum discharge, 6,810 ft³/s (193 m³/s) Apr. 7, 1947 (gage height, 10.20 ft or 3.109 m, from graph based on gage readings); minimum, 33 ft³/s (0.93 m³/s) Aug. 10, 1964 (gage height, 2.71 ft or 0.826 m).

REMARKS.--Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	312	200	688	1,160	1,600	1,390	1,120	392	343	161	104	103
2	294	230	640	983	1,400	1,390	1,320	380	305	159	114	106
3	266	250	580	872	1,200	1,460	1,220	358	277	156	127	121
4	237	270	580	700	1,100	1,630	1,790	345	254	161	126	125
5	212	260	580	600	950	1,910	1,960	328	237	185	123	123
6	195	240	560	500	850	2,140	1,890	323	234	184	117	119
7	176	220	560	440	700	2,150	1,720	319	236	173	111	116
8	170	210	520	370	650	2,110	1,560	322	253	160	113	111
9	161	200	480	330	600	2,150	1,400	340	322	149	121	109
10	155	199	450	300	560	2,410	1,250	358	378	144	117	107
11	150	189	430	280	530	2,410	1,120	362	394	140	119	105
12	147	185	400	270	500	2,260	1,010	387	375	133	132	117
13	152	178	370	270	450	1,960	940	414	352	130	131	140
14	195	173	350	264	420	1,600	882	418	319	125	125	144
15	209	214	330	274	400	1,350	832	431	287	122	125	135
16	216	296	310	278	390	1,160	752	492	263	116	128	128
17	216	370	290	293	380	1,020	665	715	248	112	133	120
18	209	395	270	298	370	916	599	972	245	108	133	117
19	192	393	260	302	390	847	543	1,120	257	110	126	115
20	179	367	250	336	410	801	500	1,130	267	108	118	115
21	170	326	240	632	396	753	472	1,070	271	104	111	113
22	167	306	240	1,290	661	702	447	971	286	103	104	113
23	164	300	250	2,080	945	663	433	839	287	106	99	110
24	158	304	250	2,600	1,260	614	416	684	264	108	96	107
25	155	384	280	2,900	1,480	534	394	543	242	108	94	105
26	150	469	350	2,680	1,590	510	376	446	221	109	93	104
27	160	518	607	2,410	1,570	487	359	375	204	106	102	106
28	160	548	849	2,100	1,440	475	345	332	189	101	113	121
29	170	590	1,150	2,000	-----	476	355	345	178	107	115	148
30	180	647	1,290	2,000	-----	573	377	366	170	110	112	169
31	180	-----	1,290	1,800	-----	862	-----	363	-----	108	107	-----
TOTAL	5,857	9,421	15,694	31,612	23,192	39,713	27,347	16,240	8,158	4,006	3,589	3,572
MEAN	189	314	506	1,020	828	1,281	912	524	272	129	116	119
MAX	312	647	1,290	2,900	1,600	2,410	1,960	1,130	394	185	133	169
MIN	147	173	240	264	370	475	345	319	170	101	93	103
CFSM	.49	.82	1.31	2.65	2.15	3.33	2.37	1.36	.71	.34	.30	.31
IN.	.45	.91	1.52	3.05	2.24	3.84	2.64	1.57	.79	.39	.35	.35

CAL YR 1973 TOTAL 174,047 MEAN 477 MAX 2,740 MIN 76 CFSM 1.24 IN 16.82
WTR YR 1974 TOTAL 188,401 MEAN 516 MAX 2,900 MIN 93 CFSM 1.34 IN 18.20

STREAMS TRIBUTARY TO LAKE MICHIGAN

111

04118000 Thornapple River near Caledonia, Mich.

LOCATION.--Lat 42°48'40", long 85°29'00", in NW¼ sec.22, T.5 N., R.10 W., Kent County, on right bank 200 ft (61 m) downstream from LaBarge powerplant, 2.3 mi (3.7 km) northeast of Caledonia, and 3.3 mi (5.3 km) downstream from Coldwater River.

DRAINAGE AREA.--773 mi² (2,002 km²).

PERIOD OF RECORD.--October 1930 to September 1938, October 1951 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 676.31 ft (206.139 m) above mean sea level, unadjusted (Consumers Power Co. bench mark). Oct. 1, 1930 to Sept. 30, 1938, nonrecording gage at same site and mean sea level datum (unadjusted).

AVERAGE DISCHARGE.--31 years, 550 ft³/s (15.58 m³/s), 9.66 in/yr (245 mm/yr).

EXTREMES.--Current year: Maximum discharge, about 4,900 ft³/s (139 m³/s) Jan. 25, based on correlation with nearby stations; minimum 217 ft³/s (6.15 m³/s) Sept. 20 (gage height, 3.04 ft or 0.927 m).

Period of record: Maximum discharge, 6,290 ft³/s (178 m³/s) May 10, 1956 (gage height, 10.79 ft or 3.289 m); minimum, 1.0 ft³/s (0.028 m³/s) May 28, 1968 (gage height, 1.40 ft or 0.427 m), result of regulation during bridge construction.

Flood of Apr. 7, 1947 reached a stage of 14.4 ft (4.39 m) from information by powerplant operator.

REMARKS.--Records good except those for the winter period and those for periods of no gage-height record, which are fair. Prior to Dec. 1, 1958, large diurnal fluctuation at low and medium flow caused by powerplant above station; occasional fluctuation since.

REVISIONS (WATER YEARS).--WSP 824: 1931-36. WSP 1307: 1931-37.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	639	450	1,350	1,780	2,580	2,630	2,280	879	660	480	304	331
2	638	500	1,250	1,480	2,170	2,670	2,440	847	620	470	402	330
3	586	540	1,200	1,510	1,950	2,780	2,570	817	600	460	460	352
4	547	580	1,200	1,320	1,610	3,020	3,050	792	580	470	429	345
5	498	560	1,200	1,140	1,370	3,580	3,330	769	580	540	405	348
6	415	520	1,150	1,050	1,110	3,830	3,330	740	580	520	367	342
7	405	500	1,150	928	1,050	3,800	3,180	726	600	490	353	338
8	427	470	1,050	819	1,050	3,700	3,100	783	680	460	355	335
9	418	430	1,000	700	1,000	3,840	2,780	786	800	440	366	327
10	352	405	940	650	980	3,910	2,410	794	950	420	378	324
11	381	400	870	600	950	3,900	2,160	880	870	400	372	313
12	350	387	800	600	900	3,800	2,000	903	869	390	381	294
13	395	383	750	640	850	3,530	1,910	890	810	380	359	316
14	516	383	720	670	800	3,130	1,860	933	782	370	354	348
15	458	485	670	684	800	2,680	1,780	1,020	770	360	361	353
16	507	550	640	671	750	2,330	1,560	1,600	684	350	360	338
17	466	750	600	641	760	2,130	1,420	2,000	686	330	495	333
18	472	840	570	634	768	1,910	1,320	2,100	667	329	423	329
19	452	860	550	629	836	1,730	1,250	2,100	731	321	388	323
20	420	780	520	733	899	1,550	1,160	2,000	788	331	370	289
21	390	720	510	1,580	995	1,460	1,090	1,900	800	326	351	317
22	370	660	520	2,400	1,300	1,390	1,050	1,600	800	323	313	318
23	360	660	520	3,090	1,960	1,320	995	1,300	820	306	305	316
24	350	660	570	4,500	2,080	1,260	959	1,100	770	312	318	314
25	340	750	620	4,800	2,260	1,160	920	950	700	331	316	312
26	340	900	850	4,500	2,440	1,120	896	730	650	325	299	300
27	340	1,000	1,130	4,000	2,590	1,090	861	730	600	321	309	300
28	350	1,100	1,360	3,500	2,500	1,060	846	750	550	314	319	320
29	370	1,200	1,610	3,400	-----	1,070	913	800	520	312	316	385
30	390	1,250	1,790	3,300	-----	1,440	902	800	500	309	345	438
31	410	-----	1,850	2,960	-----	2,080	-----	750	-----	306	343	-----
TOTAL	13,352	19,673	29,510	55,909	39,308	74,900	54,322	33,769	21,017	11,796	11,216	9,928
MEAN	431	656	952	1,804	1,404	2,416	1,811	1,089	701	381	362	331
MAX	639	1,250	1,850	4,800	2,590	3,910	3,330	2,100	950	540	495	438
MIN	340	383	510	600	750	1,060	846	726	500	306	299	289
CFSM	.56	.85	1.23	2.33	1.82	3.13	2.34	1.41	.91	.49	.47	.43
IN.	.64	.95	1.42	2.69	1.89	3.60	2.61	1.63	1.01	.57	.54	.48

CAL YR 1973 TOTAL 350,302 MEAN 960 MAX 4,850 MIN 230 CFSM 1.24 IN 16.86
WTR YR 1974 TOTAL 374,700 MEAN 1,027 MAX 4,800 MIN 289 CFSM 1.33 IN 18.03

NOTE.--No gage-height record Nov. 16 to Dec. 16, Jan. 24-30.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04118500 Rogue River near Rockford, Mich.

LOCATION.--Lat 43°05'00", long 85°35'30", in NE¼ sec.15, T.8 N., R.11 W., Kent County, on left bank at downstream side of highway bridge, 2.2 mi (3.5 km) upstream from mouth, and 3.0 mi (4.8 km) southwest of Rockford.

DRAINAGE AREA.--234 mi² (606 km²).

PERIOD OF RECORD.--February 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 625.2 ft (190.56 m) above mean sea level (levels by Blass Survey Co.). Prior to August 30, 1952 nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--22 years, 221 ft³/s (6.259 m³/s), 12.83 in/yr (326 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,390 ft³/s (67.7 m³/s) May 17 (gage height, 8.60 ft or 2.621 m); minimum, 111 ft³/s (3.14 m³/s) July 31; minimum gage height, 3.97 ft (1.210 m) July 31, Aug. 1, Sept. 12; minimum daily discharge 113 ft³/s (3.20 m³/s) Aug. 1.

Period of record: Maximum discharge, 2,640 ft³/s (74.8 m³/s) Mar. 31, 1960 (gage height, 8.59 ft or 2.618 m); minimum, 28 ft³/s (0.79 m³/s) Jan. 22, 1967 (gage height, 3.41 ft or 1.039 m); minimum daily, 49 ft³/s (1.39 m³/s) Aug. 27, 1955.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are fair. Some diurnal fluctuation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	250	253	338	542	477	778	330	304	146	113	142
2	166	230	239	273	459	574	889	330	287	224	125	149
3	154	220	224	270	420	658	952	330	274	205	151	147
4	148	210	229	255	390	901	1,080	330	302	209	162	143
5	146	200	281	240	370	1,080	1,030	330	303	206	175	138
6	139	190	309	220	350	1,050	900	330	307	195	173	134
7	120	175	337	210	330	831	720	325	333	161	159	132
8	120	165	329	200	320	717	620	320	387	169	157	131
9	125	166	317	195	310	732	540	310	345	159	172	129
10	130	163	306	190	300	673	507	302	339	164	175	127
11	140	159	281	180	290	630	480	338	340	160	165	128
12	150	156	260	180	280	570	540	336	340	152	173	125
13	160	157	245	180	280	510	620	363	319	149	187	156
14	185	158	226	180	270	470	700	494	303	148	169	155
15	219	264	200	185	260	480	580	614	287	142	155	146
16	221	263	160	200	260	500	510	1,160	265	133	154	136
17	170	264	150	208	260	470	470	2,000	260	129	161	132
18	150	258	160	207	265	460	430	1,960	264	131	167	132
19	145	241	180	207	279	450	410	746	252	129	179	131
20	140	218	165	262	283	440	390	579	263	129	171	129
21	140	216	150	470	299	420	380	498	265	126	172	131
22	135	216	160	675	425	400	370	438	242	125	157	129
23	130	212	170	872	427	380	360	400	221	134	147	127
24	130	271	189	798	478	370	360	370	212	134	138	128
25	140	276	233	745	498	360	360	350	207	131	134	132
26	120	269	285	640	446	350	350	352	197	132	130	132
27	160	260	329	817	375	350	340	366	195	131	140	131
28	200	284	362	1,150	400	347	330	362	192	124	144	143
29	225	273	396	1,330	-----	346	330	355	191	118	145	244
30	180	264	391	1,020	-----	476	330	339	207	116	138	214
31	210	-----	382	794	-----	582	-----	323	-----	114	140	-----
TOTAL	4,824	6,648	7,898	13,691	9,866	17,054	16,656	15,980	8,213	4,695	4,828	4,253
MEAN	156	222	255	442	352	550	555	515	274	151	156	142
MAX	225	284	396	1,330	542	1,080	1,080	2,000	387	224	187	244
MIN	120	156	150	180	260	346	330	302	191	114	113	125
CFSM	.67	.95	1.09	1.89	1.50	2.35	2.37	2.20	1.17	.65	.67	.61
IN.	.77	1.06	1.26	2.18	1.57	2.71	2.65	2.54	1.31	.75	.77	.68

CAL YR 1973 TOTAL 108,076 MEAN 296 MAX 1,140 MIN 109 CFSM 1.27 IN 17.18
 WTR YR 1974 TOTAL 114,606 MEAN 314 MAX 2,000 MIN 113 CFSM 1.34 IN 18.22

NOTE.--No gage-height record Apr. 6 to May 9.

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04119000 Grand River at Grand Rapids, Mich.

LOCATION.--Lat 42°57'52", long 85°40'35", in NE¼ sec.25, T.7 N., R.12 W., Kent County, on right bank 500 ft (152 m) upstream from bridge on Fulton Street, 1.7 mi (2.7 km) upstream from Plaster Creek, and at mile 41 (66 km).

DRAINAGE AREA.--4,900 mi² (12,700 km²), approximately.

PERIOD OF RECORD.--March 1901 to December 1905, January 1906 to August 1918 (gage heights only), October 1930 to current year. Monthly discharge only for some periods, published in WSP 1307. 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 (178.521 m) above mean sea level (levels by City of Grand Rapids). March 1901 to August 1918, nonrecording gage at Fulton Street Bridge 500 ft (152 m) downstream and Oct. 1, 1930, to Oct. 26, 1953, water-stage recorder at sewage pumping station 1 mi (1.6 km) downstream at datum 2.99 ft (0.911 m) higher.

AVERAGE DISCHARGE.--48 years, 3,503 ft³/s (99.20 m³/s), 9.71 in/yr (247 mm/yr).

EXTREMES.--Current year: Maximum discharge, 24,600 ft³/s (697 m³/s) Mar. 9 (gage height, 16.87 ft or 5.142 m); minimum, 1,090 ft³/s (30.9 m³/s) Sept. 22 (gage height, 2.83 ft or 0.863 m).

Period of record: Maximum discharge, 54,000 ft³/s (1530 m³/s) Mar. 28, 1904 (gage height, 19.5 ft or 5.94 m, from graph based on gage readings, site then in use); minimum daily, 381 ft³/s (10.8 m³/s) Aug. 9, 17, 1936. Maximum discharge since at least 1901, that of March 28, 1904.

REMARKS.--Records good except those for the winter period and those for indefinite stage-discharge relation, which are fair. Moderate diurnal fluctuation at low and medium flow caused by powerplants above station.

REVISIONS (WATER YEARS).--WSP 924: 1938 (M). WSP 1387: 1901-5, 1940.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,250	2,500	5,900	8,220	18,200	12,000	10,400	5,480	5,900	2,540	1,400	1,500
2	2,400	2,790	5,650	7,340	15,900	11,900	11,300	5,730	5,620	2,910	1,350	1,500
3	2,480	2,810	5,280	6,530	13,900	12,200	12,200	5,700	5,290	3,050	1,600	1,550
4	2,170	2,740	5,450	6,000	12,200	13,300	14,200	5,270	4,940	3,030	1,900	1,550
5	2,130	2,680	5,870	5,400	10,300	15,900	15,700	5,060	4,820	3,100	1,900	1,500
6	2,160	2,800	6,080	5,000	9,000	18,700	17,100	4,720	4,670	3,010	1,900	1,600
7	2,220	2,570	5,930	4,600	8,000	21,600	17,900	4,200	4,290	2,800	1,800	1,600
8	2,010	2,480	5,720	4,200	6,500	23,700	17,700	4,320	4,510	2,700	1,750	1,650
9	1,860	2,460	5,460	3,900	6,000	24,300	16,600	4,800	5,130	2,530	1,700	1,550
10	1,700	2,400	5,320	3,800	6,200	24,100	15,100	4,810	5,760	2,430	1,800	1,500
11	1,680	2,390	5,070	3,700	6,400	23,900	13,800	4,760	5,330	2,360	1,750	1,400
12	1,700	2,300	4,880	3,600	6,000	23,400	12,700	5,080	5,080	2,190	1,600	1,400
13	1,900	2,300	4,670	3,500	5,500	22,500	11,900	5,180	5,040	2,040	1,700	1,400
14	2,190	2,370	4,160	3,500	5,900	20,800	11,700	5,510	4,920	1,900	2,100	1,500
15	2,220	2,980	3,600	3,600	5,200	18,300	11,400	6,160	4,800	1,850	2,610	1,550
16	2,180	3,240	3,200	3,600	4,800	15,900	10,800	6,860	4,600	1,700	2,490	1,500
17	2,300	3,920	2,900	3,600	4,800	13,900	10,100	9,550	4,380	1,680	2,260	1,500
18	2,070	3,830	3,000	3,600	4,800	12,400	9,280	11,200	4,160	1,660	2,340	1,450
19	2,080	3,540	2,800	3,700	4,800	11,500	8,690	12,600	4,130	1,660	2,310	1,400
20	1,820	3,600	2,600	4,630	4,800	10,700	8,320	13,700	4,110	1,510	2,140	1,350
21	1,720	3,550	2,800	6,750	6,000	10,200	7,880	14,400	4,310	1,570	2,210	1,300
22	1,840	3,440	2,800	8,820	8,100	9,660	7,400	14,100	4,010	1,400	1,700	1,170
23	1,800	3,350	2,900	10,300	9,210	9,230	7,030	13,100	3,830	1,300	1,650	1,360
24	1,750	3,860	3,300	11,800	10,100	8,710	6,740	11,700	3,560	1,460	1,700	1,600
25	1,660	4,400	3,500	13,900	11,100	8,090	6,240	10,200	3,420	1,590	1,800	1,770
26	1,740	4,840	4,640	18,800	11,500	7,670	5,970	8,770	3,370	1,640	1,650	1,770
27	1,710	4,950	5,760	21,700	12,000	7,340	5,800	7,600	3,240	1,550	1,500	2,350
28	1,820	5,040	6,660	22,500	11,900	7,060	5,630	6,940	3,010	1,560	1,600	2,180
29	1,980	5,190	7,390	21,900	-----	6,920	5,550	6,630	2,870	1,390	1,650	2,400
30	2,440	5,940	8,060	21,100	-----	7,680	5,590	6,380	2,580	1,350	1,700	2,350
31	2,520	-----	8,390	19,900	-----	9,300	-----	6,120	-----	1,480	1,600	-----
TOTAL	62,500	101,460	149,740	269,490	238,710	442,860	320,720	236,630	131,680	63,000	57,160	48,210
MFAN	2,010	3,382	4,830	8,693	8,525	14,290	10,690	7,633	4,389	2,032	1,844	1,607
MAX	2,520	5,940	8,390	22,500	18,200	24,300	17,900	14,400	5,900	3,100	2,610	2,400
MIN	1,660	2,300	2,600	3,500	4,800	6,920	5,550	4,200	2,580	1,300	1,350	1,170
CFSM	.41	.69	.99	1.77	1.74	2.92	2.14	1.56	.90	.41	.36	.33
IN.	.47	.77	1.14	2.05	1.81	3.36	2.43	1.80	1.00	.48	.43	.37

CAL YR 1973 TOTAL 2,013,650 MEAN 5.517 MAX 23,400 MIN 1,260 CFSM 1.13 IN 15.29
WTR YR 1974 TOTAL 2,122,160 MEAN 5.814 MAX 24,300 MIN 1,170 CFSM 1.19 IN 16.11

NOTE.--Indefinite stage-discharge relation Aug. 22 to Sept. 21.

STREAMS TRIBUTARY TO LAKE MICHIGAN

04121300 Clam River at Vogel Center, Mich.

LOCATION.--Lat 44°12'02", long 85°03'10", in SW¼ NW¼ sec.21, T.21 N., R.6 W., Missaukee County, on left bank 10 ft (3 m) downstream from bridge on county road, 0.5 mi (0.8 km) north of Vogel Center, and 3.5 mi (5.6 km) southeast of Falmouth.

DRAINAGE AREA.--243 mi² (629 km²).

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,130 ft (344 m) from topographic map.

AVERAGE DISCHARGE.--8 years, 128 ft³/s (3.625 m³/s), 7.15 in/yr (182 mm/yr).

EXTREMES.--Current year: Maximum discharge, 680 ft³/s (19.3 m³/s) Apr. 15 (gage height, 5.30 ft or 1.615 m); minimum, 55 ft³/s (1.56 m³/s) Feb. 22.

Period of record: Maximum discharge, 1,150 ft³/s (32.6 m³/s) Apr. 13, 1971 (gage height, 6.33 ft or 1.929 m); minimum, 29 ft³/s (0.82 m³/s) Nov. 3, 1969, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	94	107	90	185	104	141	206	136	128	80	75
2	62	97	105	90	160	107	165	195	129	130	80	73
3	67	89	102	90	140	203	253	191	126	165	97	71
4	75	80	108	92	120	310	385	198	124	221	97	70
5	81	73	152	90	110	373	423	208	123	246	100	69
6	77	70	178	86	95	387	316	226	122	229	95	68
7	71	66	161	90	85	422	254	226	128	188	88	69
8	67	67	143	86	80	412	241	209	137	149	83	67
9	66	66	130	84	75	322	222	195	155	124	81	69
10	65	66	122	86	80	245	202	186	201	113	78	68
11	64	66	117	88	83	225	196	196	260	107	78	68
12	63	66	105	86	84	206	207	241	268	104	76	67
13	70	73	100	81	83	181	252	245	217	100	75	73
14	83	74	75	80	88	163	368	247	183	95	72	75
15	78	79	85	82	80	157	602	292	169	88	71	71
16	68	91	83	83	83	156	626	307	163	86	70	66
17	64	85	80	82	85	157	427	287	170	87	70	65
18	66	80	86	85	85	155	296	266	174	86	69	63
19	65	80	88	82	91	150	253	239	171	85	71	64
20	65	77	89	87	97	140	233	215	161	83	72	69
21	63	79	87	98	94	142	222	200	152	82	70	75
22	63	97	88	105	82	140	220	191	145	90	69	76
23	61	102	90	105	78	125	216	183	141	94	68	77
24	61	102	90	106	82	115	211	176	138	97	66	78
25	61	103	90	105	86	115	206	173	135	98	66	81
26	60	105	97	110	92	120	199	171	133	96	70	81
27	60	104	106	166	94	135	196	165	127	89	84	80
28	76	108	108	199	99	135	194	158	123	86	86	80
29	119	111	106	207	-----	134	201	153	118	84	80	91
30	121	110	104	191	-----	134	215	150	127	82	75	97
31	96	-----	95	204	-----	136	-----	144	-----	82	76	-----
TOTAL	2,219	2,560	3,277	3,316	2,696	6,006	8,142	6,439	4,656	3,594	2,413	2,196
MEAN	71.6	85.3	106	107	96.3	194	271	208	155	116	77.8	73.2
MAX	121	111	178	207	185	422	626	307	268	246	100	97
MIN	60	66	75	80	75	104	141	144	118	82	66	63
CFSM	.29	.35	.44	.44	.40	.80	1.12	.86	.64	.48	.32	.30
IN.	.34	.39	.50	.51	.41	.92	1.25	.99	.71	.55	.37	.34

CAL YR 1973 TOTAL 42,513 MEAN 116 MAX 400 MIN 53 CFSM .48 IN 6.51
WTR YR 1974 TOTAL 47,514 MEAN 130 MAX 626 MIN 60 CFSM .54 IN 7.27

PEAK DISCHARGE (BASE, 350 FT³/S).--Mar. 8 (0100) 440 ft³/s (4.50 ft), Apr. 15 (2400) 680 ft³/s (5.30 ft).

04121500 Muskegon River at Evart, Mich.

LOCATION.--Lat 43°53'57", long 85°15'19", in NW¼ NE¼ sec.3, T.17 N., R.8 W., Osceola County, on right bank 500 ft (152 m) downstream from bridge on U.S. Highway 10 at Evart, 0.4 mi (0.6 km) upstream from Twin Creek, and at mile 123.9 (199.4 km).

DRAINAGE AREA.--1,450 mi² (3,760 km²) approximately.

PERIOD OF RECORD.--October 1930 to September 1931, October 1933 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 977.72 ft (298.009 m) above mean sea level. Prior to Nov. 7, 1956, nonrecording gages at sites 400 ft (122 m) and 500 ft (152 m) upstream at present datum.

AVERAGE DISCHARGE.--42 years, 982 ft³/s (27.81 m³/s), 9.20 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,710 ft³/s (133 m³/s) Apr. 17 (gage height, 11.71 ft or 3.569 m); minimum, 510 ft³/s (14.4 m³/s) Sept. 20.

Period of record: Maximum discharge, 7,750 ft³/s (219 m³/s) Apr. 9, 1959 (gage height, 14.42 ft or 4.395 m) minimum observed, 164 ft³/s (4.64 m³/s) Dec. 20, 1947, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by dams above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1437: 1934, 1947 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	535	893	900	900	2,000	872	1,220	1,920	1,270	935	642	660
2	525	893	879	920	1,800	893	1,470	1,830	1,220	900	636	630
3	525	879	858	960	1,500	1,160	1,980	1,770	1,180	1,010	678	618
4	535	858	872	1,050	1,450	2,040	2,640	1,750	1,130	1,160	774	594
5	550	830	1,060	1,050	1,350	2,360	2,870	1,710	1,100	1,330	774	576
6	570	816	1,160	1,050	1,300	3,160	2,950	1,830	1,120	1,380	760	565
7	576	809	1,190	1,050	1,250	3,590	3,000	1,830	1,160	1,380	725	555
8	576	767	1,170	1,050	1,150	3,900	2,840	1,770	1,230	1,390	732	550
9	565	739	1,140	1,050	1,100	3,760	2,750	1,710	1,350	1,430	718	550
10	560	718	1,130	1,050	1,050	3,770	2,650	1,650	1,580	1,490	704	550
11	555	704	1,120	1,050	960	3,630	2,500	1,710	1,760	1,530	690	550
12	545	704	1,090	1,050	950	3,230	2,450	1,910	1,800	1,510	678	540
13	576	711	1,050	1,100	940	2,840	2,680	1,960	1,670	1,430	672	550
14	600	718	963	1,090	920	2,520	3,140	2,110	1,560	1,310	648	540
15	600	809	879	1,090	900	2,280	3,910	2,530	1,510	1,190	624	545
16	606	886	816	1,090	900	2,130	4,250	2,650	1,550	1,070	624	545
17	600	886	660	1,030	880	2,020	4,670	3,500	1,510	978	624	535
18	594	893	540	978	860	1,900	4,520	3,320	1,510	935	600	525
19	600	893	612	978	844	1,770	4,070	3,070	1,470	886	618	520
20	594	886	684	978	820	1,640	3,640	2,790	1,400	837	612	515
21	588	893	809	1,000	830	1,550	3,220	2,510	1,350	795	594	515
22	576	928	816	960	800	1,480	2,950	2,320	1,280	795	576	515
23	576	928	810	928	760	1,300	2,730	2,160	1,230	809	565	515
24	570	935	810	928	800	1,200	2,510	1,980	1,170	802	550	515
25	565	942	816	949	830	1,100	2,310	1,820	1,110	767	545	525
26	565	928	928	1,020	840	1,050	2,130	1,690	1,070	760	560	535
27	565	935	914	1,550	840	1,050	2,000	1,590	1,010	746	600	535
28	636	942	893	1,770	844	1,050	1,910	1,510	949	711	820	540
29	760	942	893	1,870	-----	1,100	2,000	1,460	914	690	851	636
30	823	921	879	1,910	-----	1,150	2,060	1,390	956	678	767	666
31	844	-----	870	2,040	-----	1,150	-----	1,310	-----	648	684	-----
TOTAL	18,455	25,586	28,211	35,489	29,468	62,645	84,020	63,060	39,119	32,282	20,645	16,710
MEAN	595	853	910	1,145	1,052	2,021	2,801	2,034	1,304	1,041	666	557
MAX	844	942	1,190	2,040	2,000	3,900	4,670	3,500	1,800	1,530	851	666
MIN	525	704	540	900	760	872	1,220	1,310	914	648	545	515
CFSM	.41	.59	.63	.79	.73	1.39	1.93	1.40	.90	.72	.46	.38
IN.	.47	.66	.72	.91	.76	1.61	2.16	1.62	1.00	.83	.53	.43
CAL YR 1973	TOTAL 432,187	MEAN 1,184	MAX 4,200	MIN 465	CFSM .82	IN 11.09						
WTR YR 1974	TOTAL 455,690	MEAN 1,248	MAX 4,670	MIN 515	CFSM .86	IN 11.69						

04121900 Little Muskegon River near Morley, Mich.

LOCATION.--Lat 43°30'09", long 85°20'33", in SW¼ SW¼ sec.24, T.13 N., R.9 W., Mecosta County, on right bank at upstream side of highway bridge on 130th Avenue, 0.5 mi (0.8 km) downstream from Rustford Dam, and 5.2 mi (8.4 km) east of Morley.

DRAINAGE AREA.--138 mi² (357 km²).

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 920 ft (280 m) from topographic map.

AVERAGE DISCHARGE.--8 years, 122 ft³/s (3.455 m³/s), 12.01 in/yr (305 mm/yr).

EXTREMES.--Current year: Maximum discharge, 829 ft³/s (23.5 m³/s) May 17 (gage height, 5.23 ft or 1.594 m); minimum, 62 ft³/s (1.76 m³/s) Aug. 1, 2.

Period of record: Maximum discharge, 829 ft³/s (23.5 m³/s) May 17, 1974 (gage height, 5.23 ft or 1.594 m); minimum, 31 ft³/s (0.88 m³/s) June 3, 1972 (gage height, 1.59 ft or 0.485 m).

REMARKS.--Records good except those for winter periods, which are fair. Some regulation from dams above station. Records of water temperature for current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	147	109	90	230	151	253	261	177	143	64	92
2	71	137	103	88	200	151	330	193	167	132	65	85
3	72	124	101	87	180	256	375	183	161	132	85	83
4	72	111	112	90	160	483	474	191	167	126	90	80
5	72	103	192	93	150	460	478	189	161	137	90	78
6	72	99	187	94	130	502	400	243	183	128	85	76
7	72	90	169	94	120	454	323	249	195	116	78	74
8	72	90	147	92	120	414	297	219	195	107	78	74
9	81	89	132	93	120	381	271	207	187	103	69	71
10	74	89	130	97	125	349	235	193	177	99	67	71
11	72	87	124	100	125	309	217	195	179	98	69	71
12	71	89	116	100	130	271	235	229	179	92	69	72
13	129	89	114	100	130	235	307	225	157	89	83	74
14	151	89	110	100	130	209	349	251	145	89	74	76
15	126	146	100	105	130	201	397	428	149	89	67	74
16	118	163	95	105	125	211	359	450	141	85	71	72
17	107	137	100	105	125	221	289	762	147	81	81	74
18	101	120	105	100	125	211	249	755	153	80	76	74
19	98	112	110	95	122	209	231	565	145	76	89	72
20	99	109	105	105	122	199	197	397	137	76	90	72
21	94	118	105	180	122	191	187	323	128	74	81	72
22	90	124	105	243	120	187	193	277	122	76	76	72
23	89	116	105	197	115	175	185	261	111	81	74	72
24	89	118	110	177	120	165	181	233	105	78	71	72
25	87	124	115	169	125	160	155	221	103	76	71	76
26	85	118	139	171	125	157	169	207	101	80	67	76
27	85	111	139	358	125	155	167	183	96	76	112	71
28	109	122	139	399	132	157	163	189	90	72	107	71
29	149	126	132	335	-----	157	251	189	89	76	89	122
30	143	116	130	273	-----	179	305	203	149	74	81	128
31	130	-----	110	305	-----	217	-----	193	-----	71	96	-----
TOTAL	2,949	3,413	3,790	4,740	3,783	7,777	8,222	8,864	4,396	2,912	2,465	2,347
MEAN	95.1	114	122	153	135	251	274	286	147	93.9	79.5	78.2
MAX	151	163	192	399	230	502	478	762	195	143	112	128
MIN	69	87	95	87	115	151	155	183	89	71	64	71
CFSM	.69	.83	.88	1.11	.98	1.82	1.99	2.07	1.07	.68	.58	.57
IN.	.79	.92	1.02	1.28	1.02	2.10	2.22	2.39	1.19	.78	.66	.63

CAL YR 1973 TOTAL 50,383 MEAN 138 MAX 426 MIN 55 CFSM 1.00 IN 13.58
WTR YR 1974 TOTAL 55,658 MEAN 152 MAX 762 MIN 64 CFSM 1.10 IN 15.00

PEAK DISCHARGE (BASE, 400 FT³/s)

DATE	TIME	G.H.	DISCHARGE
01-27	2300	3.54	409
03-06	0200	4.05	528
04-05	0600	3.89	488
04-15	0100	3.52	405
05-17	1100	5.23	829

STREAMS TRIBUTARY TO LAKE MICHIGAN

04122100 Bear Creek near Muskegon, Mich.

LOCATION.--Lat 43°17'19", long 86°13'22", in SW¼ NW¼ sec.4, T.10 N., R.16 W., Muskegon County, on left bank at upstream side of bridge on North Getty Street, 1.5 mi (2.4 km) upstream from Little Bear Creek, and 3.9 mi (6.3 km) northeast of Muskegon.

DRAINAGE AREA.--14.8 mi² (38.3 km²).

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (186 m) from topographic map.

AVERAGE DISCHARGE.--9 years, 14.9 ft³/s (0.422 m³/s), 13.67 in/yr (347 mm/yr).

EXTREMES.--Current year: Maximum discharge, 500 ft³/s (14.2 m³/s) May 17 (gage height, 9.58 ft or 2.920 m); minimum, 2.4 ft³/s (0.068 m³/s) Oct. 12.

Period of record: Maximum discharge, 500 ft³/s (14.2 m³/s) May 17, 1974 (gage height, 9.58 ft or 2.920 m); minimum, 1.0 ft³/s (0.028 m³/s) Aug. 5, 17, 22, 1971.

REMARKS.--Records fair. Some regulation above station at low flows.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	12	8.5	12	26	62	72	31	16	8.7	3.9	5.9
2	4.6	8.5	8.2	12	23	46	104	25	15	12	3.9	5.2
3	5.2	7.5	8.2	12	21	70	61	24	14	11	6.2	5.4
4	4.8	6.8	11	12	20	63	101	24	13	10	6.5	4.7
5	4.8	6.5	19	12	18	103	58	22	12	10	5.5	4.5
6	4.4	5.9	20	12	17	59	34	22	19	8.4	4.5	4.5
7	4.4	5.9	16	11	16	36	30	19	69	7.8	4.3	3.7
8	4.2	6.0	13	11	15	33	29	19	58	6.9	6.6	4.3
9	4.2	5.7	12	11	14	45	26	20	41	6.5	7.6	4.5
10	4.2	5.9	12	11	13	38	24	18	54	6.6	5.8	4.5
11	3.8	6.0	11	11	13	29	23	20	41	6.2	7.5	4.3
12	3.0	5.9	11	11	13	26	30	25	29	5.8	7.2	3.7
13	13	5.9	11	11	13	23	47	21	22	5.5	6.4	5.7
14	7.6	5.9	11	11	13	21	128	30	19	5.2	5.4	4.8
15	5.9	15	11	11	13	21	142	109	21	4.7	4.5	4.3
16	5.2	12	10	11	13	28	62	83	22	4.7	10	4.2
17	5.1	10	11	10	14	32	38	376	26	4.4	12	3.6
18	5.1	9.0	12	10	14	28	35	145	29	4.7	8.1	3.8
19	4.5	8.2	12	10	16	32	50	73	24	4.5	6.8	3.7
20	5.1	7.6	12	20	18	27	33	40	19	4.3	5.9	3.7
21	4.8	9.4	12	40	18	24	29	31	16	3.7	5.4	3.9
22	4.8	8.8	13	40	17	24	29	30	15	4.4	5.2	4.0
23	4.8	8.0	13	30	16	23	27	27	13	6.1	5.5	2.9
24	4.8	11	14	25	16	23	24	23	12	5.2	4.5	4.0
25	4.8	11	22	23	17	22	22	21	11	5.2	4.8	4.3
26	4.4	9.0	24	29	19	21	21	19	10	5.7	4.5	3.9
27	5.1	8.7	20	147	25	24	19	18	9.7	4.8	6.6	2.9
28	7.8	12	20	96	32	24	18	22	9.0	4.0	5.8	3.2
29	8.2	11	17	45	-----	23	69	25	8.6	4.0	5.5	4.7
30	6.7	9.4	14	32	-----	35	58	22	9.5	4.0	5.1	4.4
31	7.6	-----	12	33	-----	48	-----	18	-----	4.0	7.8	-----
TOTAL	166.7	254.5	420.9	772	483	1,113	1,443	1,402	676.8	189.0	189.3	127.2
MEAN	5.38	8.48	13.6	24.9	17.3	35.9	48.1	45.2	22.6	6.10	6.11	4.24
MAX	13	15	24	147	32	103	142	376	69	12	12	5.9
MIN	3.0	5.7	8.2	10	13	21	18	18	8.6	3.7	3.9	2.9
CFSM	.36	.57	.92	1.68	1.17	2.43	3.25	3.05	1.53	.41	.41	.29
IN.	.42	.64	1.06	1.94	1.21	2.80	3.63	3.52	1.70	.48	.48	.32
CAL YR 1973	TOTAL 5,219.3	MEAN 14.3	MAX 90	MIN 2.9	CFSM .97	IN 13.12						
WTR YR 1974	TOTAL 7,237.4	MEAN 19.8	MAX 376	MIN 2.9	CFSM 1.34	IN 18.19						

PEAK DISCHARGE (BASE, 100 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-27	1000	8.10	220	04-29	1700	7.00	121
03-05	0500	7.26	126	05-15	0830	7.35	152
04-04	0730	7.36	135	05-17	0900	9.58	500
04-14	1830	8.17	248				

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LOCATION.--Lat 43°27'51", long 86°13'57", in SE¼NW¼ sec.4, T.12 N., R.16 W., Muskegon County, on right bank 30 ft (9 m) downstream from bridge on Fruitvale Road, 6.3 mi (10.1 km) downstream from North Branch, and 6.9 mi (11.1 km) northeast of Whitehall.

PERIOD OF RECORD.--August 1957 to current year.

AVERAGE DISCHARGE.--17 years, 403 ft³/s (11.41 m³/s), 14.40 in/yr (366 mm/yr).

Period of record: Maximum discharge, 3,740 ft³/s (106 m³/s) Apr. 17, 1967 (gage height, 6.76 ft or 2.060 m); minimum, 163 ft³/s (4.62 m³/s) Aug. 18, 19, 1958.

REMARKS.--Records good except those for the winter periods, which are fair. Some regulation from dams above station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	240	377	338	390	750	718	678	910	618	471	321	445
2	249	407	324	340	700	757	770	827	592	564	316	442
3	315	406	314	320	650	689	1,110	793	558	670	335	407
4	364	381	318	330	600	1,040	1,490	764	538	922	385	370
5	317	347	357	370	540	1,750	1,580	723	526	970	417	351
6	299	322	423	380	520	1,620	1,270	675	538	1,030	437	338
7	280	307	460	370	540	1,380	1,120	644	609	817	415	329
8	273	303	445	380	560	1,260	1,000	620	857	713	411	324
9	286	299	411	380	580	1,230	905	599	1,180	643	404	318
10	294	296	387	390	600	1,250	811	593	1,300	555	413	314
11	280	293	375	400	620	1,050	746	587	1,580	506	393	315
12	273	293	364	400	620	881	726	611	1,340	563	406	313
13	307	289	358	390	610	799	771	694	1,070	607	460	316
14	358	287	346	390	580	732	1,100	707	935	549	428	323
15	382	325	310	430	560	669	2,280	764	834	508	388	321
16	355	378	280	460	540	641	1,930	1,050	753	449	377	314
17	319	419	270	460	530	629	1,550	2,030	702	416	481	309
18	299	406	310	470	530	658	1,320	2,800	692	399	614	309
19	291	376	360	495	530	659	1,100	2,000	713	381	641	306
20	287	345	400	521	540	639	990	1,700	681	368	623	303
21	283	335	380	618	571	633	891	1,290	643	354	599	301
22	280	334	370	763	649	614	819	1,090	598	348	500	299
23	278	337	370	903	630	607	782	933	551	358	430	299
24	276	336	370	837	600	585	746	848	516	360	386	300
25	275	336	380	701	580	553	713	776	491	352	359	307
26	272	335	477	539	560	548	681	718	478	349	346	312
27	271	326	563	604	635	556	653	680	463	353	368	311
28	291	334	614	1,140	685	548	626	659	448	354	393	309
29	334	350	606	1,300	-----	531	644	651	432	339	400	316
30	363	354	560	962	-----	541	730	652	432	335	391	343
31	365	-----	480	800	-----	588	-----	641	-----	329	407	-----
TOTAL	9,356	10,233	12,320	17,233	16,610	25,355	30,532	29,029	21,668	15,932	13,244	9,864
MEAN	302	341	397	556	593	818	1,018	936	722	514	427	329
MAX	382	419	614	1,300	750	1,750	2,280	2,800	1,580	1,030	641	445
MIN	240	287	270	320	520	531	626	587	432	329	316	299
CFSM	.79	.90	1.04	1.46	1.56	2.15	2.68	2.46	1.90	1.35	1.12	.87
IN.												

STREAMS TRIBUTARY TO LAKE MICHIGAN

04122500 Pere Marquette River at Scottville, Mich.

LOCATION.--Lat 43°56'42", long 86°16'43", in NW¼ NW¼ sec.19, T.18 N., R.16 W., Mason County, on right bank 20 ft (6 m) upstream from highway bridge at south edge of Scottville, 1.4 mi (2.3 km) upstream from India Creek and 5.6 mi (9.0 km) downstream from Big South Branch.

DRAINAGE AREA.--709 mi² (1,836 km²).

PERIOD OF RECORD.--August 1939 to current year. Prior to October 1942, published as "at Custer".

GAGE.--Water-stage recorder. Datum of gage is 597.66 ft (182.167 m) above mean sea level. Prior to June 12, 1943, nonrecording gage at bridge 4.5 mi (7.2 km) upstream at different datum.

AVERAGE DISCHARGE.--35 years, 640 ft³/s (18.12 m³/s), 12.26 in/yr (311 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,410 ft³/s (68.3 m³/s) Apr. 17 (gage height, 5.57 ft or 1.698 m); minimum, 389 ft³/s (11.0 m³/s) Oct. 2.

Period of record: Maximum discharge, 2,970 ft³/s (84.1 m³/s) July 1, 1969 (gage height, 6.26 ft or 1.908 m); minimum, 209 ft³/s (5.92 m³/s) Dec. 11, 1962, (discharge measurement); minimum daily, 310 ft³/s (8.78 m³/s) Aug. 9, 10, 1941.

REMARKS.--Records good except those for the winter periods, which are fair. Some regulation above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1437: 1941 (M), 1943 (M), 1949 (M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390	570	544	620	1,150	870	887	994	882	806	564	656
2	393	575	535	650	1,100	791	986	1,020	854	955	564	649
3	419	586	530	650	1,050	886	1,160	983	822	1,060	587	629
4	431	565	526	640	1,000	1,130	1,410	934	792	1,120	624	608
5	449	542	563	600	850	1,370	1,650	916	776	1,190	673	590
6	451	528	606	600	770	1,630	1,740	913	798	1,240	683	579
7	453	510	643	610	720	1,930	1,710	895	846	1,250	649	571
8	443	502	640	610	760	1,910	1,520	893	981	1,190	614	565
9	433	495	612	620	780	1,850	1,360	884	1,250	1,050	595	594
10	429	492	596	620	830	1,790	1,260	866	1,710	970	586	604
11	429	492	584	610	860	1,670	1,180	919	1,980	918	592	593
12	427	492	570	600	880	1,510	1,150	979	2,140	840	621	576
13	467	492	559	610	880	1,350	1,170	1,030	2,180	801	636	573
14	500	492	540	630	880	1,230	1,380	1,160	1,900	756	620	576
15	502	522	520	640	860	1,140	1,760	1,260	1,630	721	595	581
16	490	548	520	640	800	1,080	2,100	1,330	1,460	685	615	571
17	470	569	500	640	830	1,020	2,390	1,510	1,400	656	649	561
18	455	573	530	650	860	1,000	2,160	1,770	1,350	639	680	557
19	451	554	570	650	860	989	1,810	1,890	1,280	623	741	555
20	447	539	620	660	840	959	1,580	1,980	1,230	609	749	551
21	441	531	640	700	860	929	1,420	1,770	1,160	592	752	549
22	439	526	650	720	870	903	1,310	1,550	1,070	591	718	552
23	441	531	650	806	880	892	1,230	1,370	998	595	653	553
24	439	534	650	762	860	867	1,180	1,240	934	599	623	553
25	439	530	698	742	770	822	1,140	1,150	874	601	602	566
26	439	530	715	728	800	804	1,080	1,070	830	607	594	568
27	443	524	765	886	850	810	1,030	1,010	793	599	704	565
28	460	530	807	1,020	920	807	985	959	759	591	728	560
29	490	536	774	1,170	-----	799	988	929	733	583	748	576
30	522	546	650	1,260	-----	805	976	917	770	576	702	629
31	550	-----	620	1,250	-----	836	-----	909	-----	570	665	-----
TOTAL	14,032	15,956	18,927	22,594	24,370	35,379	41,702	36,000	35,182	24,583	20,126	17,410
MEAN	453	532	611	729	870	1,141	1,390	1,161	1,173	793	649	580
MAX	550	586	807	1,260	1,150	1,930	2,390	1,980	2,180	1,250	752	656
MIN	390	492	500	600	720	791	887	866	733	570	564	549
CFSM	.64	.75	.86	1.03	1.23	1.61	1.96	1.64	1.65	1.12	.92	.82
IN.	.74	.84	.99	1.19	1.28	1.86	2.19	1.89	1.85	1.29	1.06	.91
CAL YR 1973	TOTAL 249,817		MEAN 684	MAX 1,620	MIN 370	CFSM .96	IN 13.11					
WTR YR 1974	TOTAL 306,261		MEAN 839	MAX 2,390	MIN 390	CFSM 1.18	IN 16.07					

STREAMS TRIBUTARY TO LAKE MICHIGAN

121

04124000 Manistee River near Sherman, Mich.

LOCATION.--Lat 44°26'11", long 85°41'55", in NE¼ NE¼ sec.36, T.24 N., R.12 W., Wexford County, on downstream side of bridge near right pier on State Highway 37, 250 ft (76 m) upstream from Wheeler Creek, 0.9 mi (1.4 km) north of Sherman, and at mile 60.8 (97.8 km).

DRAINAGE AREA.--900 mi² (2331 km²).

PERIOD OF RECORD.--July 1903 to May 1916, October 1930 to September 1931, October 1933 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Nonrecording gage. Altitude of gage is 804 ft (245 m) from river-profile map. Prior to Apr. 13, 1934, at various datums.

AVERAGE DISCHARGE.--54 years (1903-15, 1930-31, 1933-74), 1,056 ft³/s (29.91 m³/s) 15.93 in/yr (405 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,610 ft³/s (73.9 m³/s) Apr. 16 (gage height, 14.70 ft or 4.481 m); minimum, 700 ft³/s (19.8 m³/s) Dec. 17.

Period of record: Maximum discharge, 3,570 ft³/s (101 m³/s) Mar. 25, 1913 (gage height, 7.1 ft or 2.16 m), from graph based on gage readings, datum then in use; minimum daily, 540 ft³/s (15.3 m³/s) Feb. 21-23, 1936.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS (WATER YEARS).--WSP 1004, 1936 (m). WSP 1307: 1911, 1913-14 (M), 1934 (M), 1936 (M), 1937, 1939-40 (M). WSP 1437: 1911, 1913 (M), 1937.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	823	1,010	940	823	1,500	940	1,010	1,250	1,050	1,020	865	856
2	823	994	931	811	1,400	940	1,080	1,190	1,040	1,040	865	841
3	856	1,000	931	808	1,200	1,030	1,280	1,190	1,030	1,140	880	826
4	835	988	997	829	1,100	1,150	1,570	1,210	1,010	1,420	892	823
5	871	955	1,080	844	950	1,330	1,660	1,220	994	1,530	904	826
6	874	934	1,100	895	900	1,510	1,580	1,320	1,020	1,360	910	820
7	859	922	1,140	895	860	1,650	1,530	1,350	1,120	1,220	910	811
8	850	916	1,110	847	860	1,700	1,540	1,290	1,380	1,120	886	814
9	841	910	1,070	814	880	1,610	1,490	1,210	1,540	1,040	871	820
10	838	907	1,020	808	900	1,450	1,430	1,140	1,970	1,010	856	817
11	841	913	991	907	910	1,330	1,360	1,180	2,080	1,000	865	817
12	862	922	982	870	920	1,290	1,420	1,280	1,860	985	874	811
13	931	916	970	820	920	1,230	1,600	1,340	1,660	970	862	835
14	958	925	925	830	860	1,170	2,020	1,480	1,470	961	850	841
15	955	967	832	880	860	1,140	2,450	1,680	1,330	952	841	844
16	940	1,020	800	880	880	1,120	2,590	1,710	1,340	934	874	820
17	901	1,040	700	880	900	1,120	2,560	1,670	1,430	925	862	811
18	892	1,030	800	900	900	1,100	2,340	1,550	1,470	916	865	811
19	892	1,020	850	920	900	1,090	1,950	1,440	1,400	913	883	811
20	889	991	870	985	900	1,060	1,650	1,350	1,310	904	880	811
21	880	985	870	1,030	920	1,030	1,560	1,270	1,260	892	856	826
22	871	988	880	1,060	910	1,030	1,480	1,250	1,190	901	844	835
23	859	982	880	1,020	870	950	1,470	1,290	1,120	931	835	841
24	859	970	900	964	810	900	1,430	1,490	1,050	919	832	832
25	856	955	900	946	750	850	1,360	1,440	1,040	910	835	826
26	853	940	930	940	800	910	1,320	1,250	1,030	898	841	826
27	856	946	1,000	1,350	850	976	1,290	1,190	1,010	904	856	826
28	919	949	1,050	1,500	930	970	1,260	1,130	991	889	871	826
29	1,000	955	1,000	1,600	-----	970	1,260	1,130	979	880	880	844
30	1,020	952	1,000	1,550	-----	991	1,260	1,110	994	865	877	889
31	1,000	-----	886	1,550	-----	1,020	-----	1,090	-----	898	865	-----
TOTAL	27,504	28,902	29,335	30,756	26,340	35,557	47,800	40,690	38,178	31,247	26,887	24,837
MEAN	887	963	946	992	941	1,147	1,593	1,313	1,273	1,008	867	828
MAX	1,020	1,040	1,140	1,600	1,500	1,700	2,590	1,710	2,080	1,530	910	889
MIN	823	907	700	808	750	850	1,010	1,090	979	865	832	811
CFSM	.99	1.07	1.05	1.10	1.05	1.27	1.77	1.46	1.41	1.12	.96	.92
IN.	1.14	1.19	1.21	1.27	1.09	1.47	1.98	1.68	1.58	1.29	1.11	1.03
CAL YR 1973	TOTAL 382,439	MEAN 1,048	MAX 2,050	MIN 700	CFSM 1.16	IN 15.81						
WTR YR 1974	TOTAL 388,033	MEAN 1,063	MAX 2,590	MIN 700	CFSM 1.18	IN 16.04						

STREAMS TRIBUTARY TO LAKE MICHIGAN
04125500 Pine River near Hoxeyville, Mich.

LOCATION.--Lat 44°12'11", long 85°47'58", in SW¼ NW¼ sec.20, T.21 N., R.12 W., Wexford County, on right bank 500 ft (152 m) upstream from bridge on State Highway 37, 4.2 mi (6.8 km) northwest of Hoxeyville, 8.0 mi (12.9 km) east of Wellston, and 8 mi (12.9 km) upstream from mouth.

DRAINAGE AREA.--251 mi² (650 km²).

PERIOD OF RECORD.--July 1952 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 775 ft (236 m) by barometer.

AVERAGE DISCHARGE.--22 years, 282 ft³/s (7.99 m³/s), 15.26 in/yr (388 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,400 ft³/s (39.6 m³/s) Apr. 16 (gage height, 5.75 ft or 1.753 m); minimum, 183 ft³/s (5.18 m³/s) Feb. 24.

Period of record: Maximum discharge, 2,440 ft³/s (69.1 m³/s) Aug. 6, 1956 (gage height, 6.82 ft or 2.079 m), from rating curve extended above 1,100 ft³/s (31.2 m³/s); minimum, 161 ft³/s (4.56 m³/s) Feb. 2, 1961.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	227	306	235	240	397	255	314	355	282	314	250	265
2	232	327	225	227	319	260	356	355	276	304	251	254
3	243	297	224	242	300	309	519	360	271	333	289	247
4	262	273	230	240	270	570	664	380	268	387	308	251
5	264	260	273	218	235	652	687	410	272	442	296	244
6	275	252	328	238	245	592	554	420	280	392	278	240
7	250	247	302	240	245	643	470	400	357	325	262	236
8	241	243	289	224	249	647	460	379	485	296	257	236
9	239	244	275	229	249	570	415	348	634	283	257	239
10	237	241	267	244	245	509	387	332	909	277	256	240
11	231	241	270	242	245	458	371	372	1,010	271	262	238
12	229	242	265	227	245	420	397	496	699	268	267	235
13	258	243	260	222	251	385	542	471	502	265	261	240
14	289	244	230	247	247	352	852	487	415	258	252	251
15	290	257	225	242	220	334	1,140	618	376	254	247	242
16	258	277	210	240	254	333	1,150	600	368	251	252	235
17	252	272	190	240	244	336	738	558	369	248	254	231
18	246	261	230	240	242	327	572	531	388	248	251	231
19	241	257	235	240	244	321	489	447	378	247	289	231
20	240	253	244	244	244	310	441	403	344	243	302	229
21	237	252	229	272	244	301	413	371	323	242	272	231
22	234	261	242	296	256	301	413	353	303	259	258	233
23	231	268	238	282	249	280	418	339	290	288	249	231
24	231	261	233	270	224	270	413	325	285	277	245	231
25	231	253	242	267	235	240	384	313	286	264	243	233
26	230	249	263	270	256	260	363	305	277	268	245	235
27	232	245	270	411	267	277	350	299	270	267	329	229
28	252	250	270	481	251	277	343	293	268	258	383	227
29	300	250	265	400	-----	277	350	297	264	252	301	238
30	315	247	254	361	-----	289	350	295	291	252	269	260
31	300	-----	233	384	-----	304	-----	288	-----	250	265	-----
TOTAL	7,797	7,773	7,746	8,420	7,172	11,659	15,315	12,200	11,740	8,783	8,400	7,163
MEAN	252	259	250	272	256	376	511	394	391	283	271	239
MAX	315	327	328	481	397	652	1,150	618	1,010	442	383	265
MIN	227	241	190	218	220	240	314	288	264	242	243	227
CFSM	1.00	1.03	1.00	1.08	1.02	1.50	2.04	1.57	1.56	1.13	1.08	.95
IN.	1.16	1.15	1.15	1.25	1.06	1.73	2.27	1.81	1.74	1.30	1.24	1.06
CAL YR 1973	TOTAL 102,900	MEAN 282	MAX 706	MIN 190	CFSM 1.12	IN 15.25						
WTR YR 1974	TOTAL 114,168	MEAN 313	MAX 1,150	MIN 190	CFSM 1.25	IN 16.92						

PEAK DISCHARGE (BASE, 650 FT³/S)

DATE	TIME	G.H.	DISCHARGE
03-05	0100	4.15	730
04-05	0500	4.10	713
04-16	0200	5.75	1,400
06-11	1200	5.03	1,070

STREAMS TRIBUTARY TO LAKE MICHIGAN

123

04126000 Manistee River near Manistee, Mich.

LOCATION.--Lat 44°16'14", long 86°11'56", in NW¼ NW¼ sec.36, T.22 N., R.16 W., Manistee County, on right bank 6.4 mi (10.3 km) north-east of Manistee, 6.4 mi (10.3 km) south of Onekama, 7.8 mi (12.6 km) upstream from Manistee Lake, and at mile 10.8 (17.4 km).

DRAINAGE AREA.--1,780 mi² (4,610 km²), approximately.

PERIOD OF RECORD.--October 1951 to current year. Monthly discharge only for October, November 1951, published in WSP 1727.

GAGE.--Water-stage recorder. Altitude of gage is 585 ft (178 m) from river-profile map.

AVERAGE DISCHARGE.--23 years, 1,981 ft³/s (56.10 m³/s), 15.11 in/yr (384 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,040 ft³/s (143 m³/s) Apr. 17 (gage height, 7.97 ft or 2.429 m); maximum gage height, 8.62 ft (2.627 m) Feb. 12 (backwater from ice); minimum discharge, 1,120 ft³/s (31.7 m³/s) Oct. 1.
Period of record: Maximum discharge, 6,980 ft³/s (198 m³/s) Apr. 15, 1971 (gage height, 8.22 ft or 2.505 m); maximum gage height, 9.15 ft (2.789 m) Feb. 12, 1955 (backwater from ice); minimum daily discharge, 992 ft³/s (28.1 m³/s) Oct. 10, 1966.

REMARKS.--Records good. Flow regulated at all stages by powerplant 21 mi (34 km) above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,470	2,270	1,950	1,780	2,440	2,400	2,500	2,330	1,950	1,760	1,630	1,640
2	1,650	2,370	1,580	1,300	2,540	1,890	2,510	2,270	1,710	1,830	1,650	1,600
3	1,670	2,120	1,450	1,900	2,250	1,850	2,470	2,130	1,730	1,970	1,660	1,500
4	1,950	1,630	2,060	1,700	1,920	2,400	2,790	2,110	1,860	2,440	1,640	1,770
5	2,020	1,630	2,170	1,600	2,060	3,550	3,190	2,130	1,840	2,530	1,560	1,760
6	1,650	2,210	2,330	1,350	1,700	3,910	3,550	2,060	1,990	2,670	1,910	1,620
7	1,640	2,030	2,340	1,350	1,700	3,640	3,570	2,460	2,000	2,310	1,760	1,700
8	1,470	1,930	2,260	1,900	1,700	3,420	3,390	2,610	2,300	1,920	1,670	1,420
9	1,740	1,790	1,900	1,600	1,800	3,490	2,990	2,690	2,500	2,150	1,700	1,390
10	1,800	1,800	1,890	1,700	2,100	3,560	2,950	2,390	2,910	1,820	1,680	1,770
11	1,900	1,910	2,130	1,500	1,400	3,340	2,640	2,280	3,350	1,780	1,360	1,710
12	1,690	1,570	2,130	1,800	2,000	2,810	2,720	2,060	3,600	1,810	1,380	1,720
13	1,670	1,940	2,140	1,450	1,900	2,480	2,800	2,150	4,040	1,700	1,700	1,740
14	1,470	1,720	1,850	1,550	1,850	2,340	3,200	2,630	3,350	1,490	1,750	1,710
15	1,910	1,650	1,600	1,900	1,850	2,140	3,550	3,010	3,010	1,470	1,670	1,480
16	2,160	2,020	1,450	1,700	1,900	2,030	4,000	3,100	2,200	1,570	1,650	1,420
17	1,790	2,080	1,300	1,800	1,600	2,050	4,610	3,180	2,180	1,640	1,760	1,680
18	1,740	1,720	1,800	2,100	1,500	2,060	4,340	3,270	2,330	1,720	1,630	1,680
19	1,910	1,750	1,660	2,000	2,140	2,230	3,760	2,880	2,600	1,710	1,550	1,770
20	1,730	2,230	1,560	1,750	1,980	2,430	3,480	2,600	2,700	1,620	1,800	1,750
21	1,580	2,200	1,920	1,650	1,910	2,040	3,050	2,390	2,760	1,430	1,770	1,590
22	1,480	1,960	1,690	2,420	2,070	2,070	2,440	2,270	2,110	1,380	1,800	1,240
23	1,760	1,870	1,500	2,270	2,050	1,990	2,710	2,430	1,600	1,770	1,730	1,510
24	1,790	1,920	1,570	2,330	1,680	1,700	2,890	2,350	1,600	2,060	1,660	1,630
25	1,760	1,810	1,990	1,800	1,570	1,880	2,790	2,290	1,940	1,830	1,280	1,630
26	1,840	1,730	1,970	1,880	1,780	1,900	2,510	2,290	1,970	1,580	1,460	1,740
27	1,740	1,890	2,200	1,940	1,640	1,880	2,340	2,060	1,890	1,510	1,950	1,520
28	1,310	1,920	2,240	2,620	1,790	2,060	2,020	1,790	1,730	1,430	1,760	1,730
29	1,780	1,930	2,020	3,010	-----	2,040	2,190	2,140	1,740	1,380	1,750	1,530
30	1,970	2,000	1,990	2,710	-----	1,850	2,390	2,090	1,660	1,580	1,740	1,580
31	2,280	-----	2,020	2,380	-----	1,880	-----	2,020	-----	1,550	1,690	-----
TOTAL	54,320	57,600	58,660	58,740	52,820	75,310	90,340	74,460	69,150	55,410	51,700	48,530
MEAN	1,752	1,920	1,892	1,895	1,886	2,429	3,011	2,402	2,305	1,787	1,668	1,618
MAX	2,280	2,370	2,340	3,010	2,540	3,910	4,610	3,270	4,040	2,670	1,950	1,770
MIN	1,310	1,570	1,300	1,300	1,400	1,700	2,020	1,790	1,600	1,380	1,280	1,240
CFSM	.98	1.08	1.06	1.06	1.06	1.36	1.69	1.35	1.29	1.00	.94	.91
IN.	1.14	1.20	1.23	1.23	1.10	1.57	1.89	1.56	1.45	1.16	1.08	1.01
CAL YR 1973	TOTAL 742,080	MEAN 2,033	MAX 3,780	MIN 1,270	CFSM 1.14	IN 15.51						
WTR YR 1974	TOTAL 747,040	MEAN 2,047	MAX 4,610	MIN 1,240	CFSM 1.15	IN 15.61						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04126200 Little Manistee River near Freesoil, Mich.

LOCATION.--Lat 44°11'00", long 86°10'00", in NE¼ NE¼ sec.31, T.21 N., R.15 W., Manistee County, on right bank 25 ft (8 m) upstream from Sixmile Bridge, 5.8 mi (9.3 km) north of Freesoil, 7.4 mi (11.9 km) upstream from mouth, and 9.0 mi (14.5 km) southeast of Manistee.

DRAINAGE AREA.--200 mi² (518 km²).

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (186 m) from survey line in vicinity.

AVERAGE DISCHARGE.--18 years, 174 ft³/s (4.928 m³/s), 11.81 in/yr (300 mm/yr).

EXTREMES.--Current year: Maximum discharge, 433 ft³/s (12.3 m³/s) June 13 (gage height, 3.28 ft or 1.000 m), minimum, 94 ft³/s (2.66 m³/s) Dec. 17.

Period of record: Maximum discharge, 575 ft³/s (16.3 m³/s) Apr. 6, 1959 (gage height, 3.70 ft or 1.128 m); minimum, 71 ft³/s (2.01 m³/s) Feb. 11, 1958, result of freezeup.

REMARKS.--Records good. Some regulation above station. Records of water temperature for current year published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	133	174	143	144	198	164	196	225	195	217	167	164
2	136	175	141	132	175	164	213	215	194	224	166	163
3	144	168	140	142	165	181	250	214	192	221	180	163
4	146	159	144	138	150	233	283	215	190	244	185	156
5	147	153	160	119	124	259	288	218	190	256	185	153
6	149	149	173	125	135	281	287	225	192	252	178	151
7	145	146	172	130	135	281	268	228	221	235	173	150
8	141	145	161	130	140	275	240	227	257	212	169	149
9	141	146	154	125	145	276	227	216	293	201	168	153
10	139	146	154	130	157	259	216	211	372	197	166	152
11	138	148	151	130	157	242	211	227	387	194	172	149
12	136	149	149	125	157	227	224	250	401	190	175	147
13	160	148	149	120	162	211	247	261	418	186	174	150
14	166	146	139	140	157	199	292	285	325	184	167	149
15	162	151	128	148	136	193	341	296	271	181	164	147
16	150	158	110	149	156	194	353	300	253	178	174	145
17	144	158	102	152	156	193	389	305	254	177	176	145
18	144	154	122	145	156	191	333	299	254	177	172	145
19	142	150	149	143	156	190	274	293	249	175	194	145
20	140	147	153	148	154	186	250	268	238	172	193	144
21	140	147	138	162	155	184	239	241	227	171	189	146
22	139	144	146	168	163	182	235	230	219	178	173	148
23	138	145	147	168	159	180	242	222	213	182	165	149
24	137	145	144	162	138	177	240	214	208	180	162	148
25	136	145	156	158	142	160	234	208	203	178	158	150
26	136	144	167	159	153	179	226	204	200	179	160	149
27	138	143	170	197	174	178	220	201	195	177	183	148
28	151	146	170	220	166	175	216	201	193	173	184	147
29	162	147	165	225	-----	175	225	205	191	172	178	149
30	163	147	159	204	-----	181	228	203	208	171	166	160
31	162	-----	153	202	-----	190	-----	200	-----	168	166	-----
TOTAL	4,505	4,523	4,609	4,740	4,321	6,360	7,687	7,307	7,403	6,002	5,382	4,514
MEAN	145	151	149	153	154	205	256	236	247	194	174	150
MAX	166	175	173	225	198	281	389	305	418	256	194	164
MIN	133	143	102	119	124	160	196	200	190	168	158	144
CFSM	.73	.76	.75	.77	.77	1.03	1.28	1.18	1.24	.97	.87	.75
IN.	.84	.84	.86	.88	.80	1.18	1.43	1.36	1.38	1.12	1.00	.84

CAL YR 1973 TOTAL 62,207 MEAN 170 MAX 294 MIN 102 CFSM .85 IN 11.57
WTR YR 1974 TOTAL 67,353 MEAN 185 MAX 418 MIN 102 CFSM .93 IN 12.53

STREAMS TRIBUTARY TO LAKE MICHIGAN

125

04127000 Boardman River near Mayfield, Mich.

LOCATION.--Lat 44°38'18", long 85°31'10", in SE¼ NE¼ sec.21, T.26 N., R.10 W., Grand Traverse County, on right bank 25 ft (8 m) downstream from Brown's Bridge, 300 ft (91 m) downstream from East Creek, 0.9 mi (1.4 km) downstream from Brown's Bridge Dam, 1.0 mi (1.6 km) northeast of Mayfield, and 9.6 mi (15.4 km) southeast of Traverse City.

DRAINAGE AREA.--223 mi² (578 km²).

GAGE.--Water-stage recorder. Altitude of gage is 760 ft (230 m) by barometer.

PERIOD OF RECORD.--June 1952 to current year.

AVERAGE DISCHARGE.--22 years, 192 ft³/s (5.437 m³/s), 11.69 in/yr (297 mm/yr).

EXTREMES.--Current year: Maximum discharge, 580 ft³/s (16.4 m³/s) Apr. 14 (gage height, 5.13 ft or 1.564 m); minimum, 51 ft³/s (1.44 m³/s) Dec. 17 (gage height, 2.67 ft or 0.814 m); minimum daily, 109 ft³/s (3.09 m³/s) Dec. 21.

Period of record: Maximum discharge, 1,220 ft³/s (34.6 m³/s) Sept. 14, 1961 (gage height, 6.90 ft or 2.103 m); minimum, 30 ft³/s (0.85 m³/s) Jan. 15, 1965 (gage height, 2.53 ft or 0.771 m); minimum daily, 47 ft³/s (1.33 m³/s) Nov. 2, 3, 1963.

REMARKS.--Records good. Flow regulated by powerplant 0.9 mi (1.4 km) above station. Records of water temperature for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	204	146	145	160	136	207	212	188	197	156	166
2	132	194	159	149	150	145	227	197	190	203	156	178
3	133	190	165	145	150	228	243	208	207	255	190	168
4	134	186	173	139	160	296	277	220	196	375	162	166
5	141	170	187	139	135	248	248	229	190	314	178	136
6	150	149	179	139	111	240	257	255	193	246	190	136
7	155	149	185	127	130	246	288	241	189	236	174	136
8	141	150	193	140	140	242	279	233	364	210	142	146
9	141	157	183	140	146	253	270	225	389	222	168	154
10	133	182	175	145	144	248	250	203	427	220	154	158
11	132	180	188	145	142	231	236	227	457	210	158	148
12	135	161	181	133	161	209	266	247	343	168	174	126
13	185	146	147	140	161	192	300	273	312	142	164	166
14	195	145	140	135	132	186	423	281	279	164	124	184
15	186	160	140	131	125	184	483	292	223	222	130	182
16	182	171	140	120	115	186	431	288	328	178	178	160
17	182	189	161	120	132	184	388	282	258	164	184	128
18	169	191	171	137	139	180	319	263	248	116	174	134
19	137	190	170	146	151	180	277	213	261	174	174	150
20	137	186	168	166	151	168	263	190	234	200	168	164
21	139	183	109	182	159	118	262	228	198	140	166	164
22	143	185	113	162	162	143	255	237	234	162	164	160
23	163	180	123	161	168	140	236	324	210	200	166	140
24	163	178	135	146	140	140	243	245	199	172	166	152
25	155	177	143	137	130	150	235	206	200	152	154	182
26	132	176	163	140	140	205	222	223	202	156	152	166
27	134	175	170	188	145	201	220	221	186	160	174	130
28	147	178	161	180	140	194	212	220	165	178	170	132
29	163	112	168	188	-----	149	207	218	163	180	148	148
30	188	132	164	192	-----	131	217	202	171	154	148	168
31	189	-----	150	233	-----	176	-----	180	-----	156	150	-----
TOTAL	4,751	5,126	4,950	4,690	4,019	5,929	8,241	7,283	7,404	6,026	5,046	4,628
MEAN	153	171	160	151	144	191	275	235	247	194	163	154
MAX	195	204	193	233	168	296	483	324	457	375	190	184
MIN	132	112	109	120	111	118	207	180	163	116	124	126
CFSM	.69	.77	.72	.68	.65	.86	1.23	1.05	1.11	.87	.73	.69
IN.	.79	.86	.83	.78	.67	.99	1.37	1.21	1.24	1.01	.84	.77
CAL YR 1973	TOTAL 64,327	MEAN 176	MAX 341	MIN 109	CFSM .79	IN 10.73						
WTR YR 1974	TOTAL 68,093	MEAN 187	MAX 483	MIN 109	CFSM .84	IN 11.36						

STREAMS TRIBUTARY TO LAKE MICHIGAN

04127800 Jordan River near East Jordan, Mich.

LOCATION.--Lat 45°06'09", long 85°05'53", in NW¼ NW¼ sec.7, T.31 N., R.6 W., Antrim County, on right bank 600 ft (183 m) downstream from Webster Bridge, 4.2 mi (6.8 km) south of East Jordan and 4.5 mi (7.2 km) upstream from mouth.

DRAINAGE AREA.--67.6 mi² (175 km²).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1960-65. October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (186 m) from topographic map. Nov. 19, 1959 to Sept. 30, 1966, nonrecording gage at present site and at site 600 ft (183 m) upstream at same datum.

AVERAGE DISCHARGE.--8 years, 185 ft³/s (5.239 m³/s), 37.16 in/yr (944 mm/yr).

EXTREMES.--Current year: Maximum discharge, 584 ft³/s (16.5 m³/s) Apr. 14 (gage height, 5.11 ft or 1.558 m); minimum, 135 ft³/s (3.82 m³/s) Feb. 24.

Period of record: Maximum discharge, 1,180 ft³/s (33.4 m³/s) Sept. 29, 1972 (gage height, 6.07 ft or 1.850 m); minimum, 109 ft³/s (3.09 m³/s) Mar. 1, 8, 1967, result of freezeup.

REMARKS.--Records good, except those for winter periods and those for period of no gage-height record, which are fair. Records of water temperature for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	168	225	179	180	190	175	188	170	175	173	154	160
2	174	197	177	180	180	181	228	190	170	174	150	155
3	187	183	179	185	170	251	256	210	170	190	158	156
4	183	180	186	175	160	302	342	220	175	389	167	156
5	180	181	253	170	160	244	232	225	175	252	160	155
6	173	179	209	170	165	272	213	225	180	178	150	154
7	171	179	187	165	175	278	264	220	190	164	149	152
8	170	185	183	160	175	217	218	205	210	160	149	154
9	169	182	181	170	175	200	206	190	240	156	152	164
10	169	181	187	180	170	197	206	210	280	155	149	160
11	174	182	185	180	170	194	215	230	230	152	192	155
12	171	192	182	175	170	191	320	240	190	152	210	155
13	223	189	183	170	175	184	355	230	175	152	160	176
14	206	184	175	175	170	178	413	240	177	194	154	162
15	180	186	170	175	165	182	338	245	216	161	150	156
16	180	184	165	170	180	189	270	235	189	154	194	155
17	212	182	170	170	178	184	250	220	188	160	176	173
18	203	188	175	170	177	181	230	210	183	161	156	168
19	194	187	180	180	178	160	220	200	177	154	154	164
20	185	182	180	193	176	170	220	190	173	150	150	168
21	179	186	180	231	177	175	225	185	170	148	148	170
22	176	186	180	202	184	180	240	185	168	155	148	166
23	175	180	175	195	175	180	230	185	168	156	149	161
24	175	179	175	188	170	177	210	180	167	154	150	162
25	174	181	187	185	175	186	190	175	165	160	150	180
26	173	178	221	186	185	193	180	170	165	160	198	166
27	179	179	206	260	190	178	175	170	164	152	176	161
28	212	188	196	212	175	177	175	175	163	149	156	162
29	191	184	190	196	-----	178	175	175	163	155	154	179
30	182	181	189	196	-----	186	170	180	203	158	154	180
31	180	-----	185	210	-----	191	-----	180	-----	160	167	-----
TOTAL	5,668	5,550	5,770	5,754	4,890	6,131	7,154	6,265	5,559	5,288	4,984	4,885
MEAN	183	185	186	186	175	198	238	202	185	171	161	163
MAX	223	225	253	260	190	302	413	245	280	389	210	180
MIN	168	178	165	160	160	160	170	170	163	148	148	152
CFSM	2.71	2.74	2.75	2.75	2.59	2.93	3.52	2.99	2.74	2.53	2.38	2.41
IN.	3.12	3.05	3.18	3.17	2.69	3.37	3.94	3.45	3.06	2.91	2.74	2.69
CAL YR 1973	TOTAL 67,652	MEAN 185	MAX 396	MIN 154	CFSM 2.74	IN 37.23						
WTR YR 1974	TOTAL 67,898	MEAN 186	MAX 413	MIN 148	CFSM 2.75	IN 37.36						

PEAK DISCHARGE (BASE, 400 FT³/S)

NOTE.--No gage-height record Apr. 16 to June 13.

DATE	TIME	G.H.	DISCHARGE
03-03	2300	4.62	421
04-04	0400	4.57	407
04-14	1900	5.11	584
07-04	2000	4.68	439

04127918 Pine River near Rudyard, Mich.

LOCATION.--Lat 46°11'09", long 84°35'52", in NW¼ NE¼ sec.30, T.44 N., R.2 W., Chippewa County, on right bank 15 ft (5 m) upstream from county highway bridge, 3.2 mi (5.1 km) south of Rudyard.

DRAINAGE AREA.--184 mi² (477 km²).

PERIOD OF RECORD.--April 1972 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m) from topographic map (nearest 10 ft). Prior to Aug. 4, 1972, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 3,560 ft³/s (101 m³/s) June 10 (gage height, 15.53 ft or 4.734 m); maximum gage height, 15.87 ft (4.837 m) Apr. 17 (backwater from ice); minimum discharge, 71 ft³/s (2.01 m³/s) July 29 (gage height, 2.01 ft or 0.613 m).
Period of record: Maximum discharge, 3,560 ft³/s (101 m³/s) June 10, 1974 (gage height, 15.53 ft or 4.734 m); maximum gage height, 15.87 ft (4.837 m) Apr. 17, 1974 (backwater from ice); minimum discharge, 62 ft³/s (1.76 m³/s) July 24-26, 1973 (gage height, 1.97 ft or 0.600 m).

A discharge of 50.3 ft³/s (1.42 m³/s) was measured Aug. 6, 1963.

REMARKS.--Records good except those for winter periods, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	129	152	219	105	92	74	100	287	397	137	85	162
2	117	190	192	105	92	80	105	253	272	119	79	133
3	184	172	183	100	94	94	140	240	240	143	117	115
4	180	159	182	100	94	110	210	239	201	230	123	106
5	176	145	400	98	92	120	230	219	175	201	163	100
6	156	133	700	96	90	150	210	210	173	165	173	98
7	143	132	400	92	90	180	210	196	182	135	143	94
8	131	138	321	90	88	170	220	181	557	116	108	92
9	123	130	286	88	84	165	230	170	1,290	105	96	94
10	118	138	255	86	82	160	300	162	2,860	101	94	169
11	119	134	230	84	82	150	600	161	1,670	95	89	205
12	150	184	210	82	80	145	1,300	199	918	93	134	293
13	143	256	190	80	78	140	2,100	190	546	99	181	325
14	161	240	170	80	78	135	2,000	204	362	96	142	264
15	162	216	150	78	76	130	1,800	255	311	93	113	215
16	137	186	130	78	74	125	2,100	248	523	84	121	187
17	140	160	120	78	74	120	2,300	216	323	82	207	195
18	135	153	115	78	72	115	2,490	194	261	113	198	226
19	147	169	110	78	72	110	1,720	173	230	107	177	238
20	155	166	105	78	72	110	1,360	156	205	95	150	281
21	147	345	105	78	72	105	1,210	145	184	82	136	276
22	138	710	100	80	72	105	1,250	140	163	77	119	243
23	128	398	100	80	72	100	1,090	139	146	79	111	221
24	121	303	100	82	72	100	813	137	128	81	105	210
25	119	343	100	84	72	100	638	131	118	79	98	301
26	114	291	105	86	72	100	529	125	108	79	103	282
27	110	272	105	86	72	100	457	115	102	78	139	234
28	106	298	110	88	72	98	426	113	96	77	118	201
29	107	285	110	88	-----	98	387	122	94	73	109	194
30	103	244	110	90	-----	100	335	120	123	76	121	177
31	103	-----	105	90	-----	100	-----	462	-----	89	147	-----
TOTAL	4,202	6,842	5,818	2,686	2,232	3,689	26,860	5,902	12,958	3,279	3,999	5,931
MEAN	136	228	188	86.6	79.7	119	895	190	432	106	129	198
MAX	184	710	700	105	94	180	2,490	462	2,860	230	207	325
MIN	103	130	100	78	72	74	100	113	94	73	79	92
CFSM	.74	1.24	1.02	.47	.43	.65	4.86	1.03	2.35	.58	.70	1.08
IN.	.85	1.38	1.18	.54	.45	.75	5.43	1.19	2.62	.66	.81	1.20

CAL YR 1973 TOTAL 90,889 MEAN 249 MAX 1,640 MIN 62 CFSM 1.35 IN 18.38
WTR YR 1974 TOTAL 84,398 MEAN 231 MAX 2,860 MIN 72 CFSM 1.26 IN 17.06

PEAK DISCHARGE (BASE, 1,200 FT³/s)

DATE	TIME	G.H.	DISCHARGE
04-18	0300	13.09	2,830
06-10	0300	15.53	3,560

STREAMS TRIBUTARY TO LAKE HURON

04128000 Sturgeon River near Wolverine, Mich.

LOCATION.--45°17'56", long 84°36'40", in SE¼NE¼ sec. 36, T.34 N., R.3 W., Cheboygan County, on left bank 1.8 mi (2.9 km) north of Wolverine, 2.8 mi (4.5 km) downstream from West Branch, and 9 mi (14 km) upstream from mouth.

DRAINAGE AREA.--170 mi² (440 km²), approximately.

PERIOD OF RECORD.--April 1942 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 740 ft (226 m), from topographic map. Prior to June 15, 1942, nonrecording gage at site 1.0 mi (1.6 km) upstream, and June 16, 1942, to Sept. 30, 1958, at site 0.7 mi (1.1 km) upstream at different datums.

AVERAGE DISCHARGE.--32 years, 209 ft³/s (5.919 m³/s), 16.70 in/yr (424 mm/yr).

EXTREMES.--Current year: Maximum discharge, 868 ft³/s (24.6 m³/s) Apr. 14 (gage height, 3.12 ft or 0.951 m); minimum, 140 ft³/s (3.96 m³/s) Feb. 15, result of freezeup.

Period of record: Maximum discharge, 1,290 ft³/s (36.5 m³/s) Sept. 29, 1972 (gage height, 3.72 ft or 1.134 m); minimum, 94 ft³/s (2.66 m³/s) Jan. 19, 1971, result of freezeup; minimum daily, 113 ft³/s (3.20 m³/s) Aug. 6, 1958.

REMARKS.--Records good except those for the winter periods, which are fair. Intermittent regulation at low flows from ponds 2.4 mi (3.9 km) above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS (WATER YEARS).--WSP 1307: 1944 (M), 1948 (M). WSP 1727: 1951 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	209	310	239	225	260	209	222	210	225	219	222	203
2	206	314	232	225	240	209	239	225	212	199	199	193
3	212	260	236	235	220	250	287	253	209	322	199	193
4	219	242	247	220	200	406	425	287	212	725	246	190
5	228	242	416	210	190	338	364	271	215	600	253	185
6	215	242	363	205	200	392	318	302	228	310	209	190
7	209	242	287	200	210	468	392	275	228	250	193	190
8	206	256	260	180	210	364	330	253	246	228	187	190
9	206	253	250	205	210	302	290	246	294	219	196	232
10	206	242	253	220	210	279	290	239	458	209	190	212
11	215	236	246	220	205	268	318	279	334	199	203	196
12	209	253	239	220	205	253	452	322	268	196	219	199
13	271	260	239	210	210	232	642	287	242	199	196	222
14	351	250	230	220	200	215	699	302	239	225	190	219
15	268	239	220	215	190	210	764	318	347	212	185	199
16	236	239	205	212	220	239	502	287	369	196	222	196
17	246	232	200	209	210	232	420	275	294	203	246	215
18	256	242	220	209	205	222	382	268	271	206	206	215
19	239	260	230	215	209	215	318	260	256	187	187	206
20	236	253	235	225	203	203	298	236	239	182	182	212
21	228	253	235	283	206	210	300	228	222	179	176	222
22	222	256	230	264	215	210	310	250	212	182	173	236
23	215	242	235	250	210	200	300	239	209	193	185	222
24	215	232	240	242	200	190	270	225	206	187	179	209
25	212	230	250	236	210	200	240	222	203	185	179	232
26	212	235	260	236	220	200	230	222	193	199	318	225
27	219	235	271	356	240	200	220	215	187	185	360	209
28	322	260	246	306	215	205	220	219	187	179	236	203
29	294	260	239	268	-----	209	220	228	187	203	206	371
30	250	246	236	264	-----	212	215	228	236	236	196	334
31	242	-----	230	300	-----	222	-----	222	-----	236	212	-----
TOTAL	7,274	7,516	7,719	7,285	5,923	7,764	10,477	7,893	7,428	7,450	6,550	6,520
MEAN	235	251	249	235	212	250	349	255	248	240	211	217
MAX	351	314	416	356	260	468	764	322	458	725	360	371
MIN	206	230	200	180	190	190	215	210	187	179	173	185
CFSM	1.38	1.48	1.46	1.38	1.25	1.47	2.05	1.50	1.46	1.41	1.24	1.28
IN.	1.59	1.64	1.69	1.59	1.30	1.70	2.29	1.73	1.63	1.63	1.43	1.43

CAL YR 1973 TOTAL 92,351 MEAN 253 MAX 608 MIN 173 CFSM 1.49 IN 20.21
WTR YR 1974 TOTAL 89,799 MEAN 246 MAX 764 MIN 173 CFSM 1.45 IN 19.65

STREAMS TRIBUTARY TO LAKE HURON

129

04128500 Indian River at Indian River, Mich.

LOCATION.--Lat 45°24'38", long 84°37'12", in NE¼ SW¼ sec.24, T.35 N., R.3 W., Cheboygan County, on left bank at Indian River, 500 ft (152 m) downstream from Burt Lake, and 2.3 mi (3.7 km) upstream from Mullett Lake.

DRAINAGE AREA.--583 mi² (1,510 km²).

PERIOD OF RECORD.--April 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 590.21 ft (179.896 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 12, 1942, nonrecording gage at site 100 ft (30 m) downstream.

AVERAGE DISCHARGE.--32 years, 562 ft³/s (15.92 m³/s), 13.09 in/yr (332 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,160 ft³/s (32.9 m³/s) Apr. 18, 19; maximum daily gage height, 4.73 ft (1.442 m) July 6-9; minimum daily discharge, 404 ft³/s (11.4 m³/s) Oct. 1; minimum daily gage height, 3.71 ft (1.131 m) Mar. 2, 3.
Period of record: Maximum daily discharge, 1,220 ft³/s (34.6 m³/s) May 7, 1972; Maximum daily gage height, 5.58 ft (1.701 m) May 13, 14, 1960; minimum daily discharge, 212 ft³/s (6.00 m³/s) Sept. 2, 1970; minimum daily gage height, 3.34 ft (1.018 m) Oct. 21, 1957.

REMARKS.--Records poor. Seasonal distribution of flow modified by regulation from dam at Cheboygan.

REVISIONS (WATER YEARS).--WSP 1437: 1942 (M), 1945 (M), 1947.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	404	620	635	740	800	617	572	900	510	528	554	545
2	412	600	599	750	800	608	581	840	500	511	545	528
3	420	580	608	750	780	599	581	850	500	644	554	511
4	436	580	617	750	780	626	599	820	490	930	581	494
5	436	580	560	740	770	644	626	810	480	1,010	599	477
6	428	590	600	740	760	664	617	840	480	1,020	590	468
7	436	600	620	740	760	720	654	790	480	1,010	590	460
8	428	620	640	750	750	760	654	760	490	1,010	590	452
9	436	620	680	740	750	760	644	750	590	1,010	590	494
10	428	600	730	720	740	780	635	730	673	1,000	563	511
11	436	673	720	730	730	780	635	711	711	980	563	511
12	428	682	711	720	720	770	740	720	702	950	581	536
13	468	682	740	711	711	770	840	692	692	920	581	554
14	486	702	730	702	692	760	960	682	692	930	563	520
15	486	702	702	711	673	740	1,060	682	730	910	536	502
16	494	690	702	702	673	740	1,120	664	750	860	572	477
17	460	680	692	692	664	730	1,130	664	750	850	581	511
18	486	670	673	692	654	730	1,160	654	740	850	572	494
19	477	670	654	682	644	730	1,160	640	730	830	563	536
20	486	700	654	692	635	720	1,140	630	720	790	554	545
21	477	700	644	730	635	711	1,120	620	720	750	528	572
22	486	700	626	720	682	711	1,100	620	711	720	528	554
23	486	690	617	730	692	692	1,050	610	682	711	528	536
24	486	670	608	740	673	682	1,000	600	654	682	502	511
25	494	660	644	700	654	654	1,000	600	626	654	477	554
26	511	660	664	700	635	673	950	580	590	644	528	536
27	528	660	682	720	626	654	920	560	581	635	581	528
28	589	673	692	750	626	644	900	550	545	608	572	528
29	608	644	720	760	-----	608	900	540	520	581	563	563
30	608	644	730	770	-----	599	900	530	554	572	554	536
31	626	-----	730	780	-----	581	-----	520	-----	572	554	-----
TOTAL	14,870	19,542	20,624	22,554	19,709	21,457	25,948	21,159	18,593	24,672	17,337	15,544
MEAN	480	651	665	728	704	692	865	683	620	796	559	518
MAX	626	702	740	780	800	780	1,160	900	750	1,020	599	572
MIN	404	580	560	682	626	581	572	520	480	511	477	452
CFSM	.82	1.12	1.14	1.25	1.21	1.19	1.48	1.17	1.06	1.37	.96	.89
IN.	.95	1.25	1.32	1.44	1.26	1.37	1.66	1.35	1.19	1.57	1.11	.99

CAL YR 1973 TOTAL 236,143 MEAN 647 MAX 990 MIN 242 CFSM 1.11 IN 15.07
WTR YR 1974 TOTAL 242,009 MEAN 663 MAX 1,160 MIN 404 CFSM 1.14 IN 15.44

LOCATION.--Lat 45°10'15", long 84°26'18", in SE¼ SW¼ sec.9, T.32 N., R.1 W., Otsego County, on right bank at Pigeon River Headquarters, 11.1 mi (17.9 km) east of Vanderbilt, and 26 mi (41.8 km) upstream from Mullett Lake.

DRAINAGE AREA.--63 mi² (160 km²), approximately.

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 886.24 ft (270.126 m) above mean sea level.

AVERAGE DISCHARGE.--24 years, 77.0 ft³/s (2.181 m³/s), 16.60 in/yr (422 mm/yr).

EXTREMES.--Current year: Maximum discharge, 532 ft³/s (15.1 m³/s) July 4 (gage height, 5.54 ft or 1.689 m); minimum, 32 ft³/s (0.91 m³/s) Jan. 26.

Period of record: Maximum discharge, 1,500 ft³/s (42.5 m³/s) May 15, 1957 (gage height, 6.80 ft or 2.073 m, from floodmark), from rating curve extended above 500 ft³/s (14.2 m³/s), result of failure of Lansing Club Dam; minimum, 13 ft³/s (0.37 m³/s) Jan. 8, 1957.

REMARKS.--Records good except those for winter periods, which are fair. Prior to May 16, 1957, and since Apr. 22, 1958, occasional regulation by Lansing Club Dam 3.5 mi (5.6 km) above station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	114	97	78	74	71	78	87	67	76	60	71
2	79	107	73	75	73	69	90	81	63	66	66	69
3	67	107	75	77	73	80	105	90	77	142	70	67
4	88	62	99	76	70	133	163	114	71	371	81	64
5	66	101	154	72	67	107	140	83	90	267	96	67
6	73	73	160	70	70	108	128	109	83	124	74	61
7	69	72	86	70	73	165	141	95	74	88	65	61
8	66	74	92	65	74	129	138	91	79	72	64	62
9	66	87	95	68	75	101	91	90	95	82	65	67
10	66	81	98	74	75	102	116	87	141	62	62	71
11	67	77	88	75	72	86	122	108	123	61	62	66
12	66	69	83	75	73	85	149	143	86	66	76	62
13	103	89	73	74	74	92	274	101	75	68	50	81
14	126	86	72	72	70	76	264	120	79	65	59	77
15	85	78	72	75	72	83	364	140	122	61	58	71
16	79	87	70	75	75	85	169	102	125	58	76	66
17	90	83	68	74	75	96	170	108	95	73	76	72
18	91	82	75	71	72	69	146	89	92	66	67	66
19	75	101	77	69	70	77	130	78	80	58	61	71
20	76	83	79	73	75	77	116	86	75	56	61	99
21	77	103	80	102	68	86	119	86	73	63	60	103
22	72	81	80	81	72	82	145	72	68	63	58	81
23	78	94	80	87	67	81	136	87	68	70	59	74
24	66	86	81	83	72	81	88	76	70	58	57	74
25	64	60	84	81	76	79	111	67	65	68	61	76
26	72	96	75	68	80	75	90	71	60	63	114	78
27	78	81	102	140	75	84	92	81	61	61	124	71
28	107	103	110	110	70	88	111	75	61	62	83	57
29	138	74	105	109	-----	78	89	73	64	81	71	83
30	70	86	74	79	-----	80	107	87	73	66	69	106
31	96	-----	79	111	-----	88	-----	78	-----	80	70	-----
TOTAL	2,475	2,577	2,736	2,509	2,032	2,793	4,182	2,855	2,455	2,717	2,175	2,194
MEAN	79.8	85.9	88.3	80.9	72.6	90.1	139	92.1	81.8	87.6	70.2	73.1
MAX	138	114	160	140	80	165	364	143	141	371	124	106
MIN	59	60	68	65	67	69	78	67	60	56	50	57
CFSM	1.27	1.36	1.40	1.28	1.15	1.43	2.21	1.46	1.30	1.39	1.11	1.16
IN.	1.46	1.52	1.62	1.48	1.20	1.65	2.47	1.69	1.45	1.60	1.28	1.30
CAL YR 1973	TOTAL	31,539	MEAN	86.4	MAX	260	MIN	50	CFSM	1.37	IN	18.62
WTR YR 1974	TOTAL	31,700	MEAN	86.8	MAX	371	MIN	50	CFSM	1.38	IN	18.72

04129500 Pigeon River at Afton, Mich.

LOCATION.--Lat 45°22'26", long 84°30'54", in NW¼ NE¼ sec.2, T.34 N., R.2 W., Cheboygan County, on downstream side of bridge on State Highway 68, 0.9 mi (1.4 km) west of Afton, 2.2 mi (3.5 km) downstream from Wilkes Creek, and 7 mi (11 km) upstream from Mullett Lake.

DRAINAGE AREA.--159 mi² (412 km²).

PERIOD OF RECORD.--April 1942 to current year.

GAGE.--Nonrecording gage. Altitude of gage 675 ft (206 m), by barometer. Prior to Oct. 1, 1961, at various sites upstream at pre-sent datum.

AVERAGE DISCHARGE.--32 years, 139 ft³/s (3.936 m³/s), 11.87 in/yr (301 mm/yr).

EXTREMES.--Current year: Maximum discharge, 856 ft³/s (24.2 m³/s) July 5 (gage height, 6.47 ft or 1.972 m); minimum, 83 ft³/s (2.35 m³/s) Aug. 22.

Period of record: Maximum discharge, 1,170 ft³/s (33.1 m³/s) Apr. 17, 1960 (gage height, 6.80 ft or 2.073 m, from high-water mark); maximum gage height, about 10.5 ft (3.20 m) Mar. 31, 1943, from floodmarks (backwater from ice); minimum discharge, 49 ft³/s (1.39 m³/s) Aug. 8, 1958.

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation by Lansing Club Dam 22 mi (35 km) above station.

REVISIONS (WATER YEARS).--WSP 1437: 1945-46, 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	145	145	130	302	170	126	186	142	144	112	118
2	106	157	135	130	276	230	131	167	124	137	114	112
3	122	142	135	130	230	350	142	172	137	559	116	105
4	124	132	150	125	200	450	273	191	133	739	144	103
5	138	134	230	125	180	400	307	196	137	816	167	105
6	134	138	210	115	165	550	251	191	153	557	156	107
7	118	134	170	115	150	644	262	206	144	267	105	101
8	118	138	150	105	145	615	262	194	137	198	116	95
9	114	138	145	110	135	442	230	186	162	167	101	118
10	114	142	145	120	135	309	184	172	256	149	97	140
11	114	142	140	125	130	291	214	174	276	124	114	129
12	118	138	140	125	130	205	318	216	235	122	120	116
13	140	144	135	125	125	178	526	224	179	114	97	118
14	178	153	135	120	120	164	712	208	144	137	99	133
15	200	148	130	120	115	159	786	238	196	126	103	122
16	166	144	120	120	110	159	693	238	243	112	112	107
17	146	148	115	125	120	164	370	211	256	122	133	109
18	159	148	120	130	120	144	337	194	216	133	120	122
19	145	151	130	140	120	138	307	174	198	122	112	131
20	135	164	135	190	120	130	265	156	165	109	105	140
21	135	155	135	250	120	135	248	165	151	105	101	162
22	130	155	135	230	125	135	254	181	131	105	95	153
23	125	150	135	200	120	130	265	172	137	116	89	129
24	125	145	140	170	115	115	248	167	122	118	97	122
25	125	142	145	160	115	115	208	146	126	107	97	129
26	125	138	150	170	125	125	204	140	116	120	122	133
27	130	146	155	300	130	130	196	142	112	105	184	126
28	140	142	155	450	140	135	189	144	109	107	181	122
29	170	166	150	626	-----	130	191	151	112	118	135	156
30	150	153	140	491	-----	114	186	146	129	118	114	186
31	140	-----	135	352	-----	124	-----	149	-----	114	114	-----
TOTAL	4,188	4,372	4,490	5,924	4,118	7,280	8,885	5,597	4,878	6,187	3,672	3,749
MEAN	135	146	145	191	147	235	296	181	163	200	118	125
MAX	200	166	230	626	302	644	786	238	276	816	184	186
MIN	104	132	115	105	110	114	126	140	109	105	89	95
CFSM	.85	.92	.91	1.20	.92	1.48	1.86	1.14	1.03	1.26	.74	.79
IN.	.98	1.02	1.05	1.39	.96	1.70	2.08	1.31	1.14	1.45	.86	.88

CAL YR 1973 TOTAL 58,501 MEAN 160 MAX 452 MIN 90 CFSM 1.01 IN 13.69
WTR YR 1974 TOTAL 63,340 MEAN 174 MAX 816 MIN 89 CFSM 1.09 IN 14.82

STREAMS TRIBUTARY TO LAKE HURON

04130000 Cheboygan River near Cheboygan, Mich.

LOCATION.--Lat 45°34'38", long 84°29'15", in SW¼ sec.19, T.37 N., R.1 W., Cheboygan County, on right bank 300 ft (91 m) downstream from Mullett Lake, 2.4 mi (3.9 km) upstream from Black River, and 4.8 mi (7.7 km) south of Cheboygan.

DRAINAGE AREA.--865 mi² (2,240 km²).

PERIOD OF RECORD.--October 1942 to current year. Monthly discharge only for October 1942, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 591.21 ft (180.201 m) above mean sea level. Auxiliary water-stage recorder 5.1 mi (8.2 km) downstream from base gage, in Cheboygan, datum of gage is 590.00 ft (179.832 m) above mean sea level. Prior to Aug. 30, 1967, nonrecording auxiliary gage in Cheboygan, 5.2 mi (8.4 km) downstream at present datum.

AVERAGE DISCHARGE.--32 years, 809 ft³/s (22.91 m³/s), 12.70 in/yr (323 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,460 ft³/s (41.3 m³/s) July 5; maximum daily gage height, 2.84 ft (0.866 m) July 6; minimum daily discharge, 360 ft³/s (10.2 m³/s) Aug. 27; minimum daily gage height, 1.17 ft (0.357 m) Apr. 1.
Period of record: Maximum daily discharge, 1,640 ft³/s (46.4 m³/s) May 8, 1959; maximum daily gage height, 3.27 ft (0.997 m) May 13, 14, 1960; minimum daily discharge, 90 ft³/s (2.55 m³/s) Mar. 29, 30, 1958; minimum daily gage height, 1.11 ft (0.338 m) Apr. 9, 10, 1972.

REMARKS.--Records fair. Flow regulated by dam in Cheboygan; prior to Dec. 31, 1965, flow affected by variable backwater from powerplant in Cheboygan 5.2 mi (8.4 km) below station and by Alverno powerplant.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	650	749	951	897	1,080	860	1,040	1,210	730	837	667	741
2	680	856	918	911	1,000	850	1,040	1,100	700	877	616	729
3	730	890	929	975	980	894	1,040	783	650	929	618	732
4	800	880	874	977	980	827	1,040	753	607	1,040	608	745
5	854	787	615	976	970	854	1,050	772	607	1,460	687	816
6	832	712	712	972	960	866	1,060	878	612	1,450	821	827
7	826	776	755	986	960	1,040	1,070	965	608	1,430	601	753
8	898	773	796	970	950	1,170	1,060	1,140	621	1,400	601	752
9	906	828	799	988	920	1,170	1,050	1,130	811	1,360	593	775
10	762	879	850	987	920	1,160	1,050	1,120	1,280	1,350	532	777
11	753	886	922	990	920	1,140	1,050	1,010	1,290	1,340	527	749
12	741	851	895	992	920	1,130	1,060	1,010	1,310	1,330	511	747
13	759	920	950	978	920	1,140	1,080	1,080	1,160	1,330	897	747
14	720	1,110	1,030	968	910	1,120	1,120	1,110	835	1,400	857	667
15	762	1,140	1,040	990	900	1,120	1,200	1,030	778	1,400	665	657
16	767	1,130	1,050	982	870	1,120	1,320	1,090	1,040	1,400	669	654
17	707	1,120	1,030	991	860	1,120	1,330	1,110	1,080	1,350	722	655
18	526	1,120	1,010	986	850	1,110	1,340	1,110	1,130	1,350	720	654
19	545	1,120	985	985	860	1,110	1,330	1,110	1,120	1,300	724	618
20	650	1,110	922	985	870	1,100	1,330	1,100	1,020	1,300	739	600
21	638	1,110	799	974	880	1,100	1,340	1,100	1,060	1,250	726	602
22	675	1,090	772	961	900	1,110	1,360	1,100	1,080	1,150	737	624
23	720	1,110	791	957	900	1,110	1,360	1,080	1,080	1,050	671	612
24	718	1,110	796	950	900	1,100	1,360	1,080	1,070	921	801	574
25	695	1,120	817	954	890	1,090	1,360	1,090	1,020	672	678	586
26	713	1,070	805	964	880	1,100	1,350	1,090	868	608	402	597
27	735	991	885	954	880	1,090	1,350	1,050	906	878	360	597
28	766	992	868	923	870	1,090	1,350	1,050	908	859	394	605
29	758	1,000	870	945	-----	1,060	1,300	960	474	800	365	646
30	736	973	897	1,000	-----	1,050	1,190	850	831	706	414	617
31	726	-----	883	1,040	-----	1,050	-----	800	-----	706	541	-----
TOTAL	22,748	29,203	27,216	30,108	25,700	32,851	35,980	31,851	27,286	35,233	19,464	20,455
MEAN	734	973	878	971	818	1,060	1,199	1,027	910	1,137	628	682
MAX	906	1,140	1,050	1,040	1,080	1,170	1,360	1,210	1,310	1,460	897	827
MIN	526	712	615	897	850	827	1,040	753	474	608	360	574
CFSM	.85	1.12	1.02	1.12	1.06	1.23	1.39	1.19	1.05	1.31	.73	.79
TM.	.98	1.26	1.17	1.29	1.11	1.41	1.55	1.37	1.17	1.52	.84	.88

CAL YR 1973 TOTAL 336,617 MEAN 922 MAX 1,390 MTN 330 CFSM 1.07 TM 14.48
WTR YR 1974 TOTAL 338,095 MEAN 926 MAX 1,460 MTN 360 CFSM 1.07 TM 14.54

04130500 Black River near Tower, Mich.

LOCATION.--Lat 45°23'33", long 84°20'00", in SE¼ NE¼ sec.29, T.35 N., R.1 E., Cheboygan County, on right bank 400 ft (122 m) downstream from Kleber Dam, 1,000 ft (305 m) upstream from Milligan Creek, 3.0 mi (4.8 km) northwest of Tower, and 10.8 mi (17.4 km) upstream from Black Lake.

DRAINAGE AREA.--313 mi² (811 km²).

PERIOD OF RECORD.--October 1942 to current year. Monthly discharge only for October 1942, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 658.00 ft (200.558 m) above mean sea level (Stanley Engineering Co. bench mark). Prior to Aug. 1, 1949, at site 1 mi (1.6 km) upstream at different datum.

AVERAGE DISCHARGE.--32 years, 265 ft³/s (7.505 m³/s), 11.50 in/yr (292 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,380 ft³/s (39.1 m³/s) Apr. 15 (gage height, 5.46 ft or 1.664 m); minimum, 52 ft³/s (1.47 m³/s) Sept. 5; minimum daily, 153 ft³/s (4.33 m³/s) Aug. 16.

Period of record: Maximum discharge, 2,340 ft³/s (66.3 m³/s) Apr. 17, 1960 (gage height, 7.13 ft or 2.173 m); minimum, 0.60 ft³/s (0.017 m³/s) Mar. 11, 1950; minimum daily, 4.0 ft³/s (0.11 m³/s) Nov. 27, 1949.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Flow regulated by powerplant 400 ft (122m) above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	406	400	240	536	318	272	426	285	216	230	212
2	227	386	350	210	494	288	323	428	241	275	248	217
3	224	411	300	250	259	260	356	383	265	396	235	218
4	253	380	350	270	341	395	513	337	269	917	210	196
5	215	380	400	230	348	503	672	406	277	1,010	223	154
6	239	349	450	260	244	544	674	433	278	1,110	267	194
7	230	265	480	250	229	947	674	439	266	1,260	252	191
8	242	255	420	210	222	718	671	424	290	967	251	185
9	221	266	300	194	282	694	604	424	259	652	235	255
10	220	270	320	203	293	628	532	423	334	479	199	234
11	225	280	350	272	297	548	508	291	350	450	195	278
12	238	280	310	267	196	440	535	377	406	246	206	208
13	200	280	330	239	203	440	864	498	411	279	195	202
14	356	270	240	246	290	428	1,110	498	295	285	191	258
15	301	270	310	200	210	252	1,330	498	295	277	157	242
16	352	260	260	243	194	505	1,340	498	333	280	153	246
17	281	260	230	250	198	372	1,260	498	487	271	226	227
18	318	250	220	256	230	320	992	497	487	261	200	249
19	345	260	220	263	235	295	803	491	487	270	215	274
20	301	300	230	251	240	328	698	329	487	268	221	210
21	308	360	240	282	233	266	612	322	373	233	161	302
22	205	370	260	314	246	222	574	416	298	231	184	228
23	270	350	280	325	216	276	573	269	248	218	167	247
24	235	300	250	313	214	247	581	246	254	206	161	238
25	226	290	280	367	206	265	560	289	245	216	159	236
26	243	310	320	292	217	238	517	288	224	219	228	237
27	252	350	350	421	238	306	500	278	226	196	244	209
28	266	470	350	456	289	318	498	250	190	227	272	222
29	351	370	300	458	-----	296	496	254	199	248	261	262
30	316	310	330	537	-----	318	413	260	183	257	173	265
31	390	-----	270	537	-----	254	-----	299	-----	225	242	-----
TOTAL	8,275	9,558	9,700	9,106	7,400	12,229	20,055	11,769	9,242	12,645	6,561	6,896
MEAN	267	319	313	294	264	394	669	380	308	408	212	230
MAX	390	470	480	537	536	947	1,340	498	487	1,260	272	302
MIN	200	250	220	194	194	222	272	246	183	196	153	154
CFSM	.85	1.02	1.00	.94	.84	1.26	2.14	1.21	.98	1.30	.68	.73
IN.	.98	1.14	1.15	1.08	.88	1.45	2.38	1.40	1.10	1.50	.78	.82

CAL YR 1973 TOTAL 125,096 MEAN 343 MAX 823 MIN 111 CFSM 1.10 IN 14.87
WTR YR 1974 TOTAL 123,436 MEAN 338 MAX 1,340 MIN 153 CFSM 1.08 IN 14.67

NOTE.--No gage-height record Nov. 10 to Jan. 8.

STREAMS TRIBUTARY TO LAKE HURON

04131500 Rainy River near Ocqueoc, Mich.

LOCATION.--Lat 45°24'30", long 84°10'45", in NE¼ NW¼ sec.22, T.35 N., R.2 E., Presque Isle County, on upstream side of highway bridge, 4.4 mi (7.1 km) west of Ocqueoc, and 5 mi (8 km) upstream from Black Lake.

DRAINAGE AREA.--85 mi² (220 km²), approximately.

PERIOD OF RECORD.--October 1952 to current year.

GAGE.--Nonrecording gage. Datum of gage is 674.85 ft (205.694 m) above mean sea level, unadjusted.

AVERAGE DISCHARGE.--22 years, 41.7 ft³/s (1.181 m³/s), 6.66 in/yr (169 mm/yr).

EXTREMES.--Current year: Maximum discharge, 634 ft³/s (18.0 m³/s) Apr. 15 (gage height, 5.38 ft or 1.640 m); minimum, 1.9 ft³/s (0.054 m³/s) Sept. 7.

Period of record: Maximum discharge, 946 ft³/s (26.8 m³/s) Apr. 18, 1960 (gage height, 6.33 ft or 1.929 m, from floodmark); minimum, 0.4 ft³/s (0.01 m³/s) Sept. 7, 1955.

REMARKS.--Records good except those for winter periods, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	55	44	30	40	33	41	77	25	20	12	3.4
2	9.5	61	39	29	33	38	50	71	22	24	10	3.2
3	9.9	63	38	28	30	50	64	72	22	70	10	2.6
4	9.9	59	42	27	28	60	99	73	23	168	15	2.6
5	12	54	69	26	27	118	115	67	24	266	17	2.6
6	11	47	86	25	27	172	115	73	29	260	14	2.4
7	9.9	42	84	25	28	266	202	75	36	177	12	2.1
8	9.1	41	72	25	29	235	235	69	43	126	9.8	2.4
9	9.5	38	65	25	29	192	185	62	50	106	9.0	4.3
10	8.6	36	62	26	28	180	163	58	72	89	7.0	5.4
11	9.9	32	50	26	26	167	177	65	67	74	6.4	4.8
12	9.9	31	45	26	25	150	218	80	52	62	6.1	4.3
13	16	32	40	26	24	130	342	82	43	53	5.8	5.4
14	29	34	36	27	23	110	484	88	40	50	4.8	5.4
15	26	32	34	27	21	104	604	104	60	42	4.0	4.5
16	22	33	33	30	20	98	508	104	80	37	4.8	3.7
17	20	31	32	33	19	93	367	99	95	34	5.8	4.5
18	25	35	32	36	18	90	294	89	102	36	5.1	5.8
19	26	42	32	38	17	85	249	82	94	32	4.3	7.4
20	28	43	32	38	17	80	206	75	79	25	4.0	7.4
21	26	45	33	37	18	74	177	67	70	22	3.4	8.0
22	24	44	33	34	18	70	166	62	60	19	2.6	7.0
23	22	44	33	33	19	62	158	55	47	20	4.3	5.4
24	20	43	34	33	20	55	142	50	41	18	4.8	5.8
25	18	45	35	42	22	50	124	45	34	17	4.0	9.0
26	17	45	35	50	24	48	110	43	29	15	4.5	9.0
27	16	44	35	60	27	45	102	38	26	15	5.8	8.0
28	35	48	35	52	30	42	95	35	22	14	5.1	7.0
29	42	49	34	45	-----	38	90	34	20	12	4.0	11
30	36	47	34	48	-----	37	83	30	24	14	3.4	12
31	35	-----	33	48	-----	37	-----	28	-----	13	3.4	-----
TOTAL	602.2	1,295	1,341	1,055	687	3,009	5,965	2,052	1,431	1,930	212.2	166.4
MEAN	19.4	43.2	43.3	34.0	24.5	97.1	199	66.2	47.7	62.3	6.85	5.55
MAX	42	63	86	60	40	266	604	104	102	266	17	12
MIN	8.6	31	32	25	17	33	41	28	20	12	2.6	2.1
CFSM	.23	.51	.51	.40	.29	1.14	2.34	.78	.56	.73	.08	.07
IN.	.26	.57	.59	.46	.30	1.32	2.61	.90	.63	.84	.09	.07

CAL YR 1973 TOTAL 21,207.3 MEAN 58.1 MAX 246 MIN 5.8 CFSM .68 IN 9.28
WTR YR 1974 TOTAL 19,745.8 MEAN 54.1 MAX 604 MIN 2.1 CFSM .64 IN 8.64

STREAMS TRIBUTARY TO LAKE HURON

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04132000 Black River near Cheboygan, Mich.

LOCATION.--Lat 45°29'59", long 84°19'36", in NW¼ NW¼ sec.21, T.36 N., R.1 E., Cheboygan County, on left bank 0.3 mi (0.5 km) downstream from Black Lake, 5.3 mi (8.5 km) upstream from Alverno Dam, and 12.6 mi (20.3 km) southeast of Cheboygan.

DRAINAGE AREA.--597 mi² (1,546 km²).

PERIOD OF RECORD.--October 1942 to September 1974 (discontinued as a continuous record station, converted to a crest-stage partial record station). Monthly discharge only for October 1942, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 609.26 ft (185.702 m) above mean sea level. Auxiliary water-stage recorder 3 mi (5 km) downstream from base gage at same datum.

AVERAGE DISCHARGE.--32 years, 454 ft³/s (12.86 m³/s), 10.33 in/yr (262 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 2,010 ft³/s (56.9 m³/s) Apr. 19; maximum daily gage height, 4.35 ft (1.326 m) Apr. 19, minimum daily discharge, 175 ft³/s (4.96 m³/s) Aug. 9-11; minimum daily gage height, 1.48 ft (0.451 m) Jan. 18, 19.
Period of record: Maximum daily discharge, 2,700 ft³/s (76.5 m³/s) Apr. 24, 1972; maximum daily gage height, 5.74 ft (1.750 m) Apr. 20, 1960; minimum daily discharge, 11 ft³/s (0.31 m³/s) Aug. 14, 1949; minimum daily gage height, about 1.10 ft (0.335 m) Mar. 1, 1964.

REMARKS.--Records fair except those for winter periods and those for periods of no gage-height record, which are poor. Flow regulated by Alverno Dam; prior to Dec. 31, 1965, flow regulated by powerplant at Alverno Dam.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	784	376	620	550	560	460	656	1,290	274	350	205	220
2	756	362	600	550	560	460	655	1,160	251	398	205	215
3	663	419	640	550	560	474	634	986	261	445	200	210
4	582	362	610	550	550	485	684	976	229	563	200	210
5	591	631	600	540	550	494	736	948	226	801	200	205
6	572	903	600	540	550	525	782	837	220	1,070	190	195
7	570	846	600	540	540	634	839	718	215	1,140	185	195
8	406	867	600	530	540	730	886	698	220	1,250	190	190
9	276	844	600	530	540	806	936	712	259	1,370	175	180
10	252	825	600	520	540	862	960	692	311	1,340	175	200
11	273	802	590	520	540	880	986	669	429	1,320	175	200
12	290	872	590	510	530	909	1,010	717	408	1,300	180	190
13	333	850	604	510	530	909	1,090	536	422	1,200	200	190
14	366	842	704	520	520	909	1,220	573	574	1,080	220	205
15	381	828	682	520	510	894	1,480	758	756	963	230	210
16	428	832	644	530	500	887	1,750	720	740	860	250	205
17	359	812	620	530	490	900	1,900	756	663	861	250	200
18	358	800	610	541	480	865	1,990	733	626	835	250	212
19	322	801	600	558	470	848	2,010	706	723	750	255	184
20	354	775	590	573	460	803	1,980	706	778	700	260	268
21	317	742	570	574	460	786	1,910	684	772	620	281	310
22	360	725	550	572	470	785	1,860	739	770	500	316	350
23	360	718	540	589	480	773	1,770	739	742	400	331	293
24	308	715	540	582	480	759	1,720	717	744	349	224	293
25	354	715	530	572	480	717	1,650	692	750	341	203	311
26	378	709	530	564	480	710	1,600	652	730	274	220	276
27	326	686	540	572	470	702	1,540	618	566	268	286	289
28	308	688	544	570	470	690	1,500	477	410	254	236	234
29	330	680	553	580	-----	672	1,440	403	390	230	236	321
30	352	666	578	596	-----	664	1,360	358	370	210	220	268
31	329	-----	560	626	-----	671	-----	390	-----	210	230	-----
TOTAL	12,638	21,693	18,339	17,109	14,310	22,663	39,534	22,360	14,829	22,252	6,968	7,029
MEAN	408	723	592	552	511	731	1,318	721	494	718	225	234
MAX	784	903	704	626	560	909	2,010	1,290	778	1,370	331	350
MIN	252	362	530	510	460	460	634	358	215	210	175	180
CFSM	.68	1.21	.99	.92	.86	1.22	2.21	1.21	.83	1.20	.38	.39
IN.	.79	1.35	1.14	1.07	.89	1.41	2.46	1.39	.92	1.39	.43	.44

CAL YR 1973 TOTAL 207,702 MEAN 569 MAX 1,310 MIN 19 CFSM .95 IN 12.94
WTR YR 1974 TOTAL 219,724 MEAN 602 MAX 2,010 MIN 175 CFSM 1.01 IN 13.69

NOTE.--No gage-height record July 18-23, Aug. 4-20, Aug. 30 to Sept. 17.

LOCATION.--Lat 45°07'40", long 83°38'30", in NE¼ sec.36, T.32 N., R.6 E., Alpena County, on left bank 0.5 mi (0.8 km) upstream from Orchard Hill Bridge, 4 mi (6 km) upstream from North Branch, 5 mi (8 km) southwest of Bolton, and 11 mi (18 km) northwest of Alpena.

PERIOD OF RECORD.--March 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 671.96 ft (204.813 m) above mean sea level, unadjusted. Prior to Aug. 12, 1945, non-recording gage at site 500 ft (152 m) downstream at different datum.

AVERAGE DISCHARGE.--29 years, 467 ft³/s (13.23 m³/s).

EXTREMES.--Current year: Maximum discharge, 3,270 ft³/s (92.6 m³/s) July 6 (gage height, 9.03 ft or 2.752 m); maximum gage height, 9.41 ft (2.868 m) Mar. 6 (backwater from ice); minimum discharge, 305 ft³/s (8.64 m³/s) Aug. 27.
Period of record: Maximum discharge, 4,070 ft³/s (115 m³/s) Apr. 13, 1965 (gage height, 9.99 ft or 3.045 m); minimum, 92 ft³/s (2.61 m³/s) Sept. 28, 29, 1955.

REMARKS.--Records good except those for winter periods, which are poor. Regulation by Fletcher Pond on the Upper South Branch Thunder Bay River (usable capacity, 40,170 acre-ft or 49.5 km³).

REVISIONS (WATER YEARS).--WSP 1437: 1946. WSP 1727: 1947 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	405	855	650	580	1,000	930	572	594	380	419	445	374
2	387	851	600	580	1,000	1,000	627	554	384	423	452	376
3	381	846	580	600	900	1,150	740	533	380	461	461	371
4	390	772	573	600	750	1,300	1,070	546	376	1,260	480	366
5	400	650	702	580	650	1,700	1,530	568	358	2,660	513	364
6	430	574	859	560	600	2,400	1,620	608	345	3,100	547	353
7	460	528	945	540	630	2,300	1,380	684	371	2,370	516	356
8	440	529	881	520	670	2,060	1,220	690	386	1,620	478	357
9	410	548	782	500	690	1,640	1,110	636	424	1,070	453	343
10	390	535	675	510	700	1,210	954	577	525	791	438	362
11	390	523	644	540	700	900	876	557	531	642	430	366
12	381	529	610	560	700	800	910	634	532	564	428	365
13	385	525	540	560	680	750	1,280	773	497	509	422	372
14	509	527	500	560	670	700	1,610	843	407	484	405	395
15	650	529	520	550	660	679	1,960	1,010	432	457	397	397
16	633	548	530	540	650	667	2,100	1,110	673	446	393	379
17	568	558	500	540	640	655	1,820	1,060	943	439	393	376
18	557	557	520	550	640	639	1,390	912	1,040	441	397	379
19	556	581	550	580	640	619	1,120	767	952	440	391	377
20	531	616	580	650	640	591	921	663	787	425	383	376
21	523	656	580	750	650	571	796	588	659	413	379	387
22	572	717	580	800	650	559	739	547	563	406	385	408
23	462	714	600	750	650	545	744	517	524	407	384	410
24	489	668	600	700	660	500	725	489	483	425	368	399
25	465	642	620	680	690	450	672	463	451	430	364	397
26	430	633	650	750	720	500	624	443	422	434	353	395
27	418	623	680	1,150	760	510	578	424	406	439	384	391
28	503	646	660	1,150	850	520	565	406	391	430	427	378
29	671	695	640	1,050	-----	520	605	422	383	432	397	380
30	765	692	600	900	-----	537	609	436	390	430	383	432
31	780	-----	580	900	-----	545	-----	407	-----	434	382	-----
TOTAL	15,331	18,867	19,531	20,780	19,840	28,447	31,467	19,461	15,395	23,701	13,028	11,401
MEAN	495	629	630	670	709	918	1,049	628	513	765	420	380
MAX	780	855	945	1,150	1,000	2,400	2,100	1,110	1,040	3,100	547	432
MTN	381	523	500	500	600	450	565	406	345	406	353	353
CAL YR 1973	TOTAL	226,314	MEAN	620	MAX	1,860	MIN	259				
WTR YR 1974	TOTAL	237,249	MEAN	650	MAX	3,100	MIN	345				

04134000 North Branch Thunder Bay River near Bolton, Mich.

LOCATION.--Lat 45°08'55", long 83°36'35", in SE¼ sec.29, T.32 N., R.7 E., Alpena County, on left bank 1.5 mi (2.4 km) upstream from mouth, 2.5 mi (4.0 km) south of Bolton, and 9 mi (14 km) northwest of Alpena.

DRAINAGE AREA.--184 mi² (477 km²).

PERIOD OF RECORD.--March 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 675.52 ft (205.898 m) above mean sea level, unadjusted. Prior to Aug. 16, 1945, non-recording gage at site 0.5 mi (0.8 km) upstream at different datum.

AVERAGE DISCHARGE.--29 years, 118 ft³/s (3.342 m³/s), 8.71 in/yr (221 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,320 ft³/s (37.4 m³/s) Mar. 9 (gage height, 5.83 ft or 1.777 m); maximum gage height, 6.73 ft (2.051 m) Mar. 7. (backwater from ice); minimum discharge, 8.8 ft³/s (0.25 m³/s) Sept. 7.
Period of record: Maximum discharge, 2,920 ft³/s (82.7 m³/s) Apr. 13, 1965 (gage height, 7.85 ft or 2.393 m); maximum gage height, 7.98 ft (2.432 m) Mar. 31, 1950 (backwater from ice); minimum discharge, 0.40 ft³/s (0.011 m³/s) Oct. 14, 1955.

REMARKS.--Records good except those for winter periods, which are poor. Occasional regulation during low flow from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	244	184	110	170	110	83	176	66	50	25	15
2	72	264	175	105	160	125	98	159	61	50	25	13
3	67	304	159	100	140	140	146	146	57	61	27	12
4	65	349	148	95	120	160	265	139	55	242	28	11
5	72	326	188	95	100	200	450	133	55	430	29	10
6	75	276	220	90	100	400	795	149	61	892	31	9.5
7	80	233	265	84	105	800	786	173	85	854	33	9.7
8	80	199	312	78	105	1,200	652	176	101	602	33	9.8
9	76	166	302	75	105	1,210	573	181	108	406	29	10
10	70	143	265	80	105	840	517	173	124	302	27	11
11	64	127	200	85	100	667	438	160	131	232	25	12
12	60	119	160	87	98	511	432	161	141	165	25	13
13	67	114	120	88	94	452	546	184	137	119	24	14
14	95	112	100	88	88	390	741	220	116	92	23	14
15	121	113	100	85	85	278	1,050	273	105	75	22	16
16	143	116	100	86	82	250	1,170	308	157	64	20	17
17	162	115	105	87	76	230	1,010	346	306	59	19	17
18	156	116	110	90	72	210	766	336	544	56	17	17
19	139	122	110	110	68	190	579	294	626	53	17	17
20	131	133	110	125	66	170	455	250	517	49	15	17
21	126	156	115	130	65	150	379	209	382	44	15	18
22	122	183	115	125	65	140	331	172	283	40	13	17
23	117	198	115	115	68	130	299	145	206	38	15	17
24	111	208	120	110	72	120	276	125	139	35	12	17
25	103	212	120	120	80	110	256	110	103	32	13	18
26	92	197	120	160	85	100	236	99	83	31	12	18
27	85	185	125	200	95	95	212	89	69	29	14	18
28	105	184	130	240	100	90	201	78	58	27	15	19
29	128	182	130	180	-----	85	232	73	51	26	17	19
30	161	183	130	160	-----	83	196	69	50	24	16	20
31	193	-----	125	190	-----	82	-----	68	-----	24	14	-----
TOTAL	3,218	5,579	4,778	3,573	2,669	9,718	14,170	5,374	4,977	5,203	651	446.0
MEAN	104	186	154	115	95.3	313	472	173	166	168	21.0	14.9
MAX	193	349	312	240	170	1,210	1,170	346	625	892	33	20
MTN	60	112	100	75	65	82	83	68	50	24	12	9.5
CFSM	.57	1.01	.84	.63	.52	1.70	2.57	.94	.90	.91	.11	.08
IN.	.65	1.13	.97	.72	.54	1.96	2.86	1.09	1.01	1.05	.13	.09
CAL YR 1973	TOTAL 68,207.0	MEAN 187	MAX 1,080	MTN 27	CFSM 1.02	IN 13.79						
WTR YR 1974	TOTAL 60,356.0	MEAN 165	MAX 1,210	MIN 9.5	CFSM .90	IN 12.20						

PEAK DISCHARGE (BASE, 500 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
03-07	1000	6.73	1,050	04-16	0700	5.69	1,190
03-09	0200	5.83	1,320	06-19	0500	4.90	640
04-06	0900	5.24	848	07-06	1700	5.49	1,030

STREAMS TRIBUTARY TO LAKE HURON

04135500 Au Sable River at Grayling, Mich.

LOCATION.--Lat 44°39'35", long 84°42'45", in SE¼ SE¼ sec.7, T.26 N., R.3 W., Crawford County, on right bank 65 ft (20 m) upstream from bridge on Interstate Highway 75 (Business Loop) in Grayling, 0.7 mi (1.1 km) upstream from East Branch, and 114 mi (183 km) upstream from mouth.

DRAINAGE AREA.--110 mi² (285 km²).

PERIOD OF RECORD.--October 1942 to current year. Monthly discharge only for some periods, published in WSP 1307. Prior to October 1954, published as Middle Branch Au Sable River at Graveling.

GAGE.--Water-stage recorder above steel-crested dam. Datum of gage is 1,123.49 ft (342.440 m) above mean sea level.

AVERAGE DISCHARGE,--32 years, 74.8 ft³/s (2.118 m³/s), 9.23 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 214 ft³/s (6.06 m³/s) Apr. 15 (gage height, 2.55 ft or 0.777 m); minimum, 53 ft³/s (1.50 m³/s) Aug. 26, (gage height, 1.20 ft or 0.366 m).
Period of record: Maximum discharge, 274 ft³/s (7.76 m³/s) June 2, 1943 (gage height, 3.00 ft or 0.914 m); minimum, 28 ft³/s (0.79 m³/s) Apr. 21, 1946 (gage height, 0.80 ft or 0.244 m).

REMARKS.--Records excellent. Prior to Dec. 31, 1952, diurnal fluctuation caused by powerplant 2.5 mi (4.0 km) above station. Records of water temperature for the current year are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	77	75	66	88	72	76	96	81	73	61	62
2	61	81	73	66	81	72	82	95	80	71	59	61
3	62	82	73	69	78	78	86	92	78	78	60	60
4	65	77	75	68	74	96	107	92	77	103	62	60
5	68	75	90	68	67	102	115	92	77	110	67	59
6	64	72	98	68	69	100	112	96	77	101	64	58
7	63	70	97	67	68	108	113	96	80	86	62	58
8	62	70	88	65	68	110	110	92	81	78	59	56
9	62	70	82	65	70	106	106	89	83	74	59	56
10	62	70	82	66	71	98	101	86	120	77	58	57
11	61	68	80	67	71	94	101	92	131	74	59	57
12	61	68	78	66	71	91	112	107	115	70	59	57
13	66	70	77	64	73	88	134	108	100	68	58	61
14	75	72	70	66	70	83	171	116	89	66	57	62
15	76	77	70	67	66	83	210	128	89	64	56	60
16	72	82	70	68	68	83	191	126	106	62	57	59
17	69	80	69	68	71	82	160	120	112	62	59	58
18	69	77	68	68	70	81	142	110	109	63	59	58
19	69	77	69	68	70	81	132	102	103	62	58	59
20	68	77	68	70	70	77	124	98	95	61	58	62
21	68	80	69	77	71	80	118	96	85	60	57	62
22	65	82	68	80	73	78	120	102	78	62	55	61
23	63	81	69	81	67	76	119	98	76	62	54	60
24	63	78	68	76	65	75	114	92	74	62	54	60
25	63	78	70	73	67	69	108	88	72	62	54	61
26	62	75	75	75	68	72	104	84	71	62	60	62
27	63	76	81	100	70	78	102	83	70	62	68	62
28	70	78	81	108	71	78	100	81	68	60	71	61
29	77	78	78	100	-----	77	100	82	68	58	68	68
30	77	76	72	92	-----	77	98	82	73	60	64	72
31	74	-----	67	95	-----	77	-----	81	-----	62	63	-----
TOTAL	2,061	2,274	2,350	2,297	1,986	2,622	3,568	3,002	2,618	2,175	1,859	1,809
MEAN	66.5	75.8	75.8	74.1	70.9	84.6	119	96.8	87.3	70.2	60.0	60.3
MAX	77	82	98	108	88	110	210	128	131	110	71	72
MIN	61	68	67	64	65	69	76	81	68	58	54	56
CFSM	.60	.69	.69	.67	.64	.77	1.08	.88	.79	.64	.55	.55
IN.	.70	.77	.79	.78	.67	.89	1.21	1.02	.89	.74	.63	.61
CAL YR 1973	TOTAL 29,426		MEAN 80.6	MAX 144	MIN 55	CFSM .73	IN 9.95					
WTR YR 1974	TOTAL 28,621		MEAN 78.4	MAX 210	MIN 54	CFSM .71	IN 9.68					

STREAMS TRIBUTARY TO LAKE HURON

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04135600 East Branch Au Sable River at Grayling, Mich.

LOCATION.--Lat 44°40'08", long 84°42'20", in NW¼ NW¼ sec.8, T.26 N., R.3 W., Crawford County, on right bank, at south boundary of State Research Center in Grayling and 0.4 mi (0.6 km) upstream from mouth.

DRAINAGE AREA.--76.0 mi² (196.8 km²).

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,110 ft (338 m) from topographic map. Prior to Sept. 30, 1958, nonrecording gage at site 10 ft (3 m) downstream at present datum.

AVERAGE DISCHARGE.--16 years, 44.6 ft³/s (1.263 m³/s), 7.97 in/yr (202 mm/yr).

EXTREMES.--Current year: Maximum discharge, 153 ft³/s (4.33 m³/s) Apr. 15 (gage height, 4.69 ft or 1.430 m); minimum, 26 ft³/s (0.74 m³/s) Feb. 15, result of freezeup.

Period of record: Maximum discharge, 201 ft³/s (5.69 m³/s) Apr. 13, 1971 (gage height, 5.19 ft or 1.582 m); minimum, 7.0 ft³/s (0.20 m³/s) Mar. 27, 1965, result of freezeup; minimum daily, 16 ft³/s (0.45 m³/s) Aug. 20, 1964.

REMARKS.--Records good. Occasional regulation by State Research Center above gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	50	46	37	50	44	48	63	47	50	39	39
2	36	50	45	37	47	43	52	61	47	56	38	38
3	36	47	45	39	45	49	57	61	46	64	39	37
4	38	45	46	38	43	58	70	60	45	78	40	36
5	38	45	58	38	40	58	69	60	45	72	40	35
6	44	44	57	38	40	62	66	62	46	68	38	34
7	51	43	54	38	40	69	71	60	46	60	37	34
8	40	45	52	36	40	67	68	58	47	56	37	35
9	38	44	50	36	40	64	66	56	60	52	37	34
10	37	43	50	36	40	61	65	55	83	54	36	34
11	36	42	49	37	41	60	67	61	77	50	36	34
12	35	43	48	35	44	58	76	67	68	48	36	34
13	42	44	48	36	44	56	88	64	61	46	35	40
14	48	44	41	36	41	55	119	75	58	45	34	38
15	45	49	40	37	39	55	143	81	70	45	33	36
16	42	47	40	37	39	55	138	79	89	43	35	35
17	44	45	39	38	42	54	115	77	90	45	36	35
18	43	46	39	38	40	53	102	71	82	44	34	36
19	42	47	41	38	40	53	94	66	60	43	34	36
20	42	47	41	40	40	51	86	62	54	43	33	37
21	41	48	41	48	44	52	83	60	52	42	32	38
22	40	49	41	47	43	51	82	60	50	42	32	38
23	40	47	42	45	38	51	80	58	48	42	32	36
24	39	46	39	44	37	47	76	56	48	41	33	35
25	39	46	43	41	44	44	73	54	47	41	34	37
26	38	45	47	44	41	53	70	53	48	42	42	35
27	39	46	48	65	41	49	69	52	48	40	47	35
28	48	48	47	61	42	49	67	51	49	39	44	38
29	47	48	46	56	-----	49	68	51	49	39	42	47
30	46	47	40	54	-----	48	66	50	50	40	40	45
31	45	-----	35	57	-----	48	-----	49	-----	40	41	-----
TOTAL	1,275	1,380	1,398	1,307	1,165	1,666	2,394	1,893	1,710	1,510	1,146	1,101
MEAN	41.1	46.0	45.1	42.2	41.6	53.7	79.8	61.1	57.0	48.7	37.0	36.7
MAX	51	50	58	65	50	69	143	81	90	78	47	47
MIN	35	42	35	35	37	43	48	49	45	39	32	34
CFSM	.54	.61	.59	.56	.55	.71	1.05	.80	.75	.64	.49	.48
IN.	.62	.68	.68	.64	.57	.82	1.17	.93	.84	.74	.56	.54
CAL YR 1973	TOTAL 17,583	MEAN 48.2	MAX 95	MIN 29	CFSM .63	IN 8.61						
WTR YR 1974	TOTAL 17,945	MEAN 49.2	MAX 143	MIN 32	CFSM .65	IN 8.78						

LOCATION.--Lat 44°36'53", long 84°27'20", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.29, T.26 N., R.1 W., Crawford County, on right bank 10 ft (3 m) upstream from Smith Bridge, 400 ft (122 m) downstream from bridge on State Highway 72, 4.6 mi (7.4 km) upstream from mouth, and 9.1 mi (14.6 km) west of Luzerne.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1951-66. October 1966 to current year.

AVERAGE DISCHARGE.--8 years, 230 ft³/s (6.514 m³/s), 7.79 in/yr (198 mm/yr).

Period of record: Maximum discharge, 932 ft³/s (26.4 m³/s) Apr. 14, 1971 (gage height, 6.83 ft or 2.082 m); maximum gage height, 7.17 ft (2.185 m) Feb. 5, 1970 (backwater from ice); minimum daily discharge, 105 ft³/s (2.97 m³/s) Oct. 7-9, Nov. 3, 1966.

REVISIONS.--WSP 2111: Drainage area.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	262	234	195	280	189	229	352	264	191	169	163
2	140	261	230	190	260	190	242	345	258	185	167	158
3	151	256	227	185	250	204	275	339	253	227	184	154
4	158	253	228	180	230	273	384	335	246	307	203	147
5	177	247	262	190	220	287	414	333	240	359	210	145
6	185	239	269	170	200	373	438	351	248	342	200	143
7	178	231	268	170	190	461	455	350	245	317	187	141
8	169	227	266	170	190	449	428	340	233	289	177	141
9	168	222	260	170	190	423	402	330	256	251	174	141
10	178	217	254	170	190	394	382	319	297	304	170	150
11	185	214	245	165	190	357	374	328	320	324	168	147
12	190	213	234	170	190	342	393	348	337	307	173	145
13	213	214	220	170	185	311	485	345	318	296	167	162
14	236	215	213	170	180	290	599	381	287	278	163	170
15	236	231	205	171	180	280	725	418	307	260	158	160
16	243	237	200	171	180	280	727	422	334	244	158	150
17	251	236	200	172	180	270	675	440	329	233	160	148
18	252	238	200	172	180	275	597	426	319	225	159	145
19	249	242	195	172	180	269	532	402	306	216	155	150
20	244	241	193	173	180	257	483	378	284	208	153	153
21	239	246	190	205	180	259	450	356	261	199	150	151
22	234	253	190	214	180	254	445	346	237	195	148	148
23	230	250	187	211	180	243	431	341	220	197	147	145
24	225	251	185	210	180	228	417	327	210	192	145	143
25	221	250	191	212	180	210	403	316	202	187	142	145
26	217	246	201	215	185	220	387	309	195	186	155	145
27	215	241	210	277	188	228	372	299	190	184	169	145
28	239	241	213	277	187	231	358	290	186	178	177	141
29	245	240	215	271	-----	236	359	285	183	174	174	177
30	246	236	210	277	-----	232	360	277	192	171	161	197
31	247	-----	200	306	-----	230	-----	270	-----	170	163	-----
TOTAL	6,501	7,150	6,795	6,161	5,485	8,745	13,221	10,698	7,757	7,396	5,186	4,550
MEAN	210	238	219	199	196	282	441	345	259	239	167	152
MAX	252	262	269	306	280	461	727	440	337	359	210	197
MIN	140	213	185	165	180	189	229	270	183	170	142	141
CFSM	.52	.59	.55	.50	.49	.70	1.10	.86	.65	.60	.42	.38
IN.	.60	.66	.63	.57	.51	.81	1.23	.99	.72	.69	.48	.42
CAL YR 1973	TOTAL	87,608	MEAN	240	MAX	542	MIN	119	CFSM	.60	IN	8.13
WTR YR 1974	TOTAL	89,645	MEAN	246	MAX	727	MIN	140	CFSM	.61	IN	8.32

STREAMS TRIBUTARY TO LAKE HURON

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04136500 Au Sable River at Mio, Mich.

LOCATION.--Lat 44°39'36", long 84°07'52", in NW¼ sec.7, T.26 N., R.3 E., Oscoda County, on right bank 150 ft (46 m) upstream from bridge on State Highway 33 in Mio, 500 ft (152 m) downstream from Mio hydroelectric plant, 9.5 mi (15.3 km) downstream from Big Creek, and 73.0 mi (117.5 km) upstream from mouth.

DRAINAGE AREA.--1,100 mi² (2,850 km²), approximately.

PERIOD OF RECORD.--July 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 929.60 ft (283.342 m) above mean sea level.

AVERAGE DISCHARGE.--22 years, 981 ft³/s (27.78 m³/s), 12.11 in/yr (308 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,780 ft³/s (78.7 m³/s) Apr. 15 (gage height, 4.85 ft or 1.478 m); minimum, 27 ft³/s (0.76 m³/s) Sept. 23, 24; minimum daily, 646 ft³/s (18.3 m³/s) Sept. 24.
Period of record: Maximum discharge, 4,160 ft³/s (118 m³/s) Apr. 13, 1971 (gage height, 6.00 ft or 1.829 m); minimum, 18 ft³/s (0.51 m³/s) Sept. 18, 19, 20, 21, 28, 1962 (gage height, 0.10 ft or 0.030 m); minimum daily, 277 ft³/s (7.84 m³/s) Sept. 24, 1969.

REMARKS.--Records good. Flow regulated at all stages by hydroelectric plant 500 ft (152 m) above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	915	1,130	1,020	929	1,340	1,140	1,050	1,500	1,120	1,070	887	927
2	913	1,220	1,020	959	1,170	958	1,100	1,340	1,090	1,070	895	917
3	949	1,170	1,050	860	1,120	991	1,430	1,260	1,140	1,350	972	889
4	988	1,070	1,040	960	1,000	1,250	1,930	1,290	1,150	1,570	1,000	955
5	1,040	1,070	1,190	850	876	1,440	1,880	1,320	1,100	1,850	1,020	845
6	1,010	1,080	1,340	920	921	1,440	1,590	1,410	1,090	1,650	1,000	858
7	1,000	1,040	1,270	890	1,050	1,880	1,680	1,460	1,180	1,330	949	887
8	951	1,010	1,170	750	1,030	1,930	1,730	1,430	1,240	1,270	910	884
9	942	1,010	1,150	820	1,010	1,510	1,610	1,340	1,240	1,210	894	863
10	954	1,010	1,120	924	986	1,470	1,430	1,200	1,490	1,110	897	863
11	954	993	1,100	991	983	1,440	1,480	1,410	1,720	1,110	904	889
12	953	989	1,080	913	982	1,340	1,620	1,540	1,560	1,190	912	888
13	1,050	1,010	1,080	810	1,030	1,280	2,280	1,530	1,390	1,140	906	965
14	1,210	1,020	989	889	966	1,180	2,530	1,660	1,250	1,080	876	961
15	1,190	1,130	903	1,010	849	1,180	2,700	1,960	1,420	1,070	836	899
16	1,110	1,190	947	1,010	970	1,210	2,770	1,900	1,660	1,030	838	905
17	1,060	1,060	907	935	1,030	1,180	2,480	1,820	1,680	993	895	897
18	1,060	1,040	784	944	967	1,150	2,290	1,710	1,540	998	891	895
19	1,070	1,090	755	950	963	1,150	2,070	1,490	1,470	1,010	869	896
20	1,080	1,140	889	960	982	1,100	1,830	1,410	1,430	941	848	971
21	1,060	1,180	996	1,210	983	1,100	1,690	1,370	1,250	911	820	986
22	1,010	1,190	937	1,270	1,140	1,090	1,730	1,350	1,120	934	824	1,220
23	1,010	1,170	998	1,110	1,010	1,100	1,760	1,360	1,100	937	851	857
24	1,010	1,160	984	1,070	785	1,060	1,650	1,310	1,090	935	840	646
25	966	1,130	988	1,070	774	887	1,550	1,280	1,060	918	827	954
26	982	1,030	1,100	1,030	945	1,090	1,420	1,220	1,050	945	857	811
27	984	1,060	1,190	1,370	1,050	1,140	1,370	1,190	1,050	962	1,230	877
28	1,110	1,090	1,120	1,620	1,250	1,000	1,390	1,210	1,030	920	1,010	932
29	1,230	1,140	1,050	1,410	-----	1,030	1,520	1,210	1,010	889	952	1,010
30	1,130	1,080	881	1,290	-----	1,050	1,550	1,190	1,040	875	941	1,530
31	1,070	-----	989	1,320	-----	1,060	-----	1,180	-----	912	910	-----
TOTAL	31,961	32,702	32,037	32,034	28,162	37,826	53,110	43,850	37,750	34,180	28,270	27,777
MEAN	1,031	1,090	1,033	1,033	1,006	1,220	1,770	1,415	1,258	1,103	912	926
MAX	1,230	1,220	1,340	1,620	1,340	1,930	2,770	1,960	1,720	1,850	1,230	1,530
MIN	913	989	755	750	774	887	1,050	1,180	1,010	875	820	646
CFSM	.94	.99	.94	.94	.91	1.11	1.61	1.29	1.14	1.00	.83	.44
TN.	1.08	1.11	1.08	1.08	.95	1.28	1.80	1.48	1.28	1.16	.96	.94

CAL YR 1973 TOTAL 411,828 MEAN 1.128 MAX 2.120 MTN 755 CFSM 1.03 TN 13.93
WTR YR 1974 TOTAL 419,659 MEAN 1.150 MAX 2.770 MTN 646 CFSM 1.05 TN 14.19

STREAMS TRIBUTARY TO LAKE HURON

04138500 Au Gres River near National City, Mich.

LOCATION.--Lat 44°10'26", long 83°44'36", in NE¼NE¼ sec.31, T.21 N., R.6 E., Iosco County, on left bank 15 ft (5 m) upstream from highway bridge on Allen Road, 1.7 mi (2.7 km) upstream from Elm Creek, 4.4 mi (7.1 km) southwest of National City, 12.8 mi (20.6 km) southwest of Tawas City, and 13 mi (21 km) upstream from mouth.

DRAINAGE AREA.--169 mi² (438 km²).

PERIOD OF RECORD.--October 1950 to current year. Monthly discharge only October, November, 1950, published in WSP 1727.

GAGE.--Water-stage recorder. Altitude of gage is 710 ft (216 m) by barometer. Prior to Oct. 1, 1951, nonrecording gage at site 1.5 mi (2.4 km) upstream at different datum. Oct. 1, 1951 to July 24, 1969, water-stage recorder at site 50 ft (15 m) downstream at present datum.

AVERAGE DISCHARGE.--24 years, 98.7 ft³/s (2.800 m³/s), 7.93 in/yr (201 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,500 ft³/s (70.8 m³/s) Mar. 6; maximum gage height, 10.64 ft (3.243 m) Mar. 6 (backwater from ice); minimum discharge, 17 ft³/s (0.48 m³/s) Oct. 1, 2.
Period of record: Maximum discharge, 2,500 ft³/s (70.8 m³/s) Mar. 6, 1974; maximum gage height, 10.64 ft (3.243 m) Mar. 6, 1974 (backwater from ice); minimum discharge, 5.9 ft³/s (0.17 m³/s) Nov. 3, 1966, result of freezeup.

REMARKS.--Records good except those for winter periods, and those for period of no gage-height record, which are fair. Some regulation at low flows.

REVISIONS (WATER YEARS).--WSP 1911: 1959-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	99	63	68	140	98	244	165	68	41	28	23
2	18	110	57	66	130	110	290	145	66	36	27	23
3	26	99	56	64	120	140	426	145	62	222	31	24
4	35	84	59	60	110	200	843	172	60	595	44	24
5	51	73	120	58	105	1,000	640	160	62	495	37	22
6	39	67	116	56	100	2,100	385	213	68	229	32	22
7	36	63	100	56	98	1,300	359	165	80	142	31	22
8	34	57	84	54	96	800	367	140	115	95	34	22
9	33	47	77	54	94	560	286	131	170	68	33	22
10	31	39	72	54	92	450	244	116	350	82	30	20
11	31	39	66	54	92	360	224	110	270	65	29	19
12	30	42	58	54	90	320	268	120	220	52	30	19
13	88	42	52	56	90	255	830	155	170	46	28	24
14	100	42	50	56	90	229	870	160	110	43	25	24
15	57	60	46	58	90	206	888	250	120	42	24	22
16	43	93	45	58	90	201	513	350	150	37	24	22
17	40	68	45	60	90	191	359	600	150	36	25	22
18	39	65	48	62	88	179	286	450	150	42	24	24
19	38	62	50	64	86	179	239	320	145	34	22	22
20	36	56	52	68	84	167	218	230	125	30	22	26
21	44	88	54	76	82	167	186	190	101	29	21	23
22	30	128	56	120	80	165	179	160	87	30	20	22
23	28	95	58	90	80	155	191	140	78	35	27	22
24	29	82	60	74	82	150	179	130	71	30	24	22
25	31	91	62	64	84	140	165	120	60	30	28	24
26	36	80	66	58	86	135	165	110	54	50	27	24
27	46	73	74	68	88	130	153	100	46	37	35	24
28	80	75	94	390	92	127	140	90	40	30	28	22
29	118	89	82	280	-----	120	170	85	36	28	24	71
30	87	73	74	200	-----	123	189	78	40	28	22	52
31	78	-----	70	160	-----	147	-----	74	-----	32	25	-----
TOTAL	1,429	2,181	2,066	2,760	2,649	10,604	10,496	5,574	3,324	2,791	862	754
MFAN	46.1	72.7	66.6	89.0	84.6	342	350	180	111	90.0	27.8	25.1
MAX	118	128	120	390	140	2,100	888	600	350	595	44	71
MIN	17	39	45	54	80	98	140	74	36	28	20	19
CFSM	.27	.43	.39	.53	.56	2.02	2.07	1.07	.66	.53	.16	.15
IN.	.31	.48	.45	.61	.58	2.33	2.31	1.23	.73	.61	.19	.17
CAL YR 1973	TOTAL 40,944	MFAN 112	MAX 800	MIN 16	CFSM .66	IN 9.01						
WTR YR 1974	TOTAL 45,490	MFAN 125	MAX 2,100	MIN 17	CFSM .74	IN 10.01						

PEAK DISCHARGE (BASE, 600 FT³/s)

NOTE.--No gage height record May 12 to June 17.

DATE	TIME	G.H.	DISCHARGE
03-06	1600	10.64	2,500
04-04	1400	4.38	942
04-15	0200	4.62	1,020
05-17	unknown	unknown	about 840
07-04	1130	3.65	708

04140500 Rifle River at Selkirk, Mich.

LOCATION.--Lat 44°18'48", long 84°04'10", in SE¼ NE¼ sec.9, T.22 N., R.3 W., Ogemaw County, on left bank at upstream side of bridge on State Road at Selkirk, 1.0 mi (1.6 km) downstream from Klacking Creek.

DRAINAGE AREA.--117 mi² (303 km²).

PERIOD OF RECORD.--September 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 828.47 ft (252.518 m) above mean sea level.

AVERAGE DISCHARGE.--24 years, 144 ft³/s (4.078 m³/s), 16.71 in/yr (424 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,100 ft³/s (31.2 m³/s) Apr. 15 (gage height, 3.94 ft or 1.201 m); minimum, 80 ft³/s (2.27 m³/s) Aug. 22.

Period of record: Maximum discharge, 2,760 ft³/s (78.2 m³/s) May 20, 1959 (gage height, 6.76 ft or 2.060 m); minimum, 55 ft³/s (1.56 m³/s) Aug. 19, 1958.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation from dams above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	156	139	125	140	131	195	186	125	108	86	92
2	90	144	133	125	135	126	219	170	125	101	86	90
3	110	128	133	120	130	174	300	178	125	131	128	90
4	113	120	142	115	125	510	496	192	125	192	142	88
5	128	115	225	110	120	432	480	195	130	184	113	88
6	110	113	219	110	115	520	326	237	140	133	99	88
7	108	108	186	105	115	585	330	207	150	118	92	88
8	106	108	172	105	115	410	336	184	170	108	88	88
9	103	103	164	100	110	290	281	172	210	103	88	86
10	101	103	164	98	110	258	255	164	260	144	95	90
11	106	103	156	96	115	237	252	172	220	126	99	88
12	101	106	150	98	115	219	290	216	180	108	97	88
13	131	106	144	98	115	201	476	201	150	101	92	101
14	164	108	135	100	110	189	684	240	160	101	88	97
15	131	136	130	100	110	181	1,070	360	180	92	88	92
16	118	156	130	105	110	189	772	340	190	86	88	92
17	115	136	130	105	110	189	432	374	190	88	88	92
18	113	131	130	105	110	178	330	323	180	90	84	95
19	110	131	125	110	110	172	278	243	175	99	84	92
20	113	133	125	115	110	167	243	204	158	95	82	99
21	110	175	125	150	110	167	231	186	144	90	82	97
22	108	231	125	135	105	161	246	178	136	90	82	95
23	108	184	125	130	105	155	225	164	131	95	88	95
24	106	164	125	120	110	150	201	150	128	92	84	92
25	106	161	130	120	110	150	189	144	120	90	84	97
26	106	153	140	135	120	150	178	142	115	103	88	97
27	106	150	140	170	130	153	170	136	110	97	120	92
28	142	153	140	210	136	153	167	133	103	90	110	95
29	158	156	135	180	-----	153	198	136	99	88	99	142
30	142	144	130	170	-----	153	213	131	106	86	92	139
31	131	-----	125	150	-----	158	-----	128	-----	88	99	-----
TOTAL	3,584	4,115	4,472	3,815	3,256	7,061	10,063	6,186	4,535	3,317	2,935	2,865
MEAN	116	137	144	123	116	228	335	200	151	107	94.7	95.5
MAX	164	231	225	210	140	585	1,070	374	260	192	142	142
MIN	90	103	125	96	105	126	167	128	99	86	82	86
CFSM	.99	1.17	1.23	1.05	.99	1.95	2.86	1.71	1.29	.91	.81	.82
IN.	1.14	1.31	1.42	1.21	1.04	2.25	3.20	1.97	1.44	1.05	.93	.91
CAL YR 1973	TOTAL 60,495		MEAN 166	MAX 706	MIN 74	CFSM 1.42	IN 19.23					
WTR YR 1974	TOTAL 56,204		MEAN 154	MAX 1,070	MIN 82	CFSM 1.32	IN 17.87					

PEAK DISCHARGE (BASE, 500 FT³/S)

DATE	TIME	G.H.	DISCHARGE
03-06	2000	3.33	665
04-04	1830	3.09	590
04-15	0600	3.94	1,100

STREAMS TRIBUTARY TO LAKE HURON

04141000 South Branch Shepards Creek near Selkirk, Mich.

LOCATION.--Lat 44°18'28", long 84°05'13", in SE¼ SE¼ sec.8, T.22 N., R.3 E., Ogemaw County, on right bank 200 ft (61 m) upstream from mouth, 600 ft (183 m) west of bridge on Bedtelyon Road, and 1.1 mi (1.8 km) southwest of Selkirk.

DRAINAGE AREA.--1.15 mi² (2.98 km²).

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Water-stage recorder and V notch sharp-crested weir. Altitude of gage is 845 ft (258 m) by barometer.

AVERAGE DISCHARGE.--23 years, 0.55 ft³/s (0.0156 m³/s), 6.49 in/yr (165 mm/yr).

EXTREMES.--Current year: Maximum discharge, 90 ft³/s (2.55 m³/s) Mar. 3 (gage height, 3.92 ft or 1.195 m); minimum, 0.02 ft³/s (0.001 m³/s) Aug. 21.

Period of record: Maximum discharge, 181 ft³/s (5.13 m³/s) Apr. 3, 1956, from rating curve extended above 40 ft³/s (1.13 m³/s); maximum gage height, 4.42 ft (1.347 m) Apr. 3, 1956, May 28, 1973; no flow at times each year, except 1956, and 1967-74.

REMARKS.--Records fair.

REVISIONS (WATER YEARS).--WSP 1557: 1952 (M), 1954 (M), 1955 (P). WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.37	.18	.26	1.0	.24	1.7	.47	.20	.13	.04	.07
2	.11	.23	.16	.20	.58	.26	2.9	.37	.19	.14	.06	.07
3	.14	.19	.18	.14	.37	26	3.1	.45	.22	.48	.14	.06
4	.22	.16	.40	.12	.30	9.1	7.9	.45	.18	1.5	.13	.06
5	.20	.16	1.0	.11	.21	10	1.9	.71	.15	.50	.10	.06
6	.15	.15	.56	.10	.14	7.7	1.1	1.1	.22	.23	.07	.05
7	.13	.14	.35	.09	.11	5.0	1.8	.73	.24	.15	.06	.05
8	.13	.15	.31	.08	.10	2.0	1.4	.50	.47	.12	.06	.04
9	.12	.14	.31	.10	.11	1.6	.80	.40	.88	.11	.06	.04
10	.12	.13	.31	.11	.12	1.6	.73	.35	1.1	.29	.06	.04
11	.13	.13	.29	.14	.14	1.2	.76	.60	.64	.16	.06	.04
12	.13	.14	.28	.14	.15	.98	3.0	.87	.37	.13	.06	.05
13	.53	.14	.26	.14	.16	.61	7.1	.58	.28	.11	.04	.09
14	.31	.14	.24	.14	.16	.47	18	1.6	.26	.10	.04	.06
15	.23	.40	.20	.15	.12	.50	4.9	4.3	.65	.09	.04	.05
16	.19	.26	.18	.16	.13	.61	1.8	2.6	.61	.09	.04	.04
17	.19	.20	.15	.18	.14	.61	1.5	7.6	.47	.10	.06	.05
18	.18	.20	.14	.18	.20	.47	.87	1.6	.50	.11	.04	.06
19	.18	.18	.14	.18	.19	.47	.69	.98	.73	.09	.04	.05
20	.19	.16	.14	.23	.16	.42	.58	.64	.35	.07	.03	.06
21	.16	.72	.14	1.8	.18	.47	.66	.50	.23	.06	.03	.06
22	.15	.35	.14	1.6	.22	.38	1.1	.40	.20	.09	.03	.04
23	.15	.24	.15	1.2	.22	.33	.69	.33	.19	.09	.04	.04
24	.15	.23	.16	.94	.20	.33	.50	.28	.18	.06	.04	.05
25	.14	.23	.35	.61	.20	.28	.42	.26	.16	.07	.03	.09
26	.13	.22	.64	.84	.20	.26	.40	.24	.14	.15	.06	.06
27	.15	.20	1.2	17	.18	.24	.37	.24	.13	.08	.20	.05
28	.45	.24	1.0	4.2	.20	.24	.35	.24	.12	.06	.10	.08
29	.45	.22	.66	2.6	-----	.24	.82	.24	.11	.04	.07	.89
30	.26	.20	.42	2.0	-----	.28	.66	.23	.18	.04	.06	.40
31	.23	-----	.32	1.5	-----	1.5	-----	.22	-----	.04	.10	-----
TOTAL	6.09	6.62	10.96	37.24	6.19	74.39	68.50	30.08	10.35	5.48	1.99	2.85
MEAN	.20	.22	.35	1.20	.22	2.40	2.28	.97	.35	.18	.064	.095
MAX	.53	.72	1.2	17	1.0	26	18	7.6	1.1	1.5	.20	.89
MIN	.09	.13	.14	.08	.10	.24	.35	.22	.11	.04	.03	.04
CFSM	.17	.19	.30	1.04	.19	2.09	1.98	.84	.30	.16	.06	.08
IN.	.20	.21	.35	1.20	.20	2.41	2.22	.97	.33	.18	.06	.09
CAL YR 1973	TOTAL 289.95 MEAN .79 MAX 22 MIN .04 CFSM .69 IN 9.38											
WTR YR 1974	TOTAL 260.74 MEAN .71 MAX 26 MIN .03 CFSM .62 IN 8.43											

PEAK DISCHARGE (BASE, 20 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-27	0300	3.08	30
03-03	1900	3.92	90
04-04	0030	2.93	23
04-14	1400	3.63	63
05-17	0030	2.99	26

04142000 Rifle River near Sterling, Mich.

LOCATION.--Lat 44°04'21", long 84°01'12", in NE¼ SW¼ sec.5, T.19 N., R.4 E., Arenac County, on left bank 30 ft (9 m) downstream from bridge on Old-M70, 2.8 mi (4.5 km) north of Sterling, and 20 mi (32 km) upstream from mouth.

DRAINAGE AREA.--320 mi² (830 km²), approximately.

PERIOD OF RECORD.--November 1905 to December 1908 (gage heights and discharge measurements only), October 1936 to current year. Monthly discharge only for some periods, published in WSP 1307. Published as Rifle River at Michigan Highway 70 near Sterling 1936-61.

GAGE.--Water-stage recorder. Datum of gage is 649.48 ft (197.962 m) above mean sea level. November 1905 to December 1908, nonrecording gage at site 400 ft (122 m) downstream at different datum. Jan. 13, 1937 to Jan. 10, 1939, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--38 years, 308 ft³/s (8.723 m³/s), 13.07 in/yr (322 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,590 ft³/s (73.3 m³/s) Mar. 6 (gage height, 8.98 ft or 2.737 m); maximum gage height, 11.43 ft (3.484 m) Mar. 6 (backwater from ice); minimum discharge, 147 ft³/s (4.16 m³/s) Aug. 22 (gage height, 1.57 ft or 0.479 m). Period of record: Maximum discharge, 5,340 ft³/s (151 m³/s) Mar. 28, 1950 (gage height, 13.74 ft or 4.188 m), from rating curve extended above 3,800 ft³/s (108 m³/s); minimum, 75 ft³/s (2.12 m³/s) Nov. 22, 1964, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation from dams above station.

REVISIONS (WATER YEARS).--WSP 1437: 1937 (M), 1939-40 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	168	297	256	240	370	270	422	420	248	212	171	185
2	169	313	246	230	350	300	502	391	238	204	171	173
3	210	284	245	230	330	350	745	381	239	360	219	175
4	227	255	256	220	300	600	1,270	424	236	950	330	170
5	236	239	358	210	270	900	1,280	420	225	844	259	168
6	217	227	421	210	260	1,300	905	514	229	545	217	164
7	197	216	357	200	250	1,880	827	468	249	400	193	162
8	191	215	317	200	240	1,440	874	396	344	335	182	164
9	188	222	296	200	230	1,080	715	364	456	295	183	161
10	185	209	292	200	230	931	614	338	626	448	178	161
11	184	202	285	200	230	819	580	343	562	376	184	161
12	182	201	272	200	230	703	623	454	443	329	182	160
13	278	203	250	200	230	586	1,230	443	364	285	172	177
14	338	201	230	200	230	507	1,410	460	328	263	160	175
15	302	240	210	200	220	478	2,060	861	378	246	159	162
16	254	311	200	210	220	462	1,660	849	430	230	157	155
17	234	273	210	210	220	450	1,080	1,120	442	215	157	156
18	225	252	220	210	220	428	818	1,000	416	218	159	158
19	219	247	240	220	220	445	672	733	405	206	155	158
20	213	247	250	230	220	400	585	586	359	200	152	164
21	223	283	250	270	220	360	532	506	313	186	151	167
22	237	414	250	330	210	350	537	454	278	193	152	163
23	222	354	250	280	210	330	511	408	255	204	179	158
24	210	303	250	250	220	300	451	357	240	192	164	157
25	203	291	260	240	220	270	408	326	228	187	161	163
26	196	277	270	260	230	280	383	311	216	246	177	167
27	193	265	280	290	240	290	386	309	210	219	215	159
28	263	274	290	880	250	300	374	299	200	192	223	163
29	352	281	280	700	-----	303	413	298	194	191	195	280
30	325	266	270	560	-----	307	491	289	210	183	177	293
31	281	-----	250	450	-----	324	-----	262	-----	178	183	-----
TOTAL	7,122	7,862	8,311	8,730	6,870	17,743	23,358	14,784	9,561	9,332	5,717	5,179
MEAN	230	262	268	282	245	572	779	477	319	301	184	173
MAX	352	414	421	880	370	1,880	2,060	1,120	626	950	330	293
MIN	168	201	200	200	210	270	374	262	194	178	151	155
CFSM	.72	.82	.84	.88	.77	1.79	2.43	1.49	1.00	.94	.58	.54
IN.	.83	.91	.97	1.01	.80	2.06	2.72	1.72	1.11	1.08	.66	.60

CAL YR 1973 TOTAL 135,768 MEAN 372 MAX 1,720 MIN 136 CFSM 1.16 IN 15.79
WTR YR 1974 TOTAL 124,569 MEAN 341 MAX 2,060 MIN 151 CFSM 1.07 IN 14.48

PEAK DISCHARGE (BASE, 1,600 FT³/s)

DATE	TIME	G.H.	DISCHARGE
03-06	2200	8.98	2,590
04-15	1400	7.98	2,160

STREAMS TRIBUTARY TO LAKE HURON

04143500 North Branch Kawkawlin River near Kawkawlin, Mich.

LOCATION.--Lat 43°40'05", long 83°58'13", in SE¼ SE¼ sec.27, T.15 N., R.4 E., Bay County, on left bank 50 ft (15 m) upstream from bridge on Beaver Road, 1.7 mi (2.7 km) northwest of Kawkawlin, and 2.4 mi (3.9 km) upstream from mouth.

DRAINAGE AREA.--101 mi² (262 km²).

PERIOD OF RECORD.--March 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 584.00 ft (178.003 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Sept. 26, 1951, nonrecording gage at site 70 ft (21 m) downstream, and Sept. 27, 1951 to Sept. 30, 1960, water-stage recorder at present site, at datum 2.00 ft (0.610 m) higher.

AVERAGE DISCHARGE.--23 years, 58.0 ft³/s (1.643 m³/s), 7.80 in/yr (198 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,610 ft³/s (45.6 m³/s) May 18 (gage height, 10.92 ft or 3.328 m); no flow at times. Period of record: Maximum discharge, 1,610 ft³/s (45.6 m³/s) May 18, 1974 (gage height, 10.92 ft or 3.328 m); no flow at times in each year.

REMARKS.--Records fair except those for winter periods and those below 2 ft³/s (0.057 m³/s), which are poor. Some diversion above station for irrigation. Some regulation from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.60	39	78	220	90	168	47	46	20	3.2	2.5
2	.01	.66	34	80	170	120	263	98	43	19	3.3	2.4
3	.01	.42	35	40	100	170	347	148	41	18	3.8	2.5
4	.01	.36	39	25	70	388	458	137	36	19	4.7	2.4
5	.01	.28	56	20	60	682	460	110	31	21	5.5	1.9
6	.01	.21	43	16	52	1,010	532	95	26	18	5.3	1.7
7	.01	.23	35	14	46	1,010	478	94	24	16	4.7	1.2
8	.01	.21	30	13	42	925	390	98	26	14	4.5	.26
9	.01	.23	28	12	41	799	311	104	142	16	4.2	.73
10	.01	.15	27	12	38	665	250	104	321	22	4.4	.56
11	.01	.15	25	11	36	572	205	92	496	20	4.4	.41
12	.01	.15	24	10	35	458	172	87	596	16	4.6	.32
13	.01	.15	22	9.5	34	406	250	86	509	13	4.4	3.5
14	.01	.17	19	9.0	32	332	234	110	379	13	3.6	3.0
15	.01	1.6	15	8.5	29	268	274	174	291	18	3.1	2.0
16	.01	4.8	13	8.0	27	217	356	262	297	16	2.6	1.3
17	.01	4.4	11	7.5	26	187	365	923	158	14	2.4	.91
18	.01	4.4	10	7.5	26	166	324	1,530	147	16	3.1	.72
19	.01	4.6	9.5	7.0	27	168	252	1,320	167	15	4.4	.64
20	.01	5.4	9.0	7.0	28	178	184	817	168	12	5.0	.46
21	.01	13	8.5	8.0	30	180	136	554	155	9.4	4.8	.37
22	.01	21	9.0	110	35	180	105	416	135	8.4	4.2	.28
23	.01	19	8.0	115	60	174	81	325	107	8.0	3.8	.25
24	.01	23	9.5	120	110	153	66	244	79	6.8	3.4	.22
25	.01	40	9.5	130	95	138	55	181	56	6.2	3.0	.18
26	.01	30	9.0	140	90	109	49	140	40	6.8	2.6	.14
27	.01	30	11	190	85	98	42	110	30	6.8	3.6	.14
28	.01	58	25	220	80	86	37	87	25	6.3	3.6	.25
29	.23	69	52	230	-----	72	45	73	21	5.7	3.2	.43
30	.66	48	60	250	-----	91	48	60	21	4.7	3.0	.92
31	.42	-----	72	260	-----	139	-----	51	-----	4.0	2.8	-----
TOTAL	1.58	380.17	793.0	2,188.0	1,724	10,231	6,937	8,677	4,523	409.1	119.2	33.26
MEAN	.051	12.7	25.6	70.6	61.6	330	231	280	151	13.2	3.85	1.11
MAX	.66	69	72	260	220	1,010	532	1,530	596	22	5.5	3.5
MIN	0	.15	8.0	7.0	26	72	37	47	21	4.0	2.4	.14
CFSM	.0005	.13	.25	.70	.61	3.27	2.29	2.77	1.50	.13	.04	.01
IN.	0	.14	.29	.81	.63	3.77	2.56	3.20	1.67	.15	.04	.01
CAL YR 1973	TOTAL 34,314.68	MEAN 94.0	MAX 810	MIN 0	CFSM .93	IN 12.64						
WTR YR 1974	TOTAL 36,016.31	MEAN 98.7	MAX 1,530	MIN 0	CFSM .98	IN 13.27						

LOCATION.--Lat 42°48'56", long 83°48'08", in SW¼ sec.19, T.5 N., R.6 E., Genesee County, on right bank at upstream side of bridge on Hogan Road, 1.0 mi (1.6 km) west of Linden.

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259 m) from topographic map.

AVERAGE DISCHARGE.--7 years, 60.6 ft³/s (1.716 m³/s), 10.13 in/yr (257 mm/yr).

EXTREMES.--Current year: Maximum discharge, 303 ft³/s (8.58 m³/s) Mar. 9 (gage height, 6.34 ft or 1.932 m); minimum, 2.6 ft³/s (0.074 m³/s) Aug. 15, 16 (gage height, 3.00 ft or 0.914 m).

Period of record: Maximum discharge, 309 ft³/s (8.75 m³/s) Jan. 6, 1973; maximum gage height, 6.34 ft (1.932 m) Mar. 9, 1974; minimum discharge, 0.74 ft³/s (0.021 m³/s) May 22, 23, 1971; minimum gage height, 2.82 ft (0.860 m) Aug. 2, 1971.

REMARKS.--Records good except those for the winter period, which are fair. Low flow regulated at times by lakes above station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	38	116	106	210	152	107	106	106	45	13	22
2	24	41	138	100	190	157	112	101	100	46	19	22
3	24	47	135	95	180	160	116	94	97	49	22	23
4	24	61	133	90	160	174	156	87	94	49	22	24
5	25	68	133	85	150	206	189	78	95	49	22	26
6	26	72	130	80	150	222	197	84	100	48	22	26
7	26	74	119	77	140	229	234	92	104	48	22	26
8	26	74	114	73	130	264	255	63	107	44	22	26
9	26	73	110	70	125	302	260	78	104	37	22	25
10	26	72	103	66	120	299	242	80	98	26	26	25
11	27	67	101	64	115	295	234	75	93	26	18	25
12	27	60	95	62	110	285	225	81	92	27	18	27
13	29	57	83	60	105	267	219	89	84	28	17	26
14	33	56	78	58	100	247	206	102	70	29	14	26
15	35	66	70	56	100	238	196	109	62	34	10	27
16	35	63	65	55	99	225	185	100	61	50	3.2	27
17	35	61	60	55	80	211	176	225	60	52	4.7	27
18	35	61	56	55	65	192	174	226	60	52	5.6	26
19	35	60	54	56	65	175	162	263	61	45	6.4	24
20	35	60	52	58	77	166	153	278	59	24	7.4	21
21	34	64	52	92	78	153	141	289	58	20	7.9	21
22	34	70	54	121	101	142	145	274	57	9.6	8.3	21
23	34	74	54	151	140	128	148	263	56	9.6	9.2	20
24	31	81	56	165	133	125	138	237	48	9.2	9.9	19
25	27	94	62	179	129	120	137	221	32	9.1	10	5.7
26	27	97	70	180	132	109	123	196	51	9.2	11	5.3
27	28	97	81	209	142	98	126	179	47	9.5	12	5.3
28	30	112	85	219	147	103	121	157	40	9.8	13	5.5
29	35	138	84	224	-----	104	108	145	44	10	13	6.3
30	44	149	90	222	-----	105	110	126	46	11	16	7.0
31	34	-----	101	220	-----	107	-----	119	-----	12	23	-----
TOTAL	934	2,207	2,734	3,403	3,473	5,760	5,095	4,617	2,186	927.0	449.6	617.1
MEAN	30.1	73.6	88.2	110	124	186	170	149	72.9	29.9	14.5	20.6
MAX	44	149	138	224	210	302	260	289	107	52	26	27
MIN	23	38	52	55	65	98	107	63	32	9.1	3.2	5.3
CFSM	.37	.91	1.09	1.35	1.53	2.29	2.09	1.84	.90	.37	.18	.25
IN.	.43	1.01	1.25	1.56	1.59	2.64	2.33	2.12	1.00	.42	.21	.28
CAL YR 1973	TOTAL	28,793.8	MEAN	78.9	MAX	289	MIN	8.3	CFSM	.97	IN	13.19
WTR YR 1974	TOTAL	32,402.7	MEAN	88.8	MAX	302	MIN	3.2	CFSM	1.09	IN	

STREAMS TRIBUTARY TO LAKE HURON

04144000 Shiawassee River at Byron, Mich.

LOCATION.--Lat 42°49'25", long 83°56'45", in NE¼ NE¼ sec.23, T.5 N., R.4 E., Shiawassee County, on upstream side of highway bridge at Byron, 0.3 mi (0.5 km) downstream from milldam which is just upstream from South Branch Shiawassee River.

DRAINAGE AREA.--368 mi² (953 km²).

PERIOD OF RECORD.--October 1947 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 811.54 ft (247.357 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 17, 1960, nonrecording gage and crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--27 years, 247 ft³/s (6.995 m³/s), 9.11 in/yr (231 mm/yr).

EXTREMES.--Current year. Maximum discharge, 1,900 ft³/s (53.8 m³/s) Mar. 11 (gage height, 10.84 ft or 3.304 m); minimum, 66 ft³/s (1.87 m³/s) Aug. 26; minimum gage height, 4.28 ft (1.305 m) July 29, 30.

Period of record: Maximum discharge, 2,900 ft³/s (82.1 m³/s) Apr. 1, 1960; maximum gage height, 12.58 ft (3.834 m) May 15, 1956, Apr. 1, 1960; minimum discharge, 19 ft³/s (0.54 m³/s); Aug. 16, 1965; minimum gage height, 3.55 ft (1.082 m) Sept. 16, 1960.

REMARKS.--Records good except those for the winter period, which are fair. Low flow slightly regulated at times by mills above station. Records of water temperature for the current year are published in Part 2 of this report.

REVISIONS.--WSP 1144: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	274	403	522	1,000	788	743	414	428	151	74	77
2	96	269	379	434	900	822	986	406	366	153	82	78
3	93	286	316	372	800	914	1,070	392	343	160	84	83
4	86	271	314	350	750	991	1,260	379	308	166	85	90
5	86	243	332	340	650	1,210	1,350	318	260	167	82	88
6	87	199	402	320	500	1,370	1,520	250	244	187	87	107
7	86	143	470	300	400	1,550	1,600	280	233	227	92	126
8	85	136	463	280	380	1,660	1,580	301	242	235	97	131
9	90	135	441	260	370	1,740	1,450	303	314	185	99	129
10	88	132	417	240	370	1,820	1,340	303	407	143	98	118
11	89	134	404	230	360	1,890	1,250	312	336	133	95	89
12	88	127	398	220	350	1,860	1,150	371	246	127	92	83
13	91	130	388	210	330	1,720	1,070	441	215	124	92	85
14	98	133	320	200	320	1,550	964	490	224	119	95	87
15	94	173	235	200	300	1,280	855	525	212	112	103	83
16	105	192	218	200	282	1,050	715	611	205	93	99	80
17	103	211	188	200	270	862	638	1,090	196	96	91	82
18	103	214	170	200	250	692	615	1,440	197	103	102	83
19	102	196	160	204	250	675	622	1,700	203	107	102	84
20	100	186	160	252	260	642	590	1,740	204	113	93	82
21	100	190	160	506	280	613	554	1,650	222	110	81	79
22	97	267	170	584	525	576	510	1,460	258	102	76	78
23	100	486	180	931	750	539	429	1,160	261	101	73	73
24	105	465	200	1,300	795	507	406	887	258	94	72	76
25	102	420	232	1,350	828	452	400	727	225	88	70	76
26	100	383	286	1,350	829	416	381	642	176	85	67	73
27	102	342	412	1,350	833	401	362	564	154	82	73	71
28	108	327	446	1,350	812	407	341	526	144	76	75	70
29	126	345	514	1,300	-----	401	319	489	141	72	75	70
30	165	376	562	1,200	-----	435	367	466	149	72	74	68
31	232	-----	560	1,100	-----	575	-----	455	-----	74	74	-----
TOTAL	3,207	7,385	10,300	17,855	14,744	30,408	25,437	21,092	7,374	3,857	2,653	2,599
MFAN	103	246	332	576	527	981	848	680	246	124	85.6	86.6
MAX	232	486	562	1,350	1,000	1,890	1,600	1,740	428	235	103	131
MIN	85	127	160	200	250	401	319	250	141	72	67	68
CFSM	.28	.67	.90	1.57	1.43	2.67	2.30	1.85	.67	.34	.23	.24
IN.	.32	.75	1.04	1.80	1.49	3.07	2.57	2.13	.75	.39	.27	.26

CAL YR 1973 TOTAL 128,061 MEAN 351 MAX 1,700 MIN 51 CFSM .95 IN 12.95
WTR YR 1974 TOTAL 146,911 MEAN 402 MAX 1,890 MIN 67 CFSM 1.09 IN 14.85

STREAMS TRIBUTARY TO LAKE HURON

04144500 Shiawassee River at Owosso, Mich.

LOCATION.--Lat 43°00'54", long 84°10'52", in SW¼ sec.12, T.7 N., R.2 E., Shiawassee County, on right bank on grounds of sewage-treatment plant, 1.5 mi (2.4 km) north of Owosso.

DRAINAGE AREA.--538 mi² (1,393 km²).

PERIOD OF RECORD.--March 1931 to current year. Monthly discharge only for some periods, published in WSP 1307. Gage-height record for flood seasons collected in this vicinity 1904, 1910-30 are contained in reports of U.S. Weather Bureau.

GAUGE.--Water-stage recorder. Datum of gage is 707.25 ft (215.570 m) above mean sea level. Prior to Oct. 15, 1933, at site 1.5 mi (2.4 km) upstream at datum 5.46 ft (1.66 m) higher.

AVERAGE DISCHARGE.--43 years, 321 ft³/s (9.091 m³/s), 8.10 in/yr (206 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,560 ft³/s (101 m³/s) May 17 (gage height, 7.76 ft or 2.365 m); minimum, 72 ft³/s (2.04 m³/s) July 30, 31, Aug. 1, 25, 26, 27, Sept. 27, 30; minimum gage height, 2.12 ft (0.646 m) Oct. 26.

Period of record: Maximum discharge, 6,240 ft³/s (177 m³/s) Apr. 6, 1947 (gage height, 10.35 ft or 3.155 m); minimum, 0.2 ft³/s (0.006 m³/s) July 27, 1934 (gage height, 1.12 ft or 0.341 m); minimum daily, 2.0 ft³/s (0.057 m³/s) July 28, 1934.

REMARKS.--Records good except those for the winter period, which are fair. Flow regulated below about 800 cfs by powerplant at Shiawassee town prior to February 1953; occasional regulation at low stages since.

REVISIONS (WATER YEARS).--WSP 1307: 1949 (M). WSP 1337: 1932, 1934, 1936-38, 1944.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEH	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	270	584	880	1,440	1,410	1,020	447	508	174	74	78
2	114	304	537	715	1,160	1,270	1,560	474	464	181	129	92
3	149	297	476	659	1,090	1,550	1,530	466	399	191	98	99
4	110	298	441	564	1,050	1,850	2,110	449	380	189	95	96
5	100	285	506	500	764	2,690	1,980	437	316	193	97	101
6	111	255	502	430	559	2,320	1,810	407	286	190	96	103
7	94	219	535	390	501	2,060	1,860	338	280	211	94	122
8	92	162	544	350	509	2,250	1,980	362	282	241	131	161
9	92	146	534	330	507	2,840	1,810	382	280	243	138	169
10	109	140	513	310	527	2,560	1,610	379	352	204	125	167
11	101	138	484	300	495	2,310	1,470	387	405	161	121	154
12	101	132	450	290	461	2,180	1,380	441	341	144	118	126
13	122	147	400	280	452	1,980	1,310	508	266	135	117	96
14	112	140	350	270	426	1,790	1,200	581	236	134	110	94
15	114	208	320	270	403	1,580	1,100	694	243	125	107	97
16	112	265	270	260	380	1,340	964	1,290	232	114	149	95
17	136	271	230	260	359	1,120	831	3,320	228	101	137	89
18	128	261	171	260	341	941	764	2,720	226	89	109	89
19	124	253	200	260	363	821	784	2,540	226	100	111	90
20	120	233	220	384	378	779	769	2,430	236	104	119	92
21	117	244	230	1,880	416	743	724	2,140	326	112	110	91
22	112	260	250	2,000	1,020	708	675	1,880	266	128	92	84
23	108	327	270	2,160	1,500	668	618	1,560	279	121	81	83
24	105	644	290	1,930	1,370	612	527	1,210	281	115	76	77
25	107	729	345	1,810	1,150	530	504	939	276	106	73	76
26	112	612	796	1,870	1,100	545	489	794	240	98	72	78
27	106	522	1,280	2,400	1,110	471	463	707	194	91	82	77
28	130	673	1,350	2,130	1,240	474	439	638	169	86	76	90
29	139	829	1,160	1,740	-----	484	426	620	152	81	77	93
30	139	663	1,010	1,590	-----	673	401	567	201	76	79	75
31	193	-----	980	1,560	-----	918	-----	537	-----	72	85	-----
TOTAL	3,618	9,927	16,228	29,032	21,071	42,467	33,108	30,644	8,570	4,310	3,178	3,034
MFAN	117	331	523	937	753	1,370	1,104	989	286	139	103	101
MAX	193	829	1,350	2,400	1,500	2,840	2,110	3,320	508	243	149	169
MIN	92	132	171	260	341	471	401	338	152	72	72	75
CFSM	.22	.62	.97	1.74	1.40	2.55	2.05	1.84	.53	.26	.19	.19
IN.	.25	.69	1.12	2.01	1.46	2.94	2.29	2.12	.59	.30	.22	.21
CAL YR 1973	TOTAL 185,133	MEAN 507	MAX 2,750	MIN 49	CFSM .94	IN 12.80						
WTR YR 1974	TOTAL 205,187	MEAN 562	MAX 3,320	MIN 72	CFSM 1.04	IN 14.19						

PEAK DISCHARGE (BASE, 1,500 ft³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	2200	5.58	1,550	03-05	1000	7.16	2,870
01-21	2000	6.59	2,370	03-09	0500	7.19	2,890
01-27	1600	6.79	2,560	04-04	1300	6.45	2,290
02-23	0400	5.48	1,520	05-17	1400	7.76	3,560

STREAMS TRIBUTARY TO LAKE HURON

04145000 Shiawassee River near Fergus, Mich.

LOCATION.--Lat 43°15'17", long 84°06'20", in sec.22, T.10 N., R.3 E., Saginaw County, on right bank at downstream side of county highway bridge, 1.2 mi (1.9 km) east of Fergus, 1.8 mi (2.9 km) upstream from Bear Creek, and 14 mi (22 km) above mouth.

DRAINAGE AREA.--637 mi² (1,650 km²).

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 585.80 ft (178.552 m) above mean sea level. Prior to Aug. 22, 1968, nonrecording gage at same site and datum. Prior to Oct. 1, 1970, at datum 2.00 ft (0.610 m) higher.

AVERAGE DISCHARGE.--35 years, 409 ft³/s (11.58 m³/s), 8.72 in/yr (221 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,190 ft³/s (119 m³/s) May 18; maximum gage height, 12.99 ft (3.959 m) Jan. 27, backwater from ice; minimum discharge, 76 ft³/s (2.15 m³/s) Aug. 1 (gage height, 2.25 ft or 0.686 m).
Period of record: Maximum discharge, 7,500 ft³/s (212 m³/s) Apr. 6, 1947 (includes overflow bypassing gage); maximum gage height, 15.44 ft (4.706 m), present datum, Mar. 29, 1960; minimum discharge, 27 ft³/s (0.76 m³/s) Aug. 8, 1966; minimum gage height, 1.83 ft (0.558 m) Sept. 13, 14, 1971.

REMARKS.--Records good except those for the winter period, which are fair. Some regulation at low stage by powerplant above Owosso prior to February 1953; occasional regulation at low stages since.

REVISIONS (WATER YEARS).--WSP 1337: 1940 (M), 1941-42, 1943 (M), 1944, 1945 (M), 1946, 1947 (M), 1948, 1950. WSP 1627: 1952, 1954 (M), 1957.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	209	766	1,100	1,960	1,800	1,420	486	633	221	78	99
2	108	273	686	900	1,500	1,700	2,080	532	596	215	83	98
3	118	309	610	800	1,400	2,500	2,050	554	527	225	128	107
4	136	300	546	700	1,300	3,280	2,500	538	473	215	102	111
5	127	303	591	600	1,100	3,720	2,630	521	455	245	98	109
6	103	289	663	550	800	3,360	2,280	538	376	221	95	109
7	108	265	660	500	550	2,770	2,170	497	366	215	96	110
8	100	223	639	450	550	2,680	2,410	447	368	229	103	131
9	98	181	630	420	520	3,490	2,270	483	383	249	128	157
10	110	166	619	400	520	3,420	2,010	481	373	247	151	174
11	110	161	596	380	520	2,940	1,820	473	450	209	132	165
12	110	155	560	370	500	2,700	1,700	510	400	166	129	176
13	120	152	552	350	570	2,500	1,730	540	350	154	125	147
14	130	158	500	350	540	2,290	1,540	596	300	149	125	130
15	120	185	450	350	520	2,060	1,390	657	300	142	118	110
16	120	237	350	350	500	1,860	1,230	904	300	132	113	110
17	140	283	300	350	470	1,600	1,060	3,360	300	134	160	116
18	129	281	250	350	450	1,380	940	3,790	290	128	144	107
19	122	279	300	400	450	1,170	888	3,030	290	107	132	164
20	120	271	320	500	500	1,050	892	2,860	290	113	128	111
21	118	261	350	2,400	550	996	864	2,620	300	113	129	115
22	118	269	350	2,500	1,000	948	812	2,380	350	118	128	119
23	116	281	370	2,800	1,500	900	745	2,030	330	133	108	114
24	114	432	400	2,500	1,900	824	663	1,660	330	123	96	111
25	111	788	500	2,300	1,600	731	585	1,250	330	115	84	95
26	114	752	895	2,400	1,400	696	577	1,010	330	113	83	91
27	118	622	1,570	3,000	1,400	672	554	868	270	102	86	89
28	127	628	1,700	2,700	1,500	608	532	773	230	95	92	111
29	160	1,100	1,400	2,500	-----	616	513	728	200	92	88	119
30	155	952	1,300	2,270	-----	752	492	689	200	86	91	116
31	149	-----	1,200	2,190	-----	1,500	-----	630	-----	83	91	-----
TOTAL	3,724	10,765	20,623	37,730	26,070	57,513	41,347	36,435	10,690	4,889	3,449	3,551
MEAN	120	359	665	1,217	931	1,855	1,378	1,175	356	158	111	118
MAX	160	1,100	1,700	3,000	1,960	3,720	2,630	3,790	633	249	160	176
MIN	95	152	250	350	450	608	492	447	200	83	78	89
CFSM	.19	.56	1.04	1.91	1.46	2.91	2.16	1.84	.56	.25	.17	.19
IN.	.22	.63	1.20	2.20	1.52	3.36	2.41	2.13	.62	.29	.20	.21

CAL YP 1973 TOTAL 232,782 MEAN 638 MAX 4,000 MIN 56 CFSM 1.00 IN 13.59
WTR YR 1974 TOTAL 256,786 MEAN 704 MAX 3,790 MIN 78 CFSM 1.11 IN 15.00

STREAMS TRIBUTARY TO LAKE HURON

151

04146000 Farmers Creek near Lapeer, Mich.

LOCATION.--Lat 43°02'41", long 83°20'14", in sec.6, T.7 N., R.10 E., Lapeer County, on left bank at sewage-treatment plant at Michigan Home and Training School, 2.0 mi (3.2 km) west of Lapeer.

DRAINAGE AREA.--55.2 mi² (143.0 km²).

PERIOD OF RECORD.--October 1932 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 805.79 ft (245.605 m) above mean sea level. Prior to May 25, 1954, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--42 years, 29.2 ft³/s (0.827 m³/s), 7.18 in/yr (182 mm/yr).

EXTREMES.--Current year: Maximum discharge, 422 ft³/s (12.0 m³/s) May 18 (gage height, 17.88 ft or 5.450 m); minimum, 5.1 ft³/s (0.14 m³/s) Oct. 26 (gage height, 15.17 ft or 4.624 m).

Period of record: Maximum discharge, 1,280 ft³/s (36.2 m³/s) Apr. 6, 1947 (gage height, 19.87 ft or 6.056 m, from floodmark), from rating curve extended above 660 ft³/s (18.7 m³/s) on basis of contracted-opening measurement of peak flow; minimum not determined.

REMARKS.--Records good except those for the winter period, 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), 1948-51 (M). WSP 1727: 1952 (M). WRD Mich. 1971: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	15	66	72	119	123	51	46	47	21	5.9	6.2
2	5.6	16	64	62	92	123	68	43	43	21	7.6	6.2
3	7.0	17	54	52	80	147	93	41	42	22	9.4	7.6
4	7.3	17	48	45	74	171	239	40	40	18	10	8.4
5	7.3	16	45	41	69	225	335	38	37	14	11	8.4
6	7.6	16	41	36	61	283	337	40	34	14	9.9	8.4
7	7.6	15	38	33	56	281	291	39	32	15	9.0	8.0
8	7.6	14	36	30	53	239	237	40	34	15	11	8.0
9	7.3	13	35	29	51	207	195	43	33	15	14	7.6
10	7.3	12	34	28	50	199	159	44	37	14	16	7.3
11	7.0	11	32	28	47	191	129	47	43	13	16	7.0
12	6.6	11	30	28	45	173	112	58	44	11	15	7.0
13	7.0	11	29	27	43	147	102	61	38	10	14	7.0
14	7.6	11	30	27	40	123	95	66	33	9.9	12	6.6
15	8.0	19	27	26	38	104	97	75	31	10	10	6.6
16	8.0	24	24	26	36	88	93	102	31	12	8.7	6.2
17	7.6	32	23	27	35	78	86	201	31	13	9.0	5.9
18	7.3	40	22	26	35	72	77	398	31	13	9.0	7.0
19	7.3	39	19	25	35	69	66	413	32	12	8.7	7.6
20	6.6	34	18	29	37	64	66	346	36	9.9	8.0	8.0
21	5.9	32	18	68	45	69	64	270	37	8.7	7.6	8.4
22	5.9	30	25	85	90	65	64	233	34	8.0	6.6	8.4
23	5.9	30	28	183	160	58	61	213	32	8.4	6.2	7.6
24	5.9	50	31	207	180	52	58	185	30	8.7	5.9	7.3
25	5.6	61	32	223	181	46	56	151	28	8.4	5.9	6.6
26	5.1	56	38	175	173	48	54	116	26	8.7	5.9	5.9
27	5.4	52	54	159	139	44	52	83	24	8.4	5.9	5.9
28	5.6	65	64	139	129	41	48	68	22	8.0	6.2	6.6
29	8.0	64	71	155	-----	39	48	66	20	7.3	6.2	9.0
30	9.4	64	88	149	-----	42	48	58	22	7.0	6.2	11
31	11	-----	90	129	-----	46	-----	51	-----	6.6	6.6	-----
TOTAL	216.7	887	1,254	2,369	2,193	3,657	3,481	3,675	1,004	371.0	283.4	221.7
MEAN	6.99	29.6	40.5	76.4	78.3	118	116	119	33.5	12.0	9.14	7.39
MAX	11	65	90	223	181	283	337	413	47	22	16	11
MIN	5.1	11	18	25	35	39	48	38	20	6.6	5.9	5.9
CFSM	.13	.54	.73	1.38	1.42	2.14	2.10	2.16	.61	.22	.17	.13
IN.	.15	.60	.85	1.60	1.48	2.46	2.35	2.48	.68	.25	.19	.15

CAL YR 1973 TOTAL 18,305.7 MEAN 50.2 MAX 593 MIN 1.7 CFSM .91 IN 12.34
WTR YR 1974 TOTAL 19,612.8 MEAN 53.7 MAX 413 MIN 5.1 CFSM .97 IN 13.22

PEAK DISCHARGE (BASE, 160 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-25	0500	17.00	237
02-25	1900	16.70	181
03-06	2300	17.28	295
04-05	2300	17.55	352
05-18	2300	17.88	422

STREAMS TRIBUTARY TO LAKE HURON

04147000 Holloway Reservoir near Otisville, Mich.

LOCATION.--Lat 43°07'15", long 83°29'45", in NW¼ sec.11, T.8 N., R.8 E., Genesee County, in gatehouse on right side of Holloway Dam on Flint River, 3.5 mi (5.6 km) southeast of Otisville.

DRAINAGE AREA.--526 mi² (1,362 km²).

PERIOD OF RECORD.--March 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by city of Flint).

EXTREMES.--Current year: Maximum contents, 880,000,000 cu ft (24.9 hm³) May 20, elevation, 756.22 ft (230.50 m); minimum, 407,000,000 cu ft (11.5 hm³) Apr. 29, elevation, 749.90 ft (228.57 m).

Period of record: Maximum contents, 996,000,000 cu ft (28.2 hm³) Mar. 8, 1956, elevation, 757.4 ft (230.86 m); minimum, reservoir empty at times during October, November, 1954, January, February, 1955, October, 1971.

REMARKS.--Reservoir is formed by an earth-fill dam with concrete spillway completed in 1953. Capacity of reservoir, 1,256,000,000 cu ft (35.6 hm³) at elevation 760.00 ft (231.65 m). The spillway section includes two 90 foot (27.4 m) drum gates with minimum crest elevation of 751 ft (228.9 m), maximum at 755 ft (230.1 m), three 20-foot (6.1 m) radial gates with sill elevation of 745 ft (227.1 m) and 2 sluices (each 4 by 6 ft), one on each side with valve controls. Entrance elevation of sluiceways is 724 ft (220.7 m). Reservoir is used to regulate flow for sewage dilution for city of Flint.

COOPERATION.--Reservoir elevations furnished by city of Flint.

REVISIONS.--WSP 2111: Drainage area.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

Date	Elevation (feet)	Contents (millions of cubic feet)	Change in contents during month	
			Millions of cubic feet	Equivalent in cfs
Sept. 30	750.64	451	--	--
Oct. 31	750.99	472	+21	+7.8
Nov. 30	751.89	529	+57	+22.0
Dec. 31	751.83	525	-4	-1.5
Calendar year 1973	--	--	+270	+8.6
Jan. 31	752.76	590	+65	+24.3
Feb. 28	752.00	537	-53	-21.9
Mar. 31	750.72	456	-81	-30.2
Apr. 30	750.00	413	-43	-16.6
May 31	754.76	748	+335	+125
June 30	754.79	751	+3	+1.2
July 31	754.36	716	-35	-13.1
Aug. 31	753.39	638	-78	-29.1
Sept. 30	752.53	574	-64	-24.7
Water year 1973-74	--	--	+123	+3.9

STREAMS TRIBUTARY TO LAKE HURON

153

04147500 Flint River near Otisville, Mich.

LOCATION.--Lat 43°06'40", long 83°31'10", in SE¼ sec.9, T.8 N., R.8 E., Genesee County, on left bank 20 ft (6 m) downstream from bridge on State Highway 15, 1.5 mi (2.4 km) downstream from Holloway Reservoir, 3.5 mi (5.6 km) upstream from Power-Cullen drain, and 3.8 mi (6.1 km) south of Otisville.

DRAINAGE AREA.--531 mi² (1,375 km²).

PERIOD OF RECORD.--October 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 721.39 ft (219.880 m) above mean sea level.

AVERAGE DISCHARGE.--22 years, 279 ft³/s (7.901 m³/s), 7.14 in/yr (181 mm/yr), adjusted for storage since 1954.

EXTREMES.--Current year: Maximum discharge, 2,720 ft³/s (77.0 m³/s) Mar. 8 (gage height, 12.26 ft or 3.737 m); minimum, 6.0 ft³/s (0.17 m³/s) Oct. 30 (gage height, 1.77 ft or 0.539 m).

Period of record: Maximum discharge, 6,150 ft³/s (174 m³/s) Apr. 1, 1960 (gage height, 14.97 ft or 4.563 m); minimum, 2.1 ft³/s (0.059 m³/s) Oct. 11, 12, 1971 (gage height, 1.57 ft or 0.479 m).

REMARKS.--Records good. Flow regulated by Holloway Reservoir, 1.5 mi (2.4 km) above station (see preceding page).

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	62	646	802	1,540	1,090	507	267	370	201	78	85
2	82	115	604	723	1,400	1,150	629	201	369	202	80	85
3	82	138	554	644	1,200	1,260	712	96	326	203	79	85
4	82	148	560	566	1,000	1,500	870	97	270	208	106	110
5	81	143	488	486	900	1,110	1,160	97	239	213	132	136
6	80	139	451	431	800	1,750	1,360	101	205	211	133	136
7	80	139	437	397	750	2,490	1,710	101	220	206	132	132
8	80	123	405	371	650	2,700	2,000	101	248	198	135	135
9	74	125	376	371	500	2,540	1,960	118	284	166	134	135
10	63	121	344	248	450	2,280	1,780	140	371	126	133	135
11	64	114	339	90	450	2,060	1,660	141	382	125	133	116
12	65	107	321	88	413	1,940	1,560	146	355	120	133	87
13	66	107	310	100	429	1,850	1,480	192	321	120	133	85
14	66	109	282	192	413	1,720	1,380	272	297	122	132	85
15	66	140	264	257	398	1,570	1,320	283	288	122	131	85
16	66	151	247	243	386	1,440	1,260	483	292	121	134	85
17	66	189	231	235	382	1,320	1,210	1,140	289	118	133	84
18	66	221	217	230	382	1,240	1,160	1,730	296	118	133	84
19	66	240	214	228	382	1,180	1,110	2,290	305	119	133	94
20	66	254	216	199	382	811	884	2,480	308	118	133	84
21	66	247	202	323	380	379	661	2,180	317	115	133	84
22	66	244	195	631	409	701	659	1,850	313	116	133	81
23	67	244	192	917	512	699	655	1,500	287	113	133	80
24	67	275	195	1,070	675	721	650	1,260	257	113	106	80
25	68	348	208	1,250	818	714	568	1,110	241	100	84	80
26	69	420	283	1,420	903	621	478	969	224	80	85	80
27	69	434	490	1,590	965	501	476	853	216	80	85	80
28	79	484	631	1,730	1,020	499	474	677	208	80	85	80
29	53	587	752	1,830	-----	499	386	510	200	78	85	81
30	7.8	683	815	1,880	-----	503	269	512	204	79	85	81
31	34	-----	822	1,790	-----	503	-----	443	-----	79	85	-----
TOTAL	2,088.8	6,851	12,291	21,332	18,989	39,341	30,988	22,340	8,502	4,170	3,569	2,860
MEAN	67.4	228	396	688	675	1,269	1,033	721	283	135	115	95.3
MAX	82	683	822	1,880	1,540	2,700	2,000	2,480	382	213	135	136
MIN	7.8	62	192	88	380	379	269	96	200	78	78	80
MEAN+	75.2	250	395	712	653	1,239	1,016	846	285	121	86.0	70.6
CFSM+	.14	.47	.74	1.34	1.23	2.33	1.91	1.59	.54	.23	.16	.13
IN+	.16	.53	.86	1.55	1.28	2.69	2.13	1.84	.60	.26	.19	.15

CAL YR 1973 TOTAL 173,641.8 MEAN 476 MAX 2,950 MIN 7.8 MEAN+ 484 CFSM+ .91 IN+ 12.38
WTR YR 1974 TOTAL 173,221.8 MEAN 475 MAX 2,700 MIN 7.8 MEAN+ 478 CFSM+ .90 IN+ 12.23

+ Adjusted for change in contents in Holloway Reservoir.

STREAMS TRIBUTARY TO LAKE HURON

04147990 Butternut Creek near Genesee, Mich.

LOCATION.--Lat 43°08'09", long 83°35'57", in NE¼ NE¼ sec.2, T.8 N., R.7 E., Genesee County, on right bank 10 ft (3 m) downstream from bridge on Frances Road, 2.3 mi (3.7 km) upstream from mouth, and 2.0 mi (3.2 km) northeast of Genesee.

DRAINAGE AREA.--34.5 mi² (89.4 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 730 ft (223 m) from topographic map (nearest 10 ft). Prior to June 11, 1970, nonrecording gage at same site and datum.

EXTREMES.--Maximum discharge, 533 ft³/s (15.1 m³/s) May 17 (gage height, 8.21 ft or 2.502 m); minimum, 3.3 ft³/s (0.093 m³/s) Sept. 22, 25, 26, 27; minimum gage height, 1.70 ft (0.518 m) Sept. 8, 9, 10.

Period of record: Maximum discharge, 533 ft³/s (15.1 m³/s) May 17, 1974 (gage height, 8.21 ft or 2.502 m); maximum gage height, 8.68 ft (2.646 m) Dec. 31, 1972; minimum discharge, 1.2 ft³/s (0.034 m³/s) Dec. 1, 1971, result of freezeup; minimum gage height, 1.56 ft (0.475 m) Aug. 8, 9, 1971.

REMARKS.--Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	6.4	22	40	65	70	52	19	19	9.0	4.3	3.8
2	3.9	6.3	16	35	58	90	149	17	16	9.3	5.8	4.0
3	4.0	6.5	14	28	50	130	68	16	15	10	5.9	4.4
4	4.0	5.8	14	24	45	190	309	18	14	8.9	5.6	4.1
5	4.0	5.3	21	22	38	360	113	17	13	8.6	5.3	4.0
6	3.9	5.0	17	20	33	174	83	22	12	7.8	4.8	3.9
7	3.9	4.8	13	18	30	122	85	23	13	7.2	4.6	3.8
8	3.9	4.8	12	17	28	144	87	22	15	7.1	6.3	3.7
9	3.9	4.7	11	16	26	254	58	24	15	5.9	5.8	3.6
10	3.9	4.6	11	15	24	126	50	22	15	5.2	5.1	3.7
11	4.0	4.6	10	14	23	84	44	22	14	4.9	4.9	3.7
12	4.1	4.7	9.7	13	22	68	51	38	13	4.7	4.8	4.0
13	4.7	4.7	9.6	12	21	55	58	36	11	4.6	4.7	4.8
14	5.4	4.6	9.5	11	20	47	47	40	11	5.5	4.6	4.4
15	5.2	8.8	9.5	11	19	43	44	51	12	8.0	4.4	4.1
16	4.9	11	9.5	10	19	42	38	141	13	5.9	4.4	4.0
17	4.5	8.3	9.5	10	19	42	34	434	12	5.3	4.7	3.8
18	4.4	6.9	9.5	9.5	19	41	31	214	13	5.2	4.4	3.8
19	4.1	6.1	9.5	9.0	19	43	29	140	14	4.9	4.2	3.7
20	4.6	5.6	10	12	19	38	27	100	14	4.8	4.2	3.6
21	4.4	8.8	10	130	23	37	25	70	12	4.6	4.1	3.5
22	4.3	9.8	11	146	50	36	24	53	11	4.9	3.9	3.5
23	4.3	7.9	11	172	100	37	24	45	9.8	5.3	3.9	3.5
24	4.4	22	13	128	90	32	22	38	9.0	5.0	3.9	3.5
25	4.4	27	24	99	80	39	21	32	8.5	4.9	3.8	3.4
26	4.3	17	73	96	70	27	20	27	8.1	5.2	3.8	3.4
27	4.3	13	138	328	65	26	19	24	7.3	4.9	3.9	3.4
28	5.2	52	83	174	65	26	18	23	6.4	4.6	3.9	4.3
29	6.4	52	56	108	-----	27	20	26	7.4	4.5	3.8	5.0
30	6.1	30	53	82	-----	44	20	24	11	4.4	3.7	4.9
31	5.9	-----	50	76	-----	56	-----	22	-----	4.3	3.8	-----
TOTAL	139.1	359.0	769.3	1,885.5	1,140	2,550	1,670	1,800	364.5	185.4	141.3	117.3
MEAN	4.49	12.0	24.8	60.8	40.7	82.3	55.7	58.1	12.2	5.98	4.56	3.91
MAX	6.4	52	138	328	100	360	309	434	19	10	6.3	5.0
MIN	3.8	4.6	9.5	9.0	19	26	18	16	6.4	4.3	3.7	3.4
CFSM	.13	.35	.72	1.76	1.18	2.39	1.61	1.68	.35	.17	.13	.11
IN.	.15	.39	.83	2.03	1.23	2.75	1.80	1.94	.39	.20	.15	.13
CAL YR 1973	TOTAL 10,309.4	MEAN 28.2	MAX 213	MIN 2.9	CFSM .82	IN 11.12						
WTR YR 1974	TOTAL 11,121.4	MEAN 30.5	MAX 434	MIN 3.4	CFSM .88	IN 11.99						

PEAK DISCHARGE (BASE, 120 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	1100	6.14	148	03-09	0100	6.79	302
01-23	0700	6.66	194	04-02	0600	6.21	231
01-27	0900	7.66	434	04-04	0600	7.80	458
02-23	--	--	120	04-07	2200	5.24	138
03-05	0600	7.75	450	05-17	0500	8.21	533

04148140 Kearsley Creek near Davison, Mich.

LOCATION.--Lat 43°02'01", long 83°34'53", in NE¼ sec.12, T.7 N., R.7 E., Genesee County, on right bank 10 ft (3 m) upstream from bridge on State Highway 21, 1.4 mi (2.3 km) downstream from Black Creek, and 3.3 mi (5.3 km) west of Davison.

DRAINAGE AREA.--99.6 mi² (258.0 km²).

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 760 ft (232 m) from topographic map.

AVERAGE DISCHARGE.--9 years, 66.1 ft³/s (1.872 m³/s), 9.01 in/yr (229 mm/yr).

EXTREMES.--Current year: Maximum discharge, 815 ft³/s (23.1 m³/s) May 17 (gage height, 10.29 ft or 3.136 m); minimum, 8.7 ft³/s (0.25 m³/s) July 31 (gage height, 3.05 ft or 0.930 m).

Period of record: Maximum discharge, 815 ft³/s (23.1 m³/s) May 17, 1974; maximum gage height, 10.29 ft (3.136 m) Feb. 2, 1968, May 17, 1974; minimum discharge, 2.7 ft³/s (0.076 m³/s) July 9, 1966; minimum gage height, 2.69 ft (0.820 m) Sept. 12, 1969.

REMARKS.--Records good except those for the winter period, which are fair. Some diurnal fluctuation caused by small dams, and occasional diversion for sprinkler irrigation above station.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	34	123	183	250	276	126	70	80	26	9.4	12
2	13	35	118	123	200	251	279	69	49	33	17	12
3	14	35	106	110	170	324	244	67	45	35	14	16
4	14	32	92	100	140	410	478	62	48	41	14	15
5	15	31	73	90	120	647	470	59	48	40	17	16
6	15	30	67	80	110	506	469	62	47	38	14	16
7	15	27	77	70	100	520	403	62	46	41	12	14
8	14	24	80	65	95	535	378	65	54	34	25	13
9	14	23	74	60	90	532	312	81	57	27	27	12
10	13	22	44	56	90	451	273	84	80	33	18	12
11	14	21	33	54	85	350	239	86	83	30	20	11
12	14	20	35	52	80	320	200	129	66	24	19	16
13	17	20	40	50	75	269	239	118	56	21	17	13
14	18	20	48	50	70	233	217	135	54	22	15	12
15	17	40	41	50	70	200	211	203	109	25	14	12
16	18	36	39	50	70	190	168	308	35	21	13	12
17	20	47	33	52	65	170	138	743	37	18	14	14
18	20	66	34	52	65	152	118	610	42	17	13	16
19	18	68	35	55	70	149	111	600	56	16	12	12
20	18	57	36	90	75	121	104	500	65	14	12	12
21	17	44	39	150	90	119	106	432	43	13	11	13
22	17	34	41	340	190	116	105	345	39	14	11	13
23	17	36	43	400	330	109	99	271	39	15	11	12
24	17	83	45	420	310	99	88	218	37	14	11	12
25	17	104	65	434	290	83	100	158	33	15	11	12
26	17	92	163	371	280	77	95	133	32	15	11	11
27	17	88	268	434	275	74	85	114	30	13	12	11
28	20	138	236	364	276	74	80	69	26	12	12	14
29	28	146	218	278	-----	82	79	114	24	12	12	20
30	24	121	260	294	-----	102	75	118	32	10	11	18
31	28	-----	218	330	-----	123	-----	105	-----	10	13	-----
TOTAL	532	1,574	2,824	5,307	4,131	7,664	6,089	6,190	1,492	699	442.4	404
MEAN	17.2	52.5	91.1	171	148	247	203	200	49.7	22.5	14.3	13.5
MAX	28	146	268	434	330	647	478	743	109	41	27	20
MIN	12	20	33	50	65	74	75	59	24	10	9.4	11
CFSM	.17	.53	.91	1.72	1.49	2.48	2.04	2.01	.50	.23	.14	.14
IN.	.20	.59	1.05	1.98	1.54	2.86	2.27	2.31	.56	.26	.17	.15

CAL YR 1973 TOTAL 34,351.9 MEAN 94.1 MAX 585 MIN 6.6 CFSM .94 IN 12.83
WTR YR 1974 TOTAL 37,348.4 MEAN 102 MAX 743 MIN 9.4 CFSM 1.02 IN 13.95

PEAK DISCHARGE (BASE, 250 FT³/S)

DATE	TIME	G.H.	DISCHARGE
12-27	1600	7.21	287
01-23	--	--	450
01-27	1500	8.49	461
02-22	--	--	400
03-05	0600	9.94	724
04-04	1200	8.91	516
05-17	1050	10.29	815

STREAMS TRIBUTARY TO LAKE HURON

04148160 Gilkey Creek near Flint, Mich.

LOCATION.--Lat 43°01'27", long 83°37'32", in NE¼ sec.10, T.7 N., R.7 E., Genesee County, on right bank 25 ft (8 m) downstream from bridge on extension of Arapaho Street, 5.1 mi (8.2 km) upstream from mouth, and 3.5 mi (5.6 km) east of Flint.

DRAINAGE AREA.--6.29 mi² (16.29 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 750 ft (229 m) from topographic map (nearest 10 ft).

EXTREMES.--Current year: Maximum discharge, 231 ft³/s (6.54 m³/s) May 17 (gage height, 6.99 ft or 2.131 m); minimum daily, 0.01 ft³/s (<0.001 m³/s) Aug. 1.

Period of record: Maximum discharge, 272 ft³/s (7.70 m³/s) Dec. 31, 1972 (gage height, 7.66 ft or 2.335 m); no flow on many days during 1970 and 1973.

REMARKS.--Records poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	1.1	2.0	3.1	6.0	23	13	1.7	.78	.48	.01	.13
2	.16	.39	1.5	2.4	4.5	15	53	1.6	.65	1.7	1.6	.29
3	.13	1.3	1.3	2.1	4.0	28	20	1.8	.59	.97	.25	.44
4	.14	.24	2.3	1.8	3.5	56	42	1.7	.53	.84	.09	.11
5	.13	.10	3.1	1.6	3.0	144	17	1.7	.46	.77	.11	.05
6	.08	.07	1.8	1.5	2.8	32	11	2.7	.46	.23	.09	.02
7	.05	.02	1.4	1.4	2.6	18	20	2.4	.71	.16	.04	.02
8	.04	.02	1.1	1.3	2.4	44	20	2.1	1.4	.14	7.5	.02
9	.03	.04	1.1	1.2	2.3	48	9.4	2.6	1.1	.13	4.9	.02
10	.03	.04	1.1	1.2	2.2	22	6.8	2.1	2.4	1.6	.48	.02
11	.04	.02	1.0	1.1	2.0	13	5.6	4.8	.53	1.5	.20	.02
12	.05	.02	.85	1.1	1.9	9.2	12	16	.42	.30	.21	1.1
13	.65	.02	.80	1.1	1.8	6.4	12	5.9	.35	.18	.14	.16
14	1.3	.08	.75	1.1	1.8	5.4	7.1	7.3	.35	1.7	.11	.07
15	.17	7.0	.75	1.1	1.7	5.2	5.2	27	.53	1.6	.10	.02
16	.11	2.6	.75	1.1	1.7	6.8	4.1	76	.46	.30	.17	.02
17	.07	.46	.70	1.1	1.7	6.5	3.6	165	.35	.16	.17	.04
18	.08	.17	.70	1.1	1.7	5.4	3.4	28	.78	.14	.11	.13
19	.07	.12	.70	1.1	2.3	5.5	3.8	12	1.1	.12	.08	.08
20	.05	.11	.75	10	3.0	4.4	3.2	6.5	.59	.10	.07	.05
21	.05	2.9	.80	103	5.0	4.7	3.0	4.4	.39	.08	.07	.04
22	.07	1.3	.90	41	102	4.6	2.9	3.4	.31	.17	.05	.02
23	.07	.39	1.0	56	40	4.4	2.8	2.6	.24	.26	.07	.02
24	.05	20	1.3	22	12	3.7	2.4	1.9	.25	.13	.05	.02
25	.04	6.8	8.6	15	7.0	3.2	2.2	1.5	.22	.10	.05	.04
26	.04	2.0	33	16	4.0	3.1	2.1	1.3	.56	.09	.06	.02
27	.05	1.2	70	50	5.0	2.9	2.0	1.1	.69	.08	.29	.04
28	.46	24	25	23	19	2.9	1.9	1.5	.24	.05	.15	.41
29	5.4	9.8	12	14	-----	3.3	2.4	1.7	.19	.04	.06	1.2
30	1.3	3.4	6.8	10	-----	14	2.0	1.1	2.0	.02	.03	.25
31	.31	-----	4.3	9.6	-----	13	-----	.93	-----	.02	.21	-----
TOTAL	11.27	85.71	188.15	397.1	246.9	557.6	295.9	390.33	19.63	14.16	17.52	4.87
MEAN	.36	2.86	6.07	12.8	8.82	18.0	9.86	12.6	.65	.46	.57	.16
MAX	5.4	24	70	103	102	144	53	165	2.4	1.7	7.5	1.2
MIN	.03	.02	.70	1.1	1.7	2.9	1.9	.93	.19	.02	.01	.02
CFSM	.06	.45	.97	2.04	1.40	2.86	1.57	2.00	.10	.07	.09	.03
IN.	.07	.51	1.11	2.35	1.46	3.30	1.75	2.31	.12	.08	.10	.03
CAL YR 1973	TOTAL 1,946.44	MEAN 5.33	MAX 75	MIN 0	CFSM .85	IN 11.51						
WTR YR 1974	TOTAL 2,229.14	MEAN 6.11	MAX 165	MIN .01	CFSM .97	IN 13.18						

PEAK DISCHARGE (BASE, 80 FT³/S REVISED)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	0800	4.24	101	03-08	1900	3.86	90
01-21	1200	5.50	161	04-02	0400	3.83	89
01-23	0300	3.63	81	04-04	0400	4.46	81
02-22	1900	6.06	188	05-17	0500	6.99	231
03-05	0400	6.74	223				

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LOCATION.--Lat 42°49'39", long 83°37'42", in SW¼ sec.15, T.5 N., R.7 E., Oakland County, on right bank 25 ft (8 m) downstream from bridge on Elliott Road and 2.4 mi (3.9 km) north of Holly.

EXTREMES.--Current year: Maximum discharge, 105 ft³/s (2.97 m³/s) May 17 (gage height, 3.89 ft or 1.186 m); minimum, 0.69 ft³/s (0.020 m³/s) Aug. 13, 14; minimum gage height, 1.63 ft (0.497 m) Aug. 14.

Period of record: Maximum discharge, 105 ft³/s (2.97 m³/s) May 17, 1974 (gage height, 3.89 ft or 1.186 m); minimum, 0.10 ft³/s (0.003 m³/s) on many days in 1963, 1964, and 1965.

REVISIONS.--WSP 2111: Drainage area.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	6.7	20	17	25	34	20	10	12	4.9	1.1	1.6
2	1.3	6.5	17	15	22	34	32	9.3	11	5.1	1.8	1.8
3	1.3	7.1	14	12	19	39	34	8.7	9.9	5.4	1.9	2.4
4	1.5	7.2	14	11	17	47	71	8.5	8.9	5.1	1.7	2.3
5	1.7	6.7	15	10	16	67	66	8.2	7.9	4.9	1.7	2.3
6	1.5	6.0	14	8.6	15	67	63	9.5	7.3	4.4	1.5	2.2
7	1.4	5.4	12	8.1	14	62	59	9.8	6.9	4.1	1.2	2.1
8	1.4	4.9	11	8.0	13	63	55	9.8	9.7	3.9	1.2	2.1
9	1.3	4.6	10	7.5	12	70	46	11	13	3.6	.99	2.0
10	1.4	4.3	9.8	7.5	11	66	37	11	13	3.2	.95	2.1
11	1.3	4.0	9.0	7.0	11	57	30	11	11	3.0	.90	2.0
12	1.4	4.0	8.4	7.0	10	48	28	17	9.5	2.5	.85	2.4
13	1.9	4.0	8.3	7.0	10	39	28	16	8.6	2.1	.80	2.5
14	2.3	4.1	8.3	7.0	10	31	25	15	8.2	2.0	.80	2.4
15	2.8	13	7.8	7.0	9.5	27	22	19	7.6	2.0	.80	2.1
16	2.3	20	7.3	7.0	9.0	25	19	35	7.8	1.7	.78	2.0
17	2.0	17	7.0	7.0	8.9	23	17	95	7.5	1.5	.88	1.9
18	1.9	14	6.5	6.9	9.0	21	16	96	7.7	1.4	.86	1.8
19	1.9	12	6.0	6.8	9.0	21	18	85	8.6	1.2	.92	1.8
20	1.9	10	6.0	10	9.5	19	17	72	9.1	1.2	1.2	1.9
21	2.0	12	6.0	37	10	17	15	56	8.5	1.1	1.1	1.8
22	1.9	14	6.0	40	22	16	14	41	7.7	1.0	1.1	1.7
23	1.9	13	6.5	48	38	16	14	30	7.1	1.1	1.1	1.5
24	1.9	15	7.0	45	35	14	13	24	6.6	1.1	1.3	1.4
25	1.7	19	9.6	40	32	12	12	19	6.1	1.1	1.3	1.4
26	1.7	18	16	35	26	11	11	14	5.8	1.1	1.3	1.4
27	1.8	16	28	44	23	11	11	12	5.3	1.2	1.5	1.4
28	2.4	23	28	45	26	10	10	12	5.0	1.3	1.7	1.7
29	5.5	28	26	41	-----	11	11	14	4.6	1.2	1.7	2.5
30	7.2	25	23	34	-----	14	11	15	5.0	1.1	1.6	3.2
31	6.8	-----	20	30	-----	18	-----	14	-----	1.1	1.6	-----
TOTAL	68.5	344.5	387.5	616.4	471.9	1,010	825	807.8	246.9	75.6	38.13	59.7
MEAN	2.21	11.5	12.5	19.9	16.9	32.6	27.5	26.1	8.23	2.44	1.23	1.99
MAX	7.2	28	28	48	38	70	71	96	13	5.4	1.9	3.2
MIN	1.2	4.0	6.0	6.8	8.9	10	10	8.2	4.6	1.0	.78	1.4
CFSM	.18	.96	1.04	1.66	1.41	2.72	2.29	2.18	.69	.20	.10	.17
IN.	.21	1.07	1.20	1.91	1.46	3.13	2.56	2.50	.77	.23	.12	.19
CAL YR 1973	TOTAL	4,440.72	MEAN	12.2	MAX	83	MIN	.61	CFSM	1.02	IN	13.77
WTR YR 1974	TOTAL	4,951.93	MEAN	13.6	MAX	96	MIN	.78	CFSM	1.13	IN	15.35

STREAMS TRIBUTARY TO LAKE HURON

04148300 Swartz Creek at Flint, Mich.

LOCATION.--Lat 42°59'16", long 83°43'57", in NW¼ sec.26, T.7 N., R.6 E., Genesee County, on right bank 6 ft (2 m) downstream from bridge on south Ballenger Highway, in Flint, 3.6 mi (5.8 km) upstream from mouth.

DRAINAGE AREA.--115 mi² (298 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 730 ft (222 m) from topographic map (nearest 10 ft). Prior to Sept. 4, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 1,900 ft³/s (53.8 m³/s) May 17 (gage height, 7.99 ft or 2.435 m); minimum, 1.5 ft³/s (0.042 m³/s) Aug. 23, 24, 25, 26, 27; minimum gage height, 1.60 ft (0.488 m) Oct. 1, 2, 6, 8.
Period of record: Maximum discharge, 1,900 ft³/s (53.8 m³/s) May 17, 1974 (gage height, 7.99 ft or 2.435 m); maximum gage height, 8.40 ft (2.560 m) Feb. 20, 1971 (backwater from ice); minimum discharge, 0.98 ft³/s (0.028 m³/s) Sept. 15, 1973; minimum gage height, 1.16 ft (0.354 m) Aug. 19, 1971.

REMARKS.--Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	15	100	164	201	353	225	62	98	26	2.6	2.6
2	6.5	19	79	142	166	308	550	58	90	33	19	7.7
3	5.3	15	73	120	150	452	340	57	82	29	8.0	8.8
4	3.6	12	85	110	130	624	635	54	76	26	8.4	4.6
5	3.4	11	115	100	120	1,230	423	52	70	23	4.4	3.6
6	3.0	10	90	90	110	588	313	61	67	22	4.0	3.0
7	3.2	10	73	80	100	423	342	56	62	20	3.4	3.2
8	3.2	10	64	75	95	505	387	55	63	19	14	2.9
9	3.6	10	60	70	90	672	310	55	57	18	7.4	2.9
10	3.6	10	59	65	85	524	267	53	67	16	5.6	2.7
11	3.6	9.6	54	60	80	399	238	61	55	15	4.0	2.4
12	4.2	9.6	51	55	75	342	247	95	50	14	3.8	7.1
13	14	9.6	47	50	70	297	262	94	47	13	3.4	5.3
14	7.4	10	45	50	65	262	217	110	46	15	2.9	3.6
15	5.9	104	43	50	65	233	183	313	47	12	2.7	3.4
16	4.8	64	40	45	64	220	156	669	45	9.6	6.8	2.9
17	4.4	31	38	45	60	196	137	1,700	44	8.0	6.5	2.7
18	4.2	23	36	44	59	169	131	930	43	8.0	4.4	2.7
19	4.2	21	34	42	74	155	134	552	43	7.4	2.9	2.9
20	4.0	21	33	195	83	134	118	438	41	6.2	2.4	2.9
21	5.9	42	33	1,010	97	126	107	383	39	5.3	2.3	3.2
22	4.6	41	33	678	520	118	100	339	36	10	1.8	3.0
23	4.4	33	33	707	542	108	94	297	33	9.6	1.7	2.7
24	4.2	187	35	475	367	94	84	251	31	6.2	2.0	2.6
25	4.0	212	78	383	249	92	78	215	30	5.3	1.7	2.7
26	4.2	101	407	356	191	78	74	185	28	5.0	1.8	2.7
27	4.6	67	633	649	174	72	71	163	27	4.6	11	2.9
28	25	278	554	486	251	69	69	150	27	3.6	4.2	10
29	29	302	371	369	-----	71	71	139	26	3.4	3.0	12
30	16	158	243	305	-----	164	67	124	33	3.0	2.7	4.6
31	14	-----	179	284	-----	206	-----	110	-----	2.7	5.3	-----
TOTAL	211.0	1,845.8	3,818	7,354	4,333	9,284	6,430	7,881	1,503	398.9	154.1	124.3
MEAN	6.81	61.5	123	237	155	299	214	254	50.1	12.9	4.97	4.14
MAX	29	302	633	1,010	542	1,230	635	1,700	98	33	19	12
MIN	3.0	9.6	33	42	59	69	67	52	26	2.7	1.7	2.4
CFSM	.06	.53	1.07	2.06	1.35	2.60	1.86	2.21	.44	.11	.04	.04
IN.	.07	.60	1.24	2.38	1.40	3.00	2.08	2.55	.49	.13	.05	.04
CAL YR 1973	TOTAL 38,617.6	MEAN 106	MAX 742	MIN 1.2	CFSM .92	IN 12.49						
WTR YR 1974	TOTAL 43,337.1	MEAN 119	MAX 1,700	MIN 1.7	CFSM 1.03	IN 14.02						

PEAK DISCHARGE (BASE, 450 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	1200	6.41	683	03-05	0400	7.60	1,520
01-21	1300	7.23	1,190	03-09	0600	6.47	701
01-23	0400	6.69	795	04-02	unknown	unknown	about 600
01-27	1000	6.52	718	04-04	0700	6.35	668
02-22	1600	7.08	1,070	05-17	1300	7.99	1,900

04148440 Thread Creek near Flint, Mich.

LOCATION.--Lat 42°58'30", long 83°38'09", in SE¼ SE¼ sec.28, T.7 N., R.7 E., Genesee County, on left bank 20 ft (6 m) downstream from bridge on Bristol Road, 6.0 mi (9.7 km) upstream from mouth, and 4.0 mi (6.4 km) southeast of Flint.

DRAINAGE AREA.--55.6 mi² (144.0 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 770 ft (235 m) from topographic map (nearest 10 ft). Prior to May 13, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 736 ft³/s (20.8 m³/s) May 17 (gage height, 6.48 ft or 1.975 m); minimum, 0.98 ft³/s (0.028 m³/s) Aug. 30 (gage height, 0.71 ft or 0.216 m).

Period of record: Maximum discharge, 736 ft³/s (20.8 m³/s) May 17, 1974 (gage height, 6.48 ft or 1.975 m); no flow Aug. 7, 8, 10, 1971; minimum gage height, 0.45 ft (0.137 m) Aug. 8, 10, 1971.

REMARKS.--Records fair except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	16	80	70	82	130	82	36	38	12	2.1	2.1
2	4.4	13	66	60	75	150	176	33	35	24	8.3	2.8
3	5.5	15	56	55	70	175	156	33	32	19	5.7	8.0
4	5.3	11	54	50	65	203	298	30	28	14	5.0	2.9
5	5.3	11	48	45	60	349	328	30	24	13	4.2	3.4
6	5.2	9.9	43	40	55	290	214	34	20	11	4.0	3.0
7	5.3	9.4	40	35	50	202	183	32	22	10	3.5	2.4
8	5.2	8.5	37	35	48	198	172	35	31	8.8	8.2	2.5
9	4.6	7.8	35	32	45	254	149	38	28	6.5	5.7	2.2
10	4.0	7.1	33	30	43	228	125	36	32	6.5	4.1	2.0
11	3.8	6.6	30	30	40	180	107	47	33	8.4	4.2	2.2
12	3.5	6.5	28	29	38	141	110	69	30	6.3	4.6	5.0
13	5.5	6.5	27	29	37	115	110	60	24	4.9	3.1	3.8
14	8.2	6.6	26	28	36	100	103	91	20	4.4	2.3	3.2
15	4.6	7.1	25	28	36	88	89	116	20	5.2	1.6	3.2
16	4.6	32	24	28	36	89	78	255	19	3.8	2.4	3.2
17	4.4	32	23	28	36	90	67	660	18	3.6	3.5	3.1
18	4.2	37	23	29	36	79	57	544	20	3.2	2.6	3.4
19	4.4	36	23	32	37	70	58	343	26	3.1	2.5	2.8
20	4.4	30	23	40	39	62	50	222	24	2.0	2.1	4.2
21	4.2	46	24	120	45	61	48	164	23	2.5	2.9	4.4
22	4.9	31	25	200	70	58	48	132	20	3.1	4.1	2.3
23	4.6	31	27	190	180	56	44	113	18	5.5	5.8	2.8
24	4.6	101	30	170	140	50	43	88	16	4.0	6.6	3.5
25	4.9	75	40	140	120	49	42	70	14	3.4	6.0	8.7
26	4.7	58	80	130	110	44	40	59	13	3.1	5.3	8.5
27	4.9	56	160	189	100	42	38	52	11	3.0	7.4	6.5
28	9.5	126	172	176	110	38	36	48	10	2.8	5.2	6.6
29	21	96	160	152	-----	38	38	50	9.4	2.4	3.1	8.5
30	12	92	120	126	-----	63	36	46	14	2.1	1.6	6.5
31	11	-----	90	115	-----	66	-----	42	-----	2.0	2.1	-----
TOTAL	182.9	1,084.9	1,672	2,461	1,839	3,758	3,125	3,608	672.4	203.6	129.8	123.7
MEAN	5.90	36.2	53.9	79.4	65.7	121	104	116	22.4	6.57	4.19	4.12
MAX	21	126	172	200	180	349	328	660	38	24	8.3	8.7
MIN	3.5	6.5	23	28	36	38	36	30	9.4	2.0	1.6	2.0
CFSM	.11	.65	.97	1.43	1.18	2.18	1.87	2.09	.40	.12	.08	.07
IN.	.12	.73	1.12	1.65	1.23	2.51	2.09	2.41	.45	.14	.09	.08

CAL YR 1973 TOTAL 17,327.5 MEAN 47.5 MAX 300 MIN 1.0 CFSM .85 IN 11.59
WTR YR 1974 TOTAL 18,860.3 MEAN 51.7 MAX 660 MIN 1.6 CFSM .93 IN 12.62

PEAK DISCHARGE (BASE, 200 FT³/S)

NOTE.--No gage-height record Dec. 18 to Jan. 24.

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	--	--	220	03-09	2000	5.13	268
01-22	--	--	220	04-02	0600	4.85	218
01-27	0800	4.80	210	04-04	2400	5.57	391
02-22	--	--	200	05-17	1400	6.48	736
03-05	0200	5.68	428				

STREAMS TRIBUTARY TO LAKE HURON

04148500 Flint River near Flint, Mich.

LOCATION.--Lat 43°02'20", long 83°46'10", in SW¼ sec.4, T.7 N., R.6 E., Genesee County, on left bank on grounds of sewage treatment plant, 1.2 mi (1.9 km) upstream from Pirnie Creek, 1.8 mi (2.9 km) downstream from Flint, and 5.0 mi (8.0 km) downstream from Swartz Creek.

DRAINAGE AREA.--954 mi² (2,471 km²).

PERIOD OF RECORD.--September 1903 to March 1904 (gage heights only), August 1932 to current year. Gage-height records for flood seasons collected in this vicinity 1911-32, are contained in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder. Datum of gage is 678.80 ft (206.898 m) above mean sea level (levels by U.S. Weather Bureau and city of Flint).

AVERAGE DISCHARGE.--42 years, 555 ft³/s (15.72 m³/s), 7.90 in/yr (201 mm/yr); adjusted for storage since 1954.

EXTREMES.--Current year: Maximum discharge, 7,130 ft³/s (202 m³/s) May 17 (gage height, 12.76 ft or 3.889 m); minimum, 102 ft³/s (2.89 m³/s) Oct. 2 (gage height, 2.65 ft or 0.808 m).

Period of record: Maximum discharge, 14,900 ft³/s (422 m³/s) Apr. 6, 1947 (gage height, 16.35 ft or 4.983 m); minimum, 9.0 ft³/s (0.25 m³/s) Aug. 7, 1934.

REMARKS.--Records good. Some regulation by reservoirs above station (see sta 04147000). Occasional diversion for industrial use. Since Dec. 17, 1967, flow contains up to 50 ft³/s (1.42 m³/s) as sewage effluent which originates outside the basin.

REVISIONS (WATER YEARS).--WSP 954: 1941. WSP 1337: 1933-34 (M), 1935-37. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	258	523	1,050	1,390	2,840	2,420	1,380	540	453	485	193	177
2	133	521	1,010	1,180	2,280	2,340	2,420	504	419	483	444	194
3	203	480	977	990	1,820	2,620	2,120	504	457	468	256	259
4	182	426	972	829	1,640	3,460	3,300	346	368	398	252	195
5	176	415	732	698	1,430	5,840	3,490	315	372	507	339	211
6	174	403	701	643	1,330	4,580	3,030	468	379	437	291	239
7	173	389	726	613	1,270	4,110	3,250	388	377	366	284	237
8	176	373	767	539	1,000	4,720	3,710	322	429	420	612	222
9	184	357	733	532	816	5,800	3,510	294	400	265	429	232
10	223	331	726	537	855	5,280	3,210	424	602	305	361	242
11	160	293	623	381	836	4,540	2,930	364	632	270	297	237
12	161	261	576	286	842	3,730	2,750	712	486	251	304	271
13	184	252	580	268	870	3,230	2,540	696	478	233	300	238
14	233	280	561	272	734	2,870	2,330	750	451	294	287	189
15	204	682	519	292	711	2,620	2,150	1,280	626	332	276	165
16	188	495	496	350	696	2,500	2,030	2,590	523	259	316	178
17	175	452	487	385	654	2,220	1,880	6,700	596	249	310	179
18	173	432	451	378	620	1,970	1,830	5,140	669	240	262	200
19	173	427	380	366	701	1,870	1,630	4,210	785	260	272	185
20	170	479	385	790	833	1,840	1,520	3,950	742	248	273	218
21	165	706	401	2,800	771	965	1,180	3,620	663	225	266	179
22	164	642	409	2,900	2,120	1,280	1,100	3,030	614	251	265	170
23	168	505	425	3,270	2,770	1,370	1,110	2,370	531	309	270	166
24	169	945	496	2,750	2,040	1,300	1,060	1,860	539	257	250	170
25	168	873	730	2,470	1,800	1,240	940	1,590	492	249	205	175
26	168	750	1,360	2,510	1,750	1,170	739	1,320	404	247	196	174
27	168	904	2,300	3,530	1,780	1,000	624	1,230	402	217	251	173
28	238	1,480	2,230	3,530	1,920	811	669	1,280	383	194	209	263
29	558	1,360	1,800	3,090	-----	890	822	997	354	194	229	287
30	543	1,180	1,640	2,970	-----	1,110	707	650	525	193	187	215
31	496	-----	1,520	3,020	-----	1,280	-----	558	-----	193	210	-----
TOTAL	6,708	17,616	26,763	44,559	37,729	80,976	59,961	49,002	15,151	9,299	8,896	6,240
MEAN	216	587	863	1,437	1,347	2,612	1,999	1,581	505	300	287	208
MAX	558	1,480	2,300	3,530	2,840	5,840	3,710	6,700	785	507	612	287
MIN	133	252	380	268	620	811	624	294	354	193	187	165
MEAN+	224	609	862	1,462	1,326	2,582	1,982	1,706	506	287	258	183
CFSM+	.23	.64	.90	1.53	1.39	2.71	2.08	1.79	.53	.30	.27	.19
IN+	.27	.71	1.04	1.77	1.45	3.12	2.32	2.06	.59	.35	.31	.21

CAL YR 1973 TOTAL 356,657 MEAN 977 MAX 5,100 MIN 103 MEAN+ 986 CFSM+ 1.03 IN+ 14.03
WTR YR 1974 TOTAL 362,900 MEAN 994 MAX 6,700 MIN 133 MEAN+ 998 CFSM+ 1.05 IN+ 14.20

+ Adjusted for change in contents in Holloway Reservoir.

STREAMS TRIBUTARY TO LAKE HURON

04148720 Brent Run near Montrose, Mich.

LOCATION.--Lat 43°10'12", long 83°50'03", in SE¼ NE¼ sec.23, T.9 N., R.5 E., Genesee County, on right bank 10 ft (3 m) downstream from bridge on Morrish Road, 0.8 mi (1.3 km) upstream from Central-Stadler Drain, 3.0 mi (4.8 km) upstream from mouth, and 3.1 mi (5.0 km) east of Montrose.

DRAINAGE AREA.--18.3 mi² (47.4 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 655 ft (199.6 m) from topographic map (nearest 5 ft). Prior to Aug. 26, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 582 cfs (16.5 m³/s) May 17 (gage height, 5.92 ft or 1.804 m); maximum gage height, 6.03 ft (1.838 m) Jan. 21 (backwater from ice); minimum discharge, 3.1 cfs (0.088 m³/s) Aug. 1; minimum gage height, 1.24 ft (0.378 m) Oct. 2. Period of record: Maximum discharge, 730 cfs (20.7 m³/s) Dec. 31, 1972; maximum gage height, 7.08 ft (2.158 m) Mar. 15, 1971 (backwater from ice); minimum discharge, 2.1 cfs (0.059 m³/s) Sept. 5, 1973; minimum gage height, 1.01 ft (0.308 m) Aug. 9, 17, 1971.

REMARKS.--Records good except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	11	7.7	13	12	127	21	8.8	8.1	17	3.5	6.5
2	3.5	11	6.0	11	11	53	64	8.3	7.5	6.4	4.9	4.5
3	5.0	12	5.2	9.0	10	43	55	8.8	6.8	13	15	6.3
4	5.1	8.8	5.1	8.5	9.5	62	179	11	6.5	6.3	7.7	6.0
5	4.5	6.0	12	8.0	9.0	176	107	9.1	6.9	6.8	16	5.0
6	4.2	5.2	7.9	7.5	8.5	74	31	12	9.0	5.1	7.5	4.8
7	4.2	5.1	6.0	7.0	8.5	23	22	13	9.4	4.2	4.6	4.6
8	4.0	5.5	5.3	7.0	8.5	22	48	10	9.3	3.8	5.5	4.6
9	3.7	5.7	4.9	6.5	8.0	97	20	12	9.0	3.6	26	4.5
10	3.7	5.5	4.8	6.5	8.0	43	14	11	6.7	4.0	9.2	3.7
11	4.2	5.6	4.7	6.5	8.0	18	12	10	8.5	4.0	5.6	4.6
12	4.5	5.5	5.0	6.5	8.0	12	13	23	7.0	3.8	4.5	4.8
13	5.3	5.3	5.2	6.5	8.0	11	25	16	6.4	3.7	4.1	7.4
14	16	4.8	5.2	6.5	8.0	9.2	14	16	7.0	3.7	4.9	5.9
15	7.7	10	5.2	6.5	8.0	9.0	14	23	6.8	9.6	4.2	4.6
16	4.6	27	5.2	7.0	8.5	9.4	11	41	9.3	5.9	4.9	4.1
17	4.4	11	5.2	7.0	8.5	12	10	402	6.6	4.4	5.8	3.7
18	5.0	6.9	5.2	8.0	9.0	9.7	9.7	128	7.0	4.2	4.7	5.0
19	5.4	5.8	5.4	9.0	12	9.4	9.4	29	11	4.3	3.9	5.1
20	4.9	5.2	5.6	15	20	9.7	9.0	18	9.7	4.2	3.5	4.4
21	5.1	6.5	5.8	150	40	9.7	8.4	14	7.1	3.9	3.8	5.0
22	4.8	21	6.0	130	100	11	8.4	12	6.3	3.8	4.0	4.5
23	4.5	9.4	6.5	105	120	10	8.6	12	5.7	5.4	4.1	4.2
24	4.6	11	8.0	90	80	9.7	8.6	10	5.3	5.4	4.3	3.6
25	5.1	64	11	24	56	9.7	8.4	9.7	5.4	3.9	4.4	3.8
26	5.2	15	45	20	40	7.1	8.4	8.9	5.5	4.1	4.4	4.2
27	5.2	7.5	110	81	35	7.3	8.0	8.2	5.4	4.0	4.0	4.2
28	5.9	16	110	91	57	7.3	7.9	8.1	5.4	3.8	5.2	4.9
29	23	85	43	22	-----	7.3	8.1	12	5.0	3.5	4.9	8.0
30	18	14	23	13	-----	21	9.8	10	6.8	3.6	4.8	9.1
31	9.0	-----	20	12	-----	51	-----	8.8	-----	3.4	5.0	-----
TOTAL	194.1	412.3	505.1	900.5	719.0	980.5	772.7	923.7	216.4	162.8	194.9	151.6
MEAN	6.26	13.7	16.3	29.0	25.7	31.6	25.8	29.8	7.21	5.25	6.29	5.05
MAX	23	85	110	150	120	176	179	402	11	17	26	9.1
MIN	3.5	4.8	4.7	6.5	8.0	7.1	7.9	8.1	5.0	3.4	3.5	3.6
CFSM	.34	.75	.89	1.58	1.40	1.73	1.41	1.63	.39	.29	.34	.28
IN.	.39	.84	1.03	1.83	1.46	1.99	1.57	1.88	.44	.33	.40	.31

CAL YR 1973 TOTAL 6,337.6 MEAN 17.4 MAX 245 MIN 2.7 CFSM .95 IN 12.88
WTR YR 1974 TOTAL 6,133.6 MEAN 16.8 MAX 402 MIN 3.4 CFSM .92 IN 12.47

PEAK DISCHARGE (BASE, 150 FT³/S, REVISED)

DATE	TIME	G.H.	DISCHARGE
12-28	--	--	170
01-21	--	--	230
01-27	2200	3.53	183
02-23	--	--	190
03-01	1430	3.27	155
03-05	1600	4.05	253
04-04	1700	5.03	409
05-17	0700	5.92	582

STREAMS TRIBUTARY TO LAKE HURON

04149000 Flint River near Fosters, Mich.

LOCATION.--Lat 43°18'30", long 83°57'13", in SE¼ SE¼ sec.35, T.11 N., R.4 E., Saginaw County, on left bank 20 ft (6 m) downstream from bridge on State Highway 13, 2 mi (3 km) west of Fosters and 6.5 mi (10.5 km) downstream from Silver Creek. Records include flow of Birch Run.

DRAINAGE AREA.--1,189 mi² (3,080 km²), includes that of Birch Run above State Highway 13.

PERIOD OF RECORD.--October 1939 to current year. Monthly discharge only for some periods, published in WSP 1307. Gage-height records for flood seasons collected in this vicinity 1910-20, 1922-27 are contained in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder. Altitude of gage is 600 ft (183 m) from topographic map. Prior to Oct. 1, 1969, nonrecording gage at site 2.2 mi (3.5 km) upstream at datum 582.22 ft (177.461 m) above mean sea level.

AVERAGE DISCHARGE.--35 years, 700 ft³/s (19.82 m³/s), 7.99 in/yr (203 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,500 ft³/s (184 m³/s) May 17 (gage height, 15.44 ft or 4.706 m); maximum gage height, 16.12 ft (4.913 m) Jan. 22, backwater from ice; minimum discharge, 110 ft³/s (3.12 m³/s) Oct. 12 (gage height, 1.94 ft or 0.591 m). Period of record: Maximum discharge, 19,000 ft³/s (538 m³/s) Apr. 7, 1947 (including flow bypassing gage); maximum gage height, 18.6 ft (5.67 m) Feb. 2, 1968, site and datum then in use; minimum discharge observed, 27 ft³/s (0.76 m³/s) Aug. 6, 1941. Flood of March 1904 reached a stage of 18.4 ft (5.61 m) from U.S. Weather Bureau data, site and datum then in use.

REMARKS.--Records good except those for the winter period, 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. WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	232	545	1,160	1,500	3,120	2,930	1,600	727	829	585	186	209
2	226	530	1,050	1,300	2,600	2,780	2,410	658	700	465	211	196
3	151	565	982	1,200	2,190	2,920	2,710	658	676	548	438	211
4	228	510	991	1,000	1,830	3,900	3,180	588	688	472	262	254
5	194	450	970	900	1,440	5,850	4,150	492	595	490	262	205
6	192	428	793	800	1,300	6,050	3,600	572	538	560	318	213
7	192	412	763	700	1,200	5,100	3,290	615	588	415	266	232
8	190	390	772	700	1,100	4,910	3,800	558	610	425	279	230
9	194	388	769	650	1,000	5,930	3,840	495	610	400	612	220
10	213	368	742	650	1,000	5,710	3,570	535	628	335	455	226
11	219	338	739	500	1,000	4,900	3,250	565	829	345	338	232
12	144	306	600	370	1,000	4,140	3,040	748	739	306	279	238
13	183	279	580	320	1,000	3,610	2,950	913	635	285	281	272
14	274	268	560	320	900	3,170	2,700	892	590	274	283	246
15	248	410	540	350	900	2,860	2,450	1,290	575	350	262	200
16	211	739	520	400	850	2,680	2,260	1,720	608	370	246	191
17	198	532	500	450	800	2,500	2,080	5,530	558	292	313	192
18	192	470	500	450	800	2,230	1,970	5,820	565	272	283	194
19	192	448	500	450	900	2,030	1,890	4,940	652	272	246	205
20	196	450	500	1,000	1,000	1,950	1,630	4,540	673	240	244	196
21	192	525	500	2,000	1,000	1,680	1,510	4,310	618	266	236	222
22	183	751	520	3,500	1,700	1,010	1,200	3,960	595	246	236	194
23	186	628	600	4,000	3,300	1,540	1,210	3,420	550	301	238	179
24	192	542	800	4,300	2,700	1,370	1,170	2,620	510	313	244	173
25	188	1,270	1,000	3,500	2,300	1,240	1,090	2,100	495	260	230	191
26	188	913	2,110	3,100	2,300	1,180	1,030	1,880	468	256	202	194
27	194	838	3,280	3,980	2,410	1,130	775	1,590	430	250	194	194
28	219	1,100	3,300	5,140	2,050	1,000	805	1,540	378	219	238	192
29	472	1,880	2,530	4,300	-----	943	880	1,640	390	203	211	184
30	618	1,410	2,050	3,650	-----	1,070	931	1,090	390	196	226	301
31	568	-----	1,800	3,390	-----	1,790	-----	916	-----	188	190	-----
TOTAL	7,269	18,683	33,021	54,870	43,690	90,103	66,971	57,922	17,710	10,449	8,509	6,336
MEAN	234	623	1,065	1,770	1,560	2,907	2,232	1,868	590	337	274	211
MAX	618	1,880	3,300	5,140	3,300	6,050	4,150	5,820	829	585	612	301
MIN	144	268	500	320	800	943	775	492	378	188	186	173

CAL YR 1973 TOTAL 428,756 MEAN 1,175 MAX 6,000 MIN 141
WTR YR 1974 TOTAL 415,533 MEAN 1,138 MAX 6,050 MIN 144

STREAMS TRIBUTARY TO LAKE HURON

163

04149500 Flint River near Alicia, Mich.

LOCATION.--Lat 43°18'40", long 84°02'00", in SE¼ sec.31, T.11 N., R.4 E., Saginaw County, on left bank 100 ft (30 m) downstream from the Prairie Farms Association flood-pumping station, 2.8 mi (4.5 km) north of Alicia, and 4 mi (6 km) upstream from mouth.

PERIOD OF RECORD.--November 1948 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 577.00 ft (175.870 m) above mean sea level.

EXTREMES.--Current year: Maximum gage height, 11.77 ft (3.587 m) Mar. 7; minimum, 3.21 ft (0.978 m) Nov. 22.

Period of record: Maximum gage height, 13.70 ft (4.176 m) Apr. 3, 1960; minimum, less than 1.5 ft (0.46 m) during many days in 1949, 1958, 1959, 1963, 1964, 1966-69.

REMARKS.--Records represent stages in the Shiawassee Flats area.

GAGE HEIGHT, IN FEET, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.18	4.28	5.56	6.28	8.57	7.66	6.55	5.61	5.64	5.42	5.46	5.42
2	5.01	4.93	4.97	5.88	8.44	7.92	7.02	5.40	5.48	5.30	5.41	5.55
3	5.00	4.99	4.56	5.62	7.99	8.11	7.59	5.25	5.45	5.53	5.36	5.48
4	5.03	5.08	5.32	5.31	7.41	8.91	7.88	5.50	5.25	5.51	5.28	5.35
5	5.16	4.86	4.86	5.04	6.82	10.32	8.52	5.25	5.27	5.78	5.52	5.27
6	5.16	4.78	4.60	4.90	6.69	11.42	8.81	5.67	5.15	5.75	5.43	5.26
7	5.05	4.78	5.19	4.70	6.45	11.73	8.70	5.56	5.08	5.62	5.48	5.19
8	5.13	4.12	4.90	4.88	6.21	11.75	8.60	5.49	5.10	5.61	5.57	4.94
9	5.00	5.05	4.81	4.74	5.87	11.71	8.43	6.03	5.50	5.54	5.72	5.06
10	4.93	4.83	4.40	4.71	5.51	11.55	8.03	5.48	5.15	6.00	5.55	5.00
11	4.88	4.28	4.94	4.76	5.30	11.12	7.58	5.19	5.52	5.94	5.12	4.65
12	4.65	4.15	4.68	4.70	5.29	10.56	7.21	4.97	5.97	5.62	5.24	5.09
13	4.73	4.64	5.78	4.52	5.39	9.78	7.00	5.29	5.77	5.52	5.52	5.09
14	4.60	4.42	5.96	4.18	5.45	8.95	7.03	5.44	5.64	5.53	5.77	5.07
15	5.15	5.65	5.57	4.76	5.25	8.13	6.97	5.51	5.56	5.95	5.47	4.50
16	5.17	5.32	5.58	4.60	5.05	7.73	7.23	6.30	5.52	5.73	5.18	5.13
17	5.19	4.65	5.24	4.85	4.99	7.36	7.04	8.24	5.40	5.46	5.40	4.91
18	5.19	4.65	4.83	4.45	5.00	7.00	6.80	9.72	5.51	5.25	5.36	5.28
19	4.89	4.69	4.70	4.53	4.94	6.75	6.58	10.66	5.60	5.72	5.40	4.73
20	5.10	4.73	4.90	4.67	5.23	6.68	6.12	10.68	5.58	5.96	5.31	5.26
21	4.80	4.30	4.83	5.91	5.41	6.40	5.75	10.13	5.80	5.74	5.23	4.92
22	4.83	4.27	4.57	8.34	6.28	5.93	5.45	9.37	6.24	5.63	5.15	5.40
23	4.80	4.73	4.69	9.67	8.05	5.82	5.57	8.58	6.30	5.63	5.36	4.95
24	4.79	5.01	4.66	9.56	8.45	5.70	5.92	7.83	6.06	5.65	5.61	4.25
25	4.43	5.49	4.39	9.04	8.44	5.31	5.46	7.16	5.98	5.50	5.35	4.51
26	4.83	5.09	4.86	8.59	8.44	5.16	5.36	6.61	5.80	5.39	4.93	4.64
27	5.10	4.91	6.17	8.75	8.44	5.32	5.18	6.18	5.64	5.40	5.29	4.71
28	5.67	5.35	7.06	9.47	7.96	5.52	4.88	5.82	5.64	5.43	5.52	4.82
29	5.82	5.44	7.03	9.60	-----	5.36	5.17	5.83	5.54	5.55	5.30	4.91
30	5.62	5.37	6.67	9.55	-----	5.40	5.45	5.87	5.37	5.46	5.47	5.15
31	4.95	-----	6.53	9.10	-----	5.94	-----	5.67	-----	5.48	4.98	-----

04150000 South Branch Cass River near Cass City, Mich.

LOCATION.--Lat 43°34'01", long 83°06'43", in SW¼ NW¼ sec.7, T.13 N., R.12 E., Sanilac County, on left bank 1.5 mi (2.4 km) downstream from bridge on State Highway 53, 3.9 mi (6.3 km) southeast of Cass City, 4.2 mi (6.8 km) upstream from confluence with North Branch.

DRAINAGE AREA.--251 mi² (650 km²).

PERIOD OF RECORD.--October 1948 to current year. Monthly discharge only for some periods, published in WSP 1307. Prior to October 1963, published as East Branch Cass River near Cass City.

GAGE.--Water-stage recorder. Datum of gage is 719.5 ft (219.3 m) above mean sea level. Prior to Nov. 8, 1952, nonrecording gage at site 1.5 mi (2.4 km) upstream at different datum.

AVERAGE DISCHARGE.--26 years, 121 ft³/s (3.427 m³/s), 6.55 in/yr (166 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,610 ft³/s (131 m³/s) Mar. 5 (gage height 12.59 ft or 3.837 m); minimum, 4.2 ft³/s (0.12 m³/s) Sept. 1.

Period of record: Maximum discharge, 6,400 ft³/s (181 m³/s) Mar. 28, 1967 (gage height, 14.86 ft or 4.529 m); minimum 0.2 ft³/s (0.006 m³/s) Sept. 20-23, 1955, Aug. 19, 20, 1958.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS (WATER YEARS).--WSP 1337: 1949-50. WSP 1707: 1951-53, 1959.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	21	124	180	220	560	175	73	49	17	8.7	4.2
2	10	19	87	120	180	800	1,400	61	44	19	11	4.6
3	11	19	70	90	160	1,100	1,090	55	46	18	13	5.5
4	14	19	66	80	140	2,950	3,070	56	43	17	14	5.8
5	15	17	83	75	130	4,070	1,730	54	38	16	14	5.8
6	11	14	103	70	110	2,060	666	65	35	19	11	5.8
7	10	13	88	66	100	998	460	75	34	17	10	5.2
8	9.0	13	70	64	95	645	660	68	45	14	9.7	4.8
9	8.0	12	61	62	90	982	342	64	55	12	9.5	4.6
10	8.0	11	58	60	85	1,320	244	66	49	24	9.4	4.6
11	7.9	11	56	58	82	517	195	62	39	17	9.4	4.8
12	7.7	12	51	56	80	349	248	89	33	13	8.3	5.3
13	8.4	12	43	56	76	242	749	137	30	11	8.4	6.4
14	11	11	40	56	74	185	380	121	32	11	8.4	7.4
15	12	19	38	55	70	157	292	130	38	15	7.4	6.5
16	12	29	37	55	64	156	198	178	68	14	7.1	6.3
17	10	38	35	56	62	155	151	2,720	74	12	7.1	5.5
18	9.6	31	33	56	60	149	127	1,960	53	12	6.9	8.0
19	9.2	26	33	58	60	173	110	537	56	11	7.6	7.2
20	8.8	23	33	66	60	241	96	294	56	11	8.1	6.9
21	8.7	24	33	150	64	234	87	193	46	9.4	7.2	5.5
22	8.3	31	34	800	80	215	82	145	36	9.2	6.9	5.2
23	8.1	35	35	1,100	500	190	82	133	28	10	6.3	4.8
24	7.9	40	37	1,100	1,000	130	80	115	24	11	5.8	4.6
25	7.8	113	40	1,000	1,200	115	71	91	21	11	5.0	5.0
26	8.0	132	80	1,000	700	114	64	77	19	14	5.2	5.0
27	7.9	88	766	1,800	450	89	59	66	17	15	5.8	4.8
28	11	108	1,320	1,000	420	90	56	59	15	13	5.8	6.0
29	15	325	739	500	-----	76	67	58	13	12	4.8	8.4
30	21	217	407	400	-----	93	82	57	15	10	4.6	9.5
31	24	-----	250	300	-----	165	-----	53	-----	9.1	4.6	-----
TOTAL	328.0	1,483	4,950	10,589	6,412	19,320	13,113	7,912	1,151	423.7	251.0	174.0
MEAN	10.6	49.4	160	342	229	623	437	255	38.4	13.7	8.10	5.80
MAX	24	325	1,320	1,800	1,200	4,070	3,070	2,720	74	24	14	9.5
MIN	7.7	11	33	55	60	76	56	53	13	9.1	4.6	4.2
CFSM	.04	.20	.64	1.36	.91	2.48	1.74	1.02	.15	.05	.03	.02
IN.	.05	.22	.73	1.57	.95	2.86	1.94	1.17	.17	.06	.04	.03
CAL YR 1973	TOTAL	77,632.2	MEAN	213	MAX	3,410	MIN	4.8	CFSM	.85	IN	11.51
WTR YR 1974	TOTAL	66,106.7	MEAN	181	MAX	4,070	MIN	4.2	CFSM	.72	IN	9.80

PEAK DISCHARGE (BASE, 1,100 FT³/S)

DATE	TIME	G.H.	DISCHARGE
12-28	0800	7.73	1,460
01-27	2100	11.64	3,950
02-24	unknown	unknown	about 1,400
03-05	1400	12.59	4,610
04-04	1700	12.11	4,280
05-17	1900	12.03	4,220

04150500 Cass River at Cass City, Mich.

LOCATION.--Lat 43°35'03", long 83°10'34", in NE¼ NE¼ sec.4, T.13 N., R.11 E., Tuscola County, on left bank 600 ft (183 m) downstream from bridge on Cemetery Road, 0.3 mi (0.5 km) downstream from confluence of North and South Branches, and 1.1 mi (1.8 km) south of Cass City.

DRAINAGE AREA.--370 mi² (960 km²), approximately.

PERIOD OF RECORD.--October 1947 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 697.92 ft (212.726 m) above mean sea level. Prior to Nov. 14, 1952, nonrecording gage at site 600 ft (183 m) upstream at present datum.

AVERAGE DISCHARGE.--27 years, 197 ft³/s (5.579 m³/s), 7.23 in/yr (184 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,960 ft³/s (169 m³/s) Mar. 5 (gage height, 13.64 ft or 4.157 m); minimum, 4.8 ft³/s (0.14 m³/s) Aug. 31, Sept. 1, 2, 10.

Period of record: Maximum discharge, 8,460 ft³/s (240 m³/s) Mar. 20, 1948 (gage height, 15.80 ft or 4.816 m, from graph based on gage readings); minimum, 0.50 ft³/s (0.014 m³/s) Sept. 26, 1948.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS (WATER YEARS).--WSP 1337: 1949-50. WSP 1727: 1948 (M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	31	217	350	600	800	318	155	88	32	13	4.9
2	9.8	28	172	250	400	1,200	1,380	148	79	34	15	5.3
3	12	29	141	190	300	1,400	1,590	135	76	32	17	5.8
4	12	28	128	160	250	3,610	3,120	131	72	30	18	6.6
5	16	28	141	140	230	5,260	2,630	125	64	29	19	6.7
6	14	24	166	130	210	3,760	1,360	141	60	28	17	7.1
7	12	21	153	125	190	2,350	986	157	56	28	15	6.7
8	12	21	135	120	190	1,600	1,110	147	64	23	14	6.1
9	11	19	122	120	180	1,660	686	144	75	21	14	5.2
10	10	18	117	115	170	1,950	528	142	73	27	13	5.0
11	10	18	114	110	165	1,050	422	136	65	27	13	5.2
12	11	18	100	110	160	809	423	189	58	20	12	5.9
13	12	19	95	110	150	581	1,060	242	53	17	11	8.2
14	14	19	90	105	145	432	716	239	53	17	11	8.2
15	15	32	84	105	140	349	610	257	64	20	10	8.5
16	17	47	78	105	130	325	456	306	95	18	9.5	8.8
17	15	60	74	100	120	310	350	3,120	110	16	8.9	8.8
18	14	55	70	100	120	291	283	2,860	104	15	8.7	8.3
19	14	52	70	105	120	311	236	1,480	112	14	9.2	11
20	14	48	70	115	120	381	203	923	109	14	9.5	11
21	13	51	74	500	130	390	180	574	94	13	9.2	8.5
22	13	60	74	900	160	374	166	385	81	12	8.8	7.6
23	13	65	76	1,100	700	348	159	293	67	13	7.7	6.8
24	13	70	82	1,200	1,500	284	154	234	56	14	6.9	6.2
25	12	135	100	1,100	900	200	139	184	48	13	6.2	6.4
26	12	183	150	1,100	700	180	129	153	43	20	6.0	6.5
27	12	140	700	1,200	580	170	120	131	38	19	6.7	6.5
28	15	156	1,500	3,160	540	177	113	116	33	17	6.7	8.6
29	19	405	981	1,530	-----	155	134	110	30	17	6.1	10
30	24	321	721	1,030	-----	173	163	105	31	16	5.4	12
31	30	-----	550	900	-----	265	-----	95	-----	15	5.3	-----
TOTAL	429.8	2,201	7,345	16,485	9,300	31,145	19,924	13,557	2,051	631	332.8	222.4
MEAN	13.9	73.4	237	532	332	1,005	664	437	68.4	20.4	10.7	7.41
MAX	30	405	1,500	3,160	1,500	5,260	3,120	3,120	112	34	19	12
MIN	9.0	18	70	100	120	155	113	95	30	12	5.3	4.9
CFSM	.04	.20	.64	1.44	.90	2.72	1.79	1.18	.18	.06	.03	.02
IN.	.04	.22	.74	1.66	.94	3.13	2.00	1.36	.21	.06	.03	.02
CAL YR 1973	TOTAL 122,988.1	MEAN 337	MAX 4,120	MIN 6.0	CFSM .91	IN 12.37						
WTR YR 1974	TOTAL 103,624.0	MEAN 284	MAX 5,260	MIN 4.9	CFSM .77	IN 10.42						

PEAK DISCHARGE (BASE, 1,400 FT³/S)

DATE	TIME	G.H.	DISCHARGE
12-28	1000	8.69	1,630
01-27	2300	12.05	4,350
02-24	unknown	unknown	1,800
03-05	1600	13.64	5,960
04-04	2000	12.38	4,620
05-17	2030	12.43	4,730

STREAMS TRIBUTARY TO LAKE HURON

04150800 Cass River at Wahjamega, Mich.

LOCATION.--Lat 43°27'02", long 83°26'29", in NW¼ NW¼ sec.20, T.12 N., R.9 E., Tuscola County, on right bank 90 ft (27 m) upstream from bridge on Chambers Road, on grounds of Caro Regional Center at Wahjamega, 1.9 mi (3.1 km) downstream from Michigan Sugar Co. dam, and 40 mi (64 km) upstream from mouth.

DRAINAGE AREA.--637 mi² (1,650 km²).

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 650 ft (198 m) from topographic map. Prior to June 19, 1969, nonrecording gage at bridge 90 ft (27 m) downstream at present datum.

AVERAGE DISCHARGE.--6 years, 395 ft³/s (11.19 m³/s), 8.42 in/yr (214 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,990 ft³/s (226 m³/s) Mar. 6 (gage height, 17.29 ft or 5.270 m); minimum, 25 ft³/s (0.71 m³/s) Sept. 10 (gage height, 2.90 ft or 0.884 m).

Period of record: Maximum discharge, 7,990 ft³/s (226 m³/s) Mar. 6, 1974 (gage height, 17.29 ft or 5.270 m); minimum, 22 ft³/s (0.62 m³/s) Sept. 22, 1969, and part or all of each day Aug. 9, 10, 16-22, 1971.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation by dam at Michigan Sugar Co., 1.9 mi (3.1 km) above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	88	402	370	800	1,840	689	300	204	92	40	27
2	41	90	305	320	660	2,450	1,160	272	186	94	47	27
3	44	90	252	270	540	2,220	2,690	262	180	96	52	27
4	45	84	234	250	450	4,690	3,040	258	166	90	52	27
5	47	78	236	230	370	6,820	4,670	252	156	94	53	27
6	47	74	262	210	340	6,690	2,440	285	148	80	49	27
7	47	68	260	190	320	4,030	1,740	335	144	70	45	27
8	45	62	234	190	300	2,850	1,850	320	150	64	44	27
9	42	60	214	220	280	2,520	1,400	305	164	57	45	26
10	41	57	204	210	270	3,260	1,000	302	168	57	41	27
11	40	57	200	200	260	2,290	826	290	162	57	40	27
12	39	56	182	180	250	1,520	748	385	152	56	39	28
13	46	57	155	170	240	1,140	1,560	470	146	49	38	28
14	52	57	140	170	230	864	1,470	470	138	52	35	30
15	50	94	140	160	230	710	1,080	515	176	70	34	31
16	49	118	130	160	220	671	897	609	208	62	34	31
17	49	124	125	164	210	659	692	3,130	216	52	34	31
18	52	128	120	160	220	629	575	5,160	220	46	34	31
19	47	120	120	158	220	668	482	2,730	222	45	34	31
20	47	114	115	174	240	773	416	1,670	222	41	34	31
21	47	116	115	501	280	804	372	1,070	200	36	33	31
22	46	130	120	1,940	538	776	352	754	176	36	32	32
23	46	134	126	2,280	1,480	734	330	578	154	41	31	30
24	45	150	136	2,040	2,300	635	315	473	134	41	30	30
25	45	186	154	2,060	1,760	388	290	375	124	39	30	29
26	45	256	252	1,630	1,150	464	270	315	110	54	30	28
27	44	252	668	2,460	826	390	252	275	100	59	29	28
28	56	252	1,670	5,080	810	370	242	248	92	49	29	30
29	70	463	1,680	3,400	-----	355	256	244	82	44	28	33
30	70	614	800	2,010	-----	380	302	236	94	46	28	38
31	78	-----	560	1,300	-----	587	-----	222	-----	42	27	-----
TOTAL	1,500	4,229	10,311	28,857	15,794	53,177	32,406	23,110	4,794	1,811	1,151	877
MEAN	48.4	141	333	931	564	1,715	1,080	745	160	58.4	37.1	29.2
MAX	78	614	1,680	5,080	2,300	6,820	4,670	5,160	222	96	53	38
MIN	38	56	115	158	210	355	242	222	82	36	27	26
CFSM	.08	.22	.52	1.46	.89	2.69	1.70	1.17	.25	.09	.06	.05
IN.	.09	.25	.60	1.69	.92	3.11	1.89	1.35	.28	.11	.07	.05
CAL YR 1973	TOTAL 234,793	MEAN 643	MAX 5,600	MIN 27	CFSM 1.01	IN 13.71						
WTR YR 1974	TOTAL 178,017	MEAN 488	MAX 6,820	MIN 26	CFSM .77	IN 10.40						

PEAK DISCHARGE (BASE, 2,400 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-28	1300	14.96	5,660
02-24	0900	9.97	2,560
03-06	0130	17.29	7,990
04-05	0500	14.78	5,480
05-18	0630	15.21	5,910

04151500 Cass River at Frankenmuth, Mich.

LOCATION.--Lat 43°19'40", long 83°44'53", in NW¼ SE¼ sec.27, T.11 N., R.6 E., Saginaw County, on right bank 2,000 ft (610 m) below dam in Frankenmuth, 3,600 ft (1,097 m) above highway bridge on Dehmel Road, 3.4 mi (5.5 km) upstream from Dead Creek, and 17 mi (27 km) upstream from mouth.

DRAINAGE AREA.--848 mi² (2,196 km²).

PERIOD OF RECORD.--February 1908 to March 1909, July 1935 to September 1936, June 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 583.96 ft (177.991 m) above mean sea level (levels by Michigan Department of Natural Resources). February 1908 to March 1909, nonrecording gage at site 2,000 ft (610 m) upstream at datum 1.81 ft (0.552 m) lower. July 18 to Sept. 11, 1935, nonrecording gage, Sept. 12, 1935 to Sept. 30, 1936, and June 20, 1939 to Sept. 30, 1949, water-stage recorder, at site 3,600 ft (1,097 m) downstream at datum 0.04 ft (0.012 m) higher.

AVERAGE DISCHARGE.--36 years (1935-36, 1939-74), 469 ft³/s (13.28 m³/s), 7.51 in/yr (191 mm/yr).

EXTREMES.--Current year: Maximum discharge, 8,920 ft³/s (253 m³/s) Mar. 6 (gage height, 19.44 ft or 5.925 m); minimum, 37 ft³/s (1.05 m³/s) Sept. 1, 2.
Period of record: Maximum discharge, 17,700 ft³/s (501 m³/s) Mar. 18, 1942 (gage height, 20.88 ft or 6.364 m), site and datum then in use; maximum gage height, 23.37 ft (7.123 m) Feb. 3, 1968 (backwater from ice); minimum daily discharge, about 1.5 ft³/s (0.042 m³/s) Aug. 6, 1944.

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation by dams above station. Prior to 1950, regulation at low and medium flows by mill above station.

REVISIONS (WATER YEARS).--WSP 1307: 1936 (M), 1940 (M). WSP 1727: 1952. WSP 1911: 1952.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	115	592	580	1,300	2,150	1,020	386	298	137	65	39
2	56	122	418	400	1,100	3,220	1,270	351	266	135	76	38
3	58	127	345	350	800	3,350	2,660	339	250	141	88	41
4	63	121	314	310	640	4,460	3,140	347	237	135	86	43
5	66	111	327	290	540	7,340	5,430	330	221	129	87	43
6	66	107	338	280	480	8,680	3,870	383	211	127	82	42
7	63	99	343	270	440	6,160	2,340	461	204	114	73	40
8	62	95	312	260	420	3,940	2,190	457	205	104	75	39
9	61	92	282	250	380	3,380	2,010	447	215	99	72	39
10	59	87	270	240	360	3,730	1,450	434	217	97	70	40
11	59	83	250	230	350	3,340	1,180	407	214	98	63	39
12	55	81	220	220	330	2,100	1,040	547	206	92	61	41
13	61	84	200	220	320	1,610	1,450	663	196	87	62	44
14	68	86	180	210	310	1,240	1,950	676	183	86	58	46
15	73	105	170	210	310	1,030	1,460	777	194	96	54	45
16	69	160	160	210	300	956	1,240	966	233	103	53	45
17	69	159	150	200	300	944	993	3,000	254	93	54	45
18	69	156	150	200	300	907	808	5,910	276	83	57	47
19	69	158	145	210	300	976	678	4,310	280	78	61	46
20	66	152	145	240	310	1,060	587	2,310	277	71	60	45
21	66	151	145	1,220	400	1,090	521	1,560	261	66	53	43
22	65	172	150	2,420	1,290	1,070	488	1,130	231	67	50	43
23	66	175	150	3,570	2,220	1,040	452	861	200	72	49	43
24	65	193	170	3,190	2,910	927	422	687	179	74	48	43
25	66	257	235	3,030	2,650	652	390	562	163	73	46	45
26	68	281	523	2,550	1,890	590	368	463	149	82	44	42
27	68	331	923	3,020	1,410	589	343	400	137	90	45	40
28	75	366	1,630	5,330	1,350	525	321	363	128	85	44	48
29	96	545	2,210	5,280	-----	524	323	365	120	78	43	57
30	110	736	1,300	2,910	-----	578	366	354	128	69	41	60
31	109	-----	900	2,000	-----	894	-----	327	-----	68	40	-----
TOTAL	2,122	5,507	13,647	39,900	23,710	69,052	40,760	30,573	6,333	2,929	1,860	1,311
MEAN	68.5	184	440	1,287	847	2,227	1,359	986	211	94.5	60.0	43.7
MAX	110	736	2,210	5,330	2,910	8,680	5,430	5,910	298	141	88	60
MIN	55	81	145	200	300	524	321	327	120	66	40	38
CFSM	.08	.22	.52	1.52	1.00	2.63	1.60	1.16	.25	.11	.07	.05
IN.	.09	.24	.60	1.75	1.04	3.03	1.79	1.34	.28	.13	.08	.06

CAL YR 1973 TOTAL 314,405 MEAN 861 MAX 7,000 MIN 38 CFSM 1.02 IN 13.79
WTR YR 1974 TOTAL 237,704 MEAN 651 MAX 8,680 MIN 38 CFSM .77 IN 10.43

PEAK DISCHARGE (BASE, 3,500 FT³/s)

DATE	TIME	G.H.	DISCHARGE
01-28	2400	17.44	6,340
03-06	1400	19.44	8,920
04-05	1800	17.14	6,040
05-18	1800	17.50	6,400

STREAMS TRIBUTARY TO LAKE HURON

04152500 Tobacco River at Beaverton, Mich.

LOCATION.--Lat 43°52'43", long 84°28'18", in NW¼ SE¼ sec.7, T.17 N., R.1 W., Gladwin County, on left bank 15 ft (5 m) downstream from bridge on Glidden Road, 1 mi (1.6 km) downstream from dam in Beaverton, and 2 mi (3.2 km) upstream from Venison Creek.

DRAINAGE AREA.--487 mi² (1,261 km²).

PERIOD OF RECORD.--July 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 683.27 ft (208.261 m) above mean sea level (levels by Michigan Department of Natural Resources).

AVERAGE DISCHARGE.--26 years, 375 ft³/s (10.62 m³/s), 10.46 in/yr (266 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,050 ft³/s (115 m³/s) May 17 (gage height, 9.39 ft or 2.862 m); minimum, 131 ft³/s (3.71 m³/s) July 18 (gage height, 2.04 ft 0.622 m).

Period of record: Maximum discharge, 7,680 ft³/s (217 m³/s) July 9, 1957 (gage height, 12.95 ft or 3.947 m); minimum, 5.6 ft³/s (0.16 m³/s) July 12, 13, 14, 1959, Aug. 21, 1961; minimum daily, 5.9 ft³/s (0.17 m³/s) July 12, 13, 1959.

REMARKS.--Records good except those for winter periods, which are fair. Prior to Feb. 21, 1961, regulation at all stages by power-plant 1 mi (1.6 km) above station; occasional regulation since.

REVISIONS (WATER YEARS).--WSP 1307: 1948 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	276	420	349	297	900	356	985	691	352	277	303	186
2	280	466	331	260	800	379	1,040	461	344	306	200	188
3	228	383	322	230	700	645	1,310	434	350	317	219	185
4	226	328	319	220	580	2,860	1,970	461	335	457	350	180
5	222	277	387	220	500	3,010	2,100	478	256	447	378	170
6	197	274	623	220	470	2,970	1,390	578	256	339	274	162
7	201	275	588	220	440	3,080	922	616	285	277	253	162
8	207	279	434	220	400	2,300	849	562	455	259	253	168
9	208	310	391	226	360	1,840	747	451	487	240	237	190
10	210	293	372	236	350	1,580	661	436	469	238	201	206
11	208	270	352	248	350	1,210	549	436	465	227	194	197
12	208	253	339	230	350	989	571	599	322	232	199	187
13	305	264	322	230	340	750	982	679	365	226	205	211
14	387	278	261	230	330	620	1,510	639	323	218	214	234
15	355	303	243	230	330	538	2,440	1,550	307	212	211	229
16	315	459	249	230	320	572	1,750	1,950	359	211	178	210
17	226	499	236	230	320	617	1,170	3,100	419	205	179	197
18	224	372	229	240	310	632	747	3,470	409	182	189	196
19	234	340	249	256	300	621	464	1,780	396	150	191	199
20	240	331	256	266	300	599	541	782	301	164	244	198
21	250	333	257	390	300	506	553	753	280	172	205	198
22	250	406	252	924	300	497	790	678	274	204	190	198
23	250	496	248	1,050	310	504	443	487	273	245	195	196
24	250	428	251	1,050	310	465	322	458	274	244	200	195
25	250	389	258	1,100	310	384	420	436	270	233	216	198
26	260	378	314	1,200	320	470	442	388	260	233	281	203
27	350	354	453	2,100	325	462	431	393	256	321	281	204
28	450	346	549	1,800	344	419	414	393	248	361	453	207
29	540	358	559	1,500	-----	406	434	416	240	221	329	468
30	490	368	464	1,300	-----	419	700	382	243	239	183	403
31	440	-----	343	1,100	-----	555	-----	363	-----	287	170	-----
TOTAL	8,737	10,530	10,800	18,253	11,269	31,255	27,647	25,300	9,873	7,944	7,375	6,325
MEAN	282	351	348	589	402	1,008	922	816	329	256	238	211
MAX	540	499	623	2,100	900	3,080	2,440	3,470	487	457	453	468
MIN	197	253	229	220	300	356	322	363	240	150	170	162
CFSM	.58	.72	.71	1.21	.83	2.07	1.89	1.68	.68	.53	.49	.43
IN.	.67	.80	.82	1.39	.86	2.39	2.11	1.93	.75	.61	.56	.48
CAL YR 1973	TOTAL 177,697	MEAN 487	MAX 2,370	MIN 48	CFSM 1.00	IN 13.57						
WTR YR 1974	TOTAL 175,308	MEAN 480	MAX 3,470	MIN 150	CFSM .99	IN 13.39						

STREAMS TRIBUTARY TO LAKE HURON

04154000 Chippewa River near Mount Pleasant, Mich.

LOCATION.--Lat 43°37'32", long 84°42'28", in NW¼ NW¼ sec.8, T.14 N., R.3 W., Isabella County, on right bank 12 ft (4 m) downstream from bridge on South Leaton Road, 3.8 mi (6.1 km) northeast of Mount Pleasant, and 36 mi (58 km) upstream from mouth.

DRAINAGE AREA.--416 mi² (1,077 km²).

PERIOD OF RECORD.--October 1930 to September 1931, October 1932 to current year. Monthly discharge only for some periods published in WSP 1307. 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 (216.524 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Oct. 21, 1938, nonrecording gage at site 30 ft (9 m) upstream at present datum.

AVERAGE DISCHARGE.--43 years, 298 ft³/s (8.439 m³/s), 9.73 in/yr (247 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,090 ft³/s (87.5 m³/s) May 19 (gage height, 10.67 ft or 3.252 m); minimum, 146 ft³/s (4.13 m³/s) Oct. 12.

Period of record: Maximum discharge, 4,960 ft³/s (140 m³/s) Mar. 8, 1946 (gage height, 12.78 ft or 3.895 m); minimum, 12 ft³/s (0.34 m³/s) Aug. 18, 1945; minimum daily, 19 ft³/s (0.54 m³/s) Aug. 16, 1936; minimum gage height, 2.70 ft (0.822 m) Oct. 8, 1966.

REMARKS.--Records good except those for winter periods, which are fair. Diurnal fluctuation below 750 ft³/s (21.2 m³/s) caused by powerplant at Mount Pleasant prior to 1962, occasional regulation at low flow since. Since July 30, 1968, occasional regulation from control structures on lake outlets.

REVISIONS (WATER YEARS).--WSP 744: Drainage area. WSP 1337: 1931, 1933-40, 1945, 1948-49.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	177	389	330	240	400	380	908	607	521	289	177	225
2	175	376	324	230	380	433	923	555	496	287	179	221
3	175	359	318	220	350	594	911	513	463	290	197	219
4	173	325	319	210	330	1,200	1,150	491	440	274	212	211
5	174	350	419	200	320	1,490	1,430	463	410	273	214	204
6	175	329	421	190	300	1,730	1,290	508	389	264	198	201
7	173	311	386	190	280	1,790	1,190	553	388	262	190	194
8	173	302	364	190	270	1,650	1,100	521	406	249	190	200
9	173	297	354	190	260	1,600	955	519	431	242	189	199
10	172	335	349	190	260	1,560	840	490	549	231	187	172
11	172	347	345	190	250	1,340	749	461	473	227	193	172
12	169	342	331	190	250	1,160	707	490	454	218	197	180
13	196	333	325	190	240	1,010	863	512	428	210	196	200
14	264	330	300	190	240	880	924	521	391	209	195	200
15	256	413	280	200	240	775	1,270	895	388	203	187	190
16	237	433	280	200	240	717	1,190	1,250	366	193	185	180
17	225	401	280	210	240	714	1,090	1,760	360	188	189	180
18	214	383	280	210	240	665	1,000	2,940	358	187	193	180
19	210	370	290	220	240	656	857	3,010	346	187	197	180
20	209	356	300	240	240	641	735	2,250	334	179	195	190
21	210	374	300	300	250	607	649	1,680	323	178	192	190
22	208	387	300	430	250	577	598	1,330	309	188	189	190
23	208	366	300	320	250	558	544	1,100	294	194	205	180
24	208	366	310	260	260	521	514	950	282	193	199	180
25	209	384	330	250	270	468	489	825	278	201	187	180
26	208	366	330	290	280	446	463	734	274	206	181	180
27	204	351	320	430	290	446	441	656	269	196	212	190
28	249	365	290	680	320	436	427	616	258	192	233	240
29	357	382	280	600	-----	433	523	610	242	191	262	290
30	371	350	260	540	-----	466	684	583	271	181	238	330
31	360	-----	250	450	-----	628	-----	559	-----	177	227	-----
TOTAL	6,684	10,772	9,865	8,640	7,740	26,571	25,414	28,952	11,191	6,759	6,185	6,048
MEAN	216	359	318	279	276	857	847	934	373	218	200	202
MAX	371	433	421	680	400	1,790	1,430	3,010	549	290	262	330
MIN	169	297	250	190	240	380	427	461	242	177	177	172
CFSM	.52	.86	.76	.67	.66	2.06	2.04	2.25	.90	.52	.48	.49
IN.	.60	.96	.88	.77	.69	2.38	2.27	2.59	1.00	.60	.55	.54
CAL YR 1973	TOTAL 154,418	MEAN 423	MAX 1,770	MIN 155	CFSM 1.02	IN 13.81						
WTR YR 1974	TOTAL 154,821	MEAN 424	MAX 3,010	MIN 169	CFSM 1.02	IN 13.84						

PEAK DISCHARGE (BASE, 1,000 FT³/S)

DATE	TIME	G.H.	DISCHARGE
03-06	2200	8.12	1,910
04-05	0400	7.03	1,480
04-15	1800	6.64	1,340
05-19	0600	10.67	3,090

STREAMS TRIBUTARY TO LAKE HURON

04155000 Pine River at Alma, Mich.

LOCATION.--Lat 43°22'46", long 84°39'20", SW¼ SE¼ sec.34, T.12 N., R.3 W., Gratiot County, on right bank 270 ft (82 m) downstream from Superior Street Bridge in Alma, 0.6 mi (1.0 km) downstream from municipal reservoir, and 38 mi (61 km) upstream from mouth.

DRAINAGE AREA.--288 mi² (746 km²).

PERIOD OF RECORD.--October 1930 to current year. 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 (218.959 m) above mean sea level. Prior to Dec. 10, 1930, nonrecording gage at Superior Street Bridge at different datum. Dec. 10, 1930 to June 15, 1938, nonrecording gage at site 70 ft (21 m) downstream from bridge and June 16 to October 25, 1938, nonrecording gage at bridge at present datum.

AVERAGE DISCHARGE.--44 years, 208 ft³/s (5.891 m³/s), 9.81 in/yr (249 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,790 ft³/s (50.7 m³/s) Mar. 5 (gage height, 7.27 ft or 2.216 m); minimum, 55 ft³/s (1.56 m³/s) Sept. 24 (gage height, 1.10 ft or 0.335 m).

Period of record: Maximum discharge, 4,400 ft³/s (125 m³/s) Mar. 19, 1948 (gage height, 10.81 ft or 3.295 m); minimum daily, 0.40 ft³/s (0.011 m³/s) Sept. 6, 1964, caused by closing dam during construction of waterworks.

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation caused by dam 0.6 mi (1.0 km) above station and by variable backwater from powerplant at St. Louis 5.2 mi (8.4 km) below station. Since July 1965, about 2.5 ft³/s (0.07 m³/s) diverted above station for municipal and industrial use; sewage effluent is returned below station.

REVISIONS (WATER YEARS).--WSP 744: Drainage area. WSP 1307: 1945 (M). WSP 1337: 1931, 1932-34 (M), 1936, 1939, 1945, 1949.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	269	348	250	370	330	722	321	312	217	81	127
2	98	262	326	190	350	450	832	357	302	253	88	124
3	98	256	293	180	330	786	842	377	271	285	98	109
4	102	247	270	170	300	1,310	1,240	359	247	303	115	111
5	98	232	305	170	280	1,680	1,200	343	219	331	150	123
6	88	196	318	165	260	1,610	1,020	358	221	269	161	116
7	95	185	341	160	250	1,410	940	365	222	213	140	110
8	93	160	348	160	240	1,280	833	376	254	176	110	121
9	100	159	338	155	230	1,500	718	409	350	146	97	100
10	96	141	314	155	230	1,280	638	405	411	131	117	83
11	95	154	277	155	220	1,030	576	396	462	130	128	110
12	100	134	253	160	215	877	552	394	544	119	131	105
13	112	148	245	160	210	729	569	376	533	111	119	91
14	112	142	210	160	210	631	567	410	475	140	120	90
15	130	195	200	165	210	568	587	480	518	163	115	107
16	153	231	190	170	200	547	631	535	451	127	99	105
17	148	257	180	175	200	536	653	889	448	104	99	116
18	136	284	180	180	200	519	614	1,060	436	105	118	76
19	124	298	180	190	200	530	568	1,160	393	95	127	80
20	119	276	180	200	200	515	515	1,230	362	101	106	81
21	112	266	180	230	200	502	468	949	340	115	115	82
22	124	250	188	350	210	483	425	731	303	113	131	91
23	116	254	197	280	220	475	388	593	264	98	106	87
24	115	304	197	240	230	443	369	498	227	104	98	69
25	111	364	205	240	240	364	351	434	211	115	131	61
26	110	354	280	260	250	395	329	383	201	110	131	67
27	112	357	340	700	270	356	309	353	186	99	104	67
28	140	382	385	560	300	365	299	339	177	100	89	91
29	173	383	395	520	-----	365	307	321	165	103	100	129
30	194	352	350	450	-----	416	311	314	202	83	123	139
31	244	-----	330	400	-----	552	-----	320	-----	88	128	-----
TOTAL	3,750	7,492	8,343	7,700	6,825	22,834	18,373	15,835	9,707	4,647	3,575	2,968
MEAN	121	250	269	248	244	737	612	511	324	150	115	98.9
MAX	244	383	395	700	370	1,680	1,240	1,230	544	331	161	139
MIN	88	134	180	155	200	330	299	314	165	83	81	61
CFSM	.42	.87	.93	.86	.85	2.56	2.13	1.77	1.13	.52	.40	.34
IN.	.48	.97	1.08	.99	.88	2.95	2.37	2.05	1.25	.60	.46	.38
CAL YR 1973	TOTAL 127,797	MEAN 350	MAX 1,360	MIN 66	CFSM 1.22	IN 16.51						
WTR YR 1974	TOTAL 112,049	MEAN 307	MAX 1,680	MIN 61	CFSM 1.07	IN 14.47						

STREAMS TRIBUTARY TO LAKE HURON

04155500 Pine River near Midland, Mich.

LOCATION.--Lat 43°33'52", long 84°22'09", in SW¼ NW¼ sec.4, T.13 N., R.1 E., Midland County, on left bank at downstream side of bridge on Meridian Road, 7.2 mi (11.6 km) southwest of Midland, and 7.8 mi (12.6 km) upstream from Chippewa River.

DRAINAGE AREA.--390 mi² (1,010 km²), approximately.

PERIOD OF RECORD.--May 1934 to September 1938, February 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 623.94 ft (190.177 m) above mean sea level. Prior to Sept. 30, 1938, nonrecording gages at same site, at datum 5.55 ft (1.692m) lower. Feb. 3, 1948 to Dec. 13, 1951, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--30 years, 290 ft³/s (8.213 m³/s), 10.10 in/yr (257 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,100 ft³/s (116 m³/s) Mar. 4; maximum gage height, 9.74 ft (2.969 m) Mar. 4 (backwater from ice); minimum discharge, 31 ft³/s (0.88 m³/s) Nov. 11.

Period of record: Maximum discharge, 6,360 ft³/s (180 m³/s) Mar. 20, 1948 (gage height, 10.00 ft or 3.048 m, from graph based on gage readings); maximum gage height, 12.08 ft (3.682 m) Feb. 2, 1968 (backwater from ice); minimum discharge, not determined.

REMARKS.--Records fair except those for winter periods, which are poor. Regulation at low and medium stages by powerplant at St. Louis. Some diversion above station for irrigation.

REVISIONS (WATER YEARS).--WSP 1207: Drainage area, WSP 1307: 1935 (M). WSP 1337: 1936-38, 1948-49.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	329	438	360	550	500	997	382	432	328	135	108
2	151	349	476	300	500	700	1,140	389	266	308	101	160
3	145	329	449	270	470	1,100	1,090	437	334	316	128	237
4	96	313	445	260	450	1,600	1,550	481	272	392	107	178
5	160	293	420	250	400	2,550	1,630	385	320	618	103	142
6	160	275	500	240	390	2,230	1,300	492	177	439	177	126
7	140	212	482	240	370	1,940	1,120	426	238	379	190	144
8	153	219	503	240	350	1,670	1,080	477	321	290	207	91
9	152	145	488	230	330	1,950	918	483	493	325	180	117
10	165	209	450	230	320	1,810	770	511	657	226	87	144
11	174	98	400	230	310	1,430	728	488	595	191	80	111
12	143	202	350	230	300	1,100	686	517	618	213	145	100
13	161	91	320	230	300	960	746	505	657	188	179	119
14	177	156	300	230	300	824	739	450	631	209	166	124
15	171	183	280	240	300	744	741	620	662	215	142	76
16	174	304	270	250	290	672	704	707	680	349	179	70
17	218	328	250	270	290	727	714	1,250	586	277	132	148
18	229	317	250	280	290	696	706	1,390	584	180	96	132
19	211	326	250	300	290	698	662	1,270	566	177	81	107
20	194	347	250	320	300	699	612	1,280	488	149	187	103
21	203	350	250	390	300	659	551	1,190	423	126	175	108
22	113	379	250	560	310	631	536	943	413	119	122	86
23	206	330	260	430	320	624	467	766	345	267	170	81
24	122	360	270	380	330	588	395	654	329	199	169	124
25	212	605	300	370	340	588	407	563	258	173	107	149
26	161	625	360	430	350	392	398	503	266	165	96	98
27	154	488	450	900	370	505	385	447	245	211	252	101
28	190	512	520	800	420	392	358	380	242	150	175	119
29	172	710	550	700	-----	469	366	451	247	113	170	89
30	286	602	520	650	-----	473	390	364	197	185	123	99
31	214	-----	450	600	-----	840	-----	343	-----	141	157	-----
TOTAL	5,320	9,986	11,751	11,410	9,840	30,761	22,886	19,544	12,542	7,618	4,518	3,591
MEAN	172	333	379	368	351	992	763	630	418	246	146	120
MAX	286	710	550	900	550	2,550	1,630	1,390	680	618	252	237
MIN	96	91	250	230	290	392	358	343	177	113	80	70
CFSM	.44	.85	.97	.94	.90	2.54	1.96	1.62	1.07	.63	.37	.31
IN.	.51	.95	1.12	1.09	.94	2.93	2.18	1.86	1.20	.73	.43	.34
CAL YR 1973	TOTAL 165,560		MEAN 454		MAX 1,990		MIN 26		CFSM 1.16		IN 15.79	
WTR YR 1974	TOTAL 149,767		MEAN 410		MAX 2,550		MIN 70		CFSM 1.05		IN 14.29	

PEAK DISCHARGE (BASE, (1,200 FT³/s)

DATE	TIME	G.H.	DISCHARGE
03-04	0900	7.95	4,100
04-04	2100	5.63	1,840
05-18	0100	5.20	1,500

STREAMS TRIBUTARY TO LAKE HURON

04156000 Tittabawassee River at Midland, Mich.

LOCATION.--Lat 43°35'43", long 84°14'08", in NW¼ NE¼ sec.28, T.14 N., R.2 E., Midland County, on right bank 2,000 ft (610 m) downstream from dam at Dow Chemical Co. powerplant in Midland, 0.7 mi (1.1 km) upstream from Bullock Creek, 1.4 mi (2.3 km) downstream from Chippewa River and 23 mi (37 km) upstream from mouth.

DRAINAGE AREA.--2,400 mi² (6,200 km²) approximately.

PERIOD OF RECORD.--March 1936 to current year. 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 580.28 ft (176.869 m) above mean sea level. Prior to Sept. 30, 1955, at datum 10.00 ft (3.048 m) higher.

AVERAGE DISCHARGE.--38 years, 1,627 ft³/s (46.08 m³/s), 9.21 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 21,600 ft³/s (612 m³/s) May 18 (gage height, 26.23 ft or 7.995 m); minimum, 305 ft³/s (8.64 m³/s) Sept. 23 (gage height, 10.00 ft or 3.048 m); minimum daily, 339 ft³/s (9.60 m³/s) Sept. 23.
Period of record: Maximum discharge, 34,000 ft³/s (963 m³/s) Mar. 21, 1948 (gage height, 29.50 ft or 8.992 m); minimum, 39 ft³/s (1.10 m³/s) Oct. 12, 1942; minimum daily, 111 ft³/s (3.14 m³/s) Aug. 21, 1949; minimum gage height, 9.04 ft (2.755 m) Aug. 19, 1954, caused by bridge construction above station.
Maximum stage known since at least 1907, 29.7 ft (9.05 m) Mar. 28, 1916 (discharge, 34,800 ft³/s or 986 m³/s), from information by U.S. Weather Bureau.

REMARKS.--Records good. Water is diverted from river a short distance above station for industrial use. Small part returned to river at gage, small part returned to river 0.25 mi (0.4 km) below station, remainder returned 1 mi (1.6 km) below. Extremes and daily discharges not adjusted for diversion. Prior to May 20, 1970, discharge below 4,000 ft³/s (113 m³/s) regulated by dam 2,000 ft (610 m) above station; fixed crest dam since.

REVISIONS (WATER YEARS).--WSP 1045: 1945. WSP 1144: 1948.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	698	1,930	1,610	1,430	6,400	3,200	4,990	3,220	1,650	1,040	693	470
2	552	2,080	1,080	1,080	5,800	3,140	6,540	3,030	980	998	876	455
3	681	1,200	1,380	1,280	4,400	3,730	6,190	2,830	1,820	1,200	444	506
4	687	791	1,970	1,350	3,400	9,440	8,380	2,220	1,760	1,130	434	546
5	847	1,290	2,010	882	2,840	14,700	10,300	1,580	1,280	3,220	927	538
6	443	1,270	2,720	613	2,460	15,600	8,620	2,620	1,430	2,440	1,280	619
7	377	1,110	2,600	848	2,270	15,600	6,590	3,190	1,470	1,170	1,110	608
8	622	1,040	1,680	1,000	2,100	13,300	6,320	3,860	1,080	1,200	612	414
9	679	1,190	1,130	926	1,470	10,900	5,420	3,830	1,850	1,030	799	398
10	868	911	1,900	982	1,140	10,400	4,800	3,200	5,310	745	566	570
11	563	652	2,250	978	1,740	8,980	4,560	2,030	5,630	703	413	636
12	684	1,140	2,130	719	1,960	6,870	4,420	2,120	4,720	880	507	588
13	440	1,170	2,040	509	2,170	5,640	4,970	2,950	3,610	633	541	615
14	433	1,110	1,210	667	2,170	5,000	5,710	3,110	2,990	593	540	517
15	1,310	1,700	945	1,030	1,910	4,620	8,990	5,920	2,310	694	532	388
16	1,240	1,670	556	1,160	1,270	4,430	8,330	8,620	2,130	942	528	374
17	1,300	1,440	907	969	854	4,590	5,850	13,700	2,610	721	465	469
18	1,130	891	1,080	978	824	4,210	5,140	20,800	2,960	803	424	834
19	1,050	1,450	1,300	740	1,380	4,510	4,530	15,500	3,000	638	477	613
20	649	1,920	1,220	653	1,980	4,570	4,170	9,470	2,610	534	521	508
21	518	2,070	1,070	2,490	2,210	4,400	3,920	7,290	2,070	480	461	450
22	728	1,330	813	5,130	2,570	4,290	3,780	5,910	1,210	749	516	355
23	782	1,710	636	5,100	2,270	3,490	3,630	4,980	845	845	825	339
24	799	2,250	1,130	4,560	2,050	2,420	3,490	3,520	1,290	999	657	430
25	792	1,710	1,080	4,460	2,560	2,440	2,640	2,380	1,440	658	436	480
26	747	2,210	1,590	2,980	2,960	2,870	2,530	1,850	1,200	629	379	482
27	625	2,170	2,740	5,800	2,660	2,920	1,660	1,630	850	569	604	536
28	599	2,320	4,140	10,300	2,730	2,870	1,260	2,250	840	514	694	537
29	1,020	2,420	4,110	9,680	-----	2,920	2,190	2,710	716	745	953	504
30	1,610	2,640	2,040	7,220	-----	2,310	3,280	2,530	706	717	1,030	1,110
31	1,950	-----	1,830	6,760	-----	3,240	-----	2,520	-----	642	693	-----
TOTAL	25,423	46,785	52,917	83,274	68,548	187,600	153,200	151,370	62,377	28,861	19,927	15,889
MEAN	820	1,560	1,707	2,686	2,448	6,052	5,107	4,883	2,079	931	643	530
MAX	1,950	2,640	4,140	10,300	6,400	15,600	10,300	20,800	5,630	3,220	1,280	1,110
MIN	377	652	556	509	824	2,310	1,260	1,580	706	480	379	339
+	57.2	54.7	57.5	59.4	58.2	65.8	68.1	64.8	60.2	56.0	44.2	51.3
MEAN†	877	1,615	1,765	2,745	2,506	6,118	5,175	4,948	2,139	987	687	581
CFSM†	.37	.67	.74	1.14	1.04	2.55	2.16	2.06	.89	.41	.29	.24
IN†	.42	.75	.85	1.32	1.09	2.94	2.41	2.38	.99	.47	.33	.27

CAL YR 1973 TOTAL 932,880 MEAN 2,556 MAX 11,800 MIN 321 MEAN† 2,617 CFSM† 1.09 IN† 14.80
WTR YR 1974 TOTAL 896,171 MEAN 2,455 MAX 20,800 MIN 339 MEAN† 2,513 CFSM† 1.05 IN† 14.22

PEAK DISCHARGE (BASE, 7,000 FT³/s)

DATE	TIME	G.H.	DISCHARGE
01-28	1900	21.40	11,000
03-07	0230	24.21	15,700
04-05	0800	21.12	10,600
04-15	2330	20.27	9,690
05-18	1330	26.23	21,600

+Diversion in cubic feet per second, for industrial use, furnished by Dow Chemical Co.

†Adjusted for diversion by Dow Chemical Co.

STREAMS TRIBUTARY TO LAKE HURON

04157000 Saginaw River at Saginaw, Mich.

LOCATION.--Lat 43°24'46", long 83°57'47", in NW¼ SE¼ sec.26, T.12 N., R.4 E., Saginaw County, on right bank 1,000 ft (305 m) downstream from bridge on Rust Avenue in Saginaw, 1.9 mi (3.1 km) downstream from Tittabawassee River and 20.3 mi (32.7 km) upstream from mouth.

DRAINAGE AREA.--6,060 mi² (15,700 km²), approximately.

PERIOD OF RECORD.--1904, 1908-9, 1912-13, 1916, 1918-19, 1929-30, and 1942 (flood discharge for certain periods only) in WSP 1084: December 1942 to current year (high-water periods only); no high water 1944, 1949, 1953, 1955, 1958, 1961, 1963, 1964, 1966. Gage-height records for flood seasons collected in this vicinity 1910-20, and for entire years since 1921 are contained in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder. Datum of gage is 565.11 ft (172.246 m), International Great Lakes datum. Prior to Oct. 1, 1972, nonrecording gage at site 1.9 mi (3.1 km) downstream at same datum. Auxiliary water-stage recorder on right bank near Aplin Beach, 19.9 mi (32.0 km) downstream (correction).

EXTREMES.--Current year: Maximum daily discharge, 34,300 ft³/s (971 m³/s) Mar. 7, 9; maximum daily gage height, 19.90 ft (6.066 m) Mar. 8.

Period of record: Maximum discharge, 68,000 ft³/s (1,930 m³/s) Mar. 30, 1904 (gage height, 24.9 ft or 7.59 m), site then in use.

REMARKS.--Records fair. Considerable diversion through metropolitan area of Saginaw.

COOPERATION.--Auxiliary gage-height record furnished by NOAA-National Ocean Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					16,500	10,700						
2					16,700	11,700	12,200					
3					17,000	13,500	13,500					
4					14,800	16,700	16,600					
5					12,100	21,700	15,600					
6						31,500	20,600					
7						34,300	18,800					
8						34,000	17,000					
9						34,300	17,300					
10						32,600	15,600					
11						30,900	13,500					
12						27,500	12,800					
13						23,600	11,800					
14						19,500	14,700					
15						16,900	11,900					
16						15,400	14,200					
17						13,000	13,300	11,100				
18						12,000		17,900				
19						10,600		24,300				
20								25,800				
21								24,000				
22				10,500				20,500				
23				14,000				16,300				
24				14,300				12,700				
25				15,100				10,000				
26				14,200								
27				14,800								
28				18,200								
29				21,100								
30				21,900								
31				19,700								

STREAMS TRIBUTARY TO LAKE HURON

04158500 Pigeon River near Owendale, Mich.

LOCATION.--Lat 43°45'49", long 83°14'46", in SW¼ SE¼ sec.36, T.16 N., R.10 E., Huron County, on left bank 600 ft (183 m) downstream from bridge on Kilmanagh Road, 2.5 mi (4.0 km) downstream from confluence of East and West Branches, and 2.5 mi (4.0 km) north-east of Owendale.

DRAINAGE AREA.--55 mi² (140 km²), approximately.

PERIOD OF RECORD.--October 1952 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 645 ft (197 m) from topographic map. Prior to June 10, 1954, nonrecording gage at site 600 ft (183 m) upstream at same datum.

AVERAGE DISCHARGE.--22 years, 30.3 ft³/s (0.858 m³/s), 7.48 in/yr (190 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,300 ft³/s (36.8 m³/s) Mar. 5 (gage height, 9.88 ft or 3.011 m); minimum, 2.4 ft³/s (0.068 m³/s) Oct. 1.

Period of record: Maximum discharge, 2,550 ft³/s (72.2 m³/s) Mar. 25, 1954 (gage height, 10.75 ft or 3.277 m), from rating curve extended above 1,200 ft³/s (34.0 m³/s), site and datum then in use; minimum, 0.1 ft³/s (0.003 m³/s) July 31, Aug. 1, 1964.

REMARKS.--Records good except those for winter periods, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	9.0	32	30	54	120	140	78	21	10	5.2	2.7
2	3.2	8.5	27	24	45	180	177	74	19	8.6	6.4	2.8
3	5.6	8.5	26	21	35	230	148	72	18	8.6	10	3.6
4	9.0	7.0	27	18	30	484	263	73	16	9.0	8.3	3.7
5	5.6	5.6	32	17	28	997	224	72	14	13	8.3	3.2
6	5.2	4.8	35	16	25	414	116	76	14	10	5.7	3.0
7	4.8	4.0	30	15	23	217	104	78	14	7.5	4.8	2.8
8	4.8	4.4	26	14	21	161	126	75	15	6.8	4.4	2.8
9	4.8	4.4	24	14	20	216	95	74	19	5.7	4.6	2.7
10	4.8	4.4	24	13	19	268	87	73	16	7.2	4.4	2.7
11	4.8	4.8	24	13	18	142	84	72	14	7.9	4.1	3.1
12	4.8	5.2	21	13	17	108	86	84	14	6.0	4.3	3.1
13	8.0	6.0	20	12	17	92	191	84	14	5.2	3.9	5.0
14	15	7.0	18	12	16	82	146	78	14	5.0	3.6	4.6
15	10	12	16	12	15	76	99	80	31	4.9	3.4	3.6
16	8.0	17	15	12	14	72	88	81	49	4.8	3.4	3.1
17	7.0	16	14	12	14	66	83	724	29	4.6	4.0	3.2
18	9.0	13	13	12	13	60	80	425	21	4.6	3.9	3.4
19	9.0	12	13	13	13	62	77	126	28	4.3	3.4	3.9
20	9.0	12	12	15	13	64	76	70	24	4.0	3.2	4.8
21	9.0	13	12	35	14	68	74	57	20	3.9	3.1	4.3
22	9.0	18	13	310	17	71	74	50	17	4.1	2.8	3.0
23	9.0	20	13	240	210	72	72	46	15	5.0	2.9	2.9
24	9.0	20	14	180	170	66	72	42	14	4.9	3.1	2.9
25	8.5	26	17	140	120	65	70	38	12	4.4	3.0	2.9
26	9.0	28	108	125	90	64	70	34	12	5.2	3.1	2.8
27	8.5	27	294	150	70	64	69	32	10	4.9	4.1	2.6
28	9.5	34	352	390	80	70	68	30	10	4.1	4.1	4.1
29	11	64	137	150	-----	73	76	28	8.6	7.6	3.4	4.9
30	9.5	44	80	90	-----	79	84	26	10	10	3.1	4.9
31	9.0	-----	45	76	-----	108	-----	23	-----	7.2	2.9	-----
TOTAL	236.2	459.6	1,534	2,194	1,221	4,911	3,219	2,975	532.6	199.0	134.9	103.1
MEAN	7.62	15.3	49.5	70.8	43.6	158	107	96.0	17.8	6.42	4.35	3.44
MAX	15	64	352	390	210	997	263	724	49	13	10	5.0
MIN	2.8	4.0	12	12	13	60	68	23	8.6	3.9	2.8	2.6
CFSM	.14	.28	.90	1.29	.79	2.87	1.95	1.75	.32	.12	.08	.06
IN.	.16	.31	1.04	1.48	.83	3.32	2.18	2.01	.36	.13	.09	.07
CAL YR 1973	TOTAL 22,276.0	MEAN 61.0	MAX 706	MIN 2.4	CFSM 1.11	IN 15.07						
WTR YR 1974	TOTAL 17,719.4	MEAN 48.5	MAX 997	MIN 2.6	CFSM .88	IN 11.98						

PEAK DISCHARGE (BASE, 500 FT³/s)

DATE	TIME	G.H.	DISCHARGE
03-05	1300	9.88	1,300
05-17	1800	9.66	1,190

04159500 Black River near Fargo, Mich.

LOCATION.--Lat 43°05'32", long 82°37'05", in NW¼ sec.32, T.8 N., R.16 E., St. Clair County, on left bank 20 ft (6 m) downstream from bridge on Norman Road, 2.1 mi (3.4 km) east of Fargo, 5.3 mi (8.5 km) upstream from Mill Creek, and 12 mi (19 km) northwest of Port Huron.

DRAINAGE AREA.--480 mi² (1,243 km²).

PERIOD OF RECORD.--February 1944 to current year.

GAGE.--Water-stage recorder. Datum of gage is 613.75 ft (187.071 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to July 9, 1954, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--30 years, 276 ft³/s (7.816 m³/s), 7.81 in/yr (198 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,770 ft³/s (192 m³/s) Apr. 4 (gage height, 12.52 ft or 3.816 m); minimum, 12 ft³/s (0.34 m³/s) Aug. 24, 25, Sept. 28 (gage height, 1.74 ft or 0.530 m).
Period of record: Maximum discharge, 14,400 ft³/s (408 m³/s) Apr. 5, 1947 (gage height, 16.06 ft or 4.895 m, from floodmark), from rating curve extended above 9,500 ft³/s (269 m³/s); maximum gage height observed, 18.05 ft (5.502 m) Feb. 20, 1951 (backwater from ice); minimum discharge observed, 1.8 ft³/s (0.051 m³/s) Sept. 18, 19, 1946.

REMARKS.--Records good except those for the winter period, which are poor.

REVISIONS (WATER YEARS).--WSP 1307: 1950 (M), WSP 1627: 1956-58. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	100	541	666	1,020	2,450	378	190	128	43	25	17
2	23	96	318	550	593	2,570	2,160	169	117	58	31	18
3	55	92	237	450	432	2,340	3,390	154	107	65	35	21
4	131	102	208	350	350	4,050	5,390	147	107	54	33	20
5	76	84	247	300	320	5,780	5,530	142	99	46	34	19
6	50	68	352	250	300	5,280	4,060	141	97	42	32	18
7	35	59	295	220	270	3,820	2,270	151	103	39	28	19
8	34	51	230	190	250	2,240	1,690	153	91	37	29	20
9	27	48	193	170	240	2,030	1,130	163	89	36	29	19
10	28	47	182	160	230	2,510	708	180	86	34	27	19
11	30	43	176	150	220	1,610	527	177	81	32	25	18
12	26	40	157	150	210	881	452	434	77	30	25	18
13	27	39	141	150	200	621	749	608	74	29	25	18
14	30	34	135	150	190	444	831	439	70	32	26	17
15	26	47	116	150	190	362	701	581	71	36	24	17
16	27	139	105	160	190	335	474	982	87	52	26	15
17	30	210	95	160	190	328	360	4,870	98	41	24	21
18	30	143	85	170	190	313	301	4,750	95	34	22	18
19	29	102	78	190	190	319	262	3,380	89	32	21	17
20	29	81	80	220	210	391	233	1,520	106	30	21	16
21	28	75	85	300	230	410	210	708	103	26	20	16
22	26	155	90	1,000	400	389	218	453	85	25	15	17
23	25	176	95	2,600	1,000	361	323	367	68	30	14	16
24	26	174	100	3,700	2,800	324	290	309	60	26	13	14
25	25	984	120	3,200	1,900	227	234	243	56	19	12	15
26	27	872	237	2,910	1,000	223	203	202	56	23	13	15
27	26	442	1,810	4,150	800	205	182	177	57	31	14	14
28	27	520	3,950	5,220	644	188	164	158	49	21	15	13
29	39	1,640	3,330	3,820	-----	181	159	150	44	24	16	15
30	81	1,100	2,050	2,020	-----	190	168	147	46	28	14	21
31	131	-----	1,100	1,210	-----	278	-----	141	-----	25	16	-----
TOTAL	1,223	7,763	16,938	35,086	14,759	41,650	33,747	22,386	2,496	1,080	704	521
MEAN	39.5	259	546	1,132	527	1,344	1,125	722	83.2	34.8	22.7	17.4
MAX	131	1,640	3,950	5,220	2,800	5,780	5,530	4,870	128	65	35	21
MIN	19	34	78	150	190	181	159	141	44	19	12	13
CFSM	.08	.54	1.14	2.36	1.10	2.80	2.34	1.50	.17	.07	.05	.04
IN.	.09	.60	1.31	2.72	1.14	3.23	2.62	1.73	.19	.08	.05	.04

CAL YR 1973 TOTAL 156,506 MEAN 429 MAX 7,800 MIN 18 CFSM .89 IN 12.13
WTR YR 1974 TOTAL 178,353 MEAN 489 MAX 5,780 MIN 12 CFSM 1.02 IN 13.82

PEAK DISCHARGE (BASE, 3,500 FT³/S)

DATE	TIME	G.H.	DISCHARGE
12-28	1100	10.21	4,110
01-24	--	--	4,000
01-28	0100	11.67	5,580
02-23	--	--	3,100
03-05	1700	12.28	6,320
04-04	2200	12.52	6,770
05-17	1800	11.77	5,790

STREAMS TRIBUTARY TO ST. CLAIR RIVER

04159900 Mill Creek near Avoca, Mich.

LOCATION.--Lat 43°03'16", long 82°44'05", in NW¼ sec.8, T.7 N., R.15 E., St. Clair County, on left bank at downstream side of bridge on Bricker Road, 0.2 mi (0.3 km) upstream from Gleason Drain, and 2.3 mi (3.7 km) west of Avoca.

DRAINAGE AREA.--169 mi² (438 km²).

PERIOD OF RECORD.--April 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 711.31 ft (216.807 m) above mean sea level.

AVERAGE DISCHARGE.--11 years, 92.0 ft³/s (2.605 m³/s), 7.39 in/yr (188 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,210 ft³/s (62.6 m³/s) May 17 (gage height, 7.51 ft or 2.289 m; maximum gage height, 7.52 ft (2.292 m) Jan. 27 (backwater from ice); minimum discharge, 2.0 ft³/s (0.057 m³/s) Sept. 29; minimum gage height, 0.76 ft (0.232 m) July 31.

Period of record: Maximum discharge, 3,880 ft³/s (110 m³/s) Dec. 31, 1972; maximum gage height, 8.36 ft (2.548 m) Feb. 2, 1968 (backwater from ice); minimum discharge, 0.8 ft³/s (0.023 m³/s) Aug. 9, 10, 11, 1964; minimum gage height, 0.56 ft (0.171 m) July 28, 1965.

REMARKS.--Records good except those for the winter period, and those for period of indefinite stage-discharge relation, which are poor.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FER	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	20	142	310	545	900	120	46	50	18	6.5	7.0
2	7.0	22	104	230	250	1,160	598	41	41	20	9.4	8.0
3	10	20	81	180	180	1,140	862	35	35	23	12	4.5
4	20	14	69	140	150	1,440	1,410	29	31	22	8.6	10
5	16	13	71	120	120	1,970	1,470	27	28	20	11	10
6	13	12	81	100	110	1,620	1,010	28	26	20	12	9.0
7	11	12	72	80	100	1,100	744	30	23	20	11	8.0
8	9.0	11	62	60	95	859	722	31	26	20	13	7.0
9	8.5	11	55	55	90	956	563	39	28	18	12	7.0
10	8.5	9.4	52	55	85	964	410	51	39	16	9.8	6.5
11	8.1	9.4	50	55	80	707	298	53	36	14	13	6.5
12	7.7	9.4	51	55	80	502	230	174	31	11	14	6.2
13	8.1	13	50	55	75	369	235	232	28	9.4	13	6.2
14	8.2	14	50	55	75	264	232	182	26	16	12	5.9
15	8.4	24	45	55	75	204	198	256	26	14	11	5.6
16	8.6	24	42	58	75	182	144	571	26	10	10	4.5
17	9.0	30	38	60	75	167	115	1,940	24	10	9.5	4.2
18	9.8	32	35	62	75	151	94	1,850	32	10	9.0	5.0
19	9.8	25	34	66	80	144	77	1,240	33	8.6	9.0	4.5
20	9.0	20	35	75	90	152	68	888	33	7.7	8.5	3.5
21	8.1	22	35	170	120	137	59	683	37	7.4	8.0	3.3
22	8.6	26	37	400	200	127	65	515	36	7.4	7.5	3.3
23	11	26	40	900	600	116	82	365	35	7.7	7.0	3.3
24	12	40	45	1,300	1,000	98	82	239	31	6.8	9.0	3.3
25	11	92	50	1,100	700	65	68	163	26	7.4	9.0	3.5
26	11	110	80	1,000	500	79	57	124	23	8.1	8.5	3.5
27	9.8	85	472	1,400	400	69	50	90	20	8.6	8.0	2.8
28	11	121	968	1,680	400	59	45	70	18	7.4	8.0	2.3
29	16	290	852	1,140	-----	55	42	63	18	6.8	8.0	3.3
30	18	223	614	814	-----	61	43	61	20	7.1	7.5	4.2
31	18	-----	468	683	-----	91	-----	58	-----	5.9	7.0	-----
TOTAL	330.2	1,380.2	4,880	12,513	6,425	15,908	10,193	10,174	890	388.3	301.8	165.9
MEAN	10.7	46.0	157	404	229	513	340	328	29.7	12.5	9.74	5.53
MAX	20	290	968	1,680	1,000	1,970	1,470	1,940	50	23	14	10
MIN	6.0	9.4	34	55	75	55	42	27	18	5.9	6.5	2.3
CFSM	.06	.27	.93	2.39	1.36	3.04	2.01	1.94	.18	.07	.06	.03
IN.	.07	.30	1.07	2.75	1.41	3.50	2.24	2.24	.20	.09	.07	.04
CAL YR 1973	TOTAL 57,220.4	MEAN 157	MAX 2,380	MIN 3.5	CFSM .93	IN 12.60						
WTR YR 1974	TOTAL 63,549.4	MEAN 174	MAX 1,970	MIN 2.3	CFSM 1.03	IN 13.99						

PEAK DISCHARGE (BASE, 900 FT³/s)

NOTE.--Stage-discharge relation indefinite Aug. 13 to Sept. 11.

DATE	TIME	G.H.	DISCHARGE
12-28	1200	5.66	1,030
01-24	--	--	1,400
01-27	--	--	1,960
02-24	--	--	1,100
03-05	1600	7.06	2,000
04-04	2400	6.83	1,630
05-17	1800	7.51	2,210

04160570 North Branch Belle River at Imlay City, Mich.

LOCATION.--Lat 43°01'49", long 83°04'02", in SW¼ NW¼ sec.16, T.7 N., R.12 E., Lapeer County, on left bank 12 ft (4 m) upstream from bridge on State Highway 21, and 0.6 mi (1.0 km) northeast of Imlay City.

DRAINAGE AREA.--18.0 mi² (46.6 km²).

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 800 ft (244 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--9 years, 11.2 ft³/s (0.317 m³/s), 8.45 in/yr (215 mm/yr).

EXTREMES.--Current year: Maximum discharge, 191 ft³/s (5.41 m³/s) May 17 (gage height, 7.78 ft or 2.371 m); minimum, 0.74 ft³/s (0.021 m³/s) Sept. 9 (gage height, 3.14 ft or 0.957 m).

Period of record: Maximum discharge, 212 ft³/s (6.00 m³/s) Feb. 2, 1968 (gage height, 8.12 ft or 2.475 m); minimum, 0.06 ft³/s (0.002 m³/s) July 25, 26, 27, 1966, Aug. 15, 1967; minimum gage height, 2.96 ft (0.902 m) July 25, 26, 27, 1966.

REMARKS.--Records good except those for the winter period, which are fair. Some diversion by pumping for sprinkler irrigation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	7.9	15	16	20	60	20	9.6	9.0	12	1.7	2.0
2	3.8	7.3	11	13	17	40	61	8.6	7.0	13	5.4	2.6
3	7.6	7.6	10	10	16	72	44	8.6	6.5	15	6.5	4.3
4	6.5	6.5	10	9.0	11	116	122	8.6	5.6	12	4.5	3.0
5	5.4	5.6	12	8.0	11	140	63	8.6	5.1	12	4.5	2.8
6	4.5	5.4	11	7.0	10	91	43	10	5.1	11	3.8	2.6
7	3.8	4.8	9.6	7.0	9.5	55	47	9.3	4.8	8.3	3.0	2.5
8	3.3	4.5	9.0	6.5	9.5	55	46	9.6	16	6.8	11	2.3
9	2.8	4.5	8.3	6.5	9.0	76	33	16	14	5.9	7.9	2.1
10	2.8	4.3	8.0	6.0	9.0	54	27	13	11	4.8	5.4	2.1
11	2.8	4.0	7.5	6.0	8.5	37	23	14	8.6	4.8	4.5	2.1
12	2.6	4.3	7.0	6.0	8.5	30	23	31	6.8	4.8	4.3	2.6
13	3.3	4.5	6.5	6.0	8.0	23	25	23	6.8	5.1	4.0	2.5
14	4.5	4.5	6.0	6.0	8.0	19	21	24	11	5.6	3.4	2.6
15	3.8	17	6.0	6.0	7.5	18	19	34	9.3	5.1	3.0	2.3
16	3.3	18	5.5	6.0	7.0	19	16	88	11	4.8	3.0	2.1
17	3.0	13	5.5	6.0	7.0	19	14	186	9.6	3.8	3.4	2.1
18	2.8	10	5.0	6.5	7.0	17	13	161	12	4.3	3.0	2.0
19	2.8	8.6	4.5	7.0	7.5	19	12	94	17	2.8	2.6	2.0
20	2.8	7.3	4.5	10	9.0	17	11	50	16	2.5	2.3	2.5
21	2.8	9.3	4.5	22	11	16	11	36	13	2.1	2.3	2.5
22	3.0	9.6	4.5	58	52	15	13	29	9.3	2.5	2.3	2.3
23	3.0	8.3	5.0	78	77	15	14	25	7.3	3.3	2.3	2.1
24	3.0	17	6.0	56	56	15	12	19	6.2	3.0	2.1	2.3
25	3.0	22	10	50	40	17	11	15	5.6	2.8	1.8	2.3
26	3.0	16	26	52	26	10	10	12	5.1	3.5	1.8	2.3
27	3.0	13	52	125	17	10	9.6	10	5.1	3.3	2.3	2.3
28	4.3	29	49	89	28	10	9.3	11	4.5	2.5	2.3	2.3
29	8.3	33	40	48	-----	10	11	14	4.8	2.3	2.3	4.5
30	9.6	21	30	34	-----	15	11	13	13	2.0	2.0	4.0
31	8.3	-----	20	32	-----	17	-----	10	-----	1.8	2.3	-----
TOTAL	125.8	327.8	408.9	798.5	507.0	1,127	794.9	1,000.9	266.1	173.5	111.2	76.5
MEAN	4.06	10.9	13.2	25.8	18.1	36.4	26.5	32.3	8.87	5.60	3.59	2.55
MAX	9.6	33	52	125	77	140	122	186	17	15	11	4.5
MIN	2.3	4.0	4.5	6.0	7.0	10	9.3	8.6	4.5	1.8	1.7	2.0
CFSM	.23	.61	.73	1.43	1.01	2.02	1.47	1.79	.49	.31	.20	.14
IN.	.26	.68	.85	1.65	1.05	2.33	1.64	2.07	.55	.36	.23	.16
CAL YR 1973	TOTAL 5,876.50 MEAN 16.1 MAX 177 MIN .60 CFSM .89 IN 12.14											
WTR YR 1974	TOTAL 5,718.10 MEAN 15.7 MAX 186 MIN 1.7 CFSM .87 IN 11.82											

PEAK DISCHARGE (BASE, 60 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-23	0800	5.17	82	03-09	1000	5.11	80
01-27	1300	6.27	131	04-04	0800	6.36	134
02-22	1900	5.57	92	04-07	2100	4.85	66
03-01	0200	5.19	74	05-17	1100	7.78	191
03-05	0600	6.71	148				

STREAMS TRIBUTARY TO ST. CLAIR RIVER

04160600 Belle River at Memphis, Mich.

LOCATION.--Lat 42°54'03", long 82°46'09", in NW¼ SE¼ sec.35, T.6 N., R.14 E., St. Clair County, on right bank, at downstream side of bridge on State Highway 19 at Memphis.

DRAINAGE AREA.--151 mi² (391 km²).

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 720 ft (219 m) from topographic map (nearest 5 ft).

AVERAGE DISCHARGE.--12 years, 81.4 ft³/s (2.305 m³/s), 7.32 in/yr (186 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,910 ft³/s (82.4 m³/s) Mar. 5 (gage height, 7.90 ft or 2.408 m); minimum, 5.2 ft³/s (0.15 m³/s) Sept. 26; minimum gage height, 1.33 ft (0.405 m) Sept. 18, 19.

Period of record: Maximum discharge, 4,070 ft³/s (115 m³/s) Feb. 2, 1968; maximum gage height, 8.88 ft (2.707 m) Feb. 1, 1968 (backwater from ice); minimum discharge, 3.1 ft³/s (0.088 m³/s) Mar. 10, 1964 (gage height, 1.19 ft or 0.363 m).

Flood of April 1947 reached a stage of about 9 ft (2.7 m), from information by local residents.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	28	146	214	270	612	150	75	64	27	10	11
2	10	26	103	169	168	769	468	64	56	31	14	12
3	11	24	82	140	166	771	603	52	50	28	20	13
4	20	24	73	110	144	1,110	1,080	46	44	32	20	15
5	18	23	75	90	118	2,190	951	46	40	27	18	15
6	15	21	93	75	100	1,150	597	47	37	24	16	13
7	13	19	81	60	90	843	378	50	35	22	14	12
8	12	18	68	55	80	623	438	53	35	20	26	11
9	11	18	61	50	75	698	355	71	51	18	31	11
10	11	17	58	48	75	686	239	100	52	16	34	9.9
11	11	16	57	46	70	476	188	93	45	15	26	9.8
12	10	16	52	44	70	313	169	224	38	14	20	9.8
13	12	17	49	44	65	237	206	287	34	13	17	9.9
14	12	17	47	44	65	189	190	216	34	15	15	10
15	15	26	50	45	65	162	242	309	41	15	14	9.8
16	15	73	55	47	65	160	170	565	39	17	13	9.0
17	13	84	55	49	65	176	131	1,720	38	20	13	8.0
18	13	58	50	52	65	163	111	1,260	37	17	14	7.1
19	13	45	45	52	65	156	99	926	41	14	13	7.4
20	14	39	40	54	70	154	89	693	49	13	12	7.7
21	13	38	35	350	90	139	82	352	52	11	11	7.5
22	14	54	35	906	150	134	85	205	43	12	10	8.0
23	14	62	35	966	300	129	121	174	36	12	9.9	7.1
24	15	55	35	900	500	117	115	148	31	13	12	6.5
25	15	144	40	666	800	87	95	116	28	13	20	6.2
26	15	169	85	548	500	97	82	91	26	13	14	6.2
27	15	110	290	1,130	285	82	75	79	24	12	12	6.0
28	17	119	528	1,070	271	80	70	72	23	12	13	7.0
29	21	299	594	765	-----	77	75	74	21	11	14	8.3
30	28	263	415	490	-----	86	83	81	23	12	13	10
31	31	-----	264	344	-----	126	-----	75	-----	10	12	-----
TOTAL	457	1,922	3,696	9,623	4,847	12,792	7,737	8,364	1,167	529	500.9	284.2
MEAN	14.7	64.1	119	310	173	413	258	270	38.9	17.1	16.2	9.47
MAX	31	299	594	1,130	800	2,190	1,080	1,720	64	32	34	15
MIN	10	16	35	44	65	77	70	46	21	10	9.9	6.0
CFSM	.10	.42	.79	2.05	1.15	2.74	1.71	1.79	.26	.11	.11	.06
IN.	.11	.47	.91	2.37	1.19	3.15	1.91	2.06	.29	.13	.12	.07
CAL YR 1973	TOTAL 49,517.4	MEAN 136	MAX 1,720	MIN 6.1	CFSM .90	IN 12.20						
WTR YR 1974	TOTAL 51,919.1	MEAN 142	MAX 2,190	MIN 6.0	CFSM .94	IN 12.79						

PEAK DISCHARGE (BASE, 600 FT³/s)

DATE	TIME	G.H.	DISCHARGE
12-28	2300	5.06	678
01-22	1400	6.16	1,010
01-27	1900	7.10	1,440
02-25	unknown	5.71	945
03-05	0300	7.90	2,910
03-09	1900	5.27	798
04-04	1700	6.81	1,300
05-17	1000	7.73	2,020

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04160800 Sashabaw Creek near Drayton Plains, Mich.

LOCATION.--Lat 42°43'12", long 83°21'13", in SE¼ sec.26, T.4 N., R.9 E., Oakland County, on right bank 25 ft (8 m) upstream from bridge on Maybee Road, 1.1 mi (1.8 km) upstream from mouth, and 2.5 mi (4.0 km) northeast of Drayton Plains.

DRAINAGE AREA.--20.9 mi² (54.1 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Metal V-notch weir Aug. 30, 1961 to Mar. 6, 1968. Altitude of gage is 970 ft (296 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--15 years, 11.3 ft³/s (0.320 m³/s), 7.34 in/yr (186 mm/yr).

EXTREMES.--Current year: Maximum discharge, 161 ft³/s (4.56 m³/s) Feb. 23 (gage height, 4.38 ft or 1.335 m); minimum, 1.0 ft³/s (0.028 m³/s) Sept. 27 (gage height, 1.99 ft or 0.607 m).

Period of record: Maximum discharge, 161 ft³/s (4.56 m³/s) Feb. 23, 1974 (gage height, 4.38 ft or 1.335 m); minimum, 0.2 ft³/s (0.006 m³/s) on many days during 1961, 1963, 1964, 1965, 1966; minimum gage height, 1.59 ft (0.485 m) Aug. 1, 2, 1960.

REMARKS.--Records good.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	7.2	17	22	51	44	38	28	27	11	4.2	2.8
2	3.6	6.0	15	21	49	41	59	26	24	12	7.3	2.8
3	5.1	6.3	14	16	33	50	51	26	23	14	11	4.9
4	3.8	5.6	13	14	30	70	72	25	21	11	7.7	3.9
5	3.0	5.4	15	13	30	117	61	24	19	11	7.3	3.0
6	2.8	4.9	13	13	29	95	54	26	18	9.8	6.5	2.9
7	2.7	4.7	12	13	33	80	51	26	17	8.6	6.0	3.0
8	2.6	4.7	12	12	30	79	55	25	29	7.3	6.6	2.8
9	2.6	4.4	12	13	26	88	48	32	26	6.6	8.3	2.6
10	2.6	4.2	12	13	25	81	45	29	22	6.9	7.0	2.7
11	2.4	4.2	11	13	26	66	42	31	19	8.7	6.0	2.7
12	2.4	4.2	10	12	24	58	45	52	17	7.2	5.1	2.7
13	3.3	4.2	11	13	23	54	48	42	15	6.4	4.6	2.3
14	4.2	4.0	10	14	21	61	48	38	14	6.4	4.3	2.1
15	3.3	11	10	13	20	62	50	45	14	6.7	3.8	1.9
16	3.0	12	10	13	23	61	46	55	13	5.8	3.8	1.6
17	2.8	8.9	11	12	22	57	42	113	13	5.3	4.7	1.8
18	2.6	8.3	8.0	11	21	51	41	96	14	5.2	4.0	1.7
19	2.4	7.5	7.0	10	27	48	45	74	16	5.2	3.7	1.5
20	2.4	6.7	8.0	14	27	40	41	60	17	5.0	4.7	1.6
21	2.4	10	13	38	24	38	38	51	16	4.6	3.7	1.7
22	2.4	12	9.7	42	51	36	38	47	14	4.8	3.5	1.5
23	2.4	9.4	10	49	102	35	39	46	13	6.6	3.6	1.3
24	2.4	12	9.4	51	58	32	36	42	12	6.2	3.5	1.5
25	2.4	17	12	38	58	30	33	39	11	5.7	3.0	1.4
26	2.3	13	16	38	55	26	32	36	10	5.9	2.9	1.4
27	2.2	12	26	59	50	25	30	31	10	5.9	3.4	1.2
28	3.0	23	25	53	47	25	28	27	9.4	5.5	3.3	2.0
29	7.5	26	23	46	-----	27	30	36	9.0	5.7	2.8	3.1
30	8.0	20	34	41	-----	34	30	33	11	5.3	2.6	2.7
31	6.3	-----	21	40	-----	40	-----	30	-----	4.6	3.0	-----
TOTAL	101.2	278.8	430.1	770	1,015	1,651	1,316	1,291	493.4	220.9	151.9	69.1
MEAN	3.26	9.29	13.9	24.8	36.3	53.3	43.9	41.6	16.4	7.13	4.90	2.30
MAX	8.0	26	34	59	102	117	72	113	29	14	11	4.9
MIN	2.2	4.0	7.0	10	20	25	28	24	9.0	4.6	2.6	1.2
CFSM	.16	.44	.67	1.19	1.74	2.55	2.10	1.99	.78	.34	.23	.11
IN.	.18	.50	.77	1.37	1.81	2.94	2.34	2.30	.88	.39	.27	.12

CAL YR 1973 TOTAL 6,314.2 MEAN 17.3 MAX 77 MIN 1.8 CFSM .83 IN 11.24
WTR YR 1974 TOTAL 7,788.4 MEAN 21.3 MAX 117 MIN 1.2 CFSM 1.02 IN 13.86

PEAK DISCHARGE (BASE, 45 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-30	0900	3.44	49	04-04	1000	3.80	78
01-24	0600	3.64	66	04-14	2200	3.58	54
01-27	1500	3.62	64	04-19	0300	3.45	45
02-01	0800	3.68	70	05-12	0600	3.54	55
02-23	0900	4.38	161	05-17	1200	4.17	129
03-05	0700	4.12	124				

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04160900 Clinton River near Drayton Plains, Mich.

LOCATION.--Lat 42°39'37", long 83°23'25", in NE¼ sec.21, T.3 N., R.9 E., Oakland County, on left bank 14 ft (4 m) downstream from bridge on State Highway 59, 1.0 mi (1.6 km) downstream from State fish hatchery, and 2.0 mi (3.2 km) south of Drayton Plains.

DRAINAGE AREA.--79.2 mi² (205.1 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft (287 m) from topographic map (nearest 10 ft). Jan. 29 to July 9, 1964, non-recording gage at same site and datum.

AVERAGE DISCHARGE.--15 years, 48.6 ft³/s (1.376 m³/s), 8.33 in/yr (212 mm/yr).

EXTREMES.--Current year: Maximum discharge, 276 ft³/s (7.82 m³/s) Mar. 12 (gage height, 4.95 ft or 1.509 m); minimum, 8.6 ft³/s (0.24 m³/s) Nov. 20; minimum gage height, 1.89 ft (0.576 m) Oct. 1.

Period of record: Maximum discharge, 276 ft³/s (7.82 m³/s) Mar.12, 1974 (gage height, 4.95 ft or 1.509 m); minimum, 2.4 ft³/s (0.068 m³/s) May 31, 1961; minimum gage height, 1.23 ft (0.375 m) Jan. 4, 1961.

REMARKS.--Records good. Some regulation and occasional diversion for lake level control at many lakes above station. Records of water temperatures for the current year are published in Part 2 of this report.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.7	41	104	90	132	126	143	130	119	48	25	28
2	16	42	103	92	131	129	153	121	118	41	30	16
3	19	43	103	89	125	130	153	112	113	42	36	16
4	21	45	119	88	121	149	167	96	110	41	36	14
5	26	45	121	87	115	170	168	87	106	36	38	12
6	29	47	118	85	115	175	174	80	103	28	39	11
7	34	54	117	83	113	181	183	76	99	27	40	11
8	30	54	98	83	112	197	183	76	105	28	43	10
9	26	57	94	84	110	223	176	79	101	31	43	10
10	30	56	93	83	110	238	172	79	98	35	39	10
11	34	56	78	81	109	255	173	85	99	39	39	10
12	37	52	119	79	106	274	180	96	101	45	40	13
13	41	49	112	79	104	270	180	100	103	49	35	15
14	42	51	106	78	103	265	187	108	103	54	32	18
15	42	63	101	73	101	255	186	123	103	59	31	19
16	41	57	96	71	100	237	185	155	97	57	32	21
17	41	61	88	68	99	213	182	177	96	54	32	22
18	40	58	80	66	99	198	181	201	94	44	31	24
19	38	36	73	64	103	192	179	217	97	35	32	24
20	40	13	71	70	101	189	172	221	98	27	33	25
21	39	48	75	80	108	177	167	213	93	27	31	24
22	39	64	73	80	125	170	166	199	89	27	28	22
23	37	71	72	91	126	164	163	194	85	29	28	21
24	35	82	71	94	131	157	161	185	77	28	27	25
25	34	83	70	102	132	151	158	172	72	27	26	28
26	20	84	74	112	130	145	152	162	69	26	24	22
27	20	85	77	125	129	140	148	152	60	25	24	17
28	22	96	88	129	129	135	146	143	54	26	29	16
29	33	97	86	133	-----	138	146	141	52	26	32	17
30	44	102	87	134	-----	141	142	132	54	27	32	16
31	43	-----	89	133	-----	138	-----	125	-----	26	32	-----
TOTAL	1,002.7	1,792	2,856	2,806	3,219	5,722	5,026	4,237	2,768	1,114	1,019	537
MEAN	32.3	59.7	92.1	90.5	115	185	168	137	92.3	35.9	32.9	17.9
MAX	44	102	121	134	132	274	187	221	119	59	43	28
MIN	9.7	13	70	64	99	126	142	76	52	25	24	10
CFSM	.41	.75	1.16	1.14	1.45	2.34	2.12	1.73	1.17	.45	.42	.23
IN.	.47	.84	1.34	1.32	1.51	2.69	2.36	1.99	1.30	.52	.48	.25

CAL YR 1973 TOTAL 28,606.2 MEAN 78.4 MAX 171 MIN 9.5 CFSM .99 IN 13.44
WTR YR 1974 TOTAL 32,098.7 MEAN 87.9 MAX 274 MIN 9.7 CFSM 1.11 IN 15.08

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161000 Clinton River at Auburn Heights, Mich.

LOCATION.--Lat 42°38'00", long 83°13'28", in NW¼ sec.36, T.3 N., R.10 E. Oakland County, on right bank 30 ft (9 m) upstream from bridge on State Highway 59, at Auburn Heights, and 2.8 mi (4.5 km) upstream from Galloway Creek.

DRAINAGE AREA.--123 mi² (319 km²).

PERIOD OF RECORD.--May 1935 to June 1939 and February to September 1940 (published as "at Pontiac"), October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 846.50 ft (258.013 m) above mean sea level. Prior to October 1940, nonrecording gage at site 3.3 mi (5.3 km) upstream at datum 876.01 ft (267.008 m) above mean sea level.

AVERAGE DISCHARGE.--21 years (1935-38, 1956-74) 95.1 ft³/s (2.693 m³/s), 10.50 in/yr (267 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,360 ft³/s (38.5 m³/s) Mar. 5 (gage height, 4.86 ft or 1.481 m); minimum, 30 ft³/s (0.85 m³/s) Sept. 22 (gage height, 1.01 ft or 0.308 m).

Period of record: Maximum discharge, 1,400 ft³/s (39.6 m³/s) June 25, 1968 (gage height, 4.88 ft or 1.487 m); minimum observed, 4.8 ft³/s (0.14 m³/s) Sept. 4, 1936, site then in use.

REMARKS.--Records good except those for the winter period, which are poor. Some regulation by many lakes above station. Flow includes waste from city of Pontiac water supply, most of which is obtained from sources outside the basin.

REVISIONS (WATER YEARS).--WSP 1307: 1937 (M). WSP 1507: Drainage area at former site.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	141	175	155	290	250	320	261	300	118	52	56
2	89	159	166	158	270	241	350	252	284	153	102	65
3	67	131	170	160	250	250	380	262	271	139	95	104
4	83	101	189	158	240	395	820	239	264	138	61	70
5	107	98	182	152	230	970	520	222	251	131	65	66
6	107	98	175	147	220	750	440	237	241	120	58	62
7	101	99	171	151	210	510	400	221	236	110	58	49
8	102	100	166	150	199	620	420	219	312	116	63	41
9	103	98	166	153	194	940	390	230	232	116	61	41
10	100	94	172	170	189	700	330	214	223	168	53	60
11	101	86	171	171	197	500	290	308	212	115	50	87
12	102	88	169	164	204	410	290	344	206	86	53	121
13	125	89	157	156	204	330	320	290	198	63	56	74
14	102	88	181	161	199	294	300	240	190	52	56	62
15	95	225	182	159	193	305	290	310	159	53	57	55
16	95	120	160	167	184	330	274	310	112	48	67	58
17	91	103	150	160	177	329	252	520	109	45	75	51
18	69	95	140	155	179	345	294	550	136	44	63	45
19	52	101	140	150	222	355	298	420	157	45	66	43
20	46	102	135	281	208	331	289	330	157	41	75	42
21	40	181	135	600	208	388	286	283	258	39	76	38
22	43	146	140	520	481	402	355	311	147	43	74	33
23	46	142	140	560	254	391	285	326	119	56	73	37
24	45	166	146	400	209	360	283	294	122	44	68	39
25	45	138	189	300	202	340	284	289	126	42	59	39
26	45	116	226	260	214	321	290	290	126	42	62	40
27	43	114	272	660	222	312	280	285	127	40	67	41
28	80	263	186	500	249	305	271	343	127	38	65	41
29	103	185	174	420	-----	321	277	369	124	42	65	71
30	74	183	164	370	-----	360	273	334	159	46	64	42
31	70	-----	159	320	-----	400	-----	318	-----	50	75	-----
TOTAL	2,420	3,850	5,248	8,188	6,298	13,055	10,151	9,421	5,645	2,383	2,034	1,673
MEAN	78.1	128	169	264	225	421	338	304	190	76.9	65.6	55.8
MAX	125	263	272	660	481	970	820	550	312	168	102	121
MIN	40	86	135	147	177	241	252	214	109	38	50	33
CFSM	.64	1.04	1.37	2.15	1.83	3.42	2.75	2.47	1.54	.63	.53	.45
IN.	.73	1.16	1.59	2.48	1.90	3.95	3.07	2.85	1.72	.72	.62	.51
CAL YR 1973	TOTAL 58,280	MEAN 160	MAX 388	MIN 40	CFSM 1.30	IN 17.63						
WTR YR 1974	TOTAL 70,406	MEAN 193	MAX 970	MIN 33	CFSM 1.57	IN 21.29						

PEAK DISCHARGE (BASE, 460 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-26	2400	3.06	478	04-04	unknown	unknown	about 1,010
01-21	unknown	unknown	about 690	04-22	1400	3.16	494
01-23	unknown	unknown	about 604	05-11	2100	3.75	775
01-27	unknown	unknown	about 765	05-17	unknown	unknown	about 654
02-22	0500	3.59	690	06-08	0400	3.17	526
03-05	0100	4.86	1,360	06-21	0400	3.00	466
03-09	unknown	unknown	about 1,050	07-10	1900	2.99	462

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161100 Galloway Creek near Auburn Heights, Mich.

LOCATION.--Lat 42°40'02", long 83°12'02", in SE¼ sec.18, T.3 N., R.11 E., Oakland County, on right bank 12 ft (4 m) downstream from wooden bridge on Oakland University property, and 2.7 mi (4.3 km) northeast of Auburn Heights.

DRAINAGE AREA.--17.9 mi² (46.4 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Concrete control since Aug. 20, 1960. Altitude of gage is 830 ft (253 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--15 years, 9.35 ft³/s (0.265 m³/s), 7.09 in/yr (180 mm/yr).

EXTREMES.--Current year: Maximum discharge, about 150 ft³/s (4.25 m³/s) Mar. 5, based on correlation with nearby stations; minimum daily, 0.90 ft³/s (0.025 m³/s) Sept. 25.

Period of record: Maximum discharge, 368 ft³/s (10.4 m³/s) June 25, 1968 (gage height, 6.27 ft or 1.911 m); minimum, 0.01 cfs (<0.001 m³/s) on several days during July and August, 1964; minimum gage height, 0.82 ft (0.250 m) Aug. 1, 1960.

REMARKS.--Records fair.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	10	18	13	21	35	25	13	12	4.0	1.4	1.5
2	2.2	6.9	14	11	17	44	22	12	10	4.6	2.1	1.7
3	3.1	6.3	12	9.5	14	49	40	12	9.0	4.3	3.1	3.1
4	2.9	4.7	13	8.5	12	65	90	12	8.0	4.1	3.0	2.2
5	2.5	3.8	15	7.5	11	120	65	11	7.5	4.2	3.5	1.7
6	2.1	3.1	13	7.0	10	80	55	13	6.7	3.3	2.6	1.4
7	2.0	2.6	11	6.5	9.7	68	40	13	6.2	2.7	2.3	1.3
8	1.9	2.5	10	6.2	9.4	71	43	14	5.8	2.4	2.7	1.3
9	1.8	2.1	9.4	6.0	9.0	100	33	29	6.0	2.0	4.2	1.2
10	1.8	1.8	9.2	5.8	8.7	75	28	22	6.6	2.9	2.6	1.2
11	1.7	1.8	8.0	5.6	8.5	60	26	26	7.0	3.1	2.3	1.3
12	1.7	1.9	7.0	5.5	8.4	49	26	64	6.3	2.7	2.0	2.2
13	2.9	1.8	7.0	5.4	8.1	36	26	48	5.4	2.3	1.7	1.5
14	3.6	1.7	6.9	5.3	8.0	28	24	33	4.8	2.3	1.5	1.3
15	2.6	22	5.9	5.2	7.9	26	23	50	4.7	2.3	1.4	1.2
16	2.2	19	5.7	5.1	7.8	30	21	65	4.9	1.8	1.4	1.3
17	1.9	13	4.7	5.1	7.8	29	19	102	4.5	1.7	1.6	1.9
18	1.9	9.4	4.4	5.0	7.7	24	19	92	4.0	1.7	1.3	1.9
19	1.8	7.0	4.0	5.0	9.0	24	24	70	3.9	1.6	1.3	1.3
20	1.8	5.6	3.8	10	10	21	20	51	4.3	1.4	1.3	1.1
21	1.6	15	3.7	80	11	21	18	37	4.7	1.4	1.3	1.0
22	1.5	14	3.6	80	81	20	28	29	4.9	1.6	1.3	1.0
23	1.5	11	3.5	85	115	20	33	23	4.5	2.6	1.4	1.0
24	1.5	14	3.5	80	85	19	25	18	3.7	1.8	1.3	1.0
25	1.5	23	6.0	55	52	18	20	15	3.2	1.6	1.2	.90
26	1.5	18	20	50	35	17	17	14	3.0	1.6	1.2	.95
27	1.4	14	59	87	27	17	16	12	2.7	1.5	1.2	1.0
28	3.7	40	55	71	30	17	15	13	2.6	1.4	1.2	2.0
29	11	41	43	54	-----	22	15	21	2.6	1.5	1.2	3.4
30	10	27	25	42	-----	26	15	18	5.6	1.3	1.2	2.5
31	7.5	-----	16	27	-----	35	-----	15	-----	1.3	1.6	-----
TOTAL	86.4	344.0	420.3	849.2	641.0	1,266	871	967	165.1	73.0	57.4	46.35
MEAN	2.79	11.5	13.6	27.4	22.9	40.8	29.0	31.2	5.50	2.35	1.85	1.55
MAX	11	41	59	87	115	120	90	102	12	4.6	4.2	3.4
MIN	1.3	1.7	3.5	5.0	7.7	17	15	11	2.6	1.3	1.2	.90
CFSM	.16	.64	.76	1.53	1.28	2.28	1.62	1.74	.31	.13	.10	.09
IN.	.18	.71	.87	1.76	1.33	2.63	1.81	2.01	.34	.15	.12	.10
CAL YR 1973	TOTAL 5,868.60 MEAN 16.1 MAX 93 MIN 1.0 CFSM .90 IN 12.20											
WTR YR 1974	TOTAL 5,786.75 MEAN 15.9 MAX 120 MIN .90 CFSM .89 IN 12.03											

PEAK DISCHARGE (BASE, 90 FT³/S)

NOTE.--No gage-height record Mar. 5.

DATE	TIME	G.H.	DISCHARGE
01-24	0900	4.69	94
01-27	0400	4.72	97
02-23	0900	5.16	144
03-05	unknown	unknown	about 150
03-09	unknown	unknown	about 120
04-04	unknown	unknown	about 105
05-17	0800	4.84	107

04161500 Paint Creek near Lake Orion, Mich.

LOCATION.--Lat 42°46'03", long 83°13'12", in NE¼ sec.13, T.4 N., R.10 E., Oakland County, on left bank 100 ft (30 m) upstream from railroad bridge, 1.6 mi (2.6 km) southeast of Lake Orion, and 2.8 mi (4.5 km) upstream from Trout Creek.

DRAINAGE AREA.--38.5 mi² (99.7 km²).

PERIOD OF RECORD.--September 1955 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 940 ft (287 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--19 years, 24.3 ft³/s (0.688 m³/s), 8.57 in/yr (218 mm/yr).

EXTREMES.--Current year: Maximum discharge, 280 ft³/s (7.93 m³/s) Mar. 4 (gage height, 3.80 ft or 1.158 m) minimum daily, 4.0 ft³/s (0.11 m³/s) Nov. 4-14, 17-20.

Period of record: Maximum discharge, 359 ft³/s (10.2 m³/s) Feb. 4, 1968 (gage height, 3.50 ft or 1.067 m); maximum gage height, 4.43 ft (1.350 m) Sept. 22, 1971, caused by construction downstream; minimum discharge, 1.2 ft³/s (0.034 m³/s) June 28, July 13, 14 15, 1959.

REMARKS.--Records fair. Occasional regulation by Lake Orion.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	4.6	74	64	125	68	51	42	43	29	21	12
2	29	4.6	64	57	110	80	68	40	41	29	24	12
3	28	4.4	57	51	86	87	84	39	41	31	24	15
4	27	4.0	51	46	75	142	119	36	39	31	18	14
5	26	4.0	49	46	66	175	132	36	31	33	16	13
6	26	4.0	45	43	63	250	149	36	30	28	16	13
7	25	4.0	41	38	60	250	158	25	30	26	15	13
8	24	4.0	38	37	58	247	147	9.6	38	25	21	13
9	23	4.0	36	37	56	235	134	19	38	21	22	12
10	22	4.0	37	33	54	220	114	35	40	21	22	12
11	22	4.0	34	31	53	203	97	45	39	20	20	12
12	22	4.0	34	30	51	170	92	80	37	19	18	15
13	22	4.0	34	29	50	136	89	66	36	20	17	16
14	21	4.0	35	29	47	108	103	59	36	22	17	14
15	21	7.2	32	26	44	90	98	76	35	20	16	12
16	20	4.2	29	24	43	87	86	110	34	18	16	11
17	19	4.0	28	23	42	76	74	200	32	18	17	11
18	17	4.0	26	22	41	69	68	190	31	21	16	11
19	17	4.0	26	22	40	66	64	180	35	22	14	11
20	16	4.0	25	31	40	60	59	165	42	19	13	11
21	16	5.0	25	46	37	57	54	140	40	18	12	10
22	10	4.4	24	53	63	52	54	125	37	17	12	9.7
23	4.4	4.4	24	82	64	46	54	110	34	18	13	25
24	4.4	9.3	26	84	71	44	52	94	32	18	13	30
25	4.4	16	29	110	72	42	49	77	30	17	13	24
26	4.4	19	34	123	72	40	47	72	29	18	12	20
27	4.4	24	43	160	71	37	44	61	30	20	14	18
28	6.4	39	44	170	69	37	44	33	28	18	13	18
29	5.6	43	54	183	-----	39	44	39	28	16	13	20
30	4.6	50	63	175	-----	42	42	43	30	15	13	40
31	4.4	-----	67	149	-----	43	-----	44	-----	15	13	-----
TOTAL	522.0	299.1	1,228	2,054	1,723	3,298	2,470	2,326.6	1,046	663	504	467.7
MEAN	16.8	9.97	39.6	66.3	61.5	106	82.3	75.1	34.9	21.4	16.3	15.6
MAX	29	50	74	183	125	250	158	200	43	33	24	40
MIN	4.4	4.0	24	22	37	37	42	9.6	28	15	12	9.7
CFSM	.44	.26	1.03	1.72	1.60	2.75	2.14	1.95	.91	.56	.42	.41
IN.	.50	.29	1.19	1.98	1.66	3.19	2.39	2.25	1.01	.64	.49	.45
CAL YR 1973	TOTAL 14,303.7	MEAN 39.2	MAX 180	MIN 4.0	CFSM 1.02	IN 13.82						
WTR YR 1974	TOTAL 16,601.4	MEAN 45.5	MAX 250	MIN 4.0	CFSM 1.18	IN 16.04						

PEAK DISCHARGE (BASE, 90 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-26	2400	3.52	197
03-04	2200	3.80	280
04-01	2330	2.73	93
04-03	2200	3.10	170
05-17	unknown	unknown	about 225

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161540 Paint Creek at Rochester, Mich.

LOCATION.--Lat 42°41'18", long 83°08'35", in NW¼ SE¼ sec.10, T.3 N., R.11 E., Oakland County, on right bank at upstream side of bridge on Ludlow Street in Rochester, and 1.5 mi (2.4 km) upstream from mouth.

DRAINAGE AREA.--70.9 mi² (183.6 km²).

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 755.11 ft (230.158 m) above mean sea level.

AVERAGE DISCHARGE.--15 years, 47.7 ft³/s (1.351 m³/s), 9.14 in/yr (232 mm/yr).

EXTREMES.--Current year: Maximum discharge, 788 ft³/s (22.3 m³/s) Mar. 5 (gage height, 5.75 ft or 1.753 m); minimum, 1.2 ft³/s (0.034 m³/s) Aug. 19 (gage height, 1.90 ft or 0.579 m, caused by regulation due to bridge construction).

Period of record: Maximum discharge, 918 ft³/s (26.0 m³/s) Feb. 1, 1968; maximum gage height, 5.95 ft (1.814 m) Feb. 10, 1965 (backwater from ice); minimum discharge, 1.2 ft³/s (0.034 m³/s) Aug. 19, 1974, caused by regulation due to bridge construction; minimum gage height, 1.26 ft (0.384 m) Sept. 16, 1960.

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by Lake Orion.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	26	89	86	152	178	131	80	83	46	30	22
2	38	23	86	80	130	164	225	77	77	47	32	23
3	43	23	79	75	123	202	192	78	71	49	50	19
4	40	20	75	70	118	314	313	75	73	44	37	25
5	38	19	80	66	110	643	231	72	60	43	32	24
6	36	18	75	64	107	424	208	76	58	39	29	21
7	35	17	70	60	103	370	216	71	56	34	28	22
8	34	18	66	58	100	353	220	51	85	32	41	22
9	32	17	63	56	97	406	188	78	78	29	38	22
10	32	16	63	55	93	326	166	71	72	30	33	23
11	32	17	61	53	92	277	150	87	68	30	31	24
12	31	19	57	51	92	240	147	165	64	26	31	30
13	34	20	56	50	92	202	152	130	61	25	30	30
14	38	19	56	48	79	175	145	117	64	30	28	28
15	34	51	54	47	76	161	153	154	66	34	27	27
16	32	39	52	46	74	158	136	223	62	26	28	24
17	31	29	52	45	71	145	123	497	60	24	29	24
18	30	27	50	44	74	133	115	350	61	23	28	24
19	29	25	49	42	78	133	119	305	65	29	21	24
20	29	25	48	61	85	123	111	283	71	32	21	24
21	29	38	48	158	86	120	103	243	63	31	21	24
22	28	36	47	162	225	114	118	204	56	32	22	24
23	23	30	46	221	234	108	118	180	51	32	23	27
24	19	40	52	169	170	98	105	151	49	32	25	40
25	18	54	64	159	155	92	97	127	46	31	23	35
26	17	49	77	169	136	89	93	108	44	32	22	33
27	15	50	121	359	128	88	89	105	46	31	22	31
28	23	98	113	245	145	87	87	80	43	30	23	32
29	37	99	105	203	-----	91	90	98	42	30	22	41
30	33	86	99	192	-----	122	86	92	52	29	21	40
31	26	-----	95	179	-----	134	-----	87	-----	28	23	-----
TOTAL	953	1,048	2,148	3,373	3,225	6,270	4,427	4,515	1,847	1,010	871	809
MEAN	30.7	34.9	69.3	109	115	202	148	146	61.6	32.6	28.1	27.0
MAX	43	99	121	359	234	643	313	497	85	49	50	41
MIN	15	16	46	42	71	87	86	51	42	23	21	19
CFSM	.43	.49	.98	1.54	1.62	2.85	2.09	2.06	.87	.46	.40	.38
IN.	.50	.55	1.13	1.77	1.69	3.29	2.32	2.37	.97	.53	.46	.42

CAL YR 1973 TOTAL 27,441 MEAN 75.2 MAX 310 MIN 15 CFSM 1.06 IN 14.40
WTR YR 1974 TOTAL 30,496 MEAN 83.6 MAX 643 MIN 15 CFSM 1.18 IN 16.00

PEAK DISCHARGE (BASE, 200 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-23	1000	4.03	240	03-09	0500	4.71	445
01-27	1000	4.67	403	04-02	1000	4.07	262
02-22	1900	4.24	310	04-04	0900	4.47	364
03-05	0500	5.75	788	05-17	1200	5.40	630

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161580 Stony Creek near Romeo, Mich.

LOCATION.--Lat 42° 48'03", long 83°05'25", in SW¼ sec.31, T.5 N., R.12 E., Macomb County, on right bank, at upstream side of bridge on Romeo Road, and 4.0 mi (6.4 km) west of Romeo.

DRAINAGE AREA.--25.6 mi² (66.3 km²).

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 861.64 ft (262.628 m) above mean sea level.

AVERAGE DISCHARGE.--10 years, 16.0 ft³/s (0.453 m³/s), 8.49 in/yr (216 mm/yr).

EXTREMES.--Current year: Maximum discharge, 246 ft³/s (6.97 m³/s) Mar. 5, based on correlation with nearby stations; minimum, 4.3 ft³/s (0.12 m³/s) Sept. 23, 24, 25, 26, 27; minimum gage height, 1.54 ft (0.469 m) Aug. 1, Sept. 23, 24, 25, 26, 27.

Period of record: Maximum discharge, 246 ft³/s (6.97 m³/s) Mar. 5, 1974, based on correlation with nearby stations; minimum, 0.92 ft³/s (0.026 m³/s) Oct. 5, 9, 1967; minimum gage height, 1.28 ft (0.390 m) July 27, 28, 1965.

REMARKS.--Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	12	25	25	46	56	32	27	30	10	4.8	6.2
2	5.2	15	20	24	42	54	54	23	21	10	9.8	6.0
3	6.0	16	18	23	40	65	50	23	16	12	18	9.4
4	5.7	13	19	22	38	100	75	23	14	9.9	8.6	7.2
5	5.8	11	21	21	36	200	70	21	22	13	7.4	7.3
6	5.6	9.5	19	19	34	150	64	23	25	11	6.4	6.9
7	5.5	8.8	18	18	32	110	62	21	22	9.7	5.9	6.5
8	5.5	9.2	17	18	31	115	66	22	32	8.7	22	6.2
9	5.6	11	16	17	29	120	58	33	30	8.0	32	6.6
10	5.8	9.1	16	19	28	100	52	31	23	8.4	19	6.1
11	6.0	8.3	15	18	27	85	48	35	20	6.7	15	5.9
12	6.0	8.5	14	17	26	75	49	64	18	6.0	13	6.7
13	7.0	8.3	13	16	28	65	49	54	16	5.8	10	6.8
14	9.5	8.0	12	15	26	58	46	49	16	7.5	11	6.4
15	7.1	26	12	14	25	54	44	60	14	15	10	7.9
16	6.5	25	11	13	23	52	44	77	17	7.6	10	7.1
17	6.0	9.7	10	12	21	47	42	192	19	6.5	8.7	7.6
18	5.9	8.1	9.5	11	19	36	41	213	22	6.6	7.5	6.5
19	5.7	9.9	9.0	10	20	32	51	152	27	6.4	7.7	5.7
20	5.8	9.4	8.5	20	22	28	47	104	26	5.9	6.3	6.7
21	5.5	16	8.2	42	30	27	42	82	19	5.4	5.6	6.1
22	6.1	16	7.8	41	45	26	42	72	14	5.4	5.4	5.1
23	5.6	14	7.6	62	80	25	44	66	9.7	6.4	5.8	4.3
24	5.4	28	7.4	56	65	24	40	58	9.7	6.8	7.5	4.3
25	5.5	34	10	50	55	24	35	53	9.2	6.0	7.3	4.5
26	5.5	29	23	55	48	23	31	45	11	6.0	6.1	4.5
27	5.5	26	32	120	38	23	29	31	8.9	5.6	7.3	4.5
28	7.5	36	29	92	45	23	27	25	8.4	5.4	8.5	5.5
29	17	36	29	75	-----	24	29	29	8.1	5.2	7.7	9.3
30	17	31	29	63	-----	29	29	32	12	5.0	7.0	8.4
31	11	-----	27	56	-----	35	-----	29	-----	4.8	6.6	-----
TOTAL	212.7	501.8	513.0	1,064	999	1,885	1,392	1,769	540.0	236.7	307.9	192.2
MEAN	6.86	16.7	16.5	34.3	35.7	60.8	46.4	57.1	18.0	7.64	9.93	6.41
MAX	17	36	32	120	80	200	75	213	32	15	32	9.4
MIN	4.9	8.0	7.4	10	19	23	27	21	8.1	4.8	4.8	4.3
CFSM	.27	.65	.64	1.34	1.39	2.38	1.81	2.23	.70	.30	.39	.25
IN.	.31	.73	.75	1.55	1.45	2.74	2.02	2.57	.78	.34	.45	.28

CAL YR 1973 TOTAL 8,063.6 MEAN 22.1 MAX 149 MIN 4.4 CFSM .86 IN 11.72
WTR YR 1974 TOTAL 9,613.3 MEAN 26.3 MAX 213 MIN 4.3 CFSM 1.03 IN 13.97

PEAK DISCHARGE (BASE, 100 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-27	unknown	unknown	145
03-05	unknown	unknown	246
03-09	unknown	unknown	145
05-17	0600	4.70	239

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04161790 Stony Lake near Washington, Mich.

LOCATION.--Lat 42°42'58", long 83°05'58", in SE¼ sec.31, T.4 N., R.12 E., Macomb County, on left bank 1,000 ft (305 m) east of bridge over dam on Stony Creek, and 2.7 mi (4.3 km) west of Washington.

DRAINAGE AREA.--68.0 mi² (176.1 km²).

PERIOD OF RECORD.--February 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 790.00 ft (240.792 m) above mean sea level (levels by Huron-Clinton Metropolitan Authority). Gage readings have been converted to elevations above mean sea level.

EXTREMES.--Current year: Maximum contents 5,495 acre-ft (6.78 hm³) May 17, 18 (elevation, 803.6 ft or 244.94 m); minimum, 4,201 acre-ft (5.18 hm³) Nov. 11-16, 19-22, Dec. 24, 25 (elevation, 801.1 ft or 244.18 m).

Period of record: Maximum contents, 5,495 acre-ft (6.78 hm³) May 17, 18, 1974 (elevation 803.6 ft or 244.94 m); minimum recorded, 1,758 acre-ft (2.17 hm³) Nov. 21, 1967 (elevation, 794.7 ft or 242.22 m).

REMARKS.--Reservoir is formed by an earth-fill dam with concrete spillway completed in 1962. The spillway section includes a drum gate with minimum crest elevation of 796 ft (242.6 m), maximum of 802 ft (244.4 m), and 2 sluices, one on each side, with valve controls (capable of draining lake). The reservoir began filling February 1963. Lake is used for recreational purposes.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

Date	Elevation (feet)	Contents (Acre-feet)	Change in contents during month	
			(Acre-feet)	Equivalent in ft ³ /s
Sept. 30.	802.0	*4,649	--	--
Oct. 31.	801.9	4,599	-50	-0.8
Nov. 30.	801.5	4,399	-200	-3.4
Dec. 31.	801.7	4,499	+100	+1.6
Calendar year 1973	--	--	+816	+1.1
Jan. 31.	801.6	4,449	-50	-0.8
Feb. 28.	801.5	4,399	-50	-0.9
Mar. 31.	802.7	5,013	+614	+10.0
Apr. 30.	802.5	4,909	-104	-1.7
May 31.	802.5	4,909	0	0
June 30.	802.2	4,753	-156	-2.6
July 31.	802.1	4,701	-52	-0.8
Aug. 31.	802.2	4,753	+52	+0.8
Sept. 30.	802.2	4,753	0	0
Water year 1973-74	--	--	+104	+0.1

*Computed on basis of revised capacity table put into use Oct. 1, 1973.

04161800 Stony Creek near Washington, Mich.

LOCATION.--Lat 42°42'55", long 83°05'31", in SW¼ sec.31, T.4 N., R.12 E., Macomb County, on left bank 15 ft (5 m) downstream from bridge on Mt. Vernon Road, 500 ft (152 m) downstream from Stony Lake Dam, and 2.9 mi (4.7 km) west of Washington.

DRAINAGE AREA.--68.2 mi² (176.6 km²).

PERIOD OF RECORD.--July 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 772.59 ft (235.485 m) above mean sea level (levels by Huron-Clinton Metropolitan Authority).

AVERAGE DISCHARGE.--16 years, 38.0 ft³/s (1.076 m³/s), 7.57 in/yr (192 mm/yr), adjusted for storage since 1963.

EXTREMES.--Current year: Maximum discharge, 403 ft³/s (11.4 m³/s) Mar. 5 (gage height, 5.74 ft or 1.750 m); minimum, 5.6 ft³/s (0.16 m³/s) Mar. 8 (gage height, 1.97 ft or 0.600 m), caused by unusual regulation above gage; minimum daily, 13 ft³/s (0.37 m³/s) Sept. 23-26.

Period of record: Maximum discharge, 427 ft³/s (12.1 m³/s) Feb. 2, 1968 (gage height, 5.86 ft or 1.786 m); maximum gage height, 6.71 ft (2.045 m) Mar. 6, 1959 (backwater from ice); minimum discharge, 0.9 ft³/s (0.025 m³/s) July 10, 1963; minimum gage height, 1.84 ft (0.561 m) July 31, 1964; minimum daily discharge, 1.3 ft³/s (0.037 m³/s) July 31, Aug. 1, 1964.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Occasional diurnal fluctuation caused by mills above station prior to February 1963; occasional regulation by Stony Lake since (see sta 04161790).

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	47	80	64	140	122	100	78	80	36	14	22
2	19	42	67	58	120	134	150	71	78	37	17	22
3	20	46	60	58	101	150	140	69	71	40	24	27
4	19	35	60	54	99	209	200	64	63	39	28	26
5	19	30	67	50	90	385	185	63	59	37	27	25
6	19	30	59	49	88	355	170	67	59	34	25	23
7	18	29	53	47	79	305	160	65	59	33	23	23
8	18	29	50	43	74	171	180	66	64	31	27	21
9	19	32	48	44	71	125	150	77	69	29	48	21
10	19	27	48	44	70	230	130	79	67	32	52	20
11	20	25	49	46	67	229	120	83	60	31	48	20
12	20	25	46	47	64	211	115	112	55	25	43	25
13	22	25	53	44	64	173	120	127	51	22	38	25
14	26	25	52	43	61	145	110	122	49	27	34	22
15	22	76	49	43	58	133	105	136	49	38	28	19
16	21	70	45	43	55	129	100	155	49	34	27	18
17	20	45	42	43	54	122	96	291	47	30	29	19
18	20	36	41	43	53	109	94	355	50	26	26	19
19	19	34	42	42	57	110	100	333	55	24	24	19
20	19	40	37	52	59	99	96	286	60	22	23	18
21	18	60	42	84	63	88	93	229	61	18	22	17
22	20	58	40	118	105	82	101	185	57	18	19	17
23	19	45	40	155	131	81	105	152	50	21	19	13
24	18	58	41	157	135	80	104	132	40	20	22	13
25	25	84	45	155	124	78	90	118	37	20	23	13
26	40	70	57	150	116	75	84	108	34	21	23	13
27	31	58	82	222	107	76	79	99	34	21	24	14
28	31	105	76	231	107	76	76	90	32	19	22	17
29	60	98	75	215	-----	80	79	94	28	18	21	26
30	50	92	74	189	-----	95	79	89	34	16	21	26
31	38	-----	70	168	-----	110	-----	84	-----	15	22	-----
TOTAL	743	1,476	1,690	2,801	2,412	4,567	3,511	4,079	1,601	834	843	603
MEAN	24.0	49.2	54.5	90.4	86.1	147	117	132	53.4	26.9	27.2	20.1
MAX	60	105	82	231	140	385	200	355	80	40	52	27
MIN	14	25	37	42	53	75	76	63	28	15	14	13
MEAN+	23.2	45.8	56.1	89.6	85.2	157	115	132	50.8	26.1	28.0	20.1
CFSM+	.34	.67	.82	1.31	1.25	2.30	1.69	1.94	.74	.38	.41	.29
IN+	.39	.75	.95	1.51	1.30	2.65	1.89	2.24	.83	.44	.47	.32

CAL YR 1973 TOTAL 22,046 MEAN 60.4 MAX 272 MIN 13 MEAN+ 61.5 CFSM+ .90 IN+ 12.22
WTR YR 1974 TOTAL 25,160 MEAN 68.9 MAX 385 MIN 13 MEAN+ 69.0 CFSM+ 1.01 IN+ 13.71

+ Adjusted for change in contents in Stony Lake.

NOTE.--No gage-height record Oct. 29 to Jan. 9.

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04162900 Big Beaver Creek near Warren, Mich.

LOCATION.--Lat 42°32'31", long 83°02'52", in NW¼SW¼ sec.33, T.2 N., R.12 E., Macomb County, on left bank between bridges on Mound Road, 1.0 mi (1.6 km) north of Warren, and 2.0 mi (3.2 km) upstream from mouth.

DRAINAGE AREA.--23.5 mi² (60.9 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 598.80 ft (182.514 m) above mean sea level (Macomb County benchmark). Prior to Aug. 26, 1960, nonrecording gage and crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--16 years, 14.6 ft³/s (0.413 m³/s), 8.44 in/yr (214 mm/yr).

EXTREMES.--Current year: Maximum discharge, about 630 ft³/s (17.8 m³/s) Mar. 5, based on correlation with nearby stations; minimum, 0.03 ft³/s (0.001 m³/s) Sept. 26 (gage height, 4.69 ft or 1.430 m).

Period of record: Maximum discharge, 1,240 ft³/s (35.1 m³/s) June 26, 1968 (gage height, 14.45 ft or 4.404 m); minimum, no flow on several days in June and July 1962, caused by unusual regulation above gage; minimum natural discharge, 0.03 ft³/s (0.001 m³/s) Sept. 26, 1974.

REMARKS.--Records fair except those for the winter period and those for periods of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	28	11	12	18	90	35	7.2	8.5	12	1.4	3.5
2	6.7	9.7	10	9.0	14	70	44	5.8	5.8	19	1.5	1.3
3	26	12	9.0	7.0	12	90	34	11	4.4	27	1.4	1.8
4	7.6	4.9	14	6.0	11	230	354	9.7	4.0	5.3	1.4	7.0
5	5.3	4.0	20	5.3	10	550	84	6.7	3.7	4.0	.88	2.3
6	4.4	4.0	16	4.7	9.2	88	38	17	3.7	3.4	.91	.89
7	4.4	2.6	13	4.2	8.7	56	61	10	3.7	1.4	.98	.38
8	4.4	2.3	11	3.0	8.0	203	86	18	14	1.1	2.9	.27
9	4.4	1.9	9.5	4.5	7.4	380	36	56	7.6	1.2	25	.19
10	4.9	2.1	8.5	3.5	7.0	187	25	22	4.9	1.7	11	.18
11	5.3	1.9	7.6	3.2	6.7	64	26	30	3.7	1.9	2.6	.16
12	5.3	1.5	7.0	2.9	6.3	31	33	168	2.6	1.7	1.5	9.5
13	7.6	1.9	6.1	2.7	6.0	21	32	53	2.3	2.3	1.2	4.3
14	16	2.3	5.6	2.6	5.8	18	20	28	3.1	1.1	1.4	.83
15	5.3	111	5.2	2.5	5.6	20	16	110	3.4	1.4	1.4	.37
16	5.3	44	4.8	2.4	5.4	33	16	127	7.2	1.7	6.6	.21
17	3.4	13	4.5	2.3	5.2	25	14	274	2.8	1.7	27	.19
18	3.1	7.2	4.2	2.2	5.0	17	12	81	3.4	1.4	11	.66
19	3.4	5.8	4.0	2.2	7.0	22	26	33	5.3	1.7	1.5	.50
20	3.4	5.3	3.8	40	20	16	14	26	5.3	2.1	2.9	.29
21	3.4	10	3.6	418	100	17	10	23	3.1	1.2	1.7	.26
22	3.7	38	3.4	196	430	22	26	22	2.8	1.1	2.0	.14
23	3.7	15	3.2	265	180	17	27	18	1.7	14	2.0	.11
24	1.2	28	3.0	95	70	9.7	15	12	1.4	8.5	1.6	.30
25	3.1	46	6.0	53	37	8.5	12	8.1	1.2	3.1	1.0	.15
26	2.1	28	80	54	25	7.6	10	6.7	1.5	2.3	.88	.07
27	1.9	20	280	363	20	8.1	8.5	6.2	5.3	1.4	2.4	.08
28	25	90	110	98	40	8.1	7.2	6.7	3.4	.82	1.3	.55
29	73	30	50	55	-----	16	8.1	24	1.5	1.4	1.3	8.6
30	50	18	28	39	-----	100	8.1	15	18	2.1	1.9	2.9
31	16	-----	17	41	-----	97	-----	9.0	-----	1.4	2.7	-----
TOTAL	314.2	588.4	759.0	1,799.2	1,080.3	2,522.0	1,137.9	1,244.1	139.3	130.42	123.25	64.18
MEAN	10.1	19.6	24.5	58.0	38.6	81.4	37.9	40.1	4.64	4.21	3.98	2.14
MAX	73	111	280	418	430	550	354	274	18	27	27	18
MIN	1.2	1.5	3.0	2.2	5.0	7.6	7.2	5.8	1.2	.82	.88	.07
CFSM	.43	.83	1.04	2.47	1.64	3.46	1.61	1.71	.20	.18	.17	.09
IN.	.50	.93	1.20	2.85	1.71	3.99	1.80	1.97	.22	.21	.20	.10
CAL YR 1973 TOTAL	9,992.10			MEAN 27.4		MAX 409	MIN 1.2	CFSM 1.17	IN 15.82			
WTR YR 1974 TOTAL	9,902.25			MEAN 27.1		MAX 550	MIN .07	CFSM 1.15	IN 15.68			

NOTE.--No gage-height record Nov. 21 to Jan. 7, Feb. 1 to Mar. 5.

PEAK DISCHARGE (BASE, 300 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	unknown	unknown	about 390	03-05	unknown	unknown	about 630
01-21	1700	10.17	516	03-09	1600	10.00	492
01-23	0700	9.03	362	04-04	0900	10.57	573
01-27	0900	10.60	576	05-16	2400	9.00	366
02-22	unknown	unknown	about 600				

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04163400 Plum Brook at Utica, Mich.

LOCATION.--Lat 42°36'05", long 83°04'27", in SE¼ NE¼ sec.7, T.2 N., R.12 E., Macomb County, on left bank at upstream side of bridge on Ryan Road, 1.0 mi (1.6 km) southwest of Utica.

DRAINAGE AREA.--16.5 mi² (42.7 km²).

PERIOD OF RECORD.--July 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 625 ft (190 m) from topographic map (nearest 5 ft).

AVERAGE DISCHARGE.--9 years, 12.7 ft³/s (0.360 m³/s), 10.45 in/yr (265 mm/yr).

EXTREMES.--Current year: Maximum discharge, 406 ft³/s (11.5 m³/s) Feb. 22 (gage height 8.13 ft or 2.478 m); minimum, 0.04 ft³/s (0.001 m³/s) July 28; minimum gage height, 1.52 ft (0.463 m) July 28, Aug. 24, Sept. 18.

Period of record: Maximum discharge, 1,160 ft³/s (32.9 m³/s) June 26, 1968 (gage height, 10.36 ft or 3.158 m); no flow part of each day July 19, 28, 1966, Aug. 22-28, Sept. 3, 11, 1969; minimum gage height, 1.23 ft (0.375 m) Sept. 16, 1967.

REMARKS.--Records fair. Occasional diversion for sprinkler irrigation.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	8.6	14	10	21	36	27	11	7.5	2.8	.31	.66
2	.88	6.2	12	8.0	19	32	41	10	6.4	6.6	.54	.66
3	1.7	5.4	11	7.0	17	38	31	11	6.0	5.6	.66	6.4
4	.73	4.8	12	6.5	15	84	226	11	4.8	3.3	.80	2.4
5	.54	4.2	19	6.0	14	256	41	10	4.2	3.9	2.4	3.2
6	.48	3.9	14	5.6	13	50	27	12	4.1	2.1	3.3	1.2
7	.48	3.5	11	5.2	12	33	31	11	3.5	1.7	4.6	.66
8	.42	3.3	9.0	4.8	12	106	42	13	6.4	1.7	5.6	.54
9	.54	3.1	8.0	4.6	11	234	25	29	8.6	2.0	16	.60
10	.88	2.9	7.0	4.4	10	96	21	19	8.4	1.5	5.2	.48
11	1.0	2.8	6.4	4.2	10	34	18	20	4.1	1.3	4.6	.48
12	1.3	3.7	5.8	4.0	9.5	27	23	61	3.7	1.1	4.2	4.4
13	2.5	3.7	5.4	3.9	9.0	21	27	26	3.7	.96	3.9	2.2
14	2.5	3.9	5.0	3.8	8.7	19	22	19	3.0	1.3	3.0	.88
15	1.4	23	4.7	3.7	8.5	20	20	50	3.5	3.2	3.9	.66
16	1.3	17	4.4	3.6	8.2	24	19	78	3.5	.96	3.9	.48
17	1.2	10	4.2	3.5	8.0	22	14	185	3.0	1.1	6.2	.42
18	1.1	8.6	3.9	3.4	7.8	19	14	43	3.3	1.5	2.7	.36
19	1.3	8.8	3.7	3.3	12	20	18	24	8.1	.88	1.1	.31
20	1.2	7.3	3.5	35	22	16	15	19	11	.73	2.5	.36
21	1.1	24	3.3	284	36	17	13	15	7.5	.66	4.1	.36
22	1.4	18	3.2	138	295	17	20	14	3.9	.73	1.3	.42
23	1.2	12	3.1	179	136	16	24	15	2.5	3.7	.54	.73
24	2.0	16	3.0	53	43	14	16	12	2.0	1.1	.42	.31
25	2.2	25	4.5	38	40	12	13	11	2.1	.73	.27	.31
26	2.1	19	41	40	22	11	13	8.8	2.0	.66	.54	.36
27	2.2	18	165	233	20	11	12	7.9	2.0	.54	.48	.42
28	6.0	117	70	52	27	12	12	8.8	1.5	.42	.48	.88
29	14	43	35	34	-----	13	12	14	1.7	.54	.42	4.2
30	12	18	21	30	-----	43	12	11	3.9	.36	.42	2.2
31	6.2	-----	13	29	-----	54	-----	8.6	-----	.27	1.1	-----
TOTAL	72.39	444.7	526.1	1,240.5	866.7	1,417	849	788.1	135.9	53.94	85.48	37.54
MFAN	2.34	14.8	17.0	40.0	31.0	45.7	28.3	25.4	4.53	1.74	2.76	1.25
MAX	14	117	165	284	295	266	226	185	11	6.6	16	6.4
MIN	.42	2.8	3.0	3.3	7.8	11	12	7.9	1.5	.27	.27	.31
CFSM	.14	.90	1.03	2.42	1.88	2.77	1.72	1.54	.27	.11	.17	.08
IN.	.16	1.00	1.19	2.80	1.95	3.19	1.91	1.78	.31	.12	.19	.08
CAL YR 1973	TOTAL 5,932.59	MEAN 16.3	MAX 176	MIN .42	CFSM .99	IN 13.38						
WTR YR 1974	TOTAL 6,517.35	MEAN 17.9	MAX 295	MIN .27	CFSM 1.08	IN 14.69						

PEAK DISCHARGE (BASE, 200 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	1700	6.46	217	02-22	1700	8.13	406
12-27	0800	6.30	206	03-05	0500	8.10	400
01-21	1400	7.74	344	03-09	2000	7.37	295
01-23	0700	6.86	249	04-04	0500	7.72	335
01-27	0500	7.69	337	05-17	1300	6.76	241

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04164000 Clinton River near Fraser, Mich.

LOCATION.--Lat 42°34'40", long 82°57'00", in NW¼ sec.20, T.2 N., R.13 E., Macomb County, on left bank 800 ft (244 m) downstream from bridge on Garfield Road, 2.8 mi (4.5 km) north of Fraser, and 4 mi (6 km) upstream from North Branch.

DRAINAGE AREA.--444 mi² (1,150 km²).

PERIOD OF RECORD.--May 1947 to current year.

GAGE.--Water-stage recorder. Datum of gage is 577.71 ft (176.086 m) above mean sea level. Prior to Nov. 17, 1949, nonrecording gage at site 800 ft (244 m) upstream at same datum.

AVERAGE DISCHARGE.--27 years, 356 ft³/s (10.08 m³/s), 10.89 in/yr (277 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,780 ft³/s (107 m³/s) Mar. 9 (gage height, 15.31 ft or 4.666 m); minimum, 99 ft³/s (2.80 m³/s) Sept. 23 (gage height, 5.12 ft or 1.561 m).

Period of record: Maximum discharge, 8,000 ft³/s (277 m³/s) May 11, 1948 (gage height, 19.5 ft or 5.94 m, from graph based on gage readings), from rating curve extended above 4,000 ft³/s (113 m³/s); minimum, 47 ft³/s (1.33 m³/s) Sept. 6, 1955; minimum gage height, 4.29 ft (1.308 m) Sept. 7, 1954.

Flood of April 5 or 6, 1947 reached a stage of 20 ft (6.1 m), from floodmarks (discharge, 9,000 ft³/s or 255 m³/s, from rating curve extended above 4,000 ft³/s or 113 m³/s).

REMARKS.--Records good.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	396	556	517	821	891	955	575	583	327	160	189
2	189	333	491	438	698	900	1,020	536	541	428	162	155
3	275	385	452	444	633	923	1,150	559	517	411	255	350
4	215	291	483	423	579	1,220	2,850	554	501	313	216	243
5	237	246	563	389	556	3,260	1,810	502	470	285	193	201
6	232	238	483	383	536	2,630	1,300	558	455	275	190	186
7	221	227	441	365	529	1,700	1,180	529	446	246	169	169
8	217	277	413	336	502	2,050	1,400	546	549	238	251	149
9	221	253	393	360	499	3,170	1,140	778	520	251	934	138
10	220	229	396	380	455	2,460	968	612	469	254	263	152
11	219	203	401	385	468	1,670	878	623	451	320	215	175
12	218	195	377	367	488	1,390	871	1,440	419	242	193	439
13	246	205	439	306	515	1,200	916	1,000	389	213	212	270
14	307	200	439	324	504	1,030	840	773	388	189	195	183
15	230	811	400	366	444	889	784	1,240	412	265	188	154
16	239	685	367	380	437	923	741	1,210	359	213	357	150
17	225	363	348	390	424	890	703	2,060	294	196	1,370	154
18	213	299	331	345	400	821	682	2,200	326	194	259	178
19	181	275	342	333	574	836	774	1,600	380	180	217	144
20	163	277	305	652	695	792	695	1,270	450	179	226	144
21	151	599	351	2,180	711	767	666	1,110	455	157	211	136
22	150	539	333	1,820	2,720	788	739	985	400	151	183	118
23	148	365	335	2,000	2,190	767	862	902	320	262	200	113
24	148	453	330	1,470	1,300	717	715	784	250	192	242	127
25	146	601	477	1,040	840	661	666	692	265	180	181	139
26	173	486	922	931	727	672	639	645	280	183	167	137
27	162	416	2,040	2,350	673	639	612	614	270	173	184	134
28	320	1,460	1,300	1,820	716	632	583	605	273	156	165	158
29	568	1,310	827	1,330	-----	683	583	744	264	173	173	381
30	487	668	654	1,070	-----	1,060	601	691	399	162	178	224
31	304	-----	570	988	-----	1,310	-----	620	-----	152	193	-----
TOTAL	7,204	13,285	16,559	24,882	20,634	38,341	28,323	27,557	12,095	7,160	8,302	5,590
MEAN	232	443	534	803	737	1,237	944	889	403	231	268	186
MAX	568	1,460	2,040	2,350	2,720	3,260	2,850	2,200	583	428	1,370	439
MIN	146	195	305	306	400	632	583	502	250	151	160	113
CFSM	.52	1.00	1.20	1.81	1.66	2.79	2.13	2.00	.91	.52	.60	.42
IN.	.60	1.11	1.39	2.08	1.73	3.21	2.37	2.31	1.01	.60	.70	.47

CAL YR 1973 TOTAL 196,062 MEAN 537 MAX 2,800 MIN 146 CFSM 1.21 IN 16.43
WTR YR 1974 TOTAL 209,932 MEAN 575 MAX 3,260 MIN 113 CFSM 1.30 IN 17.59

PEAK DISCHARGE (BASE, 2,000 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	1700	13.47	2,240	03-05	0500	15.28	3,750
12-27	0400	13.72	2,390	03-09	1800	15.31	3,780
01-21	1100	13.89	2,490	04-04	0300	15.19	3,650
01-23	0500	13.36	2,180	05-18	0500	13.66	2,360
01-27	0500	14.28	2,760	08-17	0200	14.26	2,750
02-22	1000	14.90	3,330				

STREAMS TRIBUTARY TO LAKE ST. CLAIR

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04164100 East Pond Creek at Romeo, Mich.

LOCATION.--Lat 42°49'21", long 83°01'13", in NE¼ SE¼ sec.27, T.5 N., R.12 E., Macomb County, on right bank 10 ft (3 m) upstream from bridge on State Highway 53, and 1.4 mi (2.3 km) north of Romeo.

DRAINAGE AREA.--21.8 mi² (56.5 km²).

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 780 ft (238 m) from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--16 years, 14.0 ft³/s (0.396 m³/s), 8.72 in/yr (221 mm/yr).

EXTREMES.--Current year: Maximum discharge, 282 ft³/s (7.99 m³/s) May 17 (gage height 3.88 ft or 1.183 m); minimum, 4.1 ft³/s (0.12 m³/s) Oct. 13 (gage height 1.08 ft or 0.329 m).

Period of record: Maximum discharge, 358 ft³/s (10.1 m³/s) Feb. 10, 1965 (gage height, 4.48 ft or 1.366 m); maximum gage height, 4.56 (1.390 m) Mar. 12, 1962 (backwater from ice); minimum discharge, 0.8 ft³/s (0.023 m³/s) July 30, 31, 1964, Aug. 6, 7, 1965; minimum gage height, 0.71 ft (0.216 m) July 21, 1959.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	16	25	22	40	50	33	27	30	14	6.5	6.1
2	5.5	13	23	20	39	47	53	26	27	17	7.3	6.1
3	7.1	15	22	18	37	58	44	26	25	16	11	8.0
4	6.1	13	21	17	36	92	69	25	24	14	9.7	10
5	5.8	12	23	16	34	192	60	23	22	11	9.3	10
6	5.3	11	20	16	32	126	55	25	22	10	8.9	9.3
7	5.1	10	18	15	31	97	55	25	21	9.0	8.8	8.8
8	4.8	11	17	14	29	98	59	25	24	7.8	18	7.0
9	4.8	9.7	16	14	28	103	50	36	25	7.4	40	5.7
10	4.8	8.8	16	13	26	89	45	31	23	7.1	26	5.2
11	4.8	8.5	15	13	25	74	42	31	21	6.9	18	6.8
12	4.4	8.7	14	13	24	63	43	55	22	6.6	16	7.8
13	4.6	8.6	13	12	26	54	43	44	21	6.2	14	6.4
14	7.1	8.6	12	12	23	48	39	45	23	7.1	13	5.8
15	6.0	28	11	12	21	45	38	56	23	10	12	5.6
16	5.8	28	11	11	21	44	37	78	25	12	11	5.1
17	5.8	20	10	11	20	42	36	227	22	14	10	5.5
18	5.8	18	9.2	11	20	38	34	146	23	13	8.4	6.5
19	5.8	17	9.0	10	32	37	38	113	26	8.4	7.7	6.0
20	5.8	16	8.5	17	40	34	34	85	26	9.1	7.3	6.1
21	5.8	24	8.0	50	30	33	33	70	23	7.3	7.2	6.1
22	5.8	26	7.6	46	71	32	36	62	20	7.3	6.9	6.9
23	5.8	20	7.4	57	103	31	38	52	20	8.0	6.9	11
24	5.8	25	7.4	50	69	28	33	42	19	7.9	6.4	9.7
25	6.0	32	10	44	57	27	31	38	17	7.7	6.3	8.3
26	5.8	25	24	48	44	26	30	36	16	7.9	5.4	7.3
27	5.8	22	37	109	33	25	29	34	15	7.6	7.2	6.5
28	7.9	35	32	82	39	25	28	33	11	7.2	7.8	5.6
29	18	38	26	66	-----	26	29	36	11	7.0	7.6	8.5
30	20	29	28	56	-----	33	29	34	14	6.9	7.6	7.0
31	15	-----	24	51	-----	38	-----	32	-----	6.5	6.2	-----
TOTAL	211.8	556.9	525.1	946	1,030	1,755	1,223	1,618	641	287.9	338.4	214.7
MEAN	6.83	18.6	16.9	30.5	36.8	56.6	40.8	52.2	21.4	9.29	10.9	7.16
MAX	20	38	37	109	103	192	69	227	30	17	40	11
MIN	4.4	8.5	7.4	10	20	25	28	23	11	6.2	5.4	5.1
CFSM	.31	.85	.78	1.40	1.69	2.60	1.87	2.39	.98	.43	.50	.33
IN.	.36	.95	.90	1.61	1.76	2.99	2.09	2.76	1.09	.49	.58	.37
CAL YR 1973	TOTAL 8,294.6	MEAN 22.7	MAX 134	MIN 3.0	CFSM 1.04	IN 14.15						
WTR YR 1974	TOTAL 9,347.8	MEAN 25.6	MAX 227	MIN 4.4	CFSM 1.17	IN 15.95						

PEAK DISCHARGE (BASE, 80 FT³/s)

DATE	TIME	G.H.	DISCHARGE
01-27	0800	2.66	117
02-23	1500	2.80	132
03-05	0300	3.64	236
03-08	1800	2.65	116
05-17	0700	3.88	282

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04164300 East Branch Coon Creek at Armada, Mich.

LOCATION.--Lat 42°50'45", long 82°53'06", in NE¼ sec.23, T.5 N., R.13 E., Macomb County, on right bank 10 ft (3 m) downstream from bridge on Prospect Street in Armada.

DRAINAGE AREA.--13.0 mi² (33.7 km²).

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Altitude of gage is 735 ft (224.0 m) from topographic map (nearest 5 ft).

AVERAGE DISCHARGE.--16 years, 6.15 ft³/s (0.174 m³/s), 6.42 in/yr (163 mm/yr).

EXTREMES.--Current year: Maximum discharge, 740 ft³/s (21.0 m³/s) Mar. 5 (gage height, 6.10 ft or 1.859 m); minimum, 0.06 ft³/s (0.002 m³/s) July 30, 31, Aug. 1 (gage height 1.20 ft or 0.366 m).

Period of record: Maximum discharge, 751 ft³/s (21.3 m³/s) Apr. 17, 1967 (gage height, 6.14 ft or 1.871 m); no flow Jan. 25 to Feb. 10, 1961, result of freezeup.

REMARKS.--Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.68	4.8	7.9	11	102	13	2.5	2.1	.58	.08	.08
2	.19	.68	3.8	5.7	8.4	53	84	2.2	1.7	.68	.43	.23
3	.19	.56	3.0	4.8	7.0	123	33	2.1	1.4	.63	.27	.30
4	.23	.50	2.9	3.7	5.5	243	230	2.1	1.3	.56	.38	.15
5	.22	.44	3.8	2.8	4.8	338	49	1.9	1.0	.51	.23	.14
6	.24	.39	3.8	2.3	4.3	88	19	2.0	.93	.42	.18	.13
7	.23	.34	3.4	2.1	4.0	38	27	2.0	.86	.30	.16	.12
8	.15	.39	2.9	2.0	3.7	89	35	2.0	.94	.21	1.2	.12
9	.15	.44	2.2	1.9	3.5	114	13	4.2	.95	.17	1.2	.13
10	.17	.44	2.2	1.8	3.3	55	8.7	3.8	.82	.18	.99	.17
11	.16	.44	2.1	1.7	3.1	20	6.7	3.7	.64	.17	1.0	.16
12	.19	.50	1.9	1.6	3.0	15	11	22	.55	.12	.75	.20
13	.29	.56	1.8	1.5	2.9	9.7	16	12	.96	.12	.42	.09
14	.18	.62	1.7	1.6	2.8	6.6	9.8	11	1.2	.40	.30	.08
15	.17	2.9	1.5	1.7	2.7	6.1	13	38	.80	1.6	.23	.09
16	.18	1.9	1.4	1.9	2.6	8.7	6.6	137	.75	1.2	.21	.10
17	.24	1.2	1.2	1.9	2.6	9.6	4.8	318	.72	1.0	.17	.11
18	.21	.83	1.2	2.1	2.6	6.9	4.3	83	.89	.60	.13	.11
19	.17	.68	1.2	2.1	2.7	7.2	4.4	25	2.1	.35	.13	.09
20	.18	.62	1.1	3.0	3.1	6.0	3.7	11	1.7	.21	.11	.10
21	.18	1.8	.99	124	4.5	5.5	3.3	7.2	1.3	.15	.10	.10
22	.14	1.9	.99	120	81	5.3	5.6	5.8	1.1	.15	.09	.10
23	.16	1.4	.99	175	197	4.6	7.6	5.3	.85	.16	.17	.09
24	.15	2.9	.99	93	149	3.2	5.4	4.0	.76	.15	.12	.10
25	.14	6.3	1.7	54	40	2.7	3.9	3.7	.57	.15	.10	.10
26	.14	5.7	3.6	66	20	2.7	3.6	3.0	.44	.16	.09	.10
27	.14	3.8	39	292	10	2.7	3.1	2.6	.38	.12	.24	.14
28	.41	15	73	91	28	2.6	2.9	2.6	.34	.11	.23	.25
29	.59	24	48	45	-----	2.5	3.0	3.2	.29	.12	.12	.33
30	.71	9.2	25	24	-----	6.1	2.8	2.9	.72	.10	.11	.29
31	.55	-----	13	26	-----	10	-----	2.5	-----	.11	.12	-----
TOTAL	7.19	87.11	255.16	1,164.1	613.1	1,386.7	633.2	728.3	29.06	11.49	10.06	4.30
MEAN	.23	2.90	8.23	37.6	21.9	44.7	21.1	23.5	.97	.37	.32	.14
MAX	.71	24	73	292	197	338	230	318	2.1	1.6	1.2	.33
MIN	.14	.34	.99	1.5	2.6	2.5	2.8	1.9	.29	.10	.08	.08
CFSM	.02	.22	.63	2.89	1.68	3.44	1.62	1.81	.07	.03	.02	.01
IN.	.02	.25	.73	3.33	1.75	3.97	1.81	2.08	.08	.03	.03	.01

CAL YR 1973 TOTAL 3,711.29 MEAN 10.2 MAX 208 MIN .07 CFSM .78 IN 10.62
 WTR YR 1974 TOTAL 4,929.77 MEAN 13.5 MAX 338 MIN .08 CFSM 1.04 IN 14.11

PEAK DISCHARGE (BASE, 100 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-21	1630	3.56	204	03-08	2100	3.47	189
01-23	0630	3.71	228	04-02	0600	3.20	148
01-24	1500	3.04	129	04-04	0300	4.96	458
01-27	0500	5.04	477	05-16	2000	4.83	434
02-23	0800	3.75	234	05-17	0700	5.21	514
03-05	0100	6.10	740				

04164500 North Branch Clinton River near Mount Clemens, Mich.

LOCATION.--Lat 42°37'45", long 82°53'25", in SW¼ sec.35, T.3 N., R.13 E., Macomb County, on left bank 30 ft (9 m) upstream from bridge on State Highway 59, 2 mi (3 km) north of Mount Clemens, and 3.6 mi (5.8 km) upstream from mouth.

DRAINAGE AREA.--199 mi² (515 km²).

PERIOD OF RECORD.--May 1947 to current year.

GAGE.--Water-stage recorder. Concrete control since September 1961. Datum of gage is 576.38 ft (175.681 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Nov. 15, 1949, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--27 years, 116 ft³/s (3.285 m³/s), 7.92 in/yr (201 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,170 ft³/s (146 m³/s) Mar. 5 (gage height, 16.93 ft or 5.160 m); minimum, 8.4 ft³/s (0.24 m³/s) Aug. 1 (gage height, 4.15 ft or 1.265 m).

Period of record: Maximum discharge, 6,700 ft³/s (190 m³/s) Feb. 2, 1968 (gage height, 18.62 ft or 5.675 m); minimum, 0.2 ft³/s (0.006 m³/s) Sept. 13, 14, 1954, July 30, 1965; minimum gage height, 3.12 ft (0.951 m) Sept. 13, 14, 1954.

Flood of Apr. 5 or 6, 1947, reached a stage of 20.0 ft (6.10 m), from floodmark.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Some regulation at times by mill above station.

REVISIONS (WATER YEARS).--WSP 1437: 1948. WSP 1557: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	52	272	409	404	515	360	112	87	37	10	14
2	14	50	137	275	268	860	368	97	77	39	10	13
3	24	48	97	182	200	940	772	85	67	40	13	14
4	50	50	85	140	160	988	1,220	85	62	42	26	19
5	40	47	90	110	140	2,850	1,540	84	57	35	24	20
6	29	41	111	90	120	3,550	868	80	52	29	17	20
7	22	36	99	75	115	1,240	555	84	52	26	16	18
8	20	32	81	68	110	802	574	81	51	23	18	16
9	17	30	74	64	100	1,230	646	108	57	20	69	15
10	17	29	73	61	98	1,340	443	209	61	18	115	12
11	18	27	71	60	95	953	298	164	51	17	73	11
12	17	25	64	58	92	611	243	269	46	16	43	13
13	17	24	61	58	90	416	291	501	41	15	35	16
14	19	22	64	58	88	300	326	455	42	16	30	15
15	17	28	66	63	88	242	251	424	76	20	25	13
16	17	80	53	67	87	244	236	630	70	29	22	12
17	18	90	49	76	90	285	186	1,760	61	25	24	12
18	19	72	46	81	87	268	151	3,390	56	24	23	12
19	18	56	42	77	88	227	150	1,280	57	21	21	14
20	18	50	36	91	109	223	175	685	81	19	18	15
21	17	46	34	422	157	194	144	405	84	15	17	13
22	16	75	39	1,500	535	182	133	249	64	16	15	12
23	15	80	44	1,600	1,220	173	259	201	51	16	13	11
24	16	80	47	1,500	1,380	151	290	164	46	17	14	13
25	16	220	51	1,350	850	108	186	120	42	17	17	16
26	17	200	84	1,010	550	111	136	101	37	16	17	14
27	16	170	337	1,800	430	104	116	92	34	16	15	12
28	17	200	573	1,700	386	102	105	85	31	15	14	13
29	23	392	805	1,400	-----	105	101	97	28	13	14	17
30	38	431	850	747	-----	155	106	115	28	12	14	18
31	56	-----	642	522	-----	355	-----	104	-----	12	14	-----
TOTAL	670	2,783	5,177	15,714	8,137	19,824	11,229	12,316	1,649	676	796	433
MEAN	21.6	92.8	167	507	291	639	374	397	55.0	21.8	25.7	14.4
MAX	56	431	850	1,800	1,380	3,550	1,540	3,390	87	42	115	20
MIN	12	22	34	58	87	102	101	80	28	12	10	11
CFSM	.11	.47	.84	2.55	1.46	3.21	1.88	2.00	.28	.11	.13	.07
IN.	.13	.52	.97	2.94	1.52	3.71	2.10	2.30	.31	.13	.15	.08

CAL YR 1973 TOTAL 61,094.5 MEAN 167 MAX 2,000 MIN 4.5 CFSM .84 IN 11.42
WTR YR 1974 TOTAL 79,404.0 MEAN 218 MAX 3,550 MIN 10 CFSM 1.10 IN 14.84

PEAK DISCHARGE (BASE, 1,200 FT³/s)

NOTE.--No gage-height record Oct. 1 to Nov. 28.

DATE	TIME	G.H.	DISCHARGE
01-23	unknown	unknown	1,900
01-27	unknown	unknown	2,200
02-24	unknown	13.43	1,790
03-05	2400	16.93	5,170
03-10	0100	12.78	1,450
04-05	0100	13.64	1,920
05-18	0400	16.15	4,320

STREAMS TRIBUTARY TO LAKE ST. CLAIR

04164800 Middle Branch Clinton River at Macomb, Mich.

LOCATION.--Lat 42°42'23", long 82°57'33", in SW¼ sec.5, T.3 N., R.13 E., Macomb County, on left bank at downstream side of bridge on Romeo Plank Road, 0.4 mi (0.6 km) north of Macomb.

DRAINAGE AREA.--41.0 mi² (106.2 km²).

PERIOD OF RECORD.--Water years 1959-62, 1969 (annual maximum and occasional low-flow measurements), October 1962 to September 1968, October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is 603.23 ft (183.865 m) above mean sea level (levels by Corps of Engineers). Oct. 28, 1958 to Nov. 14, 1962, and Oct. 12, 1968 to Dec. 17, 1969, crest-stage gage at same site and datum.

AVERAGE DISCHARGE.--11 years, 25.1 ft³/s (0.711 m³/s), 8.31 in/yr (211 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,400 ft³/s (39.6 m³/s) Mar. 5 (gage height, 15.10 ft or 4.602 m); minimum daily, 2.1 ft³/s (0.059 m³/s) Sept. 23.

Period of record: Maximum discharge, 1,580 ft³/s (44.7 m³/s) June 26, 1968; maximum gage height, 16.16 ft (4.926 m) Mar. 12, 1962 (backwater from ice); minimum discharge, 0.10 ft³/s (0.003 m³/s) July 22, 1971; minimum gage height, 4.68 ft (1.426 m) July 11, 1964.

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	13	31	35	48	140	50	23	16	5.2	2.9	3.4
2	4.7	12	27	26	37	108	110	20	15	5.1	3.5	2.9
3	6.1	12	27	22	31	144	220	19	14	7.2	4.5	6.2
4	6.1	11	31	20	28	283	370	18	13	6.8	3.8	4.0
5	5.2	9.8	47	18	26	860	700	17	12	5.8	3.5	3.5
6	4.4	9.2	35	17	24	186	280	17	12	5.2	3.3	3.2
7	4.1	8.3	31	16	23	123	170	18	13	4.9	3.1	3.0
8	4.4	7.9	28	16	22	355	180	19	12	4.6	7.0	2.7
9	4.7	7.0	25	15	22	374	130	25	11	4.4	17	2.5
10	4.7	6.5	22	15	21	196	80	29	10	4.2	4.5	2.8
11	4.7	6.1	20	15	21	100	65	37	9.6	4.0	3.8	3.5
12	4.7	6.1	18	14	20	80	56	55	9.2	3.7	3.5	7.8
13	6.2	6.1	17	14	20	58	86	74	8.8	3.5	3.8	5.0
14	13	6.1	16	14	19	49	90	56	8.5	3.6	3.5	3.5
15	6.5	56	15	14	19	44	54	80	8.7	4.0	3.4	2.8
16	6.1	39	14	14	18	41	40	180	10	6.0	10	2.7
17	4.4	23	13	14	18	39	34	600	11	5.0	25	2.8
18	4.7	21	13	13	18	38	39	350	12	4.3	5.0	3.2
19	4.7	19	12	13	23	42	47	240	11	3.8	4.0	2.7
20	5.2	18	12	80	37	49	41	140	12	3.6	4.1	2.6
21	5.6	54	12	520	60	50	38	85	13	3.3	3.7	2.4
22	5.2	38	12	272	600	48	52	58	11	3.0	3.4	2.2
23	5.2	26	11	425	303	44	71	46	9.0	3.5	3.9	2.1
24	5.2	47	11	163	106	37	52	37	7.6	3.1	4.4	2.3
25	4.7	65	17	125	64	30	40	30	7.0	2.5	3.3	2.5
26	4.4	40	60	130	55	27	30	25	6.6	2.3	3.1	2.5
27	4.1	32	350	628	47	25	25	22	6.0	3.2	3.3	2.4
28	6.0	184	171	169	94	23	22	20	5.8	3.6	3.1	4.0
29	26	91	102	102	-----	22	21	18	5.6	2.5	3.1	6.8
30	22	45	65	76	-----	25	22	17	5.4	3.3	3.3	4.0
31	15	-----	48	72	-----	33	-----	17	-----	3.1	3.5	-----
TOTAL	212.7	919.1	1,313	3,087	1,824	3,673	3,215	2,392	305.8	128.3	157.3	102.0
MEAN	6.86	30.6	42.4	99.6	65.1	118	107	77.2	10.2	4.14	5.07	3.40
MAX	26	184	350	628	600	860	700	600	16	7.2	25	7.8
MIN	4.1	6.1	11	13	18	22	21	17	5.4	2.3	2.9	2.1
CFSM	.17	.75	1.03	2.43	1.59	2.88	2.61	1.88	.25	.10	.12	.08
IN.	.19	.83	1.19	2.80	1.65	3.33	2.92	2.17	.28	.12	.14	.09
CAL YR 1973	TOTAL 14,639.2	MEAN 40.1	MAX 432	MIN 3.2	CFSM .98	IN 13.28						
WTR YR 1974	TOTAL 17,329.2	MEAN 47.5	MAX 860	MIN 2.1	CFSM 1.16	IN 15.72						

PEAK DISCHARGE (BASE, 300 FT³/S)

DATE	TIME	G.H.	DISCHARGE
11-28	1430	8.19	338
12-27	--	--	410
01-21	--	--	630
01-23	0500	10.06	571
01-27	0700	12.70	959

NOTE: No gage-height record March 14 to Sept. 30.

DATE	TIME	G.H.	DISCHARGE
02-22	1930	12.14	869
03-05	0600	15.10	1,400
03-08	1900	10.35	612
04-05	unknown	13.34	1,070
05-17	unknown	unknown	about 850

04165500 Clinton River at Mount Clemens, Mich.

LOCATION.--Lat 42°35'45", long 82°54'35", Macomb County, on left bank 20 ft (6 m) downstream from bridge on Moravian Drive, 0.2 mi (0.3 km) downstream from North Branch, and 0.5 mi (0.8 km) west of Mount Clemens.

DRAINAGE AREA.--734 mi² (1,901 km²).

PERIOD OF RECORD.--May 1934 to current year.

GAGE.--Water-stage recorder. Datum of gage is 570.43 ft (173.867 m) above mean sea level. May 10, 1934, to Jan. 11, 1939, nonrecording gage at same site and datum. Auxiliary gage is a water-stage recorder on right bank 2.0 mi (3.2 km) downstream from base gage at same datum. Mar. 15, 1938, to Jan. 3, 1952, auxiliary nonrecording gage 1.6 mi (2.6 km) downstream from base gage at same datum.

AVERAGE DISCHARGE.--40 years, 506 ft³/s (14.33 m³/s), 9.36 in/yr (238 mm/yr).

EXTREMES.--Current year: Maximum discharge, 10,200 ft³/s (289 m³/s) Mar. 6 (gage height, 15.69 ft or 4.782 m); minimum daily, 135 ft³/s (3.82 m³/s) Sept. 23; minimum gage height, 5.62 ft (1.713 m) Nov. 14.

Period of record: Maximum discharge, 21,200 ft³/s (600 m³/s) Apr. 6, 1947 (gage height, 23.55 ft or 7.178 m, from floodmark); minimum not determined; minimum gage height, 2.72 ft (0.829 m) Nov. 29, 1963.

REMARKS.--Records fair.

REVISIONS (WATER YEARS).--WSP 1084: 1943, 1945-46. WSP 1937: 1935, 1936 (M), 1937-39, 1949 (M), 1950. WSP 1557: Drainage area. WSP 1727: 1952 (M), 1954 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	490	982	976	1,350	1,620	1,520	780	768	394	190	221
2	210	430	760	721	1,010	1,910	1,660	730	693	499	213	191
3	310	480	642	648	900	2,230	2,100	720	646	522	290	390
4	270	400	664	620	856	2,590	5,390	720	622	430	270	270
5	280	340	782	537	840	7,410	4,770	680	584	350	240	250
6	270	310	705	507	800	8,330	2,600	720	571	330	230	220
7	260	300	636	493	780	3,720	1,900	700	560	300	210	200
8	250	340	581	480	750	3,010	2,300	700	673	290	300	180
9	250	320	518	480	730	5,650	2,000	1,090	664	300	1,210	170
10	250	290	523	470	707	5,490	1,560	970	608	300	448	180
11	240	310	542	460	690	3,030	1,280	888	590	370	338	210
12	240	300	498	455	690	2,170	1,230	2,120	543	280	238	500
13	270	310	537	440	699	1,700	1,360	1,860	503	250	270	304
14	350	300	584	450	688	1,390	1,290	1,450	474	300	250	210
15	250	746	497	460	599	1,190	1,130	2,040	543	355	240	180
16	270	973	432	480	556	1,260	1,060	2,210	496	260	283	180
17	250	521	412	532	551	1,290	963	5,230	396	250	1,680	180
18	240	370	414	465	535	1,150	895	7,770	408	240	324	210
19	210	360	395	444	707	1,140	1,040	3,920	480	225	259	170
20	190	380	390	800	919	1,080	961	2,260	562	220	270	170
21	180	684	390	2,960	994	1,030	872	1,750	571	190	250	160
22	175	770	390	3,730	3,830	1,040	961	1,450	510	185	220	140
23	170	500	376	4,610	4,620	1,020	1,290	1,320	388	300	230	135
24	170	585	397	3,760	3,260	946	1,120	1,130	318	230	280	150
25	170	856	523	2,830	2,030	811	933	960	340	220	220	170
26	200	821	1,130	2,260	1,500	867	900	883	354	215	200	170
27	190	651	2,690	4,600	1,200	809	850	803	352	229	223	172
28	380	1,600	2,430	5,120	1,180	776	800	790	326	186	203	181
29	650	2,300	1,890	3,200	-----	827	780	1,030	300	228	210	489
30	600	1,300	1,660	2,100	-----	1,350	790	1,000	498	190	210	311
31	400	-----	1,300	1,760	-----	2,050	-----	863	-----	180	220	-----
TOTAL	8,345	18,337	24,670	47,838	33,971	68,886	46,305	49,537	15,341	8,818	10,219	6,664
MEAN	269	611	796	1,543	1,213	2,222	1,544	1,598	511	284	330	222
MAX	650	2,300	2,690	5,120	4,620	8,330	5,390	7,770	768	522	1,680	500
MIN	170	290	376	440	535	776	780	680	300	180	190	135
CFSM	.37	.83	1.08	2.10	1.65	3.03	2.10	2.18	.70	.39	.45	.30
IN.	.42	.93	1.25	2.42	1.72	3.49	2.35	2.51	.78	.45	.52	.34

CAL YR 1973 TOTAL 290,589 MEAN 796 MAX 4,800 MIN 170 CFSM 1.08 IN 14.73
WTR YR 1974 TOTAL 338,931 MEAN 929 MAX 8,330 MIN 135 CFSM 1.27 IN 17.18

PEAK DISCHARGE (BASE, 3,000 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-23	1700	11.38	4,900
01-27	2400	11.95	5,630
02-22	2200	11.90	5,590
03-06	0200	15.69	10,200
04-04	1600	12.18	6,070
05-18	0500	13.93	8,630

STREAMS TRIBUTARY TO DETROIT RIVER

04166000 River Rouge at Birmingham, Mich.

LOCATION.--Lat 42°32'45", long 83°13'25", in NW¼ sec.36, T.2 N., R.10 E., Oakland County, on left bank in Birmingham, 25 ft (8 m) downstream from mouth of Quarton Lake outlet, and 100 ft upstream from bridge on West Maple Road.

DRAINAGE AREA.--33.3 mi² (86.2 km²). Prior to water year 1971, drainage area, 36.9 mi² (95.6 km²). An area of 3.6 mi² (9.3 km²) non-contributing since then.

PERIOD OF RECORD.--June 1950 to current year.

GAGE.--Water-stage recorder. Concrete control since July 27, 1962. Datum of gage is 715.94 ft (218.218 m) above mean sea level.

AVERAGE DISCHARGE.--20 years (1950-70), 15.3 ft³/s (0.433 m³/s), 5.63 in/yr (143 mm/yr).

EXTREMES.--Current year: Maximum discharge, 390 ft³/s (11.0 m³/s) Mar. 5 (gage height, 4.35 ft or 1.326 m); minimum, 1.8 ft³/s (0.051 m³/s). Sept. 26 (gage height, 1.49 ft or 0.454 m).
Period of record: Maximum discharge, 1,390 ft³/s (39.4 m³/s) June 26, 1968 (gage height, 8.70 ft or 2.652 m); minimum, 0.10 ft³/s (0.003 m³/s) Aug. 8, 9, 1963; minimum gage height, 1.02 ft (0.311 m) Oct. 12, 1961.

REMARKS.--Records good. Occasional regulation by Quarton Lake above station.

REVISIONS (WATER YEARS).--WSP 1387: 1951-52 (M). WSP 1557: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	26	28	27	48	61	71	29	30	14	5.1	5.4
2	9.4	16	24	24	41	59	92	27	25	26	5.0	6.0
3	17	14	22	22	35	66	86	32	20	26	8.7	12
4	10	11	26	20	32	104	236	30	18	13	8.0	8.2
5	7.8	10	37	19	32	280	105	28	17	13	7.8	6.3
6	6.8	9.0	26	17	28	115	83	33	15	12	5.8	5.2
7	6.6	8.4	21	16	29	87	86	29	15	10	5.4	5.0
8	6.4	9.0	19	15	28	145	90	32	26	9.2	5.4	4.7
9	6.4	9.8	20	15	26	263	74	65	20	8.7	9.8	4.5
10	6.4	9.6	20	16	25	161	65	40	17	9.5	6.9	4.6
11	6.3	9.5	18	16	24	92	57	48	14	13	6.2	4.8
12	6.2	9.3	17	16	23	77	60	90	14	9.2	5.7	11
13	8.0	9.5	20	16	22	66	62	63	13	7.9	5.4	7.4
14	11	9.3	20	16	22	58	53	44	12	7.3	5.3	5.6
15	8.0	41	16	16	22	54	48	88	12	8.8	5.0	4.9
16	6.9	28	17	16	22	59	43	116	11	7.8	8.4	4.8
17	7.1	16	16	17	22	57	39	216	10	6.8	11	7.3
18	6.8	14	15	17	22	49	42	111	10	6.4	8.1	8.0
19	6.1	15	14	18	25	54	53	77	11	5.8	6.4	4.4
20	6.8	14	14	46	30	46	44	64	15	5.4	5.5	3.9
21	8.3	38	14	186	40	46	42	55	20	5.2	4.6	3.8
22	8.2	33	15	123	214	44	56	48	14	5.6	4.6	3.7
23	8.2	21	16	166	134	42	62	46	11	8.9	5.2	3.6
24	8.0	29	17	90	75	37	50	37	10	8.6	4.7	4.1
25	8.1	45	25	73	56	32	39	32	9.8	7.1	4.3	3.8
26	7.8	31	58	76	42	34	36	29	10	6.6	4.4	3.3
27	7.5	25	111	228	38	34	34	28	10	6.2	4.3	3.7
28	18	109	74	101	49	35	33	29	9.4	5.5	4.5	4.8
29	38	77	61	72	-----	41	34	45	8.9	5.5	4.5	16
30	31	49	46	63	-----	74	33	35	18	5.1	4.2	9.8
31	17	-----	33	59	-----	88	-----	34	-----	4.6	6.2	-----
TOTAL	317.7	745.4	880	1,622	1,207	2,464	1,908	1,680	446.1	288.7	186.4	180.6
MEAN	10.2	24.8	28.4	52.3	43.1	79.5	63.6	54.2	14.9	9.31	6.01	6.02
MAX	38	109	111	228	214	280	236	216	30	26	11	16
MIN	6.1	8.4	14	15	22	32	33	27	8.9	4.6	4.2	3.3
CFSM	.31	.74	.85	1.57	1.29	2.39	1.91	1.63	.45	.28	.18	.18
IN.	.35	.83	.98	1.81	1.35	2.75	2.13	1.88	.50	.32	.21	.20

CAL YR 1973 TOTAL 10,594.9 MEAN 29.0 MAX 205 MIN 4.0 CFSM .87 IN 11.84
WTR YR 1974 TOTAL 11,925.9 MEAN 32.7 MAX 280 MIN 3.3 CFSM .98 IN 13.32

PEAK DISCHARGE (BASE, 180 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	1200	3.23	183	03-05	0600	4.35	390
01-21	1000	3.50	230	03-09	1800	4.02	325
01-23	0600	3.34	202	04-04	0200	4.07	338
01-27	0300	3.89	298	05-17	1000	3.73	271
02-22	1900	3.95	311				

04166100 River Rouge at Southfield, Mich.

LOCATION.--Lat 42°26'52", long 83°17'52", in SW¼ sec.32, T.1 N., R.10 E., Oakland County, on right bank at downstream side of bridge on Beech Road at Southfield, 4.2 mi (6.8 m) east of Farmington.

DRAINAGE AREA.--87.9 mi² (227.7 km²).

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 609.62 ft (185.812 m) above mean sea level (city of Southfield benchmark). Prior to Sept. 30, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--16 years, 53.8 ft³/s (1.524 m³/s), 8.31 in/yr (211 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,350 ft³/s (38.2 m³/s) Apr. 4 (gage height, 11.18 ft or 3.408 m); maximum gage height, 11.30 ft (3.444 m) Mar. 5; minimum discharge, 8.0 ft³/s (0.23 m³/s) Sept. 27; minimum gage height, 2.66 ft (0.811 m) Aug. 23.
Period of record: Maximum discharge, 4,900 ft³/s (139 m³/s) June 26, 1968 (gage height, 19.04 ft or 5.803 m); minimum, 0.1 ft³/s (0.003 m³/s) Aug. 2, 1964 (gage height, 1.15 ft or 0.351 m).

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	96	89	90	119	145	201	84	73	41	12	18
2	46	58	66	70	101	153	257	77	65	29	13	13
3	100	49	58	66	95	186	190	81	57	58	20	33
4	62	35	58	62	96	245	949	86	51	40	21	24
5	41	28	111	58	78	993	404	77	47	32	17	16
6	30	29	81	56	80	514	232	87	45	29	15	13
7	28	24	62	56	80	252	206	84	44	25	13	12
8	25	23	54	53	78	431	309	84	75	23	13	12
9	23	24	51	52	74	1,030	187	192	73	21	24	12
10	22	24	56	50	70	857	151	124	54	21	17	11
11	18	23	53	47	66	339	130	100	45	27	14	12
12	19	21	46	46	62	218	136	434	40	23	14	47
13	24	17	53	45	60	165	159	212	37	19	15	23
14	49	17	76	45	60	140	127	139	35	18	14	15
15	30	79	51	45	60	129	112	270	35	19	13	13
16	21	126	44	45	60	145	103	240	37	18	13	12
17	25	46	43	47	60	141	97	628	33	16	53	12
18	14	33	40	50	64	121	90	483	34	15	23	18
19	13	31	40	55	70	123	102	221	38	15	17	13
20	14	30	40	94	80	115	101	159	39	14	14	11
21	14	66	40	675	156	109	94	129	39	13	12	9.8
22	16	117	42	720	621	109	99	114	41	13	12	9.4
23	15	58	45	629	843	106	136	111	33	19	15	9.1
24	15	56	54	314	256	95	110	94	30	23	40	9.2
25	15	115	90	193	164	85	95	81	28	18	15	9.9
26	17	111	250	161	134	86	87	74	26	16	13	9.1
27	18	76	450	653	108	85	83	69	27	16	13	8.8
28	65	292	230	424	108	87	80	65	25	14	13	11
29	181	391	160	208	-----	102	81	98	23	18	12	6.8
30	133	149	120	161	-----	178	86	96	37	16	12	26
31	61	-----	100	163	-----	322	-----	78	-----	14	14	-----
TOTAL	1,193	2,244	2,753	5,413	3,903	7,806	5,194	4,871	1,266	683	526	510.3
MEAN	38.5	74.8	88.8	175	139	252	173	157	42.2	22.0	17.0	17.0
MAX	181	391	450	720	843	1,030	949	628	75	58	53	68
MIN	13	17	40	45	60	85	80	65	23	13	12	8.8
CFSM	.44	.45	1.01	1.99	1.58	2.87	1.97	1.79	.48	.25	.19	.19
IN.	.50	.95	1.17	2.29	1.65	3.30	2.20	2.06	.54	.29	.22	.22

CAL YR 1973 TOTAL 33,334.0 MEAN 91.3 MAX 1,110 MIN 13 CFSM 1.04 IN 14.11
WTR YR 1974 TOTAL 36,362.3 MEAN 99.6 MAX 1,030 MIN 8.8 CFSM 1.13 IN 15.39

PEAK DISCHARGE (BASE, 500 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	2300	9.98	700	03-05	0900	11.30	1,340
12-27	unknown	unknown	about 500	03-09	2400	10.85	1,190
01-21	1700	11.03	1,160	04-04	0700	11.18	1,350
01-23	1500	9.47	718	05-12	1100	8.73	608
01-27	1600	10.31	943	05-17	2300	9.25	715
02-22	1800	11.00	1,200				

STREAMS TRIBUTARY TO DETROIT RIVER

04166200 Evans Ditch at Southfield, Mich.

LOCATION.--Lat 42°27'28", long 83°16'03", in SE¼ sec.28, T.1 N., R.10 E., Oakland County, on right bank at Southfield, 20 ft (6 m) upstream from bridge on Nine-Mile Road, 1.6 mi (2.6 km) upstream from mouth, and 5.5 mi (8.8 km) east of Farmington.

DRAINAGE AREA.--9.49 mi² (24.58 km²).

PERIOD OF RECORD.--September 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 615.07 ft (187.473 m) above mean sea level (city of Southfield bench mark).

AVERAGE DISCHARGE.--16 years, 7.83 ft³/s (0.222 m³/s), 11.20 in/yr (284 mm/yr).

EXTREMES.--Current year: Maximum discharge, 495 ft³/s (14.0 m³/s) Jan. 27 (gage height, 9.95 ft or 3.033 m); minimum, 0.45 ft³/s (0.013 m³/s) June 2, 3, 4.

Period of record: Maximum discharge, 903 ft³/s (25.6 m³/s) June 25, 1968 (gage height, 12.95 ft or 3.947 m), from rating curve extended above 410 ft³/s (11.6 m³/s); minimum, 0.01 ft³/s (<0.001 m³/s) Oct. 3, 1967; minimum gage height, 5.08 ft (1.548 m) Sept. 13, 1966.

REMARKS.--Records fair except those for the winter period, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	29	5.8	8.4	11	14	21	1.1	.57	2.3	1.2	1.4
2	20	7.1	4.9	6.8	8.4	32	30	.81	1.1	24	1.6	7.3
3	12	8.4	4.9	6.3	7.3	23	23	5.2	.54	3.6	3.2	24
4	4.5	3.8	15	5.3	6.8	76	111	1.1	.61	4.3	1.1	1.9
5	3.2	4.2	20	5.3	6.6	130	25	1.4	.78	2.6	.94	1.6
6	2.9	3.8	5.8	4.9	6.8	50	15	5.8	1.2	1.8	.86	1.3
7	3.5	2.9	4.2	4.5	6.3	29	42	1.1	.94	1.8	.97	1.2
8	2.4	2.6	3.5	4.5	6.3	50	28	21	24	2.0	9.6	1.6
9	2.4	2.2	3.2	4.5	5.3	120	12	24	1.8	2.4	51	2.4
10	2.4	2.2	3.8	4.5	5.3	100	8.8	3.1	.92	2.6	2.4	1.7
11	2.0	2.2	2.9	4.5	5.1	35	7.7	44	.73	2.7	1.7	1.4
12	2.0	2.2	2.6	4.2	4.9	26	19	70	.79	1.6	1.7	43
13	9.7	2.0	14	3.5	4.8	22	9.8	6.5	.61	1.5	3.5	4.9
14	3.9	2.0	7.3	3.5	4.8	20	7.7	4.0	.84	1.6	1.9	2.8
15	1.6	72	3.8	3.5	4.8	17	4.1	58	11	2.2	1.7	4.6
16	1.8	13	3.2	3.6	4.8	16	2.9	58	1.8	1.8	27	1.4
17	1.6	3.8	2.6	3.7	4.9	14	2.7	42	.90	2.8	28	2.0
18	1.6	3.5	2.3	3.7	5.1	14	3.0	8.6	1.9	2.4	3.1	4.1
19	1.8	3.5	2.2	3.8	5.6	13	5.2	4.0	8.7	2.0	2.5	1.6
20	2.0	3.2	2.4	80	6.6	13	2.2	2.3	1.5	1.7	3.2	1.6
21	1.6	47	2.5	195	23	13	1.8	1.8	1.0	1.8	2.1	1.3
22	1.6	7.8	2.7	56	120	10	19	2.4	1.0	2.9	2.0	1.3
23	2.2	4.5	3.0	103	60	6.8	4.5	2.1	.77	8.6	38	1.1
24	1.4	23	3.2	24	17	5.1	2.2	1.6	.65	1.9	15	1.3
25	1.6	38	38	18	12	4.4	2.2	2.2	1.0	1.4	2.2	.98
26	1.8	10	75	18	9.0	4.4	1.7	.86	1.1	1.5	1.9	.98
27	2.0	7.8	121	145	7.4	3.7	1.3	1.2	3.2	1.7	1.8	1.4
28	55	162	31	29	13	6.1	1.3	2.5	1.2	1.3	1.7	9.0
29	65	28	19	24	-----	19	2.1	27	1.3	12	1.5	57
30	23	10	12	25	-----	66	1.5	1.1	33	1.5	1.5	3.8
31	11	-----	9.0	23	-----	58	-----	.78	-----	1.2	6.0	-----
TOTAL	252.8	511.7	430.8	829.0	382.9	1,010.5	417.7	405.55	105.45	103.5	220.87	189.96
MEAN	8.15	17.1	13.9	26.7	13.7	32.6	13.9	13.1	3.52	3.34	7.12	6.33
MAX	65	162	121	195	120	130	111	70	33	24	51	57
MTN	1.4	2.0	2.2	3.5	4.8	3.7	1.3	.78	.54	1.2	.86	.98
CFSM	.86	1.80	1.46	2.81	1.44	3.44	1.46	1.38	.37	.35	.75	.67
IN.	.99	2.01	1.69	3.25	1.50	3.96	1.64	1.59	.41	.41	.87	.74

CAL YR 1973 TOTAL 4,675.80 MEAN 12.8 MAX 162 MIN 1.4 CFSM 1.35 IN 18.33
WTR YR 1974 TOTAL 4,860.73 MEAN 13.3 MAX 195 MIN .54 CFSM 1.40 IN 19.05

PEAK DISCHARGE (BASE, 200 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	1100	9.21	400	03-09	unknown	unknown	about 320
12-27	0030	8.89	365	04-04	0400	8.19	278
01-21	0600	8.73	347	05-11	2300	8.01	249
01-27	0230	9.95	495	05-16	1900	7.58	203
02-22	unknown	unknown	318	08-09	0200	7.98	258
03-05	unknown	unknown	about 350	08-16	2400	7.52	214

04166300 Upper River Rouge at Farmington, Mich.

LOCATION.--Lat 42°27'52", long 83°22'11", in NW¼ sec.27, T.1 N., R.9 E., Oakland County, on left bank 800 ft (244 m) downstream from bridge on Shiawassee Road at Farmington.

DRAINAGE AREA.--17.5 mi² (45.3 km²).

PERIOD OF RECORD.--March 1958 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 690.4 ft (210.43 m) above mean sea level.

AVERAGE DISCHARGE.--16 years, 10.6 ft³/s (0.300 m³/s), 8.23 in/yr (209 mm/yr).

EXTREMES.--Current year: Maximum discharge, 345 ft³/s (9.77 m³/s) Mar. 5 (gage height, 5.22 ft or 1.591 m); minimum 1.6 ft³/s (0.045 m³/s) July 20, 21, Aug. 12; minimum gage height, 2.78 ft (0.847 m) Aug. 12.

Period of record: Maximum discharge, 1,500 ft³/s (42.5 m³/s) June 25, 1968 (gage height, 8.70 ft or 2.652 m); minimum, 0.07 ft³/s (0.002 m³/s) Aug. 30, 1966, result of regulation; minimum daily, 0.32 ft³/s (0.009 m³/s) Aug. 10, 1964, Aug. 29, 1966.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1912: 1959 (M), 1960 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	15	19	17	30	38	46	16	12	4.2	2.1	3.8
2	18	9.1	16	14	25	41	72	14	10	4.6	2.9	3.8
3	11	8.6	15	14	22	48	62	17	9.8	5.0	7.0	8.8
4	6.2	7.0	10	13	20	77	142	15	9.4	4.3	3.8	4.5
5	5.1	6.2	23	13	16	220	56	14	8.7	5.8	3.1	3.5
6	4.5	5.6	17	13	15	78	43	17	7.9	3.9	4.0	3.1
7	4.5	5.7	14	12	15	53	46	16	7.2	3.2	3.7	3.1
8	4.2	6.2	12	11	14	126	50	21	20	2.8	2.6	3.0
9	4.0	5.5	12	11	14	192	38	43	13	2.5	2.2	2.7
10	3.9	5.2	12	10	13	128	33	27	9.4	2.6	2.1	2.8
11	3.7	5.2	11	10	13	63	30	37	7.9	2.9	2.1	2.7
12	3.6	5.1	10	10	12	48	36	82	7.5	2.5	2.2	7.9
13	4.7	5.1	12	10	12	38	42	39	6.5	2.5	3.6	4.7
14	5.7	5.1	12	10	12	33	34	29	6.1	2.3	3.4	3.5
15	4.2	28	9.8	10	11	32	29	58	6.3	3.2	2.5	3.0
16	3.7	18	9.0	10	11	37	26	67	6.3	2.5	5.5	2.7
17	3.5	11	8.2	10	11	34	23	97	6.1	2.4	12	2.8
18	3.3	9.1	7.8	10	11	30	22	50	6.8	2.4	4.3	2.9
19	3.3	8.3	7.0	11	13	32	23	35	7.4	2.2	3.1	2.8
20	3.4	7.4	7.8	29	17	27	21	27	7.6	1.9	2.8	2.7
21	3.2	31	8.2	150	30	27	20	23	6.4	1.9	2.6	2.6
22	3.1	20	8.2	100	153	26	29	20	5.9	2.0	2.7	2.4
23	3.1	13	8.6	130	86	24	29	19	5.1	3.7	17	2.6
24	3.1	17	8.6	70	42	20	23	16	4.6	3.3	14	2.5
25	3.0	27	16	60	29	17	20	15	4.4	2.6	5.7	2.4
26	3.0	20	34	80	25	19	18	13	4.3	2.7	3.9	2.3
27	3.2	16	87	180	24	19	17	12	4.1	2.6	3.4	2.4
28	12	85	49	80	31	20	17	12	3.8	2.3	3.4	3.1
29	22	46	37	56	-----	22	17	20	3.4	3.2	3.2	8.2
30	14	25	27	45	-----	51	17	17	5.6	2.7	2.8	4.6
31	10	-----	22	35	-----	61	-----	13	-----	2.3	4.9	-----
TOTAL	186.5	476.4	559.2	1,234	727	1,681	1,081	901	223.5	93.0	138.6	107.9
MEAN	6.02	15.9	18.0	39.8	26.0	54.2	36.0	29.1	7.45	3.00	4.47	3.60
MAX	22	85	87	180	153	220	142	97	20	5.8	17	8.8
MIN	3.0	5.1	7.0	10	11	17	17	12	3.4	1.9	2.1	2.3
CFSM	.34	.91	1.03	2.27	1.49	3.10	2.06	1.66	.43	.17	.26	.21
IN.	.40	1.01	1.19	2.62	1.55	3.57	2.30	1.92	.48	.20	.29	.23

CAL YR 1973 TOTAL 6,229.1 MEAN 17.1 MAX 123 MIN 2.1 CFSM .98 IN 13.24
WTR YR 1974 TOTAL 7,409.1 MEAN 20.3 MAX 220 MIN 1.9 CFSM 1.16 IN 15.75

PEAK DISCHARGE (BASE, 80 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	1300	4.22	150	03-05	0400	5.22	345
12-27	0500	3.92	104	03-09	1900	4.70	241
01-21	unknown	unknown	about 190	04-04	0200	4.87	275
01-23	unknown	unknown	about 160	05-11	2400	4.13	140
01-27	unknown	unknown	about 230	05-16	2100	4.09	133
02-22	1900	4.53	208	08-23	2200	3.87	95

STREAMS TRIBUTARY TO DETROIT RIVER

04166500 River Rouge at Detroit, Mich.

LOCATION.--Lat 42°22'20", long 83°15'20", in SW¼ sec.27, T.1 S., R.10 E., Wayne County, on right bank 500 ft (152 m) upstream from bridge on Plymouth Road in Detroit, and 4 mi (6 km) upstream from Middle River Rouge.

DRAINAGE AREA.--187 mi² (484 km²).

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 584.00 ft (178.003 m) above mean sea level. Prior to Oct. 16, 1948, nonrecording gage at site 1 mi (2 km) downstream at datum 4.6 ft (1.4 m) lower.

AVERAGE DISCHARGE.--44 years, 110 ft³/s (3.115 m³/s), 7.99 in/yr (203 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,980 ft³/s (56.1 m³/s) Apr. 4 (gage height, 13.61 ft or 4.148 m); maximum gage height, 13.63 ft (4.154 m) Mar. 5; minimum discharge, 16 ft³/s (0.45 m³/s) Aug. 1, 2; minimum gage height, 3.72 ft (1.134 m) Oct. 17.
Period of record: Maximum discharge, 13,000 ft³/s (368 m³/s) Apr. 5, 1947; maximum gage height, 23.0 ft (7.01 m) Apr. 6, 1947, from floodmark, site and datum then in use; minimum discharge, 1.8 ft³/s (0.051 m³/s) Aug. 1, 2, 1964 (gage height, 3.00 ft or 0.914 m).

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1034: 1933 (M). WSP 1054: 1939, 1943, 1945 (M). WSP 1437: 1931-32, 1934, 1936 (M), 1937-38, 1944 (M), 1945. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	196	186	154	249	301	385	132	103	83	18	43
2	82	112	139	140	187	375	530	121	94	60	19	29
3	172	96	126	130	170	370	439	135	95	102	36	120
4	82	72	147	110	150	553	1,720	136	76	64	38	56
5	58	59	259	100	140	1,680	876	122	70	57	29	35
6	47	52	166	95	130	1,090	397	141	66	47	23	28
7	43	48	126	90	120	436	368	134	66	38	23	25
8	42	48	109	83	115	805	546	183	175	35	20	23
9	40	46	102	80	110	1,620	333	368	120	31	129	25
10	37	45	103	80	110	1,600	272	223	86	30	36	23
11	35	45	100	80	105	653	241	175	69	40	24	23
12	34	45	88	80	105	391	268	750	63	39	25	203
13	39	46	127	80	100	297	306	380	58	30	31	71
14	69	54	156	80	100	253	244	211	54	30	38	39
15	49	380	104	80	100	236	211	526	85	43	23	30
16	36	344	90	85	100	293	188	394	83	36	98	25
17	24	116	80	85	100	266	181	770	57	30	302	24
18	33	84	75	90	110	219	167	542	58	30	57	31
19	29	76	75	100	120	236	199	295	98	31	36	32
20	29	70	75	350	150	206	180	225	80	28	31	30
21	29	222	75	1,270	316	197	166	187	62	23	29	24
22	31	277	75	1,240	1,390	199	223	170	68	25	21	24
23	30	129	80	1,120	1,450	180	274	162	52	43	256	21
24	30	144	99	645	438	160	196	139	45	56	266	22
25	31	251	186	366	268	141	167	120	42	40	46	23
26	31	235	445	343	215	147	153	111	41	34	32	24
27	32	152	997	1,410	190	140	144	103	50	33	27	24
28	99	648	626	896	204	150	136	100	39	27	25	38
29	294	882	328	406	-----	217	143	174	36	132	25	217
30	233	279	232	336	-----	476	144	145	135	41	22	95
31	119	-----	183	351	-----	687	-----	111	-----	23	26	-----
TOTAL	2,006	5,253	5,759	10,560	7,042	14,574	9,797	7,485	2,216	1,361	1,811	1,427
MFAN	64.7	175	186	341	252	470	327	241	73.9	43.9	58.4	47.6
MAX	294	882	997	1,410	1,450	1,680	1,720	770	175	132	302	217
MIN	28	45	75	80	100	140	136	100	36	23	18	21
CFSM	.35	.94	.99	1.82	1.35	2.51	1.75	1.29	.40	.23	.31	.25
IN.	.40	1.04	1.15	2.10	1.40	2.90	1.95	1.49	.44	.27	.36	.28

CAL YR 1973 TOTAL 64,373 MFAN 176 MAX 1,900 MIN 23 CFSM .94 IN 12.81
WTR YR 1974 TOTAL 69,291 MFAN 190 MAX 1,720 MIN 18 CFSM 1.02 IN 13.78

PEAK DISCHARGE (BASE, 1,200 FT³/S)

DATE	TIME	G.H.	DISCHARGE
11-29	0200	11.58	1,270
01-21	2400	12.59	1,550
01-27	1700	12.74	1,590
02-22	2400	13.45	1,860
03-05	1800	13.63	1,930
03-10	0500	13.43	1,850
04-04	1400	13.61	1,980

04167000 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., Wayne County, on right bank 200 ft (61 m) downstream from bridge on Inkster Road, 1.8 mi (2.9 km) northeast of Garden City, and 6.0 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--99.9 mi² (258.7 km²).

PERIOD OF RECORD.--October 1930 to September 1933 (published as "at Detroit"), June 1947 to current year. Monthly discharge only for October, November 1930, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 600.95 ft (183.170 m) above mean sea level. Nov. 21, 1930 to Sept. 30, 1933, nonrecording gage at site 4.8 mi (7.7 km) downstream at datum 17.48 ft (5.328 m) lower. June 6, 1947 to Oct. 18, 1948, nonrecording gage at site 200 ft (61 m) upstream at present datum.

AVERAGE DISCHARGE.--30 years 66.1 ft³/s (1.872 m³/s), 8.99 in/yr (228 mm/yr).

EXTREMES.--Current year: Maximum discharge, 945 ft³/s (26.8 m³/s) Apr. 4 (gage height, 8.50 ft or 2.591 m); minimum, 16 ft³/s (0.45 m³/s) Aug. 6, 7, 8, Sept. 23, 24, 25, 26; minimum gage height, 1.90 ft (0.579 m) Aug. 7, Sept. 7, 8, 10, 11.
Period of record: Maximum discharge, 2,330 ft³/s (66.0 m³/s) June 26, 1968; maximum gage height, 10.50 ft (3.200 m) May 10, 1948; minimum discharge, 0.9 ft³/s (0.025 m³/s) Aug. 16, 1956.

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by reservoirs above station since 1956.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	89	130	109	183	205	268	79	59	45	19	21
2	59	55	98	90	137	243	309	73	53	38	19	27
3	50	50	85	75	116	267	365	75	49	38	23	67
4	38	40	112	65	107	379	863	73	49	38	26	33
5	30	35	154	60	102	840	444	70	48	37	20	24
6	25	32	119	55	92	709	273	193	48	33	17	20
7	25	31	96	50	85	389	268	172	48	29	17	18
8	24	31	81	48	80	501	307	129	122	28	18	18
9	24	31	74	47	75	783	227	331	77	30	18	19
10	24	29	72	47	70	841	180	330	60	27	19	18
11	23	29	67	47	66	469	152	222	52	32	18	19
12	23	29	63	47	62	286	164	240	50	31	20	128
13	28	29	96	47	60	223	201	259	46	26	23	45
14	29	31	96	47	60	203	177	260	43	28	35	26
15	25	241	74	48	60	198	141	289	91	32	29	20
16	23	140	62	50	60	223	124	220	64	22	74	19
17	21	74	56	52	60	201	113	149	48	21	124	19
18	21	57	51	54	60	171	106	108	50	21	48	19
19	21	49	47	58	70	173	117	95	77	21	29	19
20	21	46	49	199	100	154	102	87	61	20	25	18
21	20	157	54	579	177	152	95	80	73	19	21	17
22	19	127	52	608	764	143	118	75	83	19	20	17
23	19	83	51	711	811	131	129	70	50	31	22	16
24	20	99	51	492	401	118	108	66	41	31	32	16
25	20	128	118	303	243	98	93	64	33	26	34	16
26	20	111	224	259	164	98	86	62	40	24	24	16
27	20	89	457	697	132	101	81	60	39	23	24	17
28	72	416	345	496	154	110	85	60	37	21	22	22
29	134	347	261	321	-----	147	80	85	35	91	20	56
30	92	198	189	250	-----	260	76	77	61	33	20	35
31	68	-----	137	257	-----	318	-----	67	-----	23	21	-----
TOTAL	1,081	2,903	3,621	6,268	4,551	9,134	5,852	4,220	1,693	938	881	825
MFAN	34.9	96.8	117	202	163	295	195	136	56.4	30.3	28.4	27.5
MAX	134	416	457	711	811	841	863	331	122	91	124	128
MIN	19	29	47	47	60	98	76	60	35	19	17	16
CFSM	.35	.97	1.17	2.02	1.63	2.95	1.95	1.36	.56	.30	.28	.28
IN.	.40	1.08	1.35	2.33	1.69	3.40	2.18	1.57	.63	.35	.33	.31

CAL YR 1973 TOTAL 35,012 MFAN 95.9 MAX 535 MIN 19 CFSM .96 IN 13.04
WTR YR 1974 TOTAL 41,967 MFAN 115 MAX 863 MIN 16 CFSM 1.15 IN 15.63

PEAK DISCHARGE (BASE, 700 FT³/s)

DATE	TIME	G.H.	DISCHARGE
01-23	1200	7.78	745
01-27	1700	7.83	758
02-22	2300	8.37	901
03-05	1700	8.39	907
03-10	0300	8.45	928
04-04	1400	8.50	945

STREAMS TRIBUTARY TO DETROIT RIVER

04168000 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., Wayne County, on right bank 10 ft (3 m) downstream from bridge on John Daly Road, 0.6 mi (1.0 km) northeast of Inkster, and 4.8 mi (7.7 km) upstream from mouth.

DRAINAGE AREA.--83.2 mi² (215.5 km²).

PERIOD OF RECORD.--June 1947 to current year.

GAGE.--Water-stage recorder. Datum of gage is 593.14 ft (180.789 m) above mean sea level. Prior to Oct. 20, 1948, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--27 years, 49.8 ft³/s (1.410 m³/s), 8.13 in/yr (207 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,420 ft³/s (40.2 m³/s) Feb. 23 (gage height, 10.43 ft or 3.179 m); minimum, 1.2 ft³/s (0.034 m³/s) Oct. 25, 26; minimum gage height, 2.70 ft (0.823 m) Aug. 22, 23, 24.

Period of record: Maximum discharge, 3,600 ft³/s (102 m³/s) June 26, 1968 (gage height, 13.62 ft or 4.151 m); minimum, 0.2 ft³/s (0.006 m³/s) Sept. 13, 1955, Jan. 23, 1961.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS (WATER YEARS).--WSP 1174: 1948 (M). WSP 1437: 1949. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	41	164	88	196	208	224	28	13	7.3	3.0	2.1
2	26	27	127	60	90	261	273	24	12	5.6	3.2	5.7
3	23	16	117	58	66	342	212	29	11	4.5	3.3	20
4	15	9.6	157	49	52	430	935	27	9.7	3.5	3.2	4.4
5	7.7	7.3	248	42	46	965	520	23	8.0	3.1	2.8	2.5
6	7.2	7.3	177	35	43	562	251	24	9.1	3.4	2.9	2.9
7	4.7	6.7	116	32	40	248	264	21	8.0	4.3	2.9	2.5
8	3.2	5.7	94	27	37	516	487	66	48	4.0	3.3	2.3
9	3.0	5.7	84	26	34	952	208	187	19	4.3	3.0	2.2
10	2.8	5.1	79	24	31	805	137	115	12	4.0	2.6	2.1
11	2.7	4.4	66	23	29	313	98	142	9.1	3.1	2.6	2.3
12	2.5	4.4	54	23	27	199	100	486	13	3.0	2.7	89
13	5.7	4.4	133	23	26	125	164	207	8.1	3.4	2.7	8.9
14	5.5	4.7	160	25	25	93	105	108	5.8	3.4	2.8	4.5
15	2.7	110	130	28	24	85	73	313	41	2.8	2.8	3.0
16	3.0	100	110	31	23	117	54	211	23	2.4	55	2.5
17	2.8	40	80	35	23	129	46	227	15	2.6	15	3.9
18	2.5	25	62	39	25	87	42	160	20	2.9	4.2	3.0
19	2.4	20	45	43	87	89	57	89	60	2.9	2.7	2.8
20	2.3	16	45	195	122	74	48	58	28	2.8	2.4	2.3
21	1.8	96	49	880	222	69	38	43	35	2.5	2.1	2.4
22	1.6	133	54	1,200	885	68	52	36	16	2.5	1.9	2.5
23	1.7	55	60	925	1,130	62	55	30	8.0	6.0	1.9	2.6
24	1.8	69	71	576	296	46	41	23	5.5	3.2	2.2	2.3
25	1.7	128	184	267	151	35	34	18	4.4	2.9	2.2	2.4
26	2.6	126	353	224	98	36	32	15	10	2.8	2.3	2.6
27	3.3	74	588	820	78	36	31	13	15	3.1	2.4	4.3
28	34	424	544	574	109	43	29	12	5.5	3.2	2.4	5.5
29	39	568	310	274	-----	78	29	24	4.6	20	2.3	75
30	29	237	180	246	-----	277	31	18	29	6.9	2.3	7.6
31	23	-----	125	377	-----	488	-----	16	-----	3.4	2.2	-----
TOTAL	279.2	2,370.3	4,766	7,269	4,015	7,838	4,670	2,792	505.8	129.8	147.3	276.1
MFAN	9.01	79.0	154	234	143	253	156	90.1	16.9	4.19	4.75	4.20
MAX	39	568	588	1,200	1,130	965	935	486	60	20	55	89
MIN	1.6	4.4	45	23	23	35	29	12	4.4	2.4	1.9	2.1
CFSM	.11	.95	1.85	2.81	1.72	3.04	1.88	1.08	.20	.05	.06	.11
IN.	.12	1.06	2.13	3.25	1.80	3.50	2.09	1.25	.23	.06	.07	.12

CAL YR 1973 TOTAL 28,953.3 MEAN 79.3 MAX 663 MIN 1.6 CFSM .95 IN 12.95
WTR YR 1974 TOTAL 35,058.5 MEAN 96.1 MAX 1,200 MIN 1.6 CFSM 1.16 IN 15.68

PEAK DISCHARGE (BASE, 900 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-22	0800	10.27	1,350
01-28	0200	9.54	1,100
02-23	0600	10.43	1,420
03-05	2400	9.79	1,180
03-09	1500	9.38	1,050
04-04	2200	10.19	1,320

04169500 Huron River at Commerce, Mich.

LOCATION.--Lat 42°35'25", long 83°29'05", in NE¼ SE¼ sec.10, T.2 N., R.8 E., Oakland County, on downstream left abutment of bridge on Commerce Road, 10 ft (3 m) upstream from Hayes Creek, and 0.2 mi (0.3 km) east of Commerce. Records include flow of Hayes Creek.

DRAINAGE AREA.--57.3 mi² (148.4 km²), includes that of Hayes Creek.

PERIOD OF RECORD.--March 1946 to current year.

GAGE.--Nonrecording gage. Datum of gage is 910.00 ft (277.368 m) above mean sea level.

AVERAGE DISCHARGE.--28 years, 37.2 ft³/s (1.054 m³/s), 8.82 in/yr (224 mm/yr).

EXTREMES.--Current year: Maximum discharge, 169 ft³/s (4.79 m³/s) Mar. 11 (gage height, 2.60 ft or 0.792 m); minimum, 8.5 ft³/s (0.24 m³/s) Sept. 16.

Period of record: Maximum discharge, 266 ft³/s (7.53 m³/s) Apr. 7, 1947 (gage height, 2.98 ft or 0.908 m, from graph based on gage readings); maximum gage height, 3.10 ft (0.945 m) May 12, 1948, from graph based on gage readings (backwater from debris); minimum discharge, 3.3 ft³/s (0.093 m³/s) Nov. 1, 1971.

REMARKS.--Records fair. Some regulation by dams operated for lake-level control at outlets of Pontiac, Oxbow, and Union Lakes.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	36	70	70	92	99	113	99	104	31	11	9.8
2	15	36	66	69	92	99	121	95	103	35	12	10
3	14	34	64	64	91	103	122	92	103	40	21	17
4	13	33	64	60	91	139	130	88	100	40	20	16
5	12	29	64	59	87	150	127	83	98	38	20	15
6	11	26	62	57	86	145	127	79	96	38	19	14
7	10	23	60	55	85	153	126	75	96	36	17	12
8	9.6	20	60	53	84	159	125	72	109	31	17	12
9	9.2	17	57	52	82	165	123	70	103	27	17	11
10	9.2	17	53	52	80	167	131	67	100	25	17	11
11	9.6	16	52	52	78	169	135	71	97	24	18	10
12	9.6	16	52	51	77	166	138	81	91	23	17	14
13	14	15	51	51	75	165	135	89	81	20	17	13
14	17	30	51	51	73	164	136	98	72	20	16	12
15	18	37	50	52	71	164	131	100	60	21	15	11
16	18	41	48	52	69	164	129	110	60	20	15	9.2
17	20	36	46	52	67	158	124	121	58	17	16	10
18	20	36	46	52	66	155	120	125	56	16	14	11
19	20	35	46	51	66	157	117	126	55	15	13	12
20	20	36	47	55	68	153	115	124	56	15	13	12
21	20	48	49	70	71	148	114	121	54	15	13	15
22	19	52	49	81	94	143	115	117	54	16	12	14
23	19	52	50	86	96	138	112	115	52	16	12	13
24	19	56	51	85	94	132	111	112	52	15	11	13
25	19	56	53	83	94	128	109	109	51	14	10	15
26	19	56	61	82	94	122	108	105	52	14	10	15
27	19	56	70	102	94	118	104	103	49	14	10	15
28	27	81	70	99	94	117	104	102	44	14	10	15
29	36	76	70	99	-----	117	105	105	36	13	10	17
30	38	72	70	97	-----	115	101	105	35	14	9.6	16
31	36	-----	70	92	-----	114	-----	104	-----	14	10	-----
TOTAL	556.2	1,174	1,772	2,086	2,311	4,386	3,608	3,063	2,177	691	441.6	390.0
MEAN	17.9	39.1	57.2	67.3	82.5	141	120	98.8	72.6	22.3	14.2	13.0
MAX	38	81	70	102	96	169	138	126	109	40	21	17
MIN	9.2	15	46	51	66	99	101	67	35	13	9.6	9.2
CFSM	.31	.68	1.00	1.17	1.44	2.46	2.09	1.72	1.27	.39	.25	.23
IN.	.36	.76	1.15	1.35	1.50	2.85	2.34	1.99	1.41	.45	.29	.25
CAL YR 1973	TOTAL 19,282.4	MEAN 52.8	MAX 117	MIN 9.0	CFSM .92	IN 12.52						
WTR YR 1974	TOTAL 22,655.8	MEAN 62.1	MAX 169	MIN 9.2	CFSM 1.08	IN 14.71						

04170000 Huron River at Milford, Mich.

LOCATION.--Lat 42°34'44", long 83°37'36", in NE¼ sec.16, T.2 N., R.7 E., Oakland County, on left bank 40 ft (12 m) downstream from bridge on General Motors Road, 0.5 mi (0.8 km) downstream from Sherwood Creek, and 0.5 mi (0.8 km) west of Milford.

DRAINAGE AREA.--132 mi² (342 km²).

PERIOD OF RECORD.--September 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 880.00 ft (268.224 m) above mean sea level. Prior to Apr. 1, 1970, at site 240 ft (73.2 m) upstream at same datum.

AVERAGE DISCHARGE.--26 years, 95.6 ft³/s (2.707 m³/s), 9.84 in/yr (250 mm/yr).

EXTREMES.--Current year: Maximum discharge, 515 ft³/s (14.6 m³/s) Mar. 6 (gage height, 7.60 ft or 2.316 m); minimum, 40 ft³/s (1.13 m³/s) Aug. 30; minimum gage height, 4.52 ft (1.378 m) June 19.

Period of record: Maximum discharge, 645 ft³/s (18.3 m³/s) Apr. 5, 1950; maximum gage height, 8.26 ft (2.518 m) June 28, 1968; minimum daily discharge, 5.2 ft³/s (0.15 m³/s) Oct. 21, 1971.

REMARKS.--Records good. Flow below about 300 ft³/s (8.50 m³/s) regulated by powerplant 1.5 mi (2.4 km) above station prior to May 20, 1957; occasional regulation for lake level control since.

REVISIONS (WATER YEARS).--WSP 1337: 1952 (m). WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	117	171	154	237	220	278	182	200	98	43	57
2	68	115	155	144	222	226	311	167	197	97	60	57
3	69	105	149	140	214	238	347	161	190	103	81	72
4	68	96	145	136	205	275	365	167	182	99	72	67
5	69	86	161	131	196	377	367	162	169	97	71	62
6	65	81	162	128	197	428	351	167	167	94	68	65
7	61	77	155	124	198	468	340	174	184	92	64	64
8	59	72	149	119	194	442	338	184	218	90	62	61
9	57	72	144	119	191	460	324	199	248	86	67	58
10	57	71	139	119	185	488	309	187	248	79	61	57
11	61	69	136	121	181	478	287	184	230	83	59	57
12	64	66	131	119	179	445	284	238	215	83	53	63
13	68	66	125	118	176	405	294	264	200	72	59	66
14	77	66	119	118	172	381	296	250	185	68	63	61
15	85	103	115	118	164	361	304	291	175	64	58	59
16	81	125	112	119	157	349	294	340	160	61	61	57
17	80	116	108	122	153	340	276	379	148	60	78	58
18	87	108	103	119	149	330	267	395	142	53	65	61
19	82	101	104	116	154	315	266	375	110	55	63	61
20	80	95	108	136	165	308	264	346	108	53	60	61
21	81	116	114	202	171	296	255	325	127	47	57	61
22	80	134	114	230	231	269	248	309	125	45	56	58
23	79	125	113	247	264	259	242	294	117	48	55	56
24	77	124	112	250	269	252	237	252	113	53	57	55
25	76	142	122	237	235	240	225	230	108	57	45	53
26	74	148	144	223	220	230	196	218	99	52	43	55
27	72	140	179	254	208	225	181	205	101	62	46	53
28	81	165	188	284	206	222	193	197	101	71	53	57
29	124	200	179	278	-----	226	194	211	94	70	50	74
30	124	190	165	294	-----	238	190	214	98	55	42	80
31	115	-----	164	257	-----	260	-----	208	-----	46	50	-----
TOTAL	2,396	3,291	4,285	5,276	5,493	10,051	8,323	7,475	4,759	2,193	1,822	1,826
MEAN	77.3	110	138	170	196	324	277	241	159	70.7	58.8	60.9
MAX	124	200	188	294	269	488	367	395	248	103	81	80
MTN	57	66	103	116	149	220	181	161	94	45	42	53
CFSM	.59	.83	1.05	1.29	1.48	2.45	2.10	1.83	1.20	.54	.45	.46
IN.	.68	.93	1.21	1.49	1.55	2.83	2.35	2.11	1.34	.62	.51	.51
CAL YR 1973	TOTAL 48,803		MFAN 134	MAX 285	MTN 25	CFSM 1.02	IN 13.75					
WTR YR 1974	TOTAL 57,190		MFAN 157	MAX 488	MTN 42	CFSM 1.19	IN 16.12					

04170500 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., Livingston County, on right bank 150 ft (46 m) downstream from Kent Lake Dam, 2 mi (3 km) upstream from Woodruff Creek, and 3 mi (5 km) west of New Hudson.

DRAINAGE AREA.--148 mi² (383 km²).

PERIOD OF RECORD.--August 1948 to current year.

GAGE.--Water-stage recorder. Datum of gage is 868.00 ft (264.566 m) above mean sea level.

AVERAGE DISCHARGE.--26 years, 109 ft³/s (3.087 m³/s), 10.00 in/yr (254 mm/yr).

EXTREMES.--Current year: Maximum discharge, 479 ft³/s (13.6 m³/s) Mar. 8 (gage height, 3.64 ft or 1.109 m); minimum daily, 36 ft³/s (1.02 m³/s) July 6; minimum gage height, 0.77 ft (0.235 m) July 5.

Period of record: Maximum discharge, 1,080 ft³/s (3.06 m³/s) Dec. 29, 1950 (gage height, 5.05 ft or 1.539 m), from rating curve extended above 600 ft³/s (17.0 m³/s) by logarithmic plotting; minimum, 2.6 ft³/s (0.074 m³/s) May 27, 1963 (gage height, 0.53 ft or 0.162 m); minimum daily, 6.4 ft³/s (0.18 m³/s) May 7, 1963.

REMARKS.--Records good. Occasional regulation by Kent Lake.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	135	245	188	295	256	309	188	242	124	56	62
2	100	136	205	193	284	265	362	174	232	120	60	69
3	93	130	182	176	268	270	412	164	227	124	77	81
4	89	123	220	172	258	298	405	189	223	120	77	79
5	85	167	213	165	246	368	392	196	217	80	78	77
6	83	170	196	163	245	405	362	209	207	36	75	76
7	82	140	188	158	242	439	368	208	206	61	73	74
8	82	115	178	148	238	309	376	216	239	77	74	74
9	81	149	170	150	233	224	353	225	254	85	76	72
10	80	154	161	148	231	191	341	229	258	91	74	71
11	81	175	161	146	228	331	332	235	257	90	71	68
12	79	176	159	144	224	392	324	264	248	85	70	78
13	86	134	162	141	220	389	328	278	233	84	90	84
14	89	117	155	142	217	379	324	277	219	83	89	79
15	92	134	150	143	212	369	336	292	211	84	76	73
16	92	178	144	143	207	363	331	316	202	73	81	73
17	89	187	142	146	204	350	319	368	189	66	105	72
18	93	185	139	146	201	339	311	392	182	63	92	74
19	92	194	141	146	204	339	309	390	177	65	82	72
20	94	158	150	163	208	324	300	371	155	64	76	77
21	94	148	150	199	210	318	293	351	152	58	71	74
22	94	153	147	230	243	304	296	338	162	57	67	73
23	95	151	144	263	269	294	293	321	148	60	66	67
24	94	149	140	271	285	294	287	303	138	59	66	65
25	93	159	147	274	279	292	274	284	133	59	61	66
26	93	158	159	270	267	278	268	269	129	61	55	65
27	134	159	184	284	257	268	245	257	124	61	57	69
28	153	177	195	298	254	273	239	247	122	65	59	74
29	152	185	201	305	-----	277	156	258	119	72	58	87
30	146	237	198	305	-----	285	147	254	126	68	53	89
31	138	-----	195	308	-----	297	-----	244	-----	61	58	-----
TOTAL	3,054	4,733	5,321	6,118	6,729	9,780	9,392	8,307	5,731	2,356	2,223	2,214
MEAN	98.5	158	172	197	240	315	313	268	191	76.0	71.7	73.8
MAX	153	237	245	308	295	439	412	392	258	124	105	89
MTN	79	115	139	141	201	191	147	164	119	36	53	62
CFSM	.67	1.07	1.16	1.33	1.62	2.13	2.11	1.81	1.29	.51	.48	.50
IN.	.77	1.19	1.34	1.54	1.69	2.46	2.36	2.09	1.44	.59	.56	.56
CAL YR 1973	TOTAL	55,749	MEAN 153	MAX 341	MIN 37	CFSM 1.03	IN 14.01					
WTR YR 1974	TOTAL	65,958	MEAN 181	MAX 439	MIN 36	CFSM 1.22	IN 16.58					

STREAMS TRIBUTARY TO LAKE ERIE

04172000 Huron River near Hamburg, Mich.

LOCATION.--Lat 42°27'55", long 83°48'00", in sec.24, T.1 N., R.5 E., Livingston County, on right bank at downstream side of bridge on Hamburg Road, 1.1 mi (1.8 km) north of Hamburg, and 3 mi (5 km) upstream from Strawberry Lake.

DRAINAGE AREA.--308 mi² (798 km²).

PERIOD OF RECORD.--October 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft (259.080 m) above mean sea level (levels by Michigan Department of Natural Resources). Prior to Aug. 12, 1953, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--23 years, 204 ft³/s (5.777 m³/s), 8.99 in/yr (228 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,050 ft³/s (29.7 m³/s) Mar. 9 (gage height, 7.37 ft or 2.246 m); minimum, 91 ft³/s (2.58 m³/s) Sept. 25, 27; minimum gage height, 3.67 ft (1.119 m) Sept. 27.

Period of record: Maximum discharge, 1,560 ft³/s (44.2 m³/s) May 15, 1956; maximum gage height, 8.46 ft (2.579 m) June 30, 1968; minimum discharge, 32 ft³/s (0.91 m³/s) July 2, 3, 1965; minimum gage height, 3.16 ft (0.963 m) Aug. 1-3, 1964.

REMARKS.--Records good except those for the winter period, which are poor. Occasional regulation by Kent Lake, 11 mi (18 km) above station.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	183	242	375	337	643	480	552	344	390	232	107	108
2	169	235	399	333	610	512	611	334	376	228	108	112
3	159	233	393	320	591	525	670	337	359	227	125	125
4	152	222	369	315	546	572	800	323	344	228	137	132
5	146	209	360	304	492	679	860	321	331	228	139	131
6	138	216	369	290	470	805	866	327	323	188	137	126
7	132	234	358	280	450	929	835	330	312	150	132	121
8	128	218	341	270	445	1,010	814	338	328	143	131	117
9	122	191	326	263	435	1,020	792	359	348	145	130	116
10	118	199	309	260	430	966	759	368	366	147	128	112
11	115	214	291	258	426	931	723	381	376	145	125	108
12	113	221	277	255	418	942	697	429	378	140	126	114
13	113	239	272	250	405	946	689	460	372	136	131	121
14	123	220	269	248	392	911	669	492	363	131	150	121
15	127	223	259	242	382	857	660	529	351	128	152	118
16	129	243	253	239	374	814	644	559	335	122	150	111
17	127	255	250	237	370	773	631	613	322	113	183	107
18	125	276	250	237	370	731	612	676	313	107	201	106
19	125	277	250	232	374	704	588	721	310	106	192	104
20	128	280	260	244	380	675	563	723	308	103	172	102
21	129	281	259	304	385	650	538	695	294	97	158	102
22	130	276	250	361	400	625	525	657	286	94	145	100
23	132	269	246	451	450	600	511	616	285	96	137	96
24	133	268	271	569	500	566	498	576	275	101	131	94
25	133	276	268	634	510	536	483	541	263	101	125	93
26	132	277	298	643	510	540	469	500	255	101	119	93
27	131	279	376	654	500	520	453	459	248	101	114	93
28	164	304	410	660	480	500	438	428	241	101	110	97
29	217	333	424	674	-----	500	425	416	233	107	108	111
30	235	360	397	679	-----	512	392	407	228	112	107	122
31	240	-----	354	671	-----	527	-----	399	-----	112	106	-----
TOTAL	4,448	7,570	9,783	11,714	12,738	21,858	18,767	14,658	9,513	4,270	4,216	3,313
MFAN	143	252	316	378	455	705	626	473	317	138	136	110
MAX	240	360	424	679	643	1,020	866	723	390	232	201	132
MIN	113	191	246	232	370	480	392	321	228	94	106	93
CFSM	.46	.82	1.03	1.23	1.48	2.29	2.03	1.54	1.03	.45	.44	.36
IN.	.54	.91	1.18	1.41	1.54	2.64	2.27	1.77	1.15	.52	.51	.40

CAL YR 1973 TOTAL 107,342 MEAN 294 MAX 776 MIN 75 CFSM .95 IN 12.96
 WTR YR 1974 TOTAL 122,848 MEAN 337 MAX 1,020 MIN 93 CFSM 1.09 IN 14.84

04173500 Mill Creek near Dexter, Mich.

LOCATION.--Lat 42°18'00", long 83°53'55", in SW¼ sec.18, T.2 S., R.5 E., Washtenaw County, on left bank 12 ft(4 m) downstream from bridge on Parker Road, 2.5 mi (4.0 km) south of Dexter, and 4 mi (6 km) upstream from mouth.

DRAINAGE AREA.--128 mi² (332 km²).

PERIOD OF RECORD.--February 1952 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 850 ft (259 m) from topographic map (nearest 10 ft). Prior to May 23, 1958, non-recording gage at same site and datum.

AVERAGE DISCHARGE.--22 years, 76.0 ft³/s (2.152 m³/s), 8.06 in/yr (205 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,020 ft³/s (28.9 m³/s) Mar. 10 (gage height, 11.30 ft or 3.444 m); minimum, 19 ft³/s (0.54 m³/s) Aug. 30, 31, Sept. 1, 2; minimum gage height, 5.49 ft (1.673 m) Aug. 22, 23, 24, 26, 30, 31, Sept. 1.
Period of record: Maximum discharge, 1,500 cfs (42.5 m³/s) June 26, 1968 (gage height, 12.95 ft or 3.947 m); minimum, 7.3 ft³/s (0.21 m³/s) Dec. 13, 1963; minimum gage height, 4.94 ft (1.506 m) Dec. 13, 1963, Feb. 22, 1964.

REMARKS.--Records good except those for the winter period, which are fair.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	100	156	170	238	269	391	116	92	44	26	19
2	83	83	125	150	190	263	703	104	83	44	28	21
3	81	81	113	130	167	348	529	104	78	44	34	30
4	72	70	115	120	153	471	570	101	75	44	30	26
5	66	64	151	110	140	835	479	98	70	48	28	24
6	57	58	129	100	130	783	381	104	70	44	27	23
7	54	54	107	95	125	628	337	101	67	42	26	23
8	53	52	96	90	120	710	433	124	104	41	26	23
9	51	49	86	85	115	906	339	232	105	39	26	23
10	49	46	84	80	110	975	265	185	92	40	25	23
11	46	44	78	80	105	755	225	174	82	49	25	23
12	45	44	73	80	100	545	232	423	86	42	25	30
13	47	44	82	80	95	364	256	333	75	39	24	29
14	53	42	107	80	90	265	220	224	70	37	22	26
15	49	84	88	80	90	239	194	294	66	37	22	25
16	44	115	73	80	85	258	173	309	64	35	22	24
17	42	85	64	80	85	255	160	497	62	34	27	24
18	41	71	56	85	85	218	149	435	64	34	24	23
19	39	66	50	98	90	218	171	294	71	33	23	23
20	39	59	49	164	100	194	158	204	73	32	23	22
21	38	89	50	708	178	185	144	164	66	31	22	22
22	38	108	52	815	620	182	140	145	59	32	21	22
23	37	84	56	763	802	185	140	133	56	33	20	22
24	37	82	64	605	495	155	129	113	54	34	20	22
25	36	115	95	391	310	136	120	105	52	31	20	22
26	37	106	209	310	250	128	116	98	54	31	20	22
27	37	100	463	605	220	130	110	92	55	29	20	21
28	45	255	449	558	240	139	105	91	51	27	20	23
29	61	357	346	384	-----	160	113	128	47	28	20	25
30	75	232	258	297	-----	348	122	130	46	28	20	26
31	72	-----	206	309	-----	503	-----	105	-----	27	19	-----
TOTAL	1,636	2,839	4,130	7,782	5,528	11,750	7,605	5,760	2,089	1,133	735	711
MEAN	52.8	94.6	133	251	197	379	254	186	69.6	36.5	23.7	23.7
MAX	112	357	463	815	802	975	703	497	105	49	34	30
MIN	36	42	49	80	85	128	106	91	46	27	19	19
CFSM	.41	.74	1.04	1.96	1.54	2.96	1.98	1.45	.54	.29	.19	.19
IN.	.48	.83	1.20	2.26	1.61	3.41	2.21	1.67	.61	.33	.21	.21

CAL YR 1973 TOTAL 43,487 MEAN 119 MAX 550 MIN 27 CFSM .93 IN 12.64
WTR YR 1974 TOTAL 51,698 MEAN 142 MAX 975 MIN 19 CFSM 1.11 IN 15.02

PEAK DISCHARGE (BASE, 500 FT³/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	1800	9.52	523	03-10	0500	11.30	1,020
01-21	2400	10.83	879	03-31	0200	9.52	550
01-27	1800	10.04	680	04-02	1300	10.34	755
02-23	0400	9.76	610	05-17	1700	9.48	541
03-05	1700	10.92	906				

STREAMS TRIBUTARY TO LAKE ERIE

04174500 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., Washtenaw County, on left bank 100 ft (30 m) upstream from bridge on Wall Street in Ann Arbor, 0.7 mi (1.1 km) downstream from Argo Dam, and 4.2 mi (6.8 km) upstream from Geddes Dam.

DRAINAGE AREA.--729 mi² (1,888 km²).

PERIOD OF RECORD.--February 1904 to current year. Monthly discharge only for some periods published in WSP 1307. 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 (227.018 m) above mean sea level (levels by Michigan Department of Natural Resources). February 1904 to December 1914 at Geddes Dam, 4.2 mi (6.8 km) downstream, and January 1914 to September 1947, at Barton Dam, 2.6 mi (4.2 km) upstream, flow computed from records of operation of powerplants and records of depth of flow over dam and/or flow through undersluices.

AVERAGE DISCHARGE.--70 years, 447 ft³/s (12.66 m³/s), 8.33 in/yr (212 mm/yr), adjusted for diversion since 1955.

EXTREMES.--Current year: Maximum discharge, 4,650 ft³/s (132 m³/s) Mar. 9 (gage height, 16.74 ft or 5.102 m); minimum, 42 ft³/s (1.19 m³/s) Oct. 20 (gage height, 11.50 ft or 3.505 m); minimum daily, 75 ft³/s (2.12 m³/s) Oct. 26, 27.
Period of record: Maximum daily discharge, 5,840 ft³/s (165 m³/s) Mar. 14, 1918; minimum daily, 4 ft³/s (0.11 m³/s) Aug. 2, Sept. 11, 1931 (plant leakage), but may be doubtful due to change in 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 prior to May 1962, and since by occasional lake-level control operations above station.

REVISIONS (WATER YEARS).--WSP 874: 1938. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	340	393	941	954	1,720	1,360	1,650	919	779	380	169	168
2	451	490	893	838	1,570	1,380	2,200	667	798	381	276	183
3	568	587	856	861	1,460	1,470	2,140	755	600	368	183	217
4	351	533	909	798	1,370	1,730	2,280	1,300	765	485	230	215
5	241	396	939	758	1,230	2,620	2,420	479	705	388	231	186
6	357	838	905	742	1,120	3,000	2,310	608	624	359	215	183
7	367	452	836	705	977	2,660	2,290	751	552	369	228	203
8	376	310	755	699	990	3,010	2,370	788	790	298	236	190
9	269	392	751	648	925	3,720	2,240	1,120	707	317	232	190
10	286	368	728	624	979	3,900	2,030	918	659	154	247	163
11	307	364	681	627	968	3,470	2,040	984	557	281	234	163
12	481	417	650	601	919	2,970	1,580	1,670	649	259	284	235
13	209	394	660	631	912	2,440	1,820	1,420	622	174	245	201
14	245	378	669	573	870	2,380	1,650	1,260	636	212	278	177
15	1,030	484	642	565	809	2,030	1,660	1,450	629	203	371	169
16	262	569	579	568	730	2,030	1,650	1,600	558	224	245	171
17	317	651	465	589	667	1,960	1,450	2,200	541	209	230	163
18	223	567	410	581	662	1,580	1,440	2,000	540	210	238	128
19	186	528	427	575	739	1,800	1,440	1,750	658	212	293	161
20	93	498	392	713	808	1,630	1,350	1,770	497	210	288	151
21	112	579	415	1,410	834	1,340	1,290	1,620	625	184	288	144
22	427	665	418	1,870	1,470	1,540	1,230	1,470	457	187	241	147
23	553	621	442	1,970	1,810	1,450	1,270	1,490	422	242	254	212
24	312	625	448	1,990	1,650	1,310	1,130	1,370	475	228	252	121
25	100	664	617	1,740	1,370	1,180	1,060	1,070	454	187	235	101
26	75	653	858	1,810	1,240	981	1,080	922	403	188	235	122
27	75	634	1,140	2,050	1,280	866	1,040	1,060	450	188	187	119
28	95	908	1,310	2,260	1,230	978	989	1,000	425	183	202	122
29	296	1,220	1,200	2,040	-----	1,130	951	989	313	183	190	221
30	573	1,070	1,090	1,840	-----	1,350	1,000	910	362	187	194	137
31	471	-----	1,020	1,770	-----	1,690	-----	846	-----	179	182	-----
TOTAL	10,048	17,248	23,046	34,400	31,309	60,955	49,050	37,156	17,253	7,829	7,413	5,063
MFAN	324	575	743	1,110	1,118	1,966	1,635	1,199	575	253	239	169
MAX	1,030	1,220	1,310	2,260	1,810	3,900	2,420	2,200	798	485	371	235
MTN	75	310	392	565	662	866	951	479	313	154	169	101
MEAN+	347	591	758	1,130	1,138	1,986	1,656	1,215	596	288	267	192
CFSM+	.48	.81	1.04	1.55	1.56	2.72	2.27	1.67	.82	.40	.37	.26
IN +	.55	.90	1.20	1.79	1.63	3.14	2.53	1.92	.91	.46	.42	.29

CAL YR 1973 TOTAL 249,910 MEAN 685 MAX 1,830 MIN 62 MEAN+ 705 CFSM+ .97 IN+ 13.12
WTR YR 1974 TOTAL 300,770 MEAN 824 MAX 3,900 MIN 75 MEAN+ 846 CFSM+ 1.16 IN+ 15.75

+Adjusted for diversion for municipal supply; record furnished by City of Ann Arbor.

04175340 Stony Creek at Oakville, Mich.

LOCATION.--Lat 42°05'05", long 83°34'43", in SE¼ SE¼ sec.34, T.4 S., R.7 E., Washtenaw County, at left downstream side of bridge on Tuttle Hill Road, 300 ft (91 m) downstream from Paint Creek, and 0.2 mi (0.3 km) northeast of Oakville.

DRAINAGE AREA.--68.0 mi² (176.1 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 645 ft (197 m), from topographic map (nearest 5 ft). Prior to July 31, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 609 ft³/s (17.2 m³/s) Feb. 23 (gage height, 7.89 ft or 2.405 m); minimum, 4.3 ft³/s (0.12 m³/s) Aug. 27 (gage height, 1.17 ft or 0.357 m).

Period of record: Maximum discharge, 609 ft³/s (17.2 m³/s) Feb. 23, 1974 (gage height, 7.89 ft or 2.405 m); maximum gage height, 8.31 ft (2.533 m) Feb. 20, 1971 (backwater from ice); minimum discharge, 2.7 ft³/s (0.076 m³/s) Aug. 24, 1971 (gage height, 1.00 ft or 0.305 m).

REMARKS.--Records good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	26	49	64	116	103	148	41	30	17	8.5	7.1
2	17	26	40	54	82	117	153	36	27	15	9.3	7.8
3	26	20	37	48	60	177	118	37	25	15	9.9	13
4	20	18	37	43	52	239	477	35	24	13	10	11
5	18	18	58	40	47	532	417	32	22	14	9.7	9.1
6	15	18	47	37	44	453	201	34	21	13	8.7	9.6
7	14	17	37	35	42	213	151	32	22	12	8.0	9.2
8	14	17	33	34	40	228	319	40	31	13	7.8	8.8
9	13	18	32	33	38	498	154	155	30	12	8.7	8.6
10	13	18	31	32	36	522	105	100	24	12	8.6	7.3
11	12	17	28	32	35	316	88	83	21	15	8.2	6.9
12	12	17	27	32	35	155	95	292	24	12	11	13
13	12	18	40	32	35	105	126	153	21	10	9.9	15
14	14	17	79	33	35	88	88	86	20	10	8.6	10
15	13	19	35	33	35	86	72	193	28	9.3	6.2	9.5
16	13	33	28	34	36	106	63	149	41	8.6	6.5	9.4
17	12	22	24	35	36	104	57	124	28	8.5	9.5	9.3
18	12	20	21	37	37	82	54	114	27	9.4	7.3	9.1
19	12	19	20	40	39	86	79	76	34	9.6	6.5	7.6
20	13	18	20	90	45	76	69	59	40	9.5	6.4	6.5
21	12	24	20	405	100	73	59	51	29	9.5	7.0	5.7
22	12	38	21	528	445	73	56	46	25	9.4	6.6	7.0
23	11	25	22	472	560	70	61	42	22	11	5.9	6.4
24	12	23	26	370	260	60	50	36	20	12	7.1	6.6
25	12	36	50	164	200	56	45	33	20	11	7.6	7.9
26	12	40	100	132	120	54	43	32	20	11	6.2	7.9
27	12	30	230	393	69	54	41	30	21	10	6.2	7.7
28	14	84	200	405	79	57	39	29	19	8.9	7.2	8.8
29	21	170	130	191	-----	71	41	43	18	9.3	7.6	12
30	25	69	100	146	-----	197	42	43	17	10	6.7	16
31	22	-----	80	193	-----	356	-----	34	-----	8.6	6.4	-----
TOTAL	459	935	1,702	4,217	2,758	5,407	3,511	2,290	751	348.6	243.8	273.8
MEAN	14.8	31.2	54.9	136	98.5	174	117	73.9	25.0	11.2	7.86	9.13
MAX	26	170	230	528	560	532	477	292	41	17	11	16
MIN	11	17	20	32	35	54	39	29	17	8.5	5.9	5.7
CFSM	.22	.46	.81	2.00	1.45	2.56	1.72	1.09	.37	.16	.12	.13
IN.	.25	.51	.93	2.31	1.51	2.96	1.92	1.25	.41	.19	.13	.15
CAL YR 1973	TOTAL 19,821.0		MEAN 54.3	MAX 478	MIN 9.0	CFSM .80	IN 10.84					
WTR YR 1974	TOTAL 22,896.2		MEAN 62.7	MAX 560	MIN 5.7	CFSM .92	IN 12.53					

PEAK DISCHARGE (BASE, 300 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	unknown	unknown	about 300	03-10	0300	7.65	542
01-21	1900	7.76	572	03-31	0500	7.22	418
01-27	1500	7.54	513	04-04	1000	7.84	575
02-23	1300	7.89	609	04-08	1100	7.04	368
03-05	1200	7.83	592	05-12	1600	7.03	359

STREAMS TRIBUTARY TO LAKE ERIE

04175600 River Raisin near Manchester, Mich.

LOCATION.--Lat 42°10'05", long 84°04'34", in NE¼ SE¼ sec.33, T.3 S., R.3 E., Washtenaw County, on left bank 8 ft (2 m) downstream from bridge on Sharon Valley Road, and 2.5 mi (4.0 km) northwest of Manchester.

DRAINAGE AREA.--132 mi² (342 km²).

PERIOD OF RECORD.--January 1970 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 900 ft (274 m) from topographic map(nearest 10 ft). Prior to July 30, 1970, non-recording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 402 ft³/s (11.4 m³/s) Mar. 10 (gage height, 5.69 ft or 1.734 m); minimum, 9.2 ft³/s (0.26 m³/s) Nov. 14 (gage height, 1.31 ft or 0.399 m).

Period of record: Maximum discharge, 402 ft³/s (11.4 m³/s) Mar. 10, 1974 (gage height, 5.69 ft or 1.734 m); minimum, 4.5 ft³/s (0.13 m³/s) Nov. 29, 1971; minimum gage height, 1.31 ft (0.399 m) Nov. 14, 1973.

REMARKS.--Records fair. Occasional regulation by many dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	73	171	186	267	244	253	165	177	85	32	20
2	75	64	154	201	250	250	328	149	158	80	34	24
3	72	60	142	203	230	266	316	148	144	75	37	17
4	69	62	165	194	210	305	319	142	131	65	30	19
5	62	61	174	175	190	380	315	125	120	60	28	18
6	60	62	157	159	180	380	301	135	111	60	28	19
7	52	57	138	140	174	367	295	121	106	65	28	19
8	48	53	121	130	165	356	297	132	129	65	27	20
9	46	52	109	115	160	378	282	185	145	55	27	22
10	46	48	103	110	155	399	270	192	143	55	26	22
11	45	44	99	105	150	391	258	189	134	65	26	23
12	47	42	92	100	150	379	253	228	124	64	27	36
13	46	43	97	100	145	364	259	241	112	59	26	44
14	49	34	121	95	140	348	260	222	106	55	26	44
15	52	41	116	95	140	338	251	243	107	51	26	37
16	47	59	107	95	135	336	228	251	121	47	26	35
17	39	59	118	95	135	330	220	263	120	45	29	33
18	39	56	117	100	135	316	220	270	110	44	26	32
19	42	60	103	101	140	316	220	259	117	43	23	29
20	37	52	100	117	160	300	220	244	123	42	24	30
21	32	58	100	237	178	283	215	227	120	42	23	29
22	31	84	100	280	287	274	210	212	114	41	23	31
23	34	75	105	295	358	270	210	197	106	41	23	29
24	30	80	110	305	323	255	200	188	99	41	23	26
25	25	92	123	291	299	232	190	174	92	40	22	26
26	32	103	150	250	295	231	180	160	90	39	22	27
27	38	103	204	289	231	218	170	148	88	38	23	23
28	43	136	216	307	227	212	160	139	99	37	30	25
29	46	200	209	293	-----	211	150	168	93	36	23	32
30	46	191	204	275	-----	230	150	195	90	33	21	40
31	51	-----	191	274	-----	254	-----	194	-----	32	21	-----
TOTAL	1,465	2,204	4,216	5,702	5,609	9,413	7,200	5,906	3,529	1,600	810	831
MEAN	47.3	73.5	136	184	200	304	240	191	118	51.6	26.1	27.7
MAX	84	200	216	307	358	399	328	270	177	85	37	44
MIN	25	34	92	95	135	211	150	121	88	32	21	17
CFSM	.36	.56	1.03	1.39	1.52	2.30	1.82	1.45	.89	.39	.20	.21
IN.	.41	.62	1.19	1.61	1.58	2.65	2.03	1.66	.99	.45	.23	.23

CAL YR 1973 TOTAL 46,722 MEAN 128 MAX 300 MIN 22 CFSM .97 IN 13.17
WTR YR 1974 TOTAL 48,485 MEAN 133 MAX 399 MIN 17 CFSM 1.01 IN 13.66

PEAK DISCHARGE (BASE, 280 FT³/s)

DATE	TIME	G.H.	DISCHARGE
01-24	2100	5.20	322
02-23	1800	5.58	383
03-10	0700	5.69	402
04-02	1000	5.37	343
05-18	0500	5.01	284

04175700 River Raisin near Tecumseh, Mich.

LOCATION.--Lat 41°56'35", long 83°56'45", in NE¼ sec.21, T.6 S., R.4 E., Lenawee County, on right bank 12 ft (4 m) downstream from bridge on North Raisin Center Highway, 3.4 mi (5.5 km) upstream from South Branch River Raisin, and 4.5 mi (7.2 km) south of Tecumseh.

DRAINAGE AREA.--267 mi² (692 km²).

PERIOD OF RECORD.--September 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 707.0 ft (215.49 m) above mean sea level.

AVERAGE DISCHARGE.--18 years, 174 ft³/s (4.928 m³/s), 8.85 in/yr (225 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,080 ft³/s (30.6 m³/s) Feb. 23 (gage height, 10.03 ft or 3.057 m); minimum 52 ft³/s (1.47 m³/s) Aug. 26, 27 (gage height, 4.07 ft or 1.241 m).
Period of record: Maximum discharge, 2,920 ft³/s (82.7 m³/s) June 26, 1968 (gage height, 12.66 ft or 3.859 m); minimum, 6.4 ft³/s (0.18 m³/s) Aug. 26, 1964 (gage height, 2.57 ft or 0.783 m); minimum daily, 8.3 ft³/s (0.24 m³/s) Oct. 30, 1965.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by powerplant 5.5 mi (8.8 km) above station prior to June 27, 1968.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166	148	302	372	598	451	467	308	287	167	75	55
2	176	139	275	311	530	455	491	290	291	158	72	54
3	167	134	253	238	455	491	533	284	269	146	73	62
4	149	129	234	230	431	580	729	277	242	127	76	65
5	142	124	234	230	369	872	702	272	205	115	77	61
6	133	119	279	220	308	944	625	263	218	121	75	58
7	124	115	263	220	290	771	580	247	194	130	73	56
8	115	116	236	210	270	708	588	295	225	127	73	56
9	79	126	208	210	260	936	573	390	254	111	73	56
10	94	114	189	200	260	968	528	449	241	119	73	56
11	98	107	180	200	250	844	491	417	235	139	75	57
12	96	98	154	190	250	750	483	555	223	143	86	84
13	96	90	176	190	240	684	505	573	208	139	77	86
14	100	103	216	180	240	623	493	505	203	130	73	84
15	99	105	225	180	240	563	475	515	200	122	70	83
16	100	101	208	180	240	595	449	560	254	107	69	79
17	98	96	194	180	240	588	412	530	253	107	80	75
18	96	100	207	180	240	563	399	528	235	103	81	72
19	93	106	176	190	250	553	409	503	259	100	74	69
20	90	109	189	234	280	530	419	473	299	96	71	68
21	88	117	176	623	350	518	398	439	291	90	70	66
22	83	130	176	936	630	495	348	407	287	88	68	65
23	79	134	183	880	988	477	388	380	242	89	62	63
24	78	146	188	816	788	463	375	350	202	90	56	64
25	79	155	217	660	784	443	353	332	197	88	54	64
26	81	172	366	605	765	404	334	311	213	87	52	63
27	77	178	595	804	660	395	316	286	208	85	52	62
28	81	228	714	852	465	382	302	254	196	82	53	63
29	100	334	615	717	-----	377	283	320	186	80	55	79
30	117	340	553	642	-----	395	271	377	177	79	59	79
31	115	-----	422	623	-----	461	-----	315	-----	76	58	-----
TOTAL	3,289	4,213	8,603	12,503	11,671	18,279	13,759	12,005	6,994	3,441	2,135	2,004
MEAN	106	140	278	403	417	590	459	387	233	111	68.9	66.8
MAX	176	340	714	936	988	968	729	573	299	167	86	86
MIN	77	90	154	180	240	377	271	247	177	76	52	54
CFSM	.40	.52	1.04	1.51	1.56	2.21	1.72	1.45	.87	.42	.26	.25
IN.	.46	.59	1.20	1.74	1.63	2.55	1.92	1.67	.97	.48	.30	.28

CAL YR 1973 TOTAL 99,295 MFAN 272 MAX 1,010 MIN 59 CFSM 1.02 IN 13.83
WTR YR 1974 TOTAL 98,896 MFAN 271 MAX 988 MIN 52 CFSM 1.02 IN 13.78

PEAK DISCHARGE (BASE, 700 FT³/s)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
12-27	2200	9.17	738	03-05	2200	10.00	1,060
01-22	0800	9.78	968	03-09	2000	9.83	988
01-27	2300	9.68	928	04-04	1900	9.37	820
02-23	1100	10.03	1,080				

STREAMS TRIBUTARY TO LAKE ERIE

04176000 River Raisin near Adrian, Mich.

LOCATION.--Lat 41°54'15", long 83°58'50", in NW¼ sec.5, T.7 S., R.4 E., Lenawee County, on right bank 10 ft (3 m) downstream from bridge on Academy Road, 1.7 mi (2.7 km) east of Adrian, and 2.6 mi (4.2 km) downstream from South Branch River Raisin.

DRAINAGE AREA.--463 mi² (1,199 km²).

PERIOD OF RECORD.--October 1953 to current year. Records for October 1930 to August 1931, October 1932 to April 1938, published as "Raisin River" in WSP 714, 744, 759, 784, 804, 824, and 854, have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 693.2 ft (211.29 m) above mean sea level.

AVERAGE DISCHARGE.--21 years, 304 ft³/s (8.609 m³/s), 8.92 in/yr (227 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,700 ft³/s (76.5 m³/s) Mar. 10 (gage height, 12.55 ft or 3.825 m); minimum, 72 ft³/s (2.04 m³/s) Aug. 27, Sept. 2; minimum gage height, 2.59 ft (0.789 m) Sept. 2.

Period of record: Maximum discharge, 5,580 ft³/s (158 m³/s) Apr. 30, 1956 (gage height, 14.87 ft or 4.532 m), from rating curve extended above 4,000 ft³/s (113 m³/s) by logarithmic plotting; minimum, 18 ft³/s (0.51 m³/s) Aug. 10, 1964 (gage height, 1.33 ft or 0.405 m); minimum daily, 25 ft³/s (0.71 m³/s) Oct. 26, 1965.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by powerplant at Tecumseh, 11 mi (18 km) above station, prior to June 27, 1968.

REVISIONS.--See PERIOD OF RECORD. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	186	438	800	1,340	1,150	756	439	423	261	133	76
2	188	188	392	660	1,170	1,200	765	419	424	241	132	73
3	193	178	363	560	897	1,300	833	413	406	225	132	95
4	173	173	340	500	778	1,500	1,440	401	375	206	135	95
5	170	169	362	450	672	2,100	1,670	392	338	193	135	90
6	201	167	364	420	560	2,400	1,460	386	329	184	132	86
7	192	163	374	400	520	1,900	1,180	369	310	188	128	83
8	142	162	344	370	500	1,640	1,050	426	368	186	133	81
9	111	171	316	350	480	2,010	1,010	617	385	168	131	82
10	112	167	287	340	470	2,580	904	802	386	166	127	83
11	119	159	273	330	450	2,370	804	792	363	187	133	84
12	119	159	249	320	440	1,840	765	1,010	352	194	141	138
13	119	143	296	315	430	1,580	804	1,270	329	188	114	133
14	122	157	345	310	430	1,360	840	1,200	345	175	105	122
15	121	171	357	310	430	1,150	778	1,000	336	165	101	118
16	123	176	337	310	430	1,090	723	1,040	369	147	94	113
17	122	161	298	315	430	1,060	579	1,080	386	147	114	108
18	121	160	333	317	450	992	582	996	357	142	111	105
19	121	167	297	327	480	950	604	936	462	140	106	101
20	116	173	290	391	540	904	609	794	609	132	100	99
21	115	189	290	925	700	843	612	693	660	125	96	98
22	113	199	290	1,800	1,300	787	598	624	590	125	93	95
23	111	202	300	2,340	2,200	740	588	574	483	126	90	93
24	110	219	310	2,220	2,000	707	570	517	372	128	84	93
25	109	240	345	1,860	1,750	657	533	486	333	123	78	94
26	113	253	510	1,560	1,600	623	500	460	387	120	75	92
27	111	267	874	1,650	1,500	601	475	430	398	115	74	91
28	114	354	1,250	2,010	1,250	586	446	406	359	128	76	91
29	130	429	1,300	1,950	-----	574	441	444	314	143	75	122
30	159	489	1,250	1,580	-----	591	411	541	288	141	79	118
31	159	-----	1,100	1,420	-----	674	-----	510	-----	137	82	-----
TOTAL	4,205	6,191	14,474	27,410	24,197	38,459	23,330	20,467	11,836	5,046	3,340	2,952
MEAN	136	206	467	884	864	1,241	778	660	395	163	108	98.4
MAX	201	489	1,300	2,340	2,200	2,580	1,670	1,270	660	261	141	138
MIN	109	143	249	310	430	574	411	369	288	115	74	73
CFSM	.29	.44	1.01	1.91	1.87	2.68	1.68	1.43	.85	.35	.23	.21
IN.	.34	.50	1.16	2.20	1.94	3.09	1.87	1.64	.95	.41	.27	.24

CAL YR 1973 TOTAL 163,459 MEAN 448 MAX 1,460 MIN 72 CFSM .97 IN 13.13
WTR YR 1974 TOTAL 181,907 MEAN 498 MAX 2,580 MIN 73 CFSM 1.08 IN 14.62

PEAK DISCHARGE, (BASE, 1,400 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-23	1500	12.36	2,420
01-28	2200	11.90	2,120
02-23	unknown	unknown	about 2,300
03-06	unknown	unknown	about 2,500
03-10	1800	12.55	2,700
04-05	0200	10.92	1,690

04176400 Saline River near Saline, Mich.

LOCATION.--Lat 42°07'50", long 83°46'35", in SW¼ sec.18, T.4 S., R.5 E., Washtenaw County, on right bank 20 ft (6 m) downstream from bridge on Maple Road, and 2.8 mi (4.5 km) south of Saline.

DRAINAGE AREA.--94.6 mi² (245.0 km²).

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 710 ft (216 m), from topographic map (nearest 10 ft).

AVERAGE DISCHARGE.--9 years, 64.4 ft³/s (1.824 m³/s), 9.24 in/yr (235 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,120 ft³/s (31.7 m³/s) Feb. 22, Mar. 5 (gage height, 10.75 ft or 3.277 m); minimum daily, 13 ft³/s (0.37 m³/s) Aug. 23 to Sept. 1.

Period of record: Maximum discharge, 3,990 ft³/s (113 m³/s) June 26, 1968 (gage height, 13.37 ft or 4.075 m); minimum, 5.4 ft³/s (0.15 m³/s) Oct. 9, 12, 1966; minimum gage height, 3.26 ft (0.994 m) July 24, 1966.

REMARKS.--Records fair except those for the winter period and those for periods of no gage-height record, which are poor. Slight regulation for lake level control. Pumpage for irrigation diverts an indeterminate amount of water. Flow contains City of Saline sewage effluent which originates as ground water.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	39	94	120	140	177	205	61	54	32	18	13
2	41	32	85	100	120	195	262	57	50	30	18	14
3	36	30	80	85	110	286	199	58	47	29	18	20
4	29	27	80	75	100	404	458	55	46	29	18	17
5	26	26	100	70	90	950	248	50	44	28	18	16
6	23	25	90	65	85	478	191	54	43	27	17	15
7	23	24	75	62	81	314	191	52	42	27	16	15
8	23	24	65	60	76	451	281	74	70	27	16	15
9	22	23	60	58	72	688	176	177	65	27	16	15
10	21	22	55	56	70	640	143	122	60	27	16	15
11	21	22	52	54	68	340	124	123	55	27	18	15
12	21	23	50	52	66	246	153	348	50	27	23	20
13	23	23	55	50	62	186	165	192	48	26	17	19
14	23	23	70	50	60	157	131	135	45	24	16	17
15	21	33	60	50	58	146	111	220	42	23	16	16
16	21	33	50	50	56	156	100	175	40	21	16	16
17	20	28	43	50	53	148	92	194	40	21	18	16
18	20	27	38	55	52	124	86	176	50	21	16	16
19	20	26	35	65	56	127	107	126	68	20	15	15
20	20	25	33	100	80	112	94	102	68	19	15	15
21	19	54	34	300	177	108	85	86	54	18	15	15
22	20	50	36	600	680	105	86	77	48	18	14	15
23	20	39	38	500	665	102	87	69	44	21	13	14
24	20	42	43	400	308	90	78	60	39	21	13	14
25	20	54	60	330	207	82	71	56	37	19	13	14
26	19	59	120	250	154	77	69	52	36	19	13	14
27	19	49	350	450	124	76	65	48	36	18	13	14
28	25	213	330	400	133	82	61	47	35	17	13	15
29	30	253	280	300	-----	93	62	54	34	21	13	27
30	32	133	200	220	-----	283	64	62	33	18	13	19
31	31	-----	150	170	-----	337	-----	60	-----	18	13	-----
TOTAL	739	1,481	2,911	5,247	4,003	7,760	4,245	3,222	1,423	720	487	481
MEAN	23.8	49.4	93.9	169	143	250	142	104	47.4	23.2	15.7	16.0
MAX	41	253	350	600	680	950	458	348	70	32	23	27
MIN	19	22	33	50	52	76	61	47	33	17	13	13
CFSM	.25	.52	.99	1.79	1.51	2.64	1.50	1.10	.50	.25	.17	.17
IN.	.29	.58	1.14	2.06	1.57	3.05	1.67	1.27	.56	.28	.19	.19
CAL YR 1973	TOTAL 31,633	MFAN 86.7	MAX 852	MIN 15	CFSM .92	IN 12.44						
WTR YR 1974	TOTAL 32,719	MFAN 89.6	MAX 950	MIN 13	CFSM .95	IN 12.87						

PEAK DISCHARGE (BASE, 380 FT³/S)

NOTE.--No gage-height record Dec. 2 to Feb. 6, Aug. 15 to Sept. 24.

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-28	2300	8.25	400	03-05	1100	10.75	1,120
12-27	unknown	unknown	about 380	03-10	0200	10.18	822
01-22	unknown	unknown	about 630	03-30	2200	9.17	544
01-27	unknown	unknown	about 500	04-04	0900	9.21	552
02-22	2300	10.75	1,120	05-12	1100	8.50	434

STREAMS TRIBUTARY TO LAKE ERIE

04176500 River Raisin near Monroe, Mich.

LOCATION.--Lat 41°57'38", long 83°31'52", Monroe County, on left bank 0.8 mi (1.3 km) downstream from bridge on Ida Maybee Road, 5.0 mi (8.0 km) downstream from Saline River, and 7.5 mi (12.1 km) west of Monroe.

DRAINAGE AREA.--1,042 mi² (2,699 km²).

PERIOD OF RECORD.--September 1937 to current year. 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 (187.836 m) above mean sea level. Prior to Oct. 1, 1953, at site 9 mi (14 km) downstream at datum 46.26 ft (14.100 m) lower.

AVERAGE DISCHARGE.--37 years, 690 ft³/s (19.54 m³/s), 8.99 in/yr (228 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,020 ft³/s (199 m³/s) Mar. 10 (gage height, 8.20 ft or 2.499 m); maximum gage height, 8.26 ft (2.518 m) Jan. 27; minimum discharge 86 ft³/s (2.44 m³/s) Aug. 30 (gage height, 2.08 ft or 0.634 m).
Period of record: Maximum discharge, 12,900 ft³/s (365 m³/s) May 19, 1945, Mar. 29, 1950; maximum gage height, 10.7 ft (3.261 m) Feb. 1, 1949 (backwater from ice), site and datum then in use; minimum discharge, about 2 ft³/s (0.06 m³/s) Sept. 4, 1938, Sept. 19, 20, 1941, site then in use.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation caused by powerplants above station prior to June 27, 1968.

REVISIONS (WATER YEARS).--WSP 954: 1938-40 (m), 1941. WSP 1437: 1939, 1948. WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	216	764	2,100	3,560	1,790	1,390	653	1,130	481	154	89
2	251	228	684	1,730	2,850	1,580	1,720	616	971	436	152	91
3	280	241	594	1,340	2,250	1,710	1,730	624	736	396	150	102
4	304	253	543	1,020	1,840	2,330	3,940	602	625	351	158	100
5	296	245	554	843	1,310	4,800	3,660	598	567	322	159	102
6	273	229	553	753	1,080	4,680	3,490	579	522	296	154	110
7	261	226	523	700	892	4,940	3,360	835	477	278	147	111
8	268	222	497	650	850	5,960	3,290	1,410	476	260	146	106
9	285	213	480	604	750	7,000	2,710	1,540	485	261	153	101
10	258	201	449	580	700	6,670	2,250	2,230	520	256	153	101
11	207	199	410	544	650	6,020	1,910	2,460	533	246	152	99
12	180	203	379	520	630	5,210	1,680	2,320	518	228	180	114
13	167	204	399	500	600	4,170	1,650	2,550	484	233	190	118
14	169	200	605	470	600	3,220	1,560	2,840	468	240	181	133
15	167	205	590	459	600	2,610	1,470	2,510	460	220	161	158
16	165	194	590	464	600	2,250	1,360	2,510	646	188	141	149
17	163	203	499	478	600	1,950	1,220	2,500	591	174	143	140
18	162	216	526	509	600	1,790	1,080	2,390	547	167	134	130
19	166	210	424	516	600	1,650	995	2,010	596	163	128	127
20	164	201	348	731	700	1,610	982	1,540	1,270	157	134	121
21	160	208	340	3,080	1,000	1,500	957	1,200	1,730	161	134	122
22	158	222	330	4,330	3,490	1,410	934	979	1,750	160	127	108
23	157	248	330	5,080	4,240	1,310	926	845	1,450	161	120	104
24	155	259	350	5,260	3,430	1,190	886	738	1,070	159	110	103
25	164	273	429	5,460	3,470	1,080	836	669	784	151	106	101
26	161	311	1,220	5,530	3,140	1,020	793	613	697	143	102	103
27	157	338	2,380	6,290	2,810	970	745	597	688	135	97	103
28	160	587	2,890	5,460	2,270	915	708	600	679	134	93	101
29	164	865	2,760	4,670	-----	916	690	651	635	148	97	100
30	182	767	2,640	4,430	-----	1,110	673	745	550	156	89	97
31	190	-----	2,460	4,300	-----	1,360	-----	974	-----	155	91	-----
TOTAL	6,228	8,387	26,540	69,401	46,112	84,621	49,595	41,928	22,655	7,016	4,236	3,344
MEAN	201	280	856	2,239	1,647	2,730	1,653	1,353	755	226	137	111
MAX	304	865	2,890	6,290	4,240	7,000	3,940	2,840	1,750	481	190	158
MIN	155	194	330	459	600	915	673	579	460	134	89	89
CFSM	.19	.27	.82	2.15	1.58	2.62	1.59	1.30	.72	.22	.13	.11
IN.	.22	.30	.95	2.48	1.65	3.02	1.77	1.50	.81	.25	.15	.12
CAL YR 1973	TOTAL 337,018	MEAN 923	MAX 5,140	MIN 110	CFSM .89	IN 12.03						
WTR YR 1974	TOTAL 370,063	MEAN 1,014	MAX 7,000	MIN 89	CFSM .97	IN 13.21						

PEAK DISCHARGE, (BASE, 3,500 FT³/S)

DATE	TIME	G.H.	DISCHARGE
01-27	1800	8.26	6,860
02-23	0100	7.20	5,050
03-10	0600	8.20	7,020
04-04	1800	6.97	4,820

STREAMS TRIBUTARY TO LAKE ERIE

04184500 Bean Creek at Powers, Ohio

LOCATION.--Lat 41°40'39", long 84°13'56", in NE¼ sec.24, T.9 S., R.1 E., Fulton County, on right bank at downstream side of bridge on U.S. Highway 20, 1 mi (2 km) east of Powers, 2.2 mi (3.5 km) upstream from Iron Creek, 3 mi (5 km) downstream from Silver Creek, and 5.2 mi (8.4 km) east of Fayette.

DRAINAGE AREA.--206 mi² (534 km²).

PERIOD OF RECORD.--October 1940 to current year.

GAGE.--Water-stage recorder. Datum of gage is 722.57 ft (220.239 m) above mean sea level. Prior to Jan. 18, 1941, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--34 years, 161 ft³/s (4,560 m³/s), 10.61 in/yr (269.5 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,560 ft³/s (44.2 m³/s) Mar. 10, gage height, 10.39 ft (3.167 m); minimum, 16 ft³/s (0.45 m³/s) Aug. 31, Sept. 1, 2, 26, 27, 28.

Period of record: Maximum discharge, 4,250 ft³/s (120 m³/s) Apr. 29, 1956, gage height, 13.82 ft (4.212 m); minimum, 5.0 ft³/s (0.14 m³/s) Aug. 9, 1964.

REMARKS.--Records good.

REVISIONS (WATER YEARS).--WSP 1307: 1948 (M). WSP 1912: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	34	84	210	563	295	332	141	180	100	22	17
2	23	35	66	170	420	289	428	130	149	88	22	17
3	22	34	57	140	331	319	409	127	131	80	23	20
4	23	31	58	120	293	499	879	119	116	73	23	22
5	28	30	71	100	219	1,290	646	110	104	73	22	22
6	24	29	74	90	190	1,250	515	110	95	75	22	20
7	22	27	62	80	170	1,110	418	150	90	65	20	18
8	24	27	54	70	150	1,020	426	550	121	60	20	18
9	27	26	50	64	140	1,300	377	480	148	56	21	18
10	26	25	47	60	130	1,530	321	380	135	52	21	17
11	25	24	45	66	130	1,300	286	460	118	49	22	17
12	25	24	42	60	120	1,030	284	680	110	48	22	23
13	24	24	50	56	120	724	377	600	102	45	21	36
14	24	24	106	52	130	535	348	500	94	42	21	32
15	23	25	117	50	140	439	291	640	94	39	28	26
16	23	26	102	56	148	427	244	690	96	36	22	23
17	23	29	73	72	134	390	218	812	94	34	29	22
18	21	30	66	110	130	341	200	754	89	33	40	20
19	19	29	62	175	141	321	191	503	231	31	31	18
20	19	28	59	235	237	300	195	373	434	29	25	18
21	19	30	56	1,020	305	277	187	297	404	27	22	18
22	19	32	54	1,360	907	256	176	247	347	27	20	17
23	20	34	54	1,440	1,220	232	171	213	227	27	25	17
24	20	33	56	1,310	891	211	161	181	178	28	22	17
25	21	35	66	1,030	653	188	149	156	147	28	21	17
26	21	40	92	768	447	189	140	142	141	27	21	17
27	21	39	1,000	1,190	343	180	134	133	159	25	20	16
28	21	71	880	1,300	292	175	130	122	161	23	18	17
29	23	157	700	964	-----	177	139	198	133	23	19	20
30	25	114	450	732	-----	225	148	375	112	25	18	21
31	30	-----	280	682	-----	371	-----	237	-----	24	17	-----
TOTAL	710	1,146	5,033	13,832	9,094	17,190	8,920	10,610	4,740	1,392	700	601
MEAN	22.9	38.2	162	446	325	555	297	342	158	44.9	22.6	20.0
MAX	30	157	1,000	1,440	1,220	1,530	879	812	434	100	40	36
MIN	19	24	42	50	120	175	130	110	89	23	17	16
CFSM	.11	.19	.79	2.17	1.58	2.69	1.44	1.66	.77	.22	.11	.10
IN.	.13	.21	.91	2.50	1.64	3.10	1.61	1.92	.86	.25	.13	.11
CAL YR 1973	TOTAL	71,732	MEAN	197	MAX	1,160	MIN	14	CFSM	.96	IN	12.95
WTR YR 1974	TOTAL	73,968	MEAN	203	MAX	1,530	MIN	16	CFSM	.99	IN	13.36

PEAK DISCHARGE (BASE, 1,200 FT³/s)

DATE	TIME	G.H.	DISCHARGE
12-27 or			
12-28	unknown	unknown	about 1,200
01-24	0015	9.80	1,450
01-27	2330	9.83	1,450
02-23	0215	9.11	1,330
03-05	2145	9.72	1,440
03-10	1345	10.39	1,560

As the number of streams in which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected on these partial-record stations are usable in low-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in time of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow partial-record 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. These measurements, when correlated with simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial record stations during water year 1974						
Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Superior						
*04032150	Presque Isle River near Connorville Mich.	Lat 46°41'46", long 89°58'26", in SE¼ sec.30, T.50 N., R.45 W., Gogebic County, 1.0 mile above mouth, 10.0 miles north of Connorville.	358	1972-74	10-02-73 04-17-74	287 a1,340
04044583	Cherry Creek near Harvey, Mich.	Lat 46°28'07", long 87°21'53", in NE¼ SE¼ sec.13, T.47 N., R.25 W., Marquette County, 0.5 mile above County Highway 551, 2.0 miles south of Harvey.	4.53	1966-70† 1971-74	05-08-74 09-11-74	20.3 18.4
*04044813	Two Hearted River near Paradise, Mich.	Lat 46°41'57", long 85°25'19", in NW¼ SW¼ sec.27, T.50 N., R.9 W., Luce County, at foot-bridge in state forest campground, 0.4 mile upstream from mouth, 18 miles northwest of Paradise.	201	1972-74	10-25-73 01-15-74 04-24-74 07-25-74	188 161 a1,370 155
*04045538	West Branch Waiska River near Brimley, Mich.	Lat 46°21'18", long 84°35'35", in SW¼ NW¼ sec.29, T.46 N., R.2 W., Chippewa County, just downstream of confluence with McMahon Creek at bridge on county road, 2 miles upstream from mouth, 3.5 miles south of Brimley.	40.7	1972-74	10-24-73 01-16-74 04-23-74 06-10-74 07-24-74	33.2 21.3 a330 a550 12.5
*04045559	East Branch Waiska River near Brimley, Mich.	Lat 46°25'07", long 84°28'24", in NW¼ NE¼ sec.6, T.46 N., R.1 W., Chippewa County, at bridge on county road, 4 miles upstream from mouth, 4.7 miles east of Brimley.	30.1	1972-74	10-24-73 01-16-74 04-15-74 04-16-74	14.4 1.54 a599 a628
Streams tributary to Lake Michigan						
04057580	Whitefish River near Rapid River, Mich.	Lat 45°57'56", long 86°55'15", in SE¼ NW¼ sec.10, T.41 N., R.21 W., Delta County, about 800 ft downstream from Chippeny Creek, 3.5 miles northeast of Rapid River.	284	1973-74	10-02-73 02-19-74 05-30-74 08-09-74	165 81.6 259 a276
04058120	Green Creek near Palmer, Mich.	Lat 46°22'22", long 87°36'21", in NW¼ sec.19, T.46 N., R.26 W., Marquette County, at bridge on County Highway 565, 4.5 miles south of Palmer.	b8.42	1961-65 1970-74	10-03-73 12-11-73 02-06-74 03-12-74 05-09-74 06-03-74 07-16-74 08-20-74 09-11-74 09-24-74	a.73 a.52 a1.89 a2.68 a7.07 a3.31 a.75 a5.68 a5.72 a7.64
04058250	Warner Creek tributary near Palmer, Mich.	Lat 46°25'20", long 87°36'09", in NW¼ SE¼ sec.31, T.47 N., R.26 W., Marquette County, at double culvert on County Road 565, 0.3 mile upstream from mouth and 0.8 mile south of Palmer.	4.05	1972-74	10-03-73 12-20-73 06-03-74 08-20-74	a2.55 a1.58 a4.82 a3.06
04059042	Portage Creek at Escanaba, Mich.	Lat 45°43'15", long 87°05'53", in SW¼ NW¼ sec.1, T.38 N., R.23 W., Delta County, at culvert on east-west runway of Delta County Airport, 600 ft downstream from Willow Creek, at Escanaba	20.3	1973-74	10-02-73 02-13-74 05-30-74 07-18-74	7.05 1.63 15.6 a47.3

Discharge measurements made at low-flow partial-record stations during water year 1974 --Continued

Discharge measurements made at low-flow partial-record stations during water year 1974 --Continued						
Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
04059750	Big Cedar River near Cedar River, Mich.	Lat 45°31'26", long 87°23'42", in NW¼ NE¼ sec.16, T.36 N., R.25 W., Menominee County, at bridge on county highway, 1.3 miles upstream from Devils Creek and 8 miles north of Cedar River.	270	1973-74	10-02-73 02-12-74 05-20-74 07-16-74	84.9 25.9 346 236
04059757	Big Brook near Ingalls, Mich.	Lat 45°23'25", long 87°30'54", in NE¼ NE¼ sec.33, T.34 N., R.26 W., Menominee County, at bridge on county road, 1,500 ft downstream from Baird Creek, 4.7 miles east of Ingalls.	20.8	1973-74	10-02-73 02-12-74 05-20-74 07-16-74	9.27 2.72 31.6 14.3
04062210	Spurr River at Three Lakes, Mich.	Lat 46°32'47", long 88°11'11", in NE¼ sec.21, T.48 N., R.31 W., Baraga County, at outlet of Beaufort Lake, 0.8 mile southeast of Three Lakes.	18.8	1971-74	11-27-73 02-22-74 04-25-74 08-16-74	16.1 9.76 85.3 12.2
04065397	East Branch Sturgeon River at Hardwood, Mich.	Lat 45°58'35", long 87°41'21", in NW¼ SE¼ sec.4, T.41 N., R.27 W., Dickinson County, 1.0 mile north of Hardwood.	89.8	1972-74	10-17-73 02-06-74 05-03-74 09-12-74	55.9 32.5 a132 a124
04065550	Pine Creek near Randville, Mich.	Lat 45°58'02", long 88°00'28", in SW¼ NW¼ sec.12, T.41 N., R.30 W., Dickinson County, 0.4 mile upstream from Groveland Mine Outlet, 2.7 miles southeast of Randville.	1.53	1971-74	10-18-73 02-08-74 05-09-74 09-04-74	.92 .62 1.13 .32
04065560	Groveland Mine Outlet near Randville, Mich.	Lat 45°58'27", long 88°00'10", in SW¼ SE¼ sec.1, T.41 N., R.30 W., Dickinson County, at overflow weir, 0.5 mile upstream from mouth, 2.9 miles southeast of Randville.	3.40	1971-74	10-18-73 02-08-74 05-09-74 09-04-74	a5.63 a4.64 a5.94 a2.89
04065570	Pine Creek near Merriman, Mich.	Lat 45°56'42", long 87°59'13", in SW¼ SW¼ sec.18, T.41 N., R.29 W., Dickinson County, 500 ft upstream from Mounty's Creek, 3.7 miles northeast of Merriman.	8.79	1971-74	10-18-73 02-07-74 05-09-74 09-05-74	8.49 7.56 9.51 2.92
04065580	Mounty's Creek near Merriman, Mich.	Lat 45°56'41", long 87°59'23", in SW¼ SW¼ sec.18, T.41 N., R.29 W., Dickinson County, 400 ft upstream from mouth, and 3.6 miles northeast of Merriman.	2.96	1971-74	10-18-73 02-07-74 05-09-74 09-05-74	.32 .43 .82 .07
04065590	Steel Creek near Merriman, Mich.	Lat 45°56'31", long 87°59'33", in NE¼ NE¼ sec.24, T.41 N., R.30 W., Dickinson County, 200 ft upstream from mouth, 3.6 miles northeast of Merriman.	3.52	1971-74	10-18-73 02-07-74 05-09-74 09-05-74	1.81 1.14 2.54 .82
04066615	Little Shakey Creek near Daggett, Mich.	Lat 45°27'18", long 87°45'10", in NE¼ SW¼ sec.3, T.35 N., R.28 W., (Michigan meridian) Menominee County, at bridge 200 ft downstream from Lake Ann, 7.0 miles west of Daggett.	13.8	1973-74	10-02-73 02-12-74 05-15-74 07-16-74	9.39 5.17 31.5 10.4
04096517	Hog Creek tributary near Allen, Mich.	Lat 41°57'33", long 84°49'33", in SW¼ SW¼ sec.7, T.6 S., R.4 W., Hillsdale County, at Squires Rd., 0.3 mile upstream from mouth, 3.0 miles west of Allen.	2.61	1969-74	06-11-74 07-12-74 08-27-74 09-24-74	a.69 .39 .41 .52
04115450	Fish Creek at Carson City, Mich.	Lat 43°10'40", long 84°51'24", in SW¼ sec.12, T.9 N., R.5 W., Montcalm County, on downstream side of footbridge in park, 300 ft upstream of bridge on State Highway 57, at Carson City.	126	1974	04-16-74 05-09-74 06-19-74 07-18-74 08-23-74 09-26-74	a244 a170 a127 60.1 69.7 49.2
04119061	Plaster Creek at Wyoming, Mich.	Lat 42°56'15", long 85°41'24", in NE¼ sec.2, T.6 N., R.12 W., Kent County, at Godfrey St., at Wyoming.	57.1	1974	11-20-73 02-20-74 03-27-74 05-07-74 06-12-74 07-16-74 08-20-74 09-25-74	38.3 a106 a61.4 43.8 a73.8 30.7 26.0 23.8

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record stations during water year 1974--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
*04120295	Black Creek near Muskegon, Mich.	Lat 43°12'14", long 86°09'52", in NW¼ NW¼ sec.1, T.9 N., R.16 W., Muskegon County, at bridge on Mill Iron Rd., 4.8 miles east of Muskegon, and 4.9 miles upstream from mouth.		1974	12-12-73 03-12-74 04-09-74 04-17-74 06-06-74 07-16-74 09-09-74	31.6 a83.6 a84.0 a111 a71.2 37.2 36.2
*04121000	Muskegon River near Merritt, Mich.	Lat 44°20'08", long 84°53'24", in NW¼ NW¼ sec.2, T.22 N., R.5 W., Missaukee County, on right bank 35 ft upstream from bridge on State Highway 55, 2.7 miles east of Merritt.	355	1946-73† 1974	10-15-73 12-05-73 04-18-74 07-24-74	163 266 a855 258
04121920	Tamarack Creek at Howard City, Mich.	Lat 43°24'03", long 84°28'06", in NW¼ SE¼ sec.26, T.12 N., R.10 W., Montcalm County, on upstream side of bridge on highway U.S. 131 in Howard City.	85.4	1973-74	10-01-73 01-02-74 03-11-74 06-05-74 07-15-74 08-12-74	34.5 59.7 a263 74.1 43.5 a40.0
04122223	Pentwater River near Hart, Mich.	Lat 43°43'27", long 86°22'36", in NW¼ SW¼ sec.5, T.15 N., R.17 W., Oceana County, at culverts on country road, 0.85 miles downstream from hydroelectric plant on Hart Lake, 1.8 miles northwest of Hart.		1974	12-12-73 01-03-74 03-12-74 04-09-74 06-07-74 07-16-74 09-11-74	90.6 88.9 a160 a88.5 a109 a18.1 91.6
04122230	North Branch Pentwater River near Pentwater, Mich.	Lat 43°47'42", long 86°21'30", in NE¼ SE¼ sec.8, T.16 N., R.17 W., Oceana County, at bridge on highway U.S. 31, 3.5 miles northwest of Pentwater, and 5.1 miles upstream from mouth.		1974	12-13-73 03-13-74 04-10-74 04-18-74 05-17-74 06-07-74 07-17-74 08-13-74	50.8 a71.5 a73.6 a93.5 a151 a88.4 48.8 47.6
04122300	Pere Marquette River near Baldwin, Mich.	Lat 43°51'27", long 85°51'01", in SW¼ SE¼ sec.15, T.17 N., R.13 W., Lake County, 300 ft upstream from bridge on M37, 2.7 miles south of Baldwin.	167	1973-74	10-02-73 01-04-74 03-13-74 04-10-74 07-17-74 08-14-74 09-11-74	112 114 a236 a222 157 144 143
*04123000	Big Sable River near Freesoil, Mich.	Lat 44°07'13", long 86°16'48", in NE¼ NE¼ sec.24, T.20 N., R.17 W., Mason County, at bridge on highway U.S. 31, 3.4 miles northwest of Freesoil, and 7 miles upstream from Hamlin Lake.	127	1942-73† 1974	10-02-73 11-14-73 01-04-74 03-13-74 04-10-74 04-17-74 07-17-74 08-14-74 09-11-74	143 119 93.0 a191 a196 a344 123 116 116
*04123500	Manistee River near Grayling, Mich.	Lat 44°41'35", long 84°50'50", in SW¼ NW¼ sec.31, T.27 N., R.4 W., Crawford County on right bank 25 ft upstream from bridge on State Highway 72, 6.8 miles northwest of Grayling.	159	1942-73† 1974	10-01-73 11-26-73 01-15-74 04-15-74 06-07-74 07-23-74 08-20-74	177 187 194 a309 194 182 172
04126600	Betsie River near Benzonia, Mich.	Lat 44°36'02", long 86°05'57", in NW¼ NW¼ sec.2, T.25 N., R.15 W., Benzie County, at bridge on highway U.S. 31, 1.2 miles south of Benzonia, and 1.4 miles downstream from Homestead Dam.		1974	12-12-73 04-15-74 06-12-74 07-17-74 08-20-74 09-19-74	a245 a503 a310 209 191 156

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Discharge measurements made at low-flow partial-record stations during water year 1974--Continued

Discharge measurements made at low-flow record stations during water year 1974--Continued						
Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
04126610	Crystal Lake Outlet near Benzonia, Mich.	Lat 44°37'56", long 86°08'41", in NW¼ NE¼ sec.29, T.26 N., R.15 W., Benzie County, at culvert on State Highway 115, 0.3 mile downstream from dam at outlet of Crystal Lake, and 2.5 miles west of Benzonia.	c32	1974	12-12-73 01-16-74 02-27-74 03-25-74 04-15-74 06-12-74 07-17-74 08-20-74 09-19-74	0.59 .55 .77 24.4 a39.3 a60.2 36.2 29.0 6.18
04127700	Elk River at Elk Rapids, Mich.	Lat 44°54'02", long 85°24'42", in SW¼ NW¼ sec.21, T.29 N., R.9 W., Antrim County, on upstream side of highway bridge at non-operative powerplant in Elk Rapids, 500 ft upstream from mouth.	513	1973-74	10-11-73 01-17-74 03-26-74 06-13-74 07-18-74 08-20-74 09-27-74	435 550 644 a890 633 502 371
04127850	Boyne River near Boyne City, Mich.	Lat 45°11'48", long 84°57'26", in NW¼ SW¼ sec.5, T.32 N., R.5 W., Charlevoix County, at culverts on Dam Rd., 0.3 mile downstream from nonoperative hydroelectric plant, 2.8 miles southeast of Boyne City, and 3.6 miles upstream from mouth.		1974	12-13-73 01-16-74 02-28-74 03-27-74 04-16-74 06-14-74 07-08-74 07-18-74 08-20-74 09-03-74	88.1 82.1 85.7 87.8 a158 a22.6 84.9 82.9 77.9 81.4
Streams tributary to Lake Huron						
04137800	Tawas River at Tawas City, Mich.	Lat 44°16'39", long 83°30'53", in NE¼ NW¼ sec.30, T.22 N., R.8 E., Iosco County, on right downstream side of bridge on State Highway M55 at Tawas City.	156	1973-74	03-07-74 04-10-74 04-24-74 05-23-74 06-19-74 07-25-74	ad281 ad325 d240 ad208 ad168 d 81.5
04143200	Pine River near Standish, Mich.	Lat 43°59'06", long 83°53'15", in SE¼ SE¼ sec.5, T.18 N., R.5 E., Arenac County, 100 ft downstream from confluence of North and South branches, 3.5 miles east of Standish.	91.9	1973-74	03-07-74 05-23-74	ad708 ad65.0
04145930	South Branch Flint River near Lapeer, Mich.	Lat 43°02'35", long 83°17'04", in NW¼ sec.10, T.7 N., R.10 E., Lapeer County, at Morris Rd., 0.2 mile south of State Highway 21 and 1.5 miles southeast of Lapeer.	77.9	1973-74	10-16-73 07-22-74 07-29-74 09-11-74	18.5 d8.58 14.8 14.3
*04146020	South Branch Flint River near Millville, Mich.	Lat 43°04'44", long 83°18'25", in SE¼ sec.29, T.8 N., R.10 E., Lapeer County, at bridge on Saginaw Road, 1.6 miles north of Lapeer.	160	1974	11-13-73 12-03-73 04-08-74 04-22-74 05-15-74 06-24-74 07-30-74 08-21-74 09-11-74	43.4 179 a611 ad179 a263 89.6 29.0 d30.9 27.4
*04149360	Misteguay Creek near Alicia, Mich.	Lat 43°14'57", long 83°59'39", in SE¼ sec.21, T.10 N., R.4 E., Saginaw County, at bridge on Birch Run Road, 2.6 miles southwest of Alicia.	142	1974	11-13-73 03-05-74 05-13-74 07-01-74 08-01-74 09-09-74	4.44 a1,540 a37.8 10.2 2.66 3.78
Streams tributary to St. Clair River						
04159300	Black River near Croswell, Mich.	Lat 43°13'24", long 82°36'49", in SE¼ sec.8, T.9 N., R.16 E., Sanilac County, 3.5 miles south of Croswell.	376	1956-74	10-16-73 11-14-73 07-30-74 09-12-74	19.3 31.0 a21.2 11.6

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record stations during water year 1974--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Streams tributary to St. Clair River --Continued						
*04160350	Pine River near Rattle Run, Mich.	Lat 42°52'49", long 82°34'04", in NE¼ sec.9, T.5 N., R.16 E., St. Clair County, at bridge on Gratiot Road, 1.9 miles northeast of Rattle Run.	135	1974	12-03-73 03-06-74 06-25-74 07-30-74 09-12-74	36.3 a2,360 7.04 2.09 1.50
Streams tributary to Lake St. Clair						
04161585	Stony Creek near Goodison, Mich.	Lat 42°45'49", long 83°04'28", in SW¼ sec.17, T.4 N., R.12 E., at Inwood Rd., Macomb County, 5.2 miles northeast of Goodison.	34.6	1972-74	10-26-73 11-30-73 06-27-74 07-31-74 09-10-74	12.2 a49.7 18.0 10.5 14.5
Streams tributary to Lake Erie						
*04173250	Mill Creek near Lima Center, Mich.	Lat 42°15'56", long 83°56'45", in NE¼ sec.34, T.2 S., R.4 E., Washtenaw County, at Guenther Rd., 2.2 miles south of Lima Center.	47.3	1967-74	08-03-74	a16.2
*04176040	Black Creek at Jasper, Mich.	Lat 41°47'11", long 84°02'25", in SW¼ sec.11, T.8 S., R.3 E., Lenawee County, on downstream left wingwall of bridge on State Highway 52, 0.5 mile south of Jasper.	42.4	1974	11-27-73 03-18-74 06-12-74 07-16-74 08-28-74 09-24-74	4.31 a60.4 a17.0 4.56 1.75 1.75
04176390	Saline River at Saline, Mich.	Lat 42°09'35", long 83°47'01", in SE¼ sec.1, T.4 S., R.5 E., Washtenaw County, at Monroe St., in Saline.	77.6	1965-73	09-20-73	e10.9
04176420	Saline River at Milan, Mich.	Lat 42°04'38", long 83°40'37", in SW¼ sec.1, T.5 S., R.6 E., Washtenaw County, at U.S. Highway 23, at southeast edge of Milan.	113	1966-73	09-20-73	e22.6
*04177080	East Branch St. Joseph River near Waldron, Mich.	Lat 41°42'34", long 84°29'26", in SW¼ sec.1, T.9 S., R.2 W., Hillsdale County, at Territorial Rd., 3.8 miles west of Waldron.	70.8	1974	11-27-73 03-18-74 06-12-74 08-28-74 09-24-74	22.4 a126 a48.2 10.5 10.5

* Also a crest-stage station.

† Operated as a continuous record station.

a Not base flow.

b Since 1970, affected by diversion for industrial use.

c Approximately.

d Discharge measurement made by employees of Michigan Department of Natural Resources.

e Not published in 1973 report.

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1974

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Superior							
04032000	Presque Isle River near Tula, Mich.	Lat 46°32'49", long 89°46'38", in NW¼ sec.23,T.48 N., R.44 W., Gogebic County, at bridge on State Highway 28, 7 miles south-west of Merriweather 5.5 miles downstream from Little Presque Isle River, and 2.0 miles east of Tula.	261	1945-73†, 1974	04-23-74	11.68	2,800
*04032150	Presque Isle River near Connorville, Mich.	Lat 46°41'46", long 89°58'26", in SE¼ sec.30, T.50 N., R.45 W., Gogebic County, at bridge on South Boundary Road, 1.0 mile upstream from mouth and 10 miles north of Connorville.	358	1972-74	04-23-74	9.02	4,750
04039500	South Branch Ontonagon River at Ewen, Mich.	Lat 46°31'58", long 89°16'37", in NW¼ sec.26, T.48 N., R.40 W., Ontonagon County, on piers of old State Highway 28 bridge in Ewen.	348	1939-41, 1942-71†, 1972-74	06-11-74	11.03	2,420
04041000	Perch River near Sidnaw, Mich.	Lat 46°31'06", long 88°39'48", in NE¼ sec.34, T.48 N., R.35 W., Baraga County, at State Highway 28, 2.5 miles east of Sidnaw.	63.1	1913-15†, 1957-74	04-23-74	8.92	299
04042500	Otter River near Elo, Mich.	Lat 46°50'09", long 88°38'12", in NE¼ NE¼ sec.8, T.51 N., R.34 W., Houghton County, 50 ft up-stream from highway bridge, 1.6 miles north of Pelkie, 2.5 miles south of Elo, and 5.5 miles up-stream from Otter Lake.	162	1943-72†, 1973-74	04-22-74	9.87	3,520
04044200	Carp Creek at Ishpeming, Mich.	Lat 46°29'11", long 87°41'21", in NW¼ sec.9, T.47 N., R.27 W., Marquette County, at bridge on Highway 41A at Ishpeming.	16.5	1970-74	04-23-74	6.43	136
*04044813	Two Hearted River near Paradise, Mich.	Lat 46°41'57", long 85°25'19", in NW¼ SW¼ sec.27, T.50 N., R.9 W., Luce County, at foot bridge in State Forest Campground, 0.4 mile upstream from mouth and 18 miles northwest of Paradise.	201	1973-74	04-23-74	8.33	1,730
*04045538	West Branch Waika River near Brimley, Mich.	Lat 46°21'18", long 84°35'35", in SW¼ NW¼ sec.29, T.46 N., R.2 W., Chippewa County, at bridge on county road, 3.2 miles up-stream from mouth and 3.5 miles south of Brimley.	40.7	1973-74	04-18-74	9.19	1,200
*04045559	East Branch Waika River near Brimley, Mich.	Lat 46°25'07", long 84°28'24", in NW¼ NE¼ sec.6, T.46 N., R.1 W., Chippewa County, at bridge on county road, 4.0 miles up-stream from mouth and 4.7 miles east of Brimley.	31.9	1973-74	04-14-74	11.71	701
Streams tributary to Lake Michigan							
04049500	Manistique River at Germfask, Mich.	Lat 46°14'00", long 85°55'40", in SE¼ sec.4, T.44 N., R.13 W., Schoolcraft County, 600 ft up-stream from bridge on State Highway 77, 1.0 mile south of Germfask.	341	1938-70†, 1971-74	04-21-74	5.50	1,290

See footnotes at end of table, p.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Michigan--Continued							
04055000	Manistique River near Blaney, Mich.	Lat 46°05'05", long 86°03'35", in SE¼ sec.28, T.43 N., R.14 W., Schoolcraft County, 40 ft downstream from logging bridge, 0.5 mile downstream from Duck Creek,, 7 miles southwest of Blaney.	704	1938-70†, 1971-74	04-21-74	17.41	4,050
04057000	Indian River near Manistique, Mich.	Lat 45°59'30", long 86°17'15", in NE¼ sec.34, T.42 N., R.16 W., Schoolcraft County, near outlet of Indian Lake, 2.4 miles north-west of Manistique.	302	1938-71†, 1972-74	06-10-74	5.13	765
04057900	Black River near Republic, Mich.	Lat 46°25'08", long 87°53'21", in NE¼ sec.2, T.46 N., R.29 W., Marquette County, at bridge on county road, 4.4 miles east of Republic.	34.4	1961-68†, 1970-74	04-22-74	3.32	209
04096020	Galien River near Union Pier, Mich.	Lat 41°49'39", long 86°39'21", in NE¼ sec.32, T.7 S., R.20 W., Berrien County, on downstream side of bridge on Union Pier Rd., 1.5 miles east of Union Pier.	86.1	1973-74	01-23-74	8.90	800
04097060	Little Portage Creek near Fulton, Mich.	Lat 42°05'19", long 85°23'29", in SW¼ sec.29, T.4 S., R.9 W., Kalamazoo County, at bridge on 38th St., 2.8 miles southwest of Fulton.	27.0	1965-67†, 1972-74	01-24-74	5.92	230
04097370	Flowerfield Creek at Flowerfield, Mich.	Lat 42°03'50", long 85°39'44", in SW¼ sec.1, T.5 S., R.12 W., St. Joseph County, at Flower-field Rd., at Flowerfield.	42.6	1964-74	05-17-74	2.30	104
04105800	Gull Creek near Galesburg	Lat 42°18'54", long 85°24'04" in NW¼ sec.7, T.2 S, R.9 W., Kalama-zoo County, on right bank 15 ft upstream from bridge on 37th Street, and 2.0 mi northeast of Galesburg.	38.1	1965-73†, 1973-74	a04-22-73 02-22-74	b3.54 3.82	98 142
04119055	Plaster Creek at Grand Rapids, Mich.	Lat 42°54'46", long 85°39'02", in SE¼ sec.7, T.6 N., R.11 W., Kent County, on left downstream side of bridge on 28th Street in Grand Rapids.	46.6	1974	01-21-74	10.40	1,040
04119160	Buck Creek at Grand-ville, Mich.	Lat 42°54'09", long 85°45'46", in SE¼ sec.18, T.6 N., R.12 W., Kent County, on right downstream side of bridge on Wilson Avenue in Grandville.	50.5	1974	05-17-74	8.17	580
04120295	Black Creek near Muskegon, Mich.	Lat 43°12'14", long 86°09'52", in NW¼ NW¼ sec.1, T.9 N., R.16 W., Muskegon County, at bridge on Mill Iron Rd., 4.8 miles east of Muskegon and 4.9 miles upstream from mouth.	c39	1974	05-17-74	4.45	590
04121000	Muskegon River near Merritt, Mich.	Lat 44°20'08", long 84°53'24", in NW¼ NW¼ sec.2, T.22 N., R.5 W., Missaukee County, on right bank 35 ft upstream from bridge on State Highway 55, 2.7 miles east of Merritt.	355	1946-73†, 1974	04-17-74	7.82	915

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Michigan--Continued							
04123000	Big Sable River near Freesoil, Mich.	Lat 44°07'13", long 86°16'48", in NE¼ NE¼ sec.24, T.20 N., R.17 W., Mason County, at bridge on U.S. Highway 31, 3.4 miles northwest of Free-soil, and 7 miles upstream from Hamlin Lake.	127	1942-73+, 1974	04-16-74	3.10	400
04123500	Manistee River near Grayling, Mich.	Lat 44°41'35", long 84°50'50", in SW¼ NW¼ sec.31, T.27 N., R.4 W., Crawford County, on right bank 25 ft upstream from bridge on State Highway 72, 6.8 miles northwest of Grayling.	159	1942-73+, 1974	04-14-74	1.41	309
04124500	East Branch Pine River near Tustin, Mich.	Lat 44°06'09", long 85°31'02", in NE¼ NW¼ sec.28, T.20 N., R.10 W., Osceola County, 75 ft down-stream from highway bridge, 3.0 miles west of Tustin.	c63	1953-63+, 1964-74	04-15-74	5.3	600
Streams tributary to Lake Huron							
04132500	Thunder Bay River near Hillman, Mich.	Lat 45°00'30", long 83°58'21", in NE¼ SE¼ sec.8, T.30 N., R.4 E., Montmorency County, on left bank 25 ft upstream from bridge on State Highway 32, 5.2 miles south-west of Hillman.	232	1946-72+, 1973-74	07-05-74	9.43	1,210
04138000	East Branch AuGres River at McIvor, Mich.	Lat 44°13'57", long 83°42'03", in NW¼ NW¼ sec.10, T.21 N., R.6 E., Iosco County, on right bank 25 ft downstream from bridge on Whittemore Road at McIvor, and 11.5 miles up-stream from mouth.	c84	1950-73+, 1974	03-04-74	7.89	856
04138600	Gamble Creek at Lupton, Mich.	Lat 44°25'26", long 84°01'32", in SW¼ SW¼ sec.36, T.24 N., R.3 E., Ogemaw County, at culvert on Lupton Rd., 0.5 mile south of Lupton.	9.47	1953-56, 1959-74,	04-14-74	4.01	84
04138700	Bixby Creek near Rose City, Mich.	Lat 44°26'06", long 84°07'16", in NE¼ NW¼ sec.31, T.24 N., R.3 E., Ogemaw County, at bridge on State Highway 33, 0.9 mile north of Rose City.	2.68	1953-74	04-14-74	3.7	75
04138800	Houghton Creek at Rose City, Mich.	Lat 44°25'17", long 84°06'34", in NE¼ NE¼ sec.6, T.23 N., R.3 E., Ogemaw County, at bridge on Rose City Rd., 0.3 mile east of Rose City.	13.3	1953-74	04-14-74	2.82	300
04138900	Wilkins Creek near Rose City, Mich.	Lat 44°24'18", long 84°06'59", in NE¼ NW¼ sec.7, T.23 N., R.3 E., Ogemaw County, at bridge on State Highway 33, 1.1 miles south of Rose City.	9.15	1953-74	04-14-74	3.25	170
04139000	Houghton Creek near Lupton, Mich.	Lat 44°23'45", long 84°02'50", in SE¼ SE¼ sec.10, T.23 N., R.3 E., Ogemaw County, 2.7 miles south-west of Lupton.	29.7	1950-72+, 1973-74	04-14-74	5.89	417
04139500	Rifle River at "The Ranch" near Lupton, Mich.	Lat 44°23'36", long 84°02'18", in SE¼ SW¼ sec.11, T.23 N., R.3 E., Ogemaw County, at downstream side of bridge, 2.7 miles south of Lupton.	56.8	1951-71+, 1972-74	04-14-74	9.80	585

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Lake Huron--Continued							
04140000	Prior Creek near Selkirk, Mich.	Lat 44°20'06", long 84°04'06" in SE¼ SE¼ sec.33, T.23 N., R.3 E., Ogemaw County, on right bank 20 ft upstream from culverts on Peters Rd., 1.5 miles north of Selkirk.	21.4	1950-72†, 1973-74	04-14-74	5.16	201
04140200	Klackening Creek near Selkirk, Mich.	Lat 44°20'05", long 84°08'46", in NE¼ NE¼ sec.2, T.22 N., R.2 E., Ogemaw County, at bridge on Campbell Rd., 4.0 miles northwest of Selkirk.	7.51	1953-74	04-14-74	2.62	142
04141100	Shepards Creek near Selkirk, Mich.	Lat 44°18'27", long 84°05'05", in SE¼ SE¼ sec.8, T.22 N., R.3 E., Ogemaw County, at bridge on Bedtelyon Rd., 1.1 miles southwest of Selkirk.	4.44	1953-74	03-03-74	4.32	270
04144180	Jones Creek near Gaines, Mich.	Lat 42°53'02", long 83°52'27", in SE¼ sec.28, T.6 N., R.5 E., Genesee County, at bridge on Baldwin Rd., 1.7 miles northeast of Gaines.	7.60	1970-74	05-17-74	7.21	130
04144200	Porter Drain near Gaines, Mich.	Lat 42°53'26", long 83°50'59", in SE¼ sec.27, T.6 N., R.5 E., Genesee County, at bridge on Seymour Rd., 3.2 miles east of Gaines.	4.68	1970-74	05-17-74	4.29	70
04144220	Jones Creek at Duffield, Mich.	Lat 42°54'45", long 83°54'27", in SW¼ sec.17, T.6 N., R.5 E., Genesee County, at bridge on Grand Blanc Rd., 1.0 mile south of Duffield.	23.4	1970-74	05-17-74	8.77	559
04146020	South Branch Flint River near Millville, Mich.	Lat 43°04'44", long 83°18'25", in SE¼ sec.29, T.8 N., R.10 E., Lapeer County, on downstream right wing-wall of bridge on Saginaw Road, 1.6 miles north of Lapeer.	160	d1974	05-17-74	8.53	808
04147800	Powers-Cullen Drain near Genesee, Mich.	Lat 43°05'33", long 83°33'31", in SE¼ sec.18, T.8 N., R.8 E., Genesee County, at bridge on Coldwater Rd., 3.3 miles southeast of Genesee.	9.17	1970-74	05-17-74	5.10	410
04147900	Lefler-Scothan Drain near Otisville, Mich.	Lat 43°08'11", long 83°32'27", in NE¼ sec.5, T.8 N., R.8 E., Genesee County, at bridge on Frances Rd., 2.2 miles south of Otisville.	4.90	1970-74	05-17-74	4.81	145
04148120	Kearsley Creek near Atlas, Mich.	Lat 42°57'15", long 83°32'42", in NE¼ sec.5, T.6 N., R.8 E., Genesee County, at bridge on Jordan Rd., 1.2 miles north of Atlas.	55.7	1970-74	05-17-74	7.01	270
04148139	Black Creek near Davison, Mich.	Lat 43°01'28", long 83°33'24", in SE¼ sec.7, T.7 N., R.8 E., Genesee County, at bridge on Irish Rd., 2.0 miles west of Davison.	22.8	1970-74	05-17-74	6.85	353
04148144	Chipmunk Creek near Genesee, Mich.	Lat 43°04'01", long 83°36'59", in SE¼ sec.27, T.8 N., R.7 E., Genesee County, at bridge on Genesee Rd., 3.1 miles south of Genesee.	5.50	1970-74	05-17-74	5.47	455

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Huron--Continued							
04148255	Swartz Creek near Grand Blanc, Mich.	Lat 42°53'09", long 83°41'29", in SE¼ sec.25, T.6 N., R.6 E., Genesee County, at bridge on Baldwin Rd., 4.1 miles southwest of Grand Blanc.	36.0	1970-74	05-17-74	5.06	143
04148260	Swartz Creek near Swartz Creek, Mich.	Lat 42°58'22", long 83°45'43", in SW¼ sec.28, T.7 N., R.6 E., Genesee County, at bridge on Bristol Rd., 3.9 miles east of Swartz Creek.	67.2	1970-74	05-17-74	9.09	1,200
04148265	Kimball Drain near Swartz Creek, Mich.	Lat 42°55'15", long 83°49'51", in NE¼ sec.14, T.6 N., R.5 E., Genesee County, at bridge on Morrish Rd., 2.4 miles south of Swartz Creek.	10.6	1970-74	05-17-74	7.98	240
04148270	West Branch Swartz Creek near Swartz Creek, Mich.	Lat 42°58'22", long 83°46'08", in SW¼ sec.28, T.7 N., R.6 E., Genesee County, at bridge on Bristol Rd., 3.2 miles east of Swartz Creek.	40.8	1970-74	05-17-74	9.95	1,500
04148410	Thread Creek near Goodrich, Mich.	Lat 42°53'19", long 83°32'10", in SE¼ sec.29, T.6 N., R.8 E., Genesee County, at bridge on Baldwin Rd., 2.4 miles south-west of Goodrich.	28.5	1970-4	05-17-74	5.61	192
04148610	Cole Creek near Flushing, Mich.	Lat 43°02'44", long 83°51'06", in SW¼ sec.35, T.8 N., R.5 E., Genesee County, at bridge on Potter Rd., 1.2 miles south of Flushing.	8.51	1970-74	05-17-74	6.39	190
04148620	Freeman Drain near Montrose, Mich.	Lat 43°07'04", long 83°53'37", in SE¼ sec.5, T.8 N., R.5 E., Genesee County, at bridge on Mt. Morris Rd., 4.0 miles south of Montrose.	8.21	1970-74	05-17-74	5.81	175
04148640	Armstrong Creek near Montrose, Mich.	Lat 43°08'04", long 83°50'03", in SE¼ sec.35, T.9 N., R.5 E., Genesee County, at bridge on Morrish Rd., 4.1 miles southeast of Montrose.	11.0	1970-74	05-17-74	5.74	232
04148740	Central-Stadler Drain near Montrose, Mich.	Lat 43°09'46", long 83°50'14", in SE¼ sec.23, T.9 N., R.5 E., Genesee County, at bridge on Wilson Rd., 3.1 miles east of Montrose.	14.2	1970-74	05-17-74	6.56	200
04148800	Pine Run near Montrose, Mich.	Lat 43°12'42", long 83°48'54", in SE¼ sec.1, T.9 N., R.5 E., Genesee County, at bridge on Elms Rd., 4.7 miles northeast of Montrose.	27.8	1970-74	05-17-74	8.68	570
04148900	Silver Creek near Clio, Mich.	Lat 43°12'54", long 83°45'55", in NW¼ sec.4, T.9 N., R.6 E., Genesee County, at bridge on Weir Rd., 3.0 miles northwest of Clio.	4.01	1970-74	05-17-74	3.51	81
04149300	Misteguay Creek near Flushing, Mich.	Lat 43°01'31", long 83°54'41", in NE¼ sec.7, T.7 N., R.5 E., Genesee County, at bridge on Duffield Rd., 3.7 miles southwest of Flushing.	17.4	1970-74	05-17-74	8.91	580

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Lake Huron--Continued							
04149360	Misteguay Creek near Alicia, Mich.	Lat 43°14'57", long 83°59'39", in SE½ sec.21, T.10 N., R.4 E., Saginaw County, on left downstream side of bridge on Birch Run Road, 2.6 miles southwest of Alicia.	142	d1974	03-05-74	18.52	1,850
04151000	Cass River at Vassar, Mich.	Lat 43°22'15", long 83°34'52", in NW¼ SW¼ sec.7, T.11 N., R.8 E., Tuscola County, at bridge on State Highway 15, in Vassar.	700	1949-70†, 1971-74	03-05-74	15.74	8,800
04153500	Salt River near North Bradley, Mich.	Lat 43°42'10", long 84°28'14", in NE½ SE½ sec.7, T.15 N., R.1 W., Midland County, at bridge on North Saginaw Rd., 1.1 miles southeast of North Bradley.	138	1935-71†, 1972-74	05-17-74	18.30	8,500
04154500	Chippewa River near Midland, Mich.	Lat 43°35'40", long 84°22'10", in NE½ NE½ sec.24, T.14 N., R.1 W., Midland County, on upstream side of bridge on Meridian Rd., 6.5 miles southwest of Midland.	597	1947-72†, 1973-74	05-19-74	16.40	3,810
Streams tributary to St. Clair River							
04160350	Pine River near Rattle Run, Mich.	Lat 42°52'49", long 82°34'04", in NE½ sec.9, T.5 N., R.16 E., St. Clair County, on right downstream wing-wall of bridge on Gratiot Road, 1.9 miles northeast of Rattle Run.	135	g1974	03-05-74	20.89	3,800
Streams tributary to Lake St. Clair							
04161760	West Branch Stony Creek near Washington, Mich.	Lat 42°43'53", long 83°06'02", in SE½ sec.25, T.4 N., R.11 E., Oakland County, at bridge on Huron-Clinton Metropolitan Park Rd., and 3.4 miles west of Washington.	22.5	1965-74	03-05-74	h	1310
04164010	North Branch Clinton River at Almont, Mich.	Lat 42°54'59", long 83°02'42", in NE½ sec.28, T.6 N., R.12 E., Lapeer County, at bridge on State Highway 53, at Almont.	9.56	1959-62, 1963-68†, 1969-74	03-05-74	4.88	268
04164050	North Branch Clinton River near Romeo, Mich.	Lat 42°49'11", long 82°58'35", in NW¼ sec.31, T.5 N., R.13 E., Macomb County, at bridge on 33-Mile Rd., 2.2 miles northeast of Romeo.	49.7	1959-64, 1965-69†, 1970-74	05-17-74	4.45	1,600
04164150	North Branch Clinton River near Meade, Mich.	Lat 42°43'50", long 82°54'23", in NE½ sec.34, T.4 N., R.13 E., Macomb County, on left bank at bridge on 27-Mile Rd., 1.9 miles northwest of Meade.	89.6	1959-67, 1968-72†, 1973-74	05-17-74	6.86	2,020
04164200	Coon Creek near Armada, Mich.	Lat 42°47'41", long 82°52'58", in SW¼ sec.1, T.4 N., R.13 E., Macomb County, at bridge on North Rd., 3.4 miles south of Armada.	10.0	1959-65, 1966-70†, 1971-74	03-05-74	6.17	585
04164250	Tupper Brook at Ray Center, Mich.	Lat 42°45'42", long 82°54'04", in NW¼ sec.23, T.4 N., R.13 E., Macomb County, at bridge on 29-Mile Rd., at Ray Center.	8.62	1959, 1960-64†, 1965-74	03-05-74	7.06	494
04164350	Highbank Creek near Armada, Mich.	Lat 42°48'24", long 82°51'08", in NW¼ sec.6, T.4 N., R.14 E., Macomb County, at bridge on 32-Mile Rd., 3.0 miles southeast of Armada.	14.9	1959-65, 1966-70†, 1971-74	03-05-74	15.67	1,000

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake St. Clair--Continued							
04164360	East Branch Coon Creek near New Haven, Mich.	Lat 42°45'46", long 82°50'57", in NW¼ sec.19, T.4 N., R.14 E., Macomb County, at bridge on 29-Mile Rd., 3.4 miles northwest of New Haven.	36.1	1959-67, 1967-72, 1973-74	03-05-74	8.22	2,060
04164400	Deer Creek near Meade, Mich.	Lat 42°42'39", long 82°51'32", in NW¼ sec.6, T.3 N., R.14 E., Macomb County, at bridge on 25-½ Mile Rd., 0.9 mile southeast of Meade.	12.7	1959-60, 1961-65, 1966-74	05-17-74	8.02	558
04164450	McBride Drain near Macomb, Mich.	Lat 42°41'14", long 82°55'14", in NE¼ NE¼ sec.16, T.3 N., R.13 E., Macomb County, at bridge on 24-Mile Rd., 2.2 miles southeast of Macomb.	5.79	1960-64, 1965-74	03-05-74	8.78	165
04164600	Middle Branch Clinton River near Macomb, Mich.	Lat 42°42'03", long 82°59'44", in SE¼ sec.2, T.3 N., R.12 E., Macomb County, at bridge on Schoenherr Rd., 2.0 miles west of Macomb.	22.2	1959-64, 1965-69, 1971-74	03-05-74	11.56	1,130
04165200	Gloede Ditch near Waldenburg, Mich.	Lat 42°37'39", long 82°57'10", in SW¼ sec.32, T.3 N., R.13 E., Macomb County, 2.2 miles south of Waldenburg.	16.0	1959, 1960-64, 1965-74	03-05-74	16.81	348
Streams tributary to Detroit River							
04166650	Johnson Drain near Brookville, Mich.	Lat 42°22'52", long 83°33'18", in SE¼ sec.24, T.1 S., R.7 E., Washtenaw County, on right downstream side of bridge on Napier Road, 1.2 miles east of Brookville.	11.5	1974	02-23-74	7.91	197
04167325	Fowler Creek near Willow Run, Mich.	Lat 42°16'37", long 83°33'51", in SW¼ sec.25, T.2 S., R.7 E., Washtenaw County, on right downstream side of bridge on Gotfredson Road, 1.4 miles northeast of Willow Run.	4.26	1974	02-23-74	5.66	55
04168660	Frank and Poet Drain at Trenton, Mich.	Lat 42°09'19", long 83°12'22", in NW¼ sec.13, T.4 S., R.10 E., Wayne County, at bridge on King Rd., at Trenton.	19.3	1972-74	04-04-74	8.23	295
Streams tributary to Lake Erie							
04168800	Huron River near Andersonville, Mich.	Lat 42°41'35", long 82°29'56", in NW¼ SE¼ sec.3, T.3 N., R.8 E., Oakland County, on downstream side of culvert on White Lake Road, 2.5 miles south of Andersonville.	14.0	1974	03-05-74	2.59	91
04172050	O'Connor Drain near Whitmore Lake, Mich.	Lat 42°32'55", long 83°44'46", in NE¼ sec.17, T.1 S., R.6 E., Washtenaw County, on right downstream side of bridge on Sixmile Road, 2.8 miles south of Whitmore Lake.	9.71	1974	03-10-74	5.93	290
04172198	Arms Creek near Whitmore Lake, Mich.	Lat 42°24'47", long 83°50'44", in SE¼ sec.4, T.1 S., R.5 E., Washtenaw County, on right downstream side of bridge on Walsh Road, 4.4 miles west of Whitmore Lake.	17.5	1974	03-10-74	7.64	180

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Streams tributary to Lake Erie--Continued							
04172500	Portage River near Pinckney, Mich.	Lat 42°25'40", long 83°57'35", in SW¼ sec.34, T.1 N., R.4 E., Livingston County, at bridge on Tiplady Rd., 2.0 miles upstream from Little Portage Lake, and 2.2 miles southwest of Pinckney.	79.1	1945-71†, 1972-74	03-09-74	4.96	355
04173000	Huron River near Dexter, Mich.	Lat 42°23'10", long 83°54'40", in S½ sec.13, T.1 S., R.4 E., Washtenaw County, at bridge on North Territorial Rd., 0.5 mile east of Hudson Mills, 2 miles downstream from Portage Lake Outlet, and 4 miles north of Dexter.	522	1946-72†, 1973-74	03-09-74	6.76	2,390
04173150	Mill Creek near Sylvan, Mich.	Lat 42°15'06", long 84°02'02", in SW¼ sec.36, T.2 S., R.3 E., Washtenaw County, on right downstream side of bridge on Manchester Road (M52), 3.3 miles southwest of Sylvan.	11.1	1974	03-09-74	8.00	111
04173155	Pleasant Lake Extension Drain near Sylvan, Mich.	Lat 42°14'51", long 84°01'46", in NW¼ sec.1, T.3 S., R.3 E., Washtenaw County, at left downstream side of bridge on Waldo Road, 3.7 miles south-east of Sylvan.	23.8	1974	01-21-74 03-09-74	9.51	190
04173250	Mill Creek near Lima Center, Mich.	Lat 42°15'56", long 83°56'45", in NE¼ sec.34, T.2 S., R.4 E., Washtenaw County, at Guenther Rd., 2.0 miles upstream from North Fork Mill Creek, and 2.2 miles south of Lima Center.	47.3	1973-74	03-09-74	9.38	500
04173320	Letts Creek at Chelsea, Mich.	Lat 42°19'29", long 84°01'15", in NE¼ sec.12, T.2 S., R.3 E., Washtenaw County, on left downstream side of bridge on Manchester Road (M52), at Chelsea.	18.8	1974	03-09-74	7.72	107
04173350	North Fork Mill Creek near Lima Center, Mich.	Lat 42°17'15", long 83°56'14", in SW¼ sec.23, T.2 S., R.4 E., Washtenaw County, on right downstream side of bridge on Dancer Road, 1.2 miles southeast of Lima Center.	59.0	1974	03-09-74	7.90	370
04173400	Frey Fitzsimmons Drain near Lima Center, Mich.	Lat 42°16'56", long 83°54'24", in NE¼ sec.25, T.2 S., R.4 E., Washtenaw County, on left downstream side of bridge on Jerusalem Road, 2.8 miles southeast of Lima Center.	6.53	1974	03-09-74	6.29	110
04174300	Honey Creek near Foster, Mich.	Lat 42°18'34", long 83°48'28", in NE¼ sec.14, T.2 S., R.5 E., Washtenaw County, on right downstream side of bridge on Miller Road, 1.4 miles west of Foster.	22.3	1974	03-09-74	6.60	177
04174509	Traver Creek at Ann Arbor, Mich.	Lat 42°17'26", long 83°44'10", in SE¼ sec.21, T.2 S., R.6 E., Washtenaw County, on right downstream side of bridge on Broadway Street, at Ann Arbor.	6.99	1974	03-09-74	5.73	65
04174518	Pittsfield-Ann Arbor Drain at Ann Arbor, Mich.	Lat 42°15'53", long 83°41'18", in SE¼ sec.35, T.2 S., R.6 E., Washtenaw County, on left downstream side of bridge on Chalmers Drive, at Ann Arbor.	10.9	1974	03-10-74	5.63	480
04174522	Swift Drain at Ann Arbor, Mich.	Lat 42°15'53", long 83°40'37", in NW¼ sec.36, T.2 S., R.6 E., Washtenaw County, on right downstream side of bridge on Huron River Drive East, at Ann Arbor.	4.79	1974	01-21-74	6.87	40

Annual maximum discharge at crest-stage partial-record stations during water year 1974--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Streams tributary to Lake Erie--Continued							
04174680	Fleming Creek at Dixboro, Mich.	Lat 42°19'05", long 83°38'16", in NW¼ sec.17, T.2 S., R.7 E., Washtenaw County, on right downstream side of bridge on Ford Road (M153),1.0 mile east of Dixboro.	15.0	1974	03-09-74	7.91	180
04175290	Sugar Creek near Oakville, Mich.	Lat 42°05'54", long 83°36'31", in NE¼ sec.33, T.4 S., R.7 E., Washtenaw County, on right downstream side of bridge on Fuller Road, 1.7 miles north-west of Oakville.	13.5	1974	04-04-74	8.04	157
04175310	Paint Creek near Ypsilanti, Mich.	Lat 42°12'22", long 83°37'16", in SW¼ sec.21, T.3 S., R.7 E., Washtenaw County, on left downstream side of bridge on Stony Creek Road, 2.0 miles south of Ypsilanti.	15.3	1974	04-04-74	9.13	137
04175330	Paint Creek at Oakville, Mich.	Lat 42°05'44", long 83°35'18", in NE¼ sec.34, T.4 S., R.7 E., Washtenaw County, on right downstream side of bridge on Liss Road, 1.0 mile north of Oakville.	34.9	1974	04-04-74	9.00	315
04175650	Iron Creek near Clinton, Mich.	Lat 42°05'37", long 83°59'17", in SW¼ sec.29, T.4 S., R.4 E., Washtenaw County, on right downstream side of bridge on Bartlet Road, 1.7 miles north of Clinton.	28.8	1974	03-05-74	6.07	130
04176040	Black Creek at Jasper, Mich.	Lat 41°47'11", long 84°02'25", in SW¼ sec.11, T.8 S., R.3 E., Lenawee County, on left downstream side of bridge on State Highway 52, 0.5 mile south of Jasper.	42.4	k1974	04-04-74	9.59	240
04176356	Saline River near Bridgewater, Mich.	Lat 42°09'38", long 83°50'40", in NE¼ sec.4, T.4 S., R.5 E., Washtenaw County, on right downstream side of bridge on Austin Road, 3.0 miles east of Bridgewater.	41.6	1974	03-05-74	9.96	495
04176370	Saline River tributary near Saline, Mich.	Lat 42°10'34", long 83°49'17", in SE¼ sec.34, T.3 S., R.5 E., Washtenaw County, on right downstream side of bridge on Saline Waterworks Road, 2.2 miles northwest of Saline.	13.2	1974	03-05-74	6.94	250
04176380	Wood Outlet Drain at Saline, Mich.	Lat 42°10'37", long 83°47'17", in NW¼ sec.36, T.3 S., R.5 E., Washtenaw County, on downstream side of bridge on Saline Waterworks Road, 0.8 mile north of Saline.	13.7	1974	02-22-74	4.96	235
04177080	East Branch St. Joseph River near Waldron, Mich.	Lat 41°42'34", long 84°29'26", in SW¼ sec.1, T.9 S., R.2 W., Hillsdale County, on downstream left wingwall of bridge on Territorial Road, 3.8 miles west of Waldron.	70.8	k1974	03-10-74	9.63	540

* Also a low-flow partial-record station.

† Operated as a continuous-record gaging station.

a Not published in 1973 report.

b Maximum gage height, 3.91 ft Jan. 8, 1973 (backwater from ice).

c Approximately.

d Period of record, Mar. 1, 1974 to September 30, 1974.

e Maximum gage height, 7.03 ft Mar. 5, 1974 (backwater from ice).

f Maximum gage height, 10.11 ft Mar. 5, 1974 (backwater from ice).

g Period of record, Feb. 28, 1974 to September 30, 1974.

h Maximum gage height, 5.93 ft Jan. 27, 1974 (backwater from ice).

i Computed on basis of correlation with nearby stations.

j Maximum gage height 9.33 ft Feb. 23, 1974 (backwater from ice).

k Period of record, Feb. 26, 1974 to September 30, 1974.

m Maximum gage height, 9.73 ft Jan. 22, 1974 (backwater from ice).

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (*).

Discharge measurements made at miscellaneous sites during water year 1974

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Superior						
Plymouth Mine Pond Outlet	Alward Creek	Lat 46°28'14", long 89°58'56", in SE¼ NW¼ sec.18, T.47 N., R.45 W., Gogebic County, at culvert on Plymouth Road, at Ramsay, Mich.			12-05-73 03-07-74 06-12-74 08-07-74 09-12-74	*0.75 *.88 *1.84 *.77 *.50
Mud Creek	Chocolay River	Lat 46°27'50", long 87°11'46", in SW¼ sec.16, T.47 N., R.23 W., Marquette County, at bridge on County Road 480, 2.8 miles east of Mangum, Mich.	a13	1972,1973	10-03-73 12-13-73 05-08-74	*2.43 *8.61 *24.9
Streams tributary to Lake Michigan						
Bills Creek	Whitefish River	Lat 45°57'09", long 86°55'28", in SE¼ NW¼ sec.15, T.41 N., R.21 W., Delta County, 0.4 mile upstream from mouth, 2.7 miles north-east of Rapid River, Mich.	a23	1973	10-02-73 02-19-74 05-30-74 08-09-74	*7.41 *5.36 *14.0 *3.12
Green Creek	Middle Branch Escanaba River	Lat 46°19'06", long 87°29'44", in NE¼ NE¼ sec.12, T.45 N., R.26 W., Marquette County, at mouth, 2 miles northwest of Princeton, Mich.	19		07-29-74	*3.97
Brule River	Menominee River	Lat 46°00'34", long 88°34'43", in NE¼ sec.29, T.42 N., R.34 W., Iron County, 150 feet above mouth of Iron River, 3.5 miles southeast of Gaastra, Mich.	68.5		08-13-74	*141
Sunset Creek	Iron River	Lat 46°08'22", long 88°36'28", in SE¼ NW¼ sec.7, T.43 N., R.34 W., Iron County, at outlet of Sunset Lake, 3.5 miles northeast of Iron River, Mich.	11.5		08-29-74	*.44
do	do	Lat 46°06'07", long 88°40'15", in NE¼ NW¼ sec.27, T.43 N., R.35 W., Iron County, at bridge on Chicago and North Western Railroad, 1,200 feet above mouth, 2.5 miles northwest of Iron River, Mich.	19.2		08-13-74	*8.56
Dober Mine Pond Outlet	do	Lat 46°02'08", long 88°38'08", in NE¼ NW¼ sec.1, T.42 N., R.35 W., Iron County, at mouth, at Stambaugh, Mich.		1973	12-06-73 01-31-74 05-29-74 06-26-74 08-13-74	*.12 *.09 *.25 *.21 *.13
Verona Mine Pond Outlet	do	Lat 46°03'58", long 88°37'23", in SW¼ NE¼ sec.1, T.42 N., R.35 W., Iron County, at culvert under Chicago and North Western Railroad, 75 feet above mouth, at Caspian, Mich.			01-31-74	*2.27
Baw Beese Lake Outlet	St. Joseph River	Lat 41°54'18", long 84°37'01", in NE¼ SE¼ sec.35, T.6 S., R.3 W., Hillsdale County, at Lakeview Road, at Hillsdale, Mich.			06-04-74 09-11-74	*12.0 *b.1
do	do	Lat 41°54'23", long 84°37'21", in SW¼ NE¼ sec.35, T.6 S., R.3 W., Hillsdale County, at Griswald Road, at Hillsdale, Mich.			06-04-74	*12.0

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
King Lake Inlet	St. Joseph River	Lat 41°53'48", long 84°39'04", in NE¼ NE¼ sec.4, T.7 S., R.3 W., Hillsdale County, at Cambria Road, 1.0 mile southwest of Hillsdale, Mich.			06-04-74	*0.24
King Lake Outlet	do	Lat 41°54'01", long 84°37'05", in SE¼ SE¼ sec.34, T.6 S., R.3 W., Hillsdale County, at M-99, 1.0 mile south of Hillsdale, Mich.			06-04-74 08-08-74	*3.11 *.42
do	do	Lat 41°54'26", long 84°37'28", in NE¼ NW¼ sec.35, T.6 S., R.3 W., Hillsdale County, at Steamburg Road, at Hillsdale, Mich.			07-19-74 09-03-74 09-11-74	*.79 *.67 *b.4
St. Joseph River	Lake Michigan	Lat 41°54'58", long 84°37'32", in NE¼ SW¼ sec.26, T.6 S., R.3 W., Hillsdale County, at South Street, at Hillsdale, Mich.			06-04-74	*16.3
do	do	Lat 41°55'45", long 84°38'22", in SW¼ SE¼ sec.22, T.6 S., R.3 W., Hillsdale County, at Fayette Street, at Hillsdale, Mich.			06-04-74 07-19-74 08-08-74 08-16-74 09-03-74 09-11-74	*18.2 *3.87 *2.69 *2.14 *3.23 *2.14
do	do	Lat 41°56'04", long 84°38'26", in NE¼ sec.22, T.6 S., R.3 W., Hillsdale County, just below sewage treatment plant, at Hillsdale, Mich.			06-05-74	*22.2
Winona Lake Outlet	St. Joseph River	Lat 41°56'31", long 84°37'54", in SW¼ sec.14, T.6 S., R.3 W., Hillsdale County, at Hillsdale Street, at Hillsdale, Mich.			06-05-74	*4.48
Beebe Creek	do	Lat 41°56'31", long 84°31'16", in NE¼ NE¼ sec.22, T.6 S., R.2 W., Hillsdale County, at Mauck Road, 2.0 miles south of North Adams, Mich.			06-04-74	*2.39
do	do	Lat 41°56'38", long 84°31'32", in SW¼ SE¼ sec.15, T.6 S., R.2 W., Hillsdale County, at Knowles Road, 2.0 miles south of North Adams, Mich.			06-04-74	*5.08
do	do	Lat 41°56'27", long 84°33'02", in NW¼ NW¼ sec. 21, T.6 S., R.3 W., Hillsdale County, at State Road, 4.5 miles west of Hillsdale, Mich.			06-04-74 07-19-74 08-07-74 08-16-74 08-30-74 09-10-74	*8.49 *2.41 *2.25 *2.20 *1.99 *1.98
do	do	Lat 41°57'04", long 84°34'26", in SW¼ NW¼ sec.17, T.6 S., R.2 W., Hillsdale County, at Lake Pleasant Road, 3.0 miles northwest of Hillsdale, Mich.			06-05-74 07-19-74 08-07-74 08-30-74	.40 *4.02 1.06 *2.07
do	do	Lat 41°57'44", long 84°35'35", in NW¼ SW¼ sec.7, T.6 S., R.2 W., Hillsdale County, at Milnes Road, 3.5 miles northwest of Hillsdale, Mich.			06-05-74	2.51
Unnamed tributary	Beebe Creek	Lat 41°59'02", long 84°33'53", in NW¼ NE¼ sec.5, T.6 S., R.2 W., Hillsdale County, at Barker Road, 5.5 miles northwest of Hillsdale, Mich.			06-04-74	0
do	do	Lat 41°58'08", long 84°35'35", in NE¼ NE¼ sec.7, T.6 S., R.2 W., Hillsdale County, at Milnes Road, 4.0 miles northwest of Hillsdale, Mich.			06-04-74	*3.07
do	Unnamed tributary	Lat. 41°58'02", long 84°35'35", in NW¼ sec.7, T.6 S., R.2 W., Hillsdale County, at Milnes Road, 3.5 miles northwest of Hillsdale, Mich.			06-04-74	*.86
Half Moon Lake Outlet	Beebe Creek	Lat 41°58'38", long 84°36'40", in NW¼ SW¼ sec.1, T.6 S., R.3 W., Hillsdale County, at north Adams Road, 4.0 miles north of Hillsdale, Mich.			06-04-74	*b.01

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Discharge measurements made at miscellaneous sites during water year 1974--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Unnamed tributary	Beebe Creek	Lat 41°57'49", long 84°35'48", in SE¼ NE¼ sec.12, T.6 S., R.3 W., Hillsdale County, at Ball Road, 3.5 miles northwest of Hillsdale, Mich.			06-05-74 07-19-74 08-07-74 08-30-74 09-10-74	*5.12 *1.99 *2.03 *2.16 *2.06
Beebe Creek	St. Joseph River	Lat 41°57'15", long 84°38'20", in NW¼ NE¼ sec.15, T.6 S., R.3 W., Hillsdale County, at Moore Road, 1.2 miles northwest of Hillsdale, Mich.		1971	05-17-74 06-05-74 07-18-74 08-07-74 08-16-74 08-29-74 09-10-74	111 12.9 *8.38 *6.21 *6.17 *6.16 *5.85
St. Joseph River	Lake Michigan	Lat 41°57'23", long 84°39'31", in SW¼ SE¼ sec.9, T.6 S., R.3 W., Hillsdale County, at Moore Road, 1.2 miles northwest of Hillsdale, Mich.		1967, 1971	07-18-74 08-29-74 09-11-74	*20.5 *14.4 *12.6
do	do	Lat 41°58'58", long 84°39'52", in NE¼ NW¼ sec. 4, T.6 S., R.3 W., Hillsdale County, at Chicago St. (US-112), at Jonesville, Mich.			06-04-74 07-18-74 08-06-74 08-16-74 08-29-74 09-09-74	*59.6 *25.5 *19.6 *18.4 *17.2 *16.6
do	do	Lat 41°59'37", long 84°40'20", in SE¼ NE¼ sec.32, T.5 S., R.3 W., Hillsdale County, just below sewage treatment plant, at Jonesville, Mich.			06-04-74	*62.1
do	do	Lat 42°00'54", long 84°43'16", in NE¼ NW¼ sec.25, T.5 S., R.4 W., Hillsdale County, at Sterling Road, 3.5 miles northwest of Jonesville, Mich.			06-04-74	*72.7
do	do	Lat 42°01'58", long 84°44'13", in NW¼ SE¼ sec.14, T.5 S., R.4 W., Hillsdale County, at Homer Road (M-99), 300 ft below dam, 1.5 miles southwest of Litchfield, Mich.			06-05-74	60.2
do	do	Lat 42°02'37", long 84°45'52", in NW¼ NW¼ sec.15, T.5 S., R.4 W., Hillsdale County, at Litchfield Road, at Litchfield, Mich.			06-04-74 07-18-74 08-05-74 08-15-74 08-28-74 09-06-74	*77.8 *32.7 *28.4 *22.8 *21.4 *22.0
South Sand Lake Outlet	Middle Sand Lake	Lat 42°55'52", long 84°41'56", in SW¼ NE¼ sec.30, T.6 S., R.3 W., Hillsdale County, at Bacon Road, 3.0 miles west of Hillsdale, Mich.			06-05-74	*5.04
Unnamed tributary	Sand Creek	Lat 41°55'58", long 84°41'42", in NE¼ SE¼ sec.19, T.6 S., R.3 W., Hillsdale County, at Mechanic Road, below confluence of small lake outlets, 3.0 miles west of Hillsdale, Mich.			06-05-74	*1.92
Middle Sand Lake Outlet	do	Lat 42°56'34", long 84°42'06", in NE¼ SW¼ sec. 19, T.6 S., R.3 W., Hillsdale County, at Mechanic Road, 3.5 miles west of Hillsdale, Mich.			06-05-74	*9.58
Sand Creek	St. Joseph River	Lat 41°55'21", long 84°41'55", in SW¼ SW¼ sec.18, T.6 S., R.3 W., Hillsdale County, at Sand Lake Road, 4.0 miles northwest of Hillsdale, Mich.			06-04-74 07-18-74 08-06-74 08-29-74 09-09-74	*14.0 *5.50 *4.26 *3.18 *3.00
Unnamed tributary	Sand Creek	Lat 41°58'51", long 84°44'20", in NW¼ NE¼ sec.2, T.6 S., R.4 W., Hillsdale County, at Beulow Road, 4.0 miles west of Jonesville, Mich.			06-04-74	*1.22

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Sand Creek	St. Joseph River	Lat 41°59'08", long 84°45'04", in NE¼ NE¼ sec.3, T.6 S., R.4 W., Hillsdale County, at Jonesville Road, 4.0 miles west of Jonesville, Mich.			06-04-74	*22.6
do	do	Lat 42°01'45", long 84°46'47", in NE¼ NW¼ sec.21, T.5 S., R.4 W., Hillsdale County, at Herring Road, 1.0 mile southwest of Litchfield, Mich.			06-04-74 07-18-74 08-05-74 08-15-74 08-28-74 09-09-74	*29.4 *14.7 *11.4 *10.7 * 8.89 * 8.90
do	do	Lat 42°03'04", long 84°48'22", in SW¼ NW¼ sec.8, T.5 S., R.4 W., Hillsdale County, at mouth near Storms Road, 2.5 miles west of Litchfield, Mich.			07-17-74	*16.9
St. Joseph River	Lake Michigan	Lat 42°04'21", long 84°49'50", in SE¼ SE¼ sec.36, T.4 S., R.5 W., Calhoun County, at South County Line Road, 4.0 miles northwest of Litchfield, Mich.			06-04-74	*123
Soap Creek	St. Joseph River	Lat 42°00'32", long 84°47'15", in SW¼ NW¼ sec.28, T.5 S., R.4 W., Hillsdale County, at McLain Road, 4.0 miles southwest of Litchfield, Mich.			06-05-74 07-18-74 08-06-74 09-09-74	*3.37 *1.18 * .26 0
do	do	Lat 42°02'36", long 84°50'10", in NW¼ NE¼ sec.13, T.5 S., R.5 W., Branch County, at Litchfield Road, 5.0 miles west of Litchfield, Mich.			06-05-74 07-17-74 08-05-74 08-15-74 08-28-74 09-06-74	*14.4 *7.17 *5.47 *5.13 *4.07 *4.23
do	do	Lat 42°04'07", long 84°50'04", in NW¼ NE¼ sec.1, T.5 S., R.5 W., Branch County at Ely Road, 6.0 miles northwest of Litchfield, Mich.			06-05-74 07-17-74 08-06-74 08-15-74 08-27-74 09-06-74 09-30-74	*16.5 *9.12 *6.39 *6.42 *5.02 *4.10 *3.74
St. Joseph River	Lake Michigan	Lat 42°07'51", long 84°51'56", in SW¼ SW¼ sec.11, T.4 S., R.5 W., Calhoun County, at 22 Mile Road, at Clarendon, Mich.		1963	06-04-74 07-17-74 08-05-74 08-15-74 08-27-74 09-06-74 09-30-74	*171 *63.7 *55.2 *45.0 *40.1 *39.7 *40.7
Nottawa Creek	St. Joseph River	Lat 42°06'57", long 85°10'40", in NE¼ NE¼ sec.24, T.4 S., R.8 W., Calhoun County, at bridge on Six Mile Road, 3 miles northeast of Athens, Mich.		1973	06-06-74	c91.8
Wanadoga Creek	Battle Creek	Lat 42°23'48", long 85°07'57", in NW¼ SW¼ sec.9, T.1 S., R.7 W., Calhoun County, at State Highway M-66, 4.2 miles north of Battle Creek, Mich.		1973	06-06-74 07-19-74 09-26-74	c31.0 *c16.0 *c16.3
Silver Creek	Kalamazoo River	Lat 42°27'10", long 85°33'47", in SW¼ SW¼ sec.24, T.1 N., R.11 W., Allegan County, 0.5 mile northwest of Lake Doster, 1.3 miles southwest of Doster, Mich.			05-07-74 07-19-74 09-26-74	*c4.24 *c3.14 *c2.92
do	do	Lat 42°26'37", long 85°34'26", in SE¼ NW¼ sec.26, T.1 N., R.11 W., Allegan County, 0.6 mile north of State Highway M-89, 1.3 miles northeast of Silver Creek, Mich.			05-07-74 06-06-74 07-19-74 09-26-74	*c11.2 c19.5 *c8.70 *c8.40
do	do	Lat 42°25'03", long 85°35'25", in NE¼ sec.4, T.1 S., R.11 W., Kalamazoo County, at bridge on 4th Street, 3.3 miles southeast of Plainwell, Mich.	20.5	1942-1964-67d	06-06-74 07-05-74 07-19-74 09-26-74	c27.9 *c15.4 *c11.1 *c10.8

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Discharge measurements made at miscellaneous sites during water year 1974--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Michigan--Continued						
Kalamazoo River	Lake Michigan	Lat 42°38'50", long 86°11'53", in NE¼ sec.16, T.3 N., R.16 W., Allegan County, 2.8 miles above mouth at Old U.S.-31, at Saugatuck, Mich.	a2,020		07-09-74 08-07-74 09-11-74	*1240 *1050 *1620
Grand River	do	Lat 42°10'08", long 84°23'02", in SE¼ NE¼ sec.35, T.3 S., R.1 W., Jackson County, at Draper Road, 2.0 miles south of Vandercook, Mich.	41.0	1960 1963-65d	09-27-74	*c12.0
Rogue River	Grand River	Lat 43°14'03", long 85°41'52", in SW¼ SE¼ sec.23, T.10 N., R.12 W., Kent County, at 18 mile Road, 3.0 miles east of Kent City, Mich.		1970, 1972	09-09-74	*c34.8
do	do	Lat 43°11'49", long 85°41'13", in SW¼ NW¼ sec.1, T.9 N., R.12 W., Kent County, at Indian Lake Road, 2.6 miles north of Sparta, Mich.		1970	09-09-74	*c55.3
do	do	Lat 43°07'26", long 85°39'03", in NE¼ SE¼ sec.31, T.9 N., R.11 W., Kent County, at Pine Island Road, 4.0 miles southeast of Sparta, Mich.		1963, 1970	09-09-74	*c65.7
do	do	Lat 43°08'47", long 85°33'52", in SE¼ SW¼ sec.24, T.9 N., R.11 W., Kent County, at 12 Mile Road, 1.5 miles north of Rockford, Mich.		1964, 1970	09-09-74	*c107
Black Creek	Mona Lake	Lat 43°11'50", long 86°11'11", in NE¼ SE¼ sec.3, T.9 N., R.16 W., Muskegon County, at bridge on Black Creek Road, 3.8 miles south-east of Muskegon, Mich.		1952, 1970,73	12-06-73 01-08-74 02-20-74 03-12-74 04-17-74	c61.2 *c35.6 c65.9 c116 c176
do	do	Lat 43°11'16", long 86°12'20", in NE¼ NE¼ sec.9, T.9 N., R.16 W., Muskegon County, at south lane of highway U.S.-31, at Norton Shores, Mich.	61.6	1973	11-13-73	*35.9
Little Black Creek	do	Lat 43°11'31", long 86°14'18", in SE¼ SW¼ sec.5, T.9 N., R.16 W., Muskegon County, at culvert on Merrian Street, at Muskegon Heights Mich.	6.00	1973	11-13-73	*5.95
Muskegon River	Lake Michigan	Lat 43°19'05", long 86°02'11", in NW¼ sec.30, T.11 N., R.14 W., Muskegon County, at Maple Island Road, 5.0 miles southwest of Bridgeton, Mich.			07-10-74 08-08-74 09-12-74	2,030 *1,370 *1,240
Streams tributary to Lake Huron						
West Branch Sturgeon River	Sturgeon River	Lat 45°14'55", long 84°40'36", in NE¼ SE¼ sec.16, T.33 N., R.3 W., Cheboygan County, 3.8 miles southwest of Wolverine, Mich.	56.8	1954	09-10-74	58.4
Ocqueoc River	Lake Huron	Lat 45°28'50", long 84°06'41", in SE¼ SE¼ sec.19, T.36 N., R.3 E., Presque Isle County, at highway bridge, 5.1 miles north of Ocqueoc, Mich.		1973	10-10-73 11-19-73 12-12-73 02-13-74 03-06-74 03-27-74 04-09-74 04-23-74 05-07-74 07-11-74	*c104 c132 c135 c108 c320 *c115 c296 c326 c200 c166
AuSable River	do	Lat 44°26'09", long 83°26'06", in SE¼ NW¼ sec.35, T.24 N., R.8 E., Iosco County, at bridge on Rea Road, 5.3 miles west of Oscoda, Mich.		1970	11-06-73 11-20-73 01-15-74 01-15-74	c341 c338 c2,580 c1,340

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Discharge measurements made at miscellaneous sites during water year 1974--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Van Etten Creek	AuSable River	Lat 44°26'54", long 83°20'24", in SW¼ NW¼ sec.27, T.24 N., R.9 E., Iosco County, at dam at outlet of Van Etten Lake, 2.0 miles north of Oscoda, Mich.			04-09-74	c568
do	do	Lat 44°26'49", long 83°20'21", in SW¼ NW¼ sec.27, T.24 N., R.9 E., Iosco County, at Detroit and Mackinaw railroad bridge, 2.0 miles northwest of Oscoda, Mich.		1973	11-06-73 11-19-73 12-13-73 01-15-74 03-07-74 03-28-74	c76.0 c252 *c285 *c22.8 c853 *c212
AuSable River	Lake Huron	Lat 44°25'16", long 83°20'28", SE¼ NE¼ sec.4, T.23 N., R.9 E., Iosco County, at highway bridge in Oscoda, Mich.			10-11-73 11-05-73	c1,220 c2,730
Tawas River	do	Lat 44°17'00", long 83°30'17", in SE¼ SE¼ sec.19, T.22 N., R.8 E., Iosco County, at highway bridge on Monument Road, at East Tawas, Mich.		1972-73	10-11-73 11-19-73 12-13-73 01-16-74 02-13-74 03-28-74 05-08-74 08-16-74 09-12-74	*c54.3 c78.9 c90.6 *c77.4 *c130 *c146 c197 *c38.6 *c53.6
East Branch AuGres River	do	Lat 44°08'28", long 83°38'34", in SW¼ SW¼ sec.9, T.20 N., R.7 E., Arenac County, at channel dredge at Turner Road, 0.2 mile east of Edmonds Rd., 5.2 miles southwest of Alabaster, Mich.		1973	10-11-73 11-20-73 12-13-73 01-16-74 03-28-74 04-24-74 05-08-74 05-23-74 06-19-74 07-25-74 08-15-74 09-12-74	*c40.3 c55.3 c67.7 *c54.4 *c99.6 c139 c129 c145 c154 *c50.3 *c38.1 *c37.6
do	do	Lat 44°08'34", long 83°37'51", in SE¼ SE¼ sec.9, T.20 N., R.7 E., Arenac County, at bridge on channel dredge, at Turner Road, .8 mile east of Edmonds Road, 4.7 miles southwest of Alabaster, Mich.			03-07-74 04-10-74	c828 c139
North Branch Pine River	Pine River	Lat 43°59'08", long 83°53'18", in NE¼ SE¼ sec.5, T.18 N., R.5 E., Arenac County, 200 ft upstream from South Branch, 3.6 miles east of Standish, Mich.		1973	10-11-73 11-20-73 12-13-73 03-28-74 04-10-74 04-24-74 05-08-74 06-19-74 07-25-74 08-15-74	*c4.73 c13.1 c14.2 *c22.2 c51.4 c26.1 c37.0 c49.5 *c5.12 *c3.94
South Branch Pine River	do	Lat 43°58'58", long 83°53'37", in SW¼ SE¼ sec.5, T.18 N., R.5 E., Arenac County, at bridge on Pine River Road, 3.3 miles east of Standish, Mich.			11-20-73 12-13-73 02-13-74 03-28-74 04-10-74 04-24-74 05-08-74 06-19-74 07-25-74 08-15-74	c6.18 c15.0 *c7.20 *c22.3 c56.0 c19.6 c41.2 c31.2 *c4.49 *c.51
Pinconning River	Lake Huron	Lat 43°51'30", long 83°57'58", in NW¼ SW¼ sec.23, T.17 N., R.4 E., Bay County, at bridge on U.S. 23, at Pinconning, Mich.		1942	11-20-73 12-13-73 02-13-74 03-07-74 03-28-74 04-10-74 04-24-74 05-08-74 05-23-74 06-19-74 07-25-74	c7.73 c7.25 *c4.30 c117 *c10.1 c18.2 *c 4.88 *c10.1 c12.7 c16.1 *c.52

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Discharge measurements made at miscellaneous sites during water year 1974--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Marion Geona Drain	South Branch Shiawassee River	Lat 42°35'34", long 83°56'35", in SE¼ NW¼ sec.2, T.2 N., R.4 E., Livingston County, at Peavy Road, .8 miles south of Howell, Mich.			07-29-74	*c5.56
South Branch Shiawassee River	Shiawassee River	Lat 42°36'00", long 83°57'50", in SW¼ SE¼ sec.34, T.3 N., R.4 E., Livingston County at Mason Road, 1.0 mile west of Howell, Mich.			04-16-74 06-26-74	c31.3 *c11.4
do	do	Lat 42°36'59", long 83°57'53", in SE¼ SW¼ sec.27, T.3 N., R.4 E., Livingston County, at Grand River Road, 1.2 miles west of Howell, Mich.		1973	04-15-74 06-21-74 07-29-74	c43.0 c16.4 *c7.79
do	do	Lat 42°40'02", long 83°58'32", in SE¼ NE¼ sec.9, T.3 N., R.4 E., Livingston County, at Marr Road, 5.0 miles northwest of Howell, Mich.			07-29-74	*c9.06
do	do	Lat 42°42'32", long 83°58'56", in SE¼ NE¼ sec.28, T.4 N., R.4 E., Livingston County, at Chase Lake Road, 2.5 miles southwest of Cohoctah Center, Mich.			04-15-74 06-26-74	c83.3 *c14.0
do	do	Lat 42°43'42", long 83°58'06", in NW¼ NE¼ sec.22, T.4 N., R.4 E., Livingston County, at Byron Road, 1.9 miles southeast of Cohoctah Center, Mich.			04-11-74 06-20-74 07-29-74	c133.0 c24.0 *c7.43
Shiawassee River	Saginaw River	Lat 42°49'00", long 83°53'43" in NE¼ SW¼ sec.20, T.5 N., R.5 E., Genesee County, at Duffield Road, 2.3 miles west of Byron, Mich.		1959	07-17-74	*c45.6
Deer Creek	Shiawassee River	Lat 43°13'20", long 84°06'57", in NW¼ SE¼ sec.33, T.10 N., R.3 E., Saginaw County, at Sharon Road, 1.5 miles north of Chesaning, Mich.			07-16-74	*c.51
Hunter Creek	South Branch Flint River	Lat 43°02'46", long 83°18'16", in SW¼ SW¼ sec.4, T.7 N., R.10 E., Lapeer County, at Saginaw Street, .3 miles south of State Highway M-21, at Lapeer, Mich.			07-22-74	*c2.21
Plumb Creek	do	Lat 43°05'32", long 83°20'10", in NE¼ SW¼ sec.19, T.8 N., R.10 E., Lapeer County, at Plum Creek Road, 2.5 miles northwest of Lapeer, Mich.			07-22-74	*c9.14
South Branch Flint River	Flint River	Lat 43°05'32", long 83°20'42", in NW¼ SW¼ sec.19, T.8 N., R.10 E., Lapeer County, at Millville Road, at Millville, Mich.			04-23-74	c261
do	do	Lat 43°07'23", long 83°22'00", in SE¼ NE¼ sec.11, T.8 N., R.9 E., Lapeer County, at Flint River Road, 2.3 miles northwest of Millville, Mich.			07-22-74	*c44.5
do	do	Lat 43°08'43", long 83°21'12", in SW¼ SE¼ sec.36, T.9 N., R.9 E., Lapeer County, at Norway Lake Road, 3.0 miles southeast of Columbiaville, Mich.	1955, 63 1972		04-25-74	c248.
do	do	Lat 43°09'35", long 83°21'04", in SE¼ SE¼ sec.25, T.9 N., R.9 E., Lapeer County, at Columbiaville Road, 2.8 miles east of Columbiaville, Mich.			07-22-74	*c53.5
Flint River	Saginaw River	Lat 43°04'35", long 83°39'17", in SW¼ SW¼ sec.21, T.8 N., R.7 E., Genesee County, at Carpenter Road, at Flint, Mich.			08-06-74	*c127
Black Creek	Kearsley Creek	Lat 43°01'37", long 83°32'17", in SW¼ NW¼ sec.9, T.7 N., R.8 E., Genesee County, at Gale Road, .5 miles west of Davison, Mich.			08-12-74	*c1.45
Kearsley Creek	Flint River	Lat 43°03'13", long 83°40'05", in NE¼ SW¼ sec.32, T.8 N., R.7 E., Genesee County, 500 ft. upstream from confluence of Flint River, at Flint, Mich.			08-06-74 08-12-74	*c18.0 *c25.4

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Gilkey Creek	Flint River	Lat 43°01'52", long 83°40'40", in NE¼ NE¼ sec.7, T.7 N., R.7 E., Genesee County, at Lewis Street, at Flint, Mich.	a13.4	1969	08-06-74	*c1.08
do	do	Lat 43°01'03", long 83°40'32", in NE¼ NE¼ sec.18, T.7 N., R.7 E., Genesee County, at Court Street, at Flint, Mich.			08-12-74	*c1.33
West Branch Swartz Creek	Swartz Creek	Lat 42°57'15", long 83°49'55", in NW¼ NW¼ sec.1, T.6 N., R.5 E., Genesee County, at Morrish Road, at Swartz Creek, Mich.			08-12-74	*c.52
Swartz Creek	Flint River	Lat 42°58'22", long 83°45'43", in SW¼ sec.28, T.7 N., R.6 E., Genesee County, at Bristol Road, 3.9 miles east of Swartz Creek, Mich.	67.2	1952-54, 1958, 1970-74e	08-12-74	*c2.84
Carman Creek	Swartz Creek	Lat 42°59'17", long 83°42'19", in NE¼ NW¼ sec.25, T.7 N., R.6 E., Genesee County, at Atherton Road, at Flint, Mich.			08-12-74	*c.93
Thread Creek	do	Lat 43°00'12", long 83°41'07", in SE¼ SW¼ sec.18, T.7 N., R.7 E., Genesee County, at 12th Street, at Flint, Mich.			08-12-74	*c4.92
Swartz Creek	Flint River	Lat 43°00'50", long 83°41'57", in SW¼ NE¼ sec.13, T.7 N., R.6 E., Genesee County, at Kearsley Street, 500 ft upstream from confluence of Flint River, at Flint, Mich.	a54.3	1969	08-06-74	*c10.0
Brent Run	do	Lat 43°11'13", long 83°51'49", in SE¼ NW¼ sec.15, T.9 N., R.5 E., Genesee County, at McKinley Road, 500 ft upstream from confluence of Flint River 1.5 miles northeast of Montrose, Mich.		1963	08-06-74	*c9.96
Center Drain	Cass River	Lat 43°36'03", long 83°11'13", in SE¼ SW¼ sec.28, T.14 N., R.11 E., Tuscola County, at culvert on M-18, at Cass City, Mich.			07-10-74	c1.81
White Creek	do	Lat 43°30'47", long 83°18'34", in SE¼ SE¼ sec.29, T.13 N., R.10 E., Tuscola County, at bridge on Murray Road, 4.8 miles northeast of Caro, Mich.		1963-64	07-10-74	c13.5
Goodings Creek	do	Lat 43°21'01", long 83°34'44", in NW¼ NW¼ sec.19, T.11 N., R.8 E., Tuscola County, at culvert on M-15, 1.5 miles south of Vassar, Mich.			07-10-74	c4.20
Millington Creek	do	Lat 43°19'57", long 83°38'30", in SW¼ NW¼ sec.27, T.11 N., R.7 E., Tuscola County, at culvert on Loren Road, .9 miles northeast of Tuscola, Mich.			07-10-74	c2.06
Perry Creek	do	Lat 43°19'28", long 83°39'07", in SW¼ SE¼ sec.28, T.11 N., R.7 E., Tuscola County, at culvert on Loren Road, .3 mile southeast of Tuscola, Mich.		1963-64	07-10-74	c4.57
Cass River	Saginaw River	Lat 43°19'28", long 83°39'28", in SE¼ SW¼ sec.28, T.11 N., R.7 E., Tuscola County, at bridge on Bray Road, .15 mile south of Tuscola, Mich.			04-09-74	c1860
Dead Creek	Cass River	Lat 43°18'30", long 83°44'06", in SE¼ SE¼ sec.34, T.11 N., R.6 E., Saginaw County, at culvert on State Highway M-83, 1.6 miles south of Frankenmuth, Mich.			07-10-74	c1.42
Cass River	Saginaw River	Lat 43°19'50", long 83°49'48", in SE¼ NW¼ sec.25, T.11 N., R.5 E., Saginaw County, at bridge on Dixie Highway, 3.3 miles southeast of Bridgeport, Mich.			04-02-74	c1,360
do	do	Lat 43°21'54", long 83°57'18", in NE¼ NE¼ sec. 14, T.11 N., R.5 E., Saginaw County, at bridge on State Highway M-13, 3.7 miles west of Bridgeport, Mich.			04-01-74	c950

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Chippewa River	Pine River	Lat 43°35'40", long 84°22'10", in NE¼ NE¼ sec.24, T.14 N., R.1 W., Midland County, at bridge on Meridan Road, 6.5 miles southwest Midland, Mich.	597	1947-72f 1973-74e	08-18-74	*c225
Pine River	Tittabawassee River	Lat 43°24'42", long 84°36'27", in SW¼ SW¼ sec.19, T.12 N., R.2 W., Gratiot County, downstream from highschool foot bridge, at St. Louis, Mich.			08-29-74 08-29-74 09-03-74	c210 c152 c136
Bush Creek	Pine River	Lat 43°30'15", long 84°28'10", in SW¼ SW¼ sec.17, T.13 N., R.1 W., Midland County, .25 mile north of Porter Road, about 3,000 ft upstream from mouth, 6.0 miles northeast of St. Louis, Mich.			09-03-74	*c.72
Tittabawassee River	Saginaw River	Lat 43°36'35", long 84°14'31", in NE¼ NW¼ sec.21, T.14 N., R.2 E., Midland County, at bridge on Poseyville Road, at Midland, Mich.			08-18-74	c501
Lingle Drain	Tittabawassee River	Lat 43°35'04", long 84°12'30", in SE¼ SE¼ sec. 27, T.14 N., R.2 E., Midland County, just above mouth, 2.7 miles southwest of Midland, Mich.			08-18-74	c19.1
Tittabawassee River	Saginaw River	Lat 43°33'52", long 84°11'14", in SW¼ NW¼ sec.1, T.13 N., R.2 E., Midland County, at bridge at Smiths Crossing, at Mapleton, Mich.		1965-67	08-18-74	c509
do	do	Lat 43°28'51", long 84°05'32", in SE¼ SE¼ sec. 34, T.13 N., R.3 E., Saginaw County, near Tittabawassee River Road, 3.0 miles west of Lawndale, Mich.			08-18-74	c550
Sebewaing River (State Drain)	Lake Huron	Lat 43°42'43", long 83°25'40", in SE¼ SE¼ sec.16, T.15 N., R.9 E., Huron County, at bridge on Rescue Road, 1.4 miles southeast of Sebewaing, Mich.	a62	1940-54f 1973	11-21-73 12-17-73 03-08-74 03-29-74 04-11-74 04-25-74 05-09-74 05-24-74 06-20-74 07-26-74	c4.39 c10.1 c186 *c11.8 c53.4 *c13.2 *c27.9 c33.0 c16.5 *c.67
East Fork Sebewaing River (Columbia Drain)	Sebewaing River	Lat 43°43'38", long 83°23'46", in SE¼ SE¼ sec.10, T.15 N., R.9 E., Huron County, at bridge on Gettel Road, 2.5 miles east of Sebewaing, Mich.	a38	1940-54f 1973	11-21-73 03-08-74 03-29-74 04-11-74 04-25-74 05-09-74 05-24-74 06-20-74 07-26-74 09-26-74	c3.49 c86.6 *c2.85 c27.6 *c6.16 *c11.4 c12.0 c9.25 *c.38 *c.11
Pigeon River	Lake Huron	Lat 43°55'03", long 83°14'36", in SE¼ SE¼ sec. 1, T.17 N., R.10 E., Huron County, at bridge on Limerick Road, 2.1 miles southeast of Caseville, Mich.		1973	11-21-73 12-17-73 02-14-74 03-08-74 03-29-74 04-11-74 04-25-74 05-09-74 05-21-74 06-21-74 07-26-74 08-16-74 09-26-74	c16.2 c25.6 *c20.9 c516 *c60.0 c118 *c42.5 *c62.7 c85.0 c70.7 *c6.09 *c2.17 *c1.72

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Lake Huron--Continued						
Pinnebog River	Lake Huron	Lat 43°55'14", long 83°07'32", in NE¼ NE¼ sec.12, T.17 N., R.11 E., Huron County, at bridge on Limerick Road 1.5 miles southwest of Pinnebog, Mich.		1973	10-12-73 11-21-73 12-17-73 02-14-74 03-08-74 03-29-74 04-11-74 04-25-74 05-09-74 05-24-74 06-20-74 07-26-74 08-16-74 09-26-74	*c2.00 c8.70 c26.1 *c38.9 c419 *c55.8 c108 *c40.5 *c65.4 c73.0 c24.7 *c3.34 *c1.47 *c.95
Willow Creek	do	Lat 44°01'42", long 82°50'16", in NW¼ NE¼ sec.4, T.18 N., R.14 E., Huron County, at bridge on State Highway M-25, at Huron City, Mich.			11-21-73 12-17-73 02-14-74 03-08-74 03-29-74 04-11-74 04-25-74 05-09-74 05-24-74 06-20-74 07-26-74	c22.0 c19.7 *c18.4 c273 *c26.5 c75.9 *c23.8 *c41.9 c37.1 c21.1 *c.64
Streams tributary to St. Clair River						
Black River	St. Clair River	Lat 43°15'37", long 82°37'14", in SE¼ NW¼ sec.32, T.10 N., R.16 E., Sanilac County, .3 miles south of State Highway M-90, at Croswell, Mich.	369	1969	10-29-73 10-30-73	c52.3 c128.
do	do	Lat 43°15'02", long 82°37'00", in SW¼ SE¼ sec.32, T.10 N., R.16 E., Sanilac County, at Sheridan Line Road, 1.8 miles south of Croswell, Mich.			12-10-73	c158
Black Creek	Black River	Lat 43°12'45", long 82°37'35", in NW¼ SW¼ sec.17, T.9 N., R.16 E., Sanilac County, at Black River Road, 2.2 miles northwest of Amadore, Mich.		1967	12-10-73	c16.6
Black River	St. Clair River	Lat 43°12'32", long 82°36'52", in SW¼ SE¼ sec.17, T.9 N., R.16 E., Sanilac County, at Gardner Line Road, 1.7 miles northwest of Amadore, Mich.			10-29-73 10-30-73	c48.0 c97.2
Belle River	do	Lat 42°59'17", long 83°04'05", in SE¼ NE¼ sec.32, T.7 N., R.12 E., Lapeer County, at State Highway M-53, 3.0 miles south of Imlay City, Mich.			09-17-74	*c2.24
Streams tributary to Lake St. Clair						
Red Run	Clinton River	Lat 42°32'14", long 83°00'22", in SW¼ SW¼ sec.34, T.2 N., R.12 E., Macomb County, at 14 Mile Road, at Warren, Mich.		1973	02-07-74 03-14-74 07-26-74 08-21-74 09-17-74	*25.0 128 *c49.4 c73.2 *c40.0
Streams tributary to Detroit River						
Middle River Rouge	River Rouge	Lat 42°24'02", long 83°28'08", in SW¼ sec.14, T.1 S., R.8 E., Wayne County at Northville Road, 1.5 miles north of Plymouth, Mich.			11-07-73 02-05-74 02-27-74 03-05-74 03-21-74 05-02-74	*17.2 *42.1 79.6 660. 105. *50.6

Discharge measurements made at miscellaneous sites during water year 1974--Continued

Discharge measurements made at miscellaneous sites during water year 1974--Continued						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Streams tributary to Detroit River--Continued						
Middle River Rouge	River Rouge	Lat 42°23'33", long 83°28'02", in NW¼ sec.23, T.1 S., R.8 E., Wayne County, at dam at outlet of Phoenix Lake, 1.0 miles north of Plymouth, Mich.	56.5		02-05-74 02-27-74 03-05-74 03-21-74 05-02-74	*42.2 81.1 670 97.8 *50.2
do	do	Lat 42°23'06", long 83°27'54", in SW¼ sec.23, T.1 S., R.8 E., Wayne County, at Middle River Rouge Parkway, at Plymouth, Mich.			01-29-74 02-27-74 03-05-74 03-21-74 05-02-74	161. 80.2 679. 94.6 *46.9
do	do	Lat 42°23'03", long 83°27'23", in SE¼ sec.23, T.1 S., R.8 E., Wayne County, at dam at intersection of East Hines and Wilcox Road, at Plymouth, Mich.	58.2		01-29-74 02-27-74 03-05-74 03-21-74 05-02-74	164 83.6 611 93.8 *46.4
do	do	Lat 42°22'13", long 83°25'58", in SE¼ sec.25, T.1 S., R.8 E., Wayne County, at Middle River Rouge Parkway, at Plymouth, Mich.			01-28-74 02-27-74 05-02-74	280 88.3 *51.7
do	do	Lat 42°22'00", long 83°24'41", in NW¼ sec.32, T.1 S., R.8 E., Wayne County at Dam at outlet of Newburgh Lake, at Newburgh Road, at Livonia, Mich.	62.3		11-07-73 01-28-74 02-27-74 03-05-74 03-21-74 05-02-74	*20.6 341. 102. 668. 110. *51.7
Streams tributary to Lake Erie						
Mann Creek	Woodruff Creek	Lat 42°36'22", long 83°38'31", in NE¼ NE¼ sec.5, T.2 N., R.7 E., Oakland County, at Garner Road, 2.0 miles northwest of Milford, Mich.			10-25-73 11-30-73 04-22-74	*.49 *3.03 *3.42
do	do	Lat 42°36'04", long 83°39'38", in SE¼ NE¼ sec.6, T.2 N., R.7 E., Oakland County, at Hickory Ridge Road, 2.8 miles northwest of Milford, Mich.			10-25-73 11-30-73 04-22-74	*.34 *2.88 *5.22
Wolf Creek	River Raisin	Lat 41°59'25", long 84°09'02", in SW¼ SW¼ sec.36, T.5 S., R.2 E., Lenawee County, at Gilbert Highway, 3.0 miles southeast of Onsted, Mich.	18.7	1970	05-15-74 09-27-74	c79.3 *c1.64

* Base flow.

a Approximately.

b Field estimate.

c Discharge measurement made by employee's of Michigan Department of Natural Resources.

d Operated as a low-flow partial-record station.

e Also a crest-stage partial-record station.

f Operated as a continuous-record gaging station.

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