Water Resources Data for Michigan

Water Year 1975

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT MI-75-1

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

CALENDAR FOR WATER YEAR 1975

1974

OCTOBER

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

NOVEMBER

S	M	T	W	T	F	S
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER

S	M	T	W	T	F	S
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29	30	31				

1975

JANUARY

S	M	T	W	T	F	S
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5	6	7	8	9	10	11
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FEBRUARY

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MARCH

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9	10	11	12	13	14	15
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23	24	25	26	27	28	29
30	31					

APRIL

S	M	T	W	T	F	S
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MAY

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JUNE

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29	30					

JULY

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6	7	8	9	10	11	12
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20	21	22	23	24	25	26
27	28	29	30	31		

AUGUST

S	M	T	W	T	F	S
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

SEPTEMBER

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
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Water resources data for the 1975 water year for Michigan consist of records stage, discharge, and water quality of streams; stage, contents, and water qualit of lakes and reservoirs; and water levels and water quality in wells and springs. This report contains discharge records for 207 gaging stations; stage only record for 1 gaging station; stage and contents for 5 lakes and reservoirs; water quality for 57 continuous-record stations, 169 partial-record stations, and 3 lakes; and water levels for 29 observation wells. Also included are 104 crest-stage partial-record stations and 43 low-flow partial-record stations. Additiona water data were collected at various sites, not part of the systematic data colle tion program, and are published as miscellaneous measurements. These data repres that part of the National Water Data System operated by the U.S. Geological Surve and cooperating State and Federal agencies in Michigan.

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Preface

This report was prepared by the U.S. Geological Survey in cooperation with the State of Michigan and with other agencies by personnel of the Michigan district of the Water Resources Division under the supervision of T. R. Cummings, District Chief, and J. T. Callahan, Regional Hydrologist, Northeastern Region.

This report is one of a series issued State by State under the general direction of J. S. Cragwall, Jr., Chief Hydrologist, and G. W. Whetstone, Assistant Chief Hydrologist for Scientific Publications and Data Management

UNITED STATES DEPARTMENT OF THE INTERIOR

THOMAS S. KLEPPE, Secretary

GEOLOGICAL SURVEY

V.E. McKelvey, Director

Prepared in cooperation with

Michigan State Department of Natural Resources
Hydrological Survey Division
Geological Survey Division
Michigan Department of Agriculture
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
Tri-County Regional Planning Commission
Van Buren County Board of Supervisors
Washtenaw County Drain Commission
Washtenaw County Planning Commission
Washtenaw County Board of Supervisors
Huron-Clinton Metropolitan Authority
Township of Ypsilanti
City of Kalamazoo
City of Saline
City of Ypsilanti
Village of Imlay City
Corps of Engineers, U.S. Army
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(Letters after station name designate type of data: (c), chemical; (b), biological; (p), pesticides; (r), radiochemical; (t), water temperature; (s), sediment)

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OBSERVATION WELLS FOR WHICH WATER-LEVEL RECORDS ARE PUBLISHED

WATER RESOURCES DATA FOR MICHIGAN, 1975

Section 1. Surface-Water Records
Section 2. Water-Quality Records
Section 3. Ground-Water Records

INTRODUCTION

Water resources data for the 1975 water year for Michigan consist of records of stage, discharge, and water quality of streams; stage, contents, and water quality of lakes and reservoirs; and water-levels and water quality of wells and springs. This report contains discharge records for 204 gaging stations; stage only records for 1 gaging station; stage and contents for 5 lakes and reservoirs; water quality for 57 continuous-record stations, 169 partial-record stations, and 3 lakes; and water levels for 29 observation wells. Also included are data for 104 crest-stage partial-record stations and 43 low-flow partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Michigan.

Records of discharge (or stage) of streams, and contents (or stage) of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled, "Surface Water Supply of the United States." Through water year 1960, these water-supply papers were in an annual series and then in a 5-year series for 1961-65 and 1966-70. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled, "Ground-Water Levels in the United States."

Streamflow records beginning with the 1961 water year and continuing through water year 1974, have been released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records beginning with the 1964 water year, have been similarly released either in separate reports or in conjunction with streamflow records. Ground-water records beginning with the 1956 calendar year and continuing through calendar year 1974 have been released by the Geological Survey in annual reports on a State-boundary basis. These reports provided rapid release of preliminary water data shortly after the end of the water year. The final data were then released in the water-supply paper series mentioned above. Beginning with the 1975 water year, water data will be released on a State-boundary basis in final form and will not be republished in the water-supply paper series. The 1975 and subsequent water year reports will be in a series which will carry an identification number consisting of the two-letter

State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report MI-75-1." These reports are for sale to the public for a nominal fee from the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22151. For more information on publications available, see "PUBLICATIONS" on a subsequent page.

COOPERATION

The U.S. Geological Survey and organizations of the State of Michigan have had cooperative agreements for the systematic collection of streamflow records since 1930, and for water-quality records since 1951. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

State Department of Natural Resources, A.G. Gazlay, director, succeeded by H.A. Tanner, 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; Township of Ypsilanti, Cities or villages of Imlay City, Saline, and Ypsilanti; Allied Paper Inc.; 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, water quality 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 25.

Acre-foot (AC-FT, ac-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.

Algae are mostly aquatic, single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable materials to yield significant quantities of water to wells and springs.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, others perform an essential roll in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C±1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal coliform bacteria are bacteria that are present in the intestines of feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococcal bacteria are bacteria also found in the intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35C±1.0°C on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the shifting portion of fragmented alluvial material of which the streambed is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per litre, used for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the weight per unit area, or volume, of habitat.

Ash weight is the weight or amount of residue present after the residue from the dry-weight determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash-weight values of zooplankton and phytoplankton are expressed in g/m^3 (grams per cubic metre) and periphyton and benthic organisms in g/m^2 (grams per square metre).

Dry weight refers to the weight of residue present after drying in an oven at 60°C for zooplankton and 105°C for periphyton until the weight remains unchanged. This weight represents the total organic matter, ash and sediment, in the sample. Dry weight values are expressed in the same units as ash weight.

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 approximately 0.0372 inches from 1 square mile or 0.3468 millimetre from 1 square kilometre.

Chlorophyll refers to the green pigment of plants. Chlorophyll a and b are the two most common green pigments in plants.

Chemical oxygen demand (COD) indicates the quantity of oxidizable compounds in water and varies with water composition, temperature, period of contact, and other factors.

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.

Continuing water-quality record station is a specified site which meets one or all conditions listed:

1. When chemical samples are collected daily or monthly for 10 or more months during the water year.
2. When water temperature records include observations taken once or more times daily.
3. When sediment discharge records include those periods for which sediment loads are computed and are considered to be representative of the runoff for the water year.

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 artifical 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 (CFS, cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.2832 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 mean of individual daily mean discharge during a specific period.

Instantaneous discharge is the discharge at a given time.

Dissolved refers to the amount of a substance present in true chemical solution. In practice, however, the term includes all forms of the substance that will pass through a 0.45-micrometre membrane filter, and thus may include some very small (colloidal) suspended particles. Analyses are performed on filtered samples.

Drainage area of a stream at a specific 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.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alakaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per litre (UG/L, ug/l) is a unit expressing the concentration of chemical constituents in solution as weight (micrograms) of solute per unit volume (litre) of water. One thousand micrograms per litre is equivalent to one milligram per litre.

Milligrams per litre (MC/1, mg/l) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per litre represents the weight of solute per unit volume of water. Milligrams or micrograms per litre may be converted to milliequivalents (one thousandth of a gram-equivalent weight of a constituent) per litre by multiplying by the factors in table 1, page 8. Concentration of suspended sediment also is expressed in mg/1, and is based on the weight of sediment per litre of water-sediment mixture. Sediment concentrations may be converted to parts per million by using the factors in table 2, page 8.

Organism is any living entity, such as an insect, phytoplankter, or zooplankter.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multi-celled and are counted according to the number of contained cells per sample volume, usually millilitres (ml) or litres (l).

Total organism count is the total number of organisms collected and enumerated in any particular sample.

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

Particle size is the diameter, in millimetres (mm), of suspended sediment or bed material determined either by sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification, used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	0.00024 - 0.004	Sedimentation
Silt	.004 - .062	Sedimentation
Sand	.062 - 2.0	Sedimentation or sieve
Gravel	2.0 -64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis (Guy, 1969).

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

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.

Sediment is solid material that originates mostly from disintegrated rocks and is transformed by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment as measured by dry weight, or by volume, that is discharged during a given time.

Total sediment discharge or total sediment load is the sum of the suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry weight, or by volume, that is discharged during a given time.

Table 1.--Factors for conversion of chemical constituents in milligrams or micrograms per litre to milliequivalents per litre

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})*...	0.11119	Hydroxide (OH^{-1})..	0.05880
Ammonia as NH_4^{+1}...	.05544	Iodide (I^{-1})	.00788
Arsenic (AS^{+3})	.04004	Iron (Fe^{+3})*	.05372
Barium (Ba^{+2})	.01456	Lead (Pb^{+2})*	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})*...	.14411
Bromide (BR^{-1})	.01251	Magnesium (Mg^{+2})..	.08226
Cadmium (Cd^{+2})	.01779	Manganese (Mn^{+2})*.	.03640
Calcium (Ca^{+2})	.04990	Nickel (Ni^{+2})* ...	.03406
Carbonate (CO_3^{-2})..	.03333	Nitrate (NO_3^{-1})...	.01613
Chloride (Cl^{-1}) ...	.02821	Nitrite (NO_2^{-1})...	.02174
Chromium (Cr^{+6})*...	.11539	Phosphate (PO_4^{-3}).	.03159
Cobalt (Co^{+2})* ...	.03394	Potassium (K^{+1}) ...	.02557
Copper (Cu^{+2})*	.03148	Sodium (Na^{+1})	.04350
Cyanide (CN^{-1})	.03844	Strontium (Sr^{+2})*.	.02283
Fluoride (F^{-1})	.05264	Sulfate (SO_4^{-2}) ...	.02082
Hydrogen (H^{+1})	.99209	Zinc (Zn^{+2})*	.03060

*Constituent reported in micrograms per litre; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per litre to parts per million*
(All values calculated to three significant figures)

Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by
0 - 8	1.00	201-217	1.13	411-424	1.26	619-634	1.39
8.05- 24	1.01	218-232	1.14	427-440	1.27	636-650	1.40
24.2 - 40	1.02	234-248	1.15	443-457	1.28	652-666	1.41
40.5 - 56	1.03	250-264	1.16	460-473	1.29	668-682	1.42
56.5 - 72	1.04	266-280	1.17	476-489	1.30	684-698	1.43
72.5 - 88	1.05	282-297	1.18	492-506	1.31	700-715	1.44
88.5 -104	1.06	299-313	1.19	508-522	1.32	717-730	1.45
105 -120	1.07	315-329	1.20	524-538	1.33	732-747	1.46
121 -136	1.08	331-345	1.21	540-554	1.34	749-762	1.47
137 -152	1.09	347-361	1.22	556-570	1.35	765-780	1.48
153 -169	1.10	363-378	1.23	572-585	1.36	782-796	1.49
170 -185	1.11	380-393	1.24	587-602	1.37	798-810	1.50
186 -200	1.12	395-409	1.25	604-617	1.38		

*Based on water density of 1.000 g/ml and a specific gravity of sediment of 2.65.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sample zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per litre of water-sediment mixture (mg/l).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimetre at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the content of dissolved-solids in the water. Commonly, the amount of dissolved solids (in milligrams per litre) is about 65 percent of the specific conductance (in micromhos per cm at 25°C). The relation is not constant from stream to stream or from well to well, and it may even vary in the same source with changes in the composition of the water.

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.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow in a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff". Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artifical substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The use of artifical substrates simplifies the community structure by standardizing the substrate from which each sample is taken. Example of artificial substrates for the collection of benthic organisms are basket samplers (made of wire cages filled with streamside rocks), multi-plate samplers (made of hardboard), and polyethelene strips for periphyton collection.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom	Animal
Phylum	Arthropoda
Class	Insecta
Order	Ephemeroptera
Family	Ephemeridae
Genus	Hexagenia
Species	Hexagenia limbata

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the presence of the thermograph or a digital mechanism that automatically records water temperature on paper tape.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day. It is computed by multiplying the concentration in milligrams per litre times the discharge in cubic feet per second times 0.0027.

Total (as used in tables of chemical analyses) refers to the amount of a substance that is present both in solution and in suspension. Analyses are performed on representative samples of water-suspended sediment mixtures.

Turbidity is the reduction of transparency of a liquid due to the presence of suspended particulate matters.

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

Some of the stations for which data are published in this report are included in special networks and programs. These stations are identified by their title, set in parentheses, under the station name.

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 man-made 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.

National stream-quality accounting network is an accounting network designed by the U.S. Geological Survey to meet many of the information demands of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad-scale monitoring objectives have been incorporated in the network design. Areal configuration of the network is based on river-basin accounting units designed by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are (1) to depict areal variability of water-quality conditions nationwide on a year-to-year basis and (2) to detect and assess long-term changes in stream quality.

Pesticide program is a network of regularly sampled water-quality stations where additional monthly samples are collected to determine the concentration and distribution of pesticides in streams whose waters are used for irrigation or in streams in areas where potential contamination could result from the application of the commonly used insecticides and herbicides.

Pesticides are chemical compounds used to control the growth of undesirable plants and animals. Major categories of pesticides includes insecticides, miticides, fungicides, herbicides, and rodenticides. Since the first application of DDT as an insecticide in the early 1930's there have been almost 60,000 pesticide formulations registered, each containing at least one of the approximately 800 different basic pesticide compounds. The United States annually produces about 1 billion pounds of these compounds. Although efforts are being made to substitute many of the chlorinated hydrocarbon pesticides with more specific, fast-acting, and easily degradable compounds, chlorinated hydrocarbon pesticides are still commonly used in many areas of the country.

Radiochemical program is a network of regularly sampled water-quality stations where additional samples are collected monthly or twice a year (at high and low flow) to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Radioisotopes are isotopic forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus. For example: Ordinary chlorine is a mixture of isotopes having atomic weights 35 and 37, with the natural mixture having atomic weight about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron (Rose, 1966). There are 275 isotopes of the 81 stable elements in addition to over 800 radioactive isotopes.

Radioisotopes that are determined in this program are natural uranium in ug/l (micrograms per litre), radium as radium -226 in PC/L (pCi/1, picocuries per litre), gross beta radiation as equivalent strontium/yttrium-90 or cesium-137 in PC/L, and gross alpha radiation as micrograms of uranium equivalents per litre (ug/l). Gross alpha and beta radioactivity associated with

the fine-grained (silt and clay sized) sediments in the samples are also determined.

A picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yield 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

DOWNSTREAM ORDER AND STATION NUMBER

Stations are listed in 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 water-quality 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 water-quality station, 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 and continuous-record stations; therefore, the station number for a partial-record station indicated downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. 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 04058500, which appears just to the left of the station name includes the 2-digit part number "04" plus the 6-digit downstream order number 058500. The part number refers to an area whose boundaries coincide with certain natural drainage lines. Records in this report are in Part 4 (St. Lawrence River basin). All records for a 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.

NUMBERING SYSTEM AND SITE LOCATION FOR LAKES

Lakes with outlets

Lakes with outlets are assigned downstream order numbers in the same manner as other surface-water sites. An individual sampling point on the surface of a lake is located by an azimuth, in degrees clockwise from true north, and the distance, in feet, on a line bearing from the principal outlet of the lake to the sampling point.

Lakes without outlets

Lakes with no outlets are identified by 15-digit numbers. The number gives the latitude and longitude of the southernmost point on the perimeter of a lake. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote the degrees, minutes, and seconds of longitude, and the last 2 digits are a sequence number. An individual sampling point on the surface of a lake is located by an azimuth, in degrees clockwise from the true north, and the distance, in feet, on a line bearing from the point specified by the latitude and longitude to the sampling site.

EXPLANATION OF SURFACE WATER RECORDS

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.

The data in this report generally comprise a description of the station and tabluations of daily and monthly figures. For gaging stations on 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 back 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.

Footnotes to the table of daily discharges are introduced by the word "NOTE". Footnotes are used to indicate periods 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.

Peak discharges and their time 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 investigage 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. The same rounding rules apply to discharge figures listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, comsumptive 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 in 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.

Sepcial 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

Information of a more detailed nature 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. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

EXPLANATION OF WATER QUALITY RECORDS

Collection and examination of data

Water samples for analyses usually are collected at or near gaging stations. The discharge records at these stations are used in conjunction with the computations of the chemical constituents and sediment loads in this report.

Descriptive statements are given for water-quality stations located at or near streamflow stations. Given are location, drainage area, periods of record for the various water-quality data, extremes of pertinent data, and general remarks, in a format similar to that used for streamflow gaging stations. For ground-water stations, no descriptive statements are given; however, the well number, depth of well, date of sampling and/or other pertinent data are given in the table containing the chemical analyses of the ground water.

Water-quality information is presented for chemical, biological, and microbiological quality, water temperature, and fluvial sediment. Chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium-adsorption ratio, specific conductance, and pH. The biological information includes qualitative and quantitative analyses of plankton and particulate inorganic and amorphous matter present. Microbiological information includes quantitative identification of certain bacteriological indicator organisms. Water-temperature data represent once-daily observations except for stations where a continuous (thermograph) or digital temperature recorder furnished information from which daily minimums and maximums are obtained. Fluvial-sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material.

Prior to the 1968 water year, data for chemical constituents and concentrations of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit (°F). In October 1967, the U.S. Geological Survey began reporting data for chemical constituents and concentrations of suspended sediment in milligrams per litre (mg/l) and water temperatures in degrees Celsius (°C). In waters with a density of 1.000 g/ml (grams per millilitre), parts per million and milligrams per litre can be considered equal. In waters with a density greater than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per litre. Temperature reported in degrees Celsius may be converted to degrees Fahrenheit by using the following table (Table 3).

Table 3.--Degrees Celsius (°C) to degrees Fahrenheit (°F)
(Temperature reported to nearest 0.5°C)

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0.0	32	10.0	50	20.0	68	30.0	86	40.0	104
.5	33	10.5	51	20.5	69	30.5	87	40.5	105
1.0	34	11.0	52	21.0	70	31.0	88	41.0	106
1.5	35	11.5	53	21.5	71	31.5	89	41.5	107
2.0	36	12.0	54	22.0	72	32.0	90	42.0	108
3.0	37	13.0	55	23.0	73	33.0	91	43.0	109
3.5	38	13.5	56	23.5	74	33.5	92	43.5	110
4.0	39	14.0	57	24.0	75	34.0	93	44.0	111
4.5	40	14.5	58	24.5	76	34.5	94	44.5	112
5.0	41	15.0	59	25.0	77	35.0	95	45.0	113
5.5	42	15.5	60	25.5	78	35.5	96	45.5	114
6.0	43	16.0	61	26.0	79	36.0	97	46.0	115
6.5	44	16.5	62	26.5	80	36.5	98	46.5	116
7.0	45	17.0	63	27.0	81	37.0	99	47.0	117
8.0	46	18.0	64	28.0	82	38.0	100	48.0	118
8.5	47	18.5	65	28.5	83	38.5	101	48.5	119
9.0	48	19.0	66	29.0	84	39.0	102	49.0	120
9.5	49	19.5	67	29.5	85	39.5	103	49.5	121

(°C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32)

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per litre instead of milligrams per litre. (See "Definitions of Terms", p.3 and table for converting English units to SI units, p. 25).

Solutes

Most methods for collecting and analyzing water samples to determine the kinds and concentrations of solutes are described by Brown, Skougstad, and Fishman. The method for determining elemental contituents by emission spectrographic techniques is described by Barnett and Mallory. Analysis of pesticides, herbicides, and organic substances in water are described by Goerlitz and Lamar; Lamar, Goerlitz, and Law; and Goerlitz and Brown. The collection and analysis of aquatic biological and microbiological samples are described by Slack and others.

One sample can adequately define the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between the reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey district office at the address given on the back of the title page of this report.

Ground-water quality normally does not change significantly during short periods of time; infrequent sampling and analysis of ground water adequately define ground-water quality at a given site. Water samples from wells are analyzed individually.

Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at times of discharge measurements for surface-water stations. For daily stations, the water temperatures are taken at about the same time each day when the sample is collected. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the change in air temperature. Some streams may be affected by waste-heat discharge.

At stations where continuous or digital temperature recorders are present, the records consists of maximum and minimum temperatures for each day and the monthly extremes.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross-section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharge for days of rapidly changing flow or concentration were computed by the sub-divided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can

assume that the sediment discharge for that day was computed by the subdivided day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment discharges for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross-section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

PUBLICATIONS

The annual series of water-supply papers that contain informtion on quality of surface waters in Michigan are listed below.

Table 4.--Water-supply paper numbers, water years 1941-70

Water Year	WSP No.	Water Year	WSP No.	Water Year	WSP No.
1941	942	1952	1251	1963	1948
1942	950	1953	1290	1964	1955
1943	970	1954	1350	1965	1962
1944	1022	1955	1400	1966	1992
1945	1030	1956	1451	1967	2012
1946	1050	1957	1520	1968	2094
1947	1102	1958	1571	1969	2144
1948	1132	1959	1642	1970	2154
1949	1162	1960	1742		
1950	1186	1961	1882		
1951	1197	1962	1942		

EXPLANATION OF GROUND-WATER LEVEL RECORDS

Collection of the data

Only ground-water level data from a basic national network of observation wells are published herein. These water-level measurements are intended to provide a sampling and historical record of water-level changes in the nation's most important aquifers.

Well numbering system

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude followed by (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs.

Each well is located as a point on a map by a number based on the universal system of latitude and longitude. In this report, this is the first set of numbers shown for each well. For maximum utility, latitude and longitude numbers are determined to seconds. The first six digits denote degrees, minutes, and seconds of north latitude; the next seven digits denote degrees, minutes, and seconds of west longitude. The last two numbers are sequential numbers assigned in the order that the wells were recorded within a designated latitude-longitude grid.

The local well number indicates the location of wells within the rectangular subdivision of the land with reference to the Michigan meridian and base line. The first two segments of the well number designate township and range, the third segment of the number designates the section and the letters A thru D designate successively smaller subdivisions of the section as shown in figure 1 . Thus, a well designated as 32N 6E 16CCCB would be located to the nearest 2.5 acres (1 hectare) and would be within the shaded area in section 16. In the event that two or more wells are located in the same 2.5 acre (1 hectare) tract, a sequential number designation follows the letter designations--for example, 16CCCB1, 16CCCB2, 16CCCB3, etc.

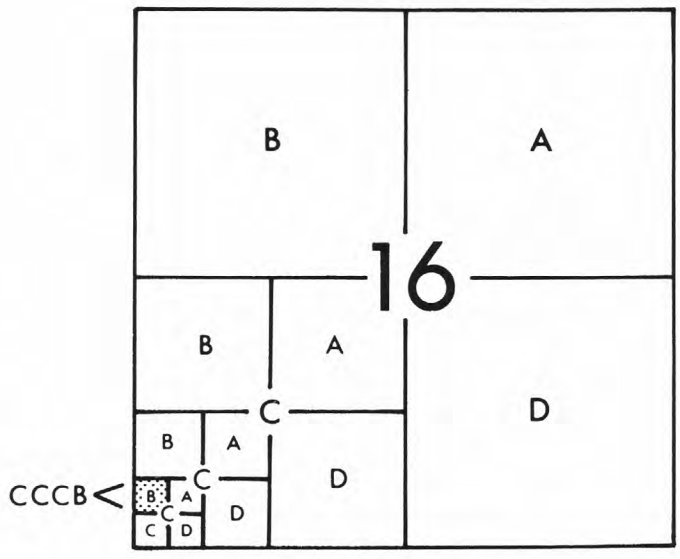

Figure 1.--Well-numbering system in Michigan

Explanation of water-level data

Measurements are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well insure that measurements at each well are of consistent accuracy and reliability.

Water-level measurements in this report are given in feet with reference to land-surface datum (lsd). Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above mean sea level is given in the well description. Mean sea level is the datum plane on which the national network of precise levels is based. The height of the measuring point (MP) above or below land surface datum is given in each well description. Water levels in wells equipped with recording gages or water levels that are measured once daily, are reported for every fifth day and the end of each month (eom).

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given only to a tenth of a foot or a larger unit.

Publications

Publication of ground-water level data for the United States in Water-Supply Papers was begun by the Geological Survey in 1935. From 1935 through 1939, a single Water-Supply Paper for each year covering the entire nation was issued (Water-Supply Papers 777, 817, 810, 845, and 886). From 1940 through 1974, separate Water-Supply Papers were issued for 6 sections of the United States. Water-level data for Michigan are in the Water-Supply Papers listed below, each report containing one or more calendar years (January-December) of data. Data in this report are for the 12-month water year ending September 30.

Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.	Calendar year	WSP No.
1935	777	1942	944	1949	1156	1956-57	1537
1936	817	1943	986	1950	1165	1958-62	1782
1937	840	1944	1016	1951	1191	1963-67	1977
1938	845	1945	1023	1952	1221	1968-72	2140
1939	886	1946	1071	1953	1265		
1940	906	1947	1096	1954	1321		
1941	936	1948	1126	1955	1404		

Information about reports and other data on ground water in Michigan may be obtained from the district office, at the address given on the back of the title page.

Table 5.--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 description until such time that all data will be published in SI units.

Multiply English units	by	To obtain SI units
Length		
inches (in)	25.4	millimetres (mm)
	.0254	metres (m)
feet (ft)	.3048	metres (m)
miles (mi)	1.609	kilometres (km)
Area		
acres	4047	square metres (m^2)
	.4047	*hectares (ha)
square miles (mi^2)	2.590	square kilometres (km^2)
Volume		
gallons (gal)	3.785	**litres (l)
	3.785×10^{-3}	cubic metres (m^3)
million gallons (10^6 gal)	3785	cubic metres (m^3)
	3.785×10^{-3}	cubic hectometres (hm^3)
cubic feet (ft^3)	.02832	cubic metres (m^3)
cfs-days ($ft^3/s)\cdot d$	2447	cubic metres (m^3)
	2.447×10^{-3}	cubic hectometres (hm^3)
acre-feet (acre-ft)	1233	cubic metres (m^3)
	1.233×10^{-3}	cubic hectometres (hm^3)
Flow		
cubic feet per second (ft^3/s)	28.32	litres per second (l/s)
	.02832	cubic metres per second (m^3/s)
gallons per minute (gpm)	.06309	litres per second (l/s)
million gallons per day (mgd)	.04381	cubic metres per second (m^3/s)
Mass		
tons (short)	.9072	tonnes (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 litre is accepted for use with the International System (SI). See NBS Special Bulletin 330, p. 13, 1972 edition.

HYDROLOGIC CONDITIONS

Annual runoff during the 1975 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 excessive during the months of November, May, and September and deficient during the months of April, July, and August. In the northern part of the Lower Peninsula runoff was excessive during the period June to September as based on records for Muskegon River at Evart. In the southern part of the State runoff was excessive during the months of February, April, August, and September as based on records for Red Cedar River at East Lansing

Ice storms occurred in February and March mainly over the central and southern Lower Peninsula and caused power failures and felled trees. Some lake shore flooding in Monroe County also occurred in March as a result of strong easterly winds and above normal levels of Lake Erie. The flooding was extensive in the undiked areas with several hundred people evacuated from their homes.

On the evening of April 18 and early morning of April 19 an intense rain storm occurred over portions of lower Michigan with amounts of precipitation totaling 3 to 5 inches recorded. At the time of the storm, streamflow was relatively high as a result of snowmelt from a heavy snowfall that had occurred 2 weeks earlier. Snowmelt had also resulted in the soils being relatively saturated; thereby, reducing their capacity to absorb additional water. Flooding occurred in most river basins with most severe flooding occurring in the Lansing metropolitan area. Total damage to private and publicly owned property was estimated in excess of 50 million dollars.

Heavy rainfall occurred over the southern half of the Lower Peninsula from August 21 through September 1. Monthly precipitation records were broken at Lansing, Muskegon, Flint, Houghton Lake, and Detroit. The period August 29 to September 1 produced very heavy rainfall with 3 to 6 inches falling in most areas and more than 7 inches was recorded in some west-central locations. Flooding in the Muskegon River basin caused considerable damage to agricultural land. Headwaters of the White River basin received 6 inches of rain in twenty-four hours on August 31 and caused flood damage estimated in the thousands of dollars.

Water levels in observation wells generally were above normal throughout the State.

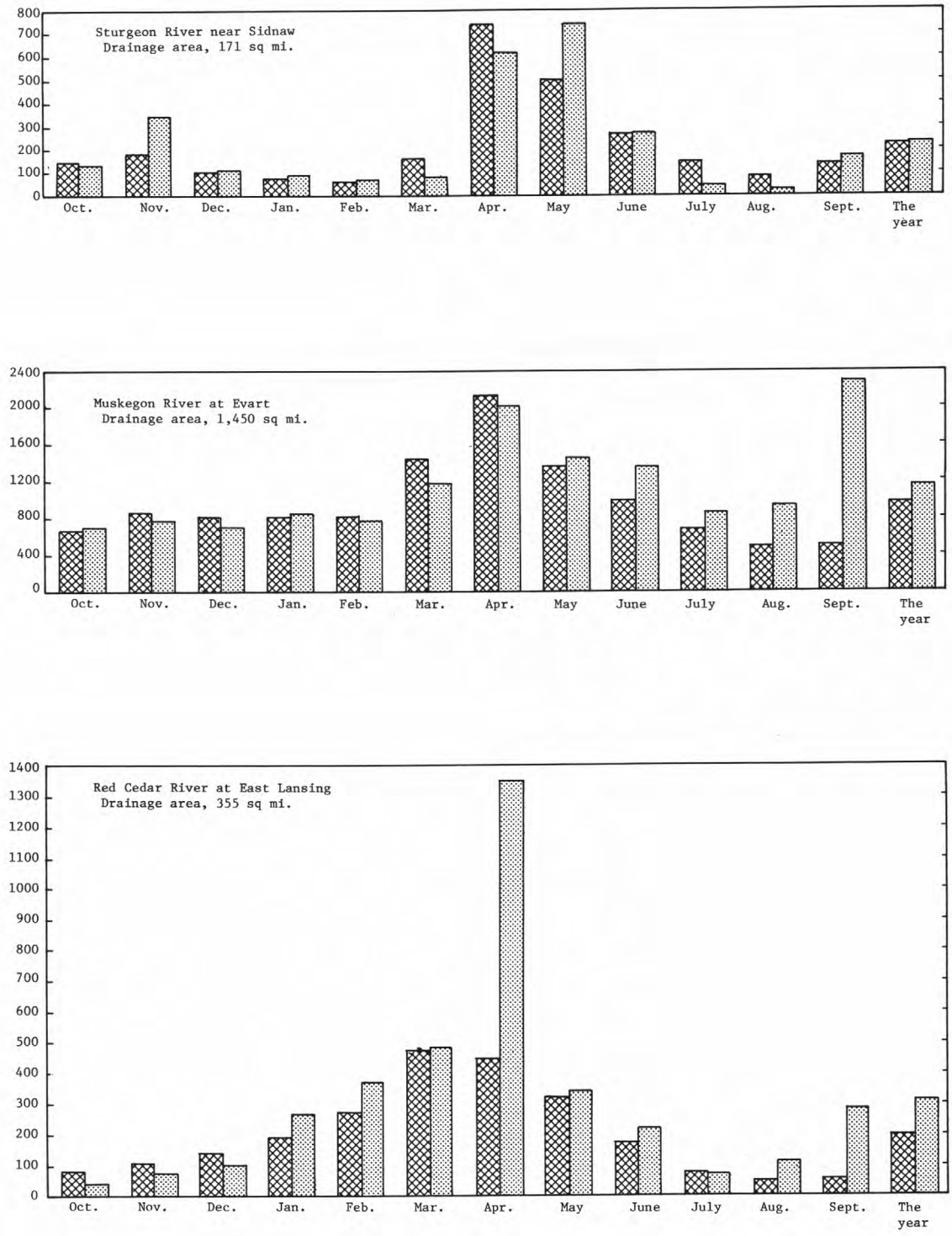

Figure 2.--Comparison of discharge at three long-term representative gaging stations during 1975 water year with mean discharge for period 1931-60.

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SECTION 1. SURFACE-WATER RECORDS

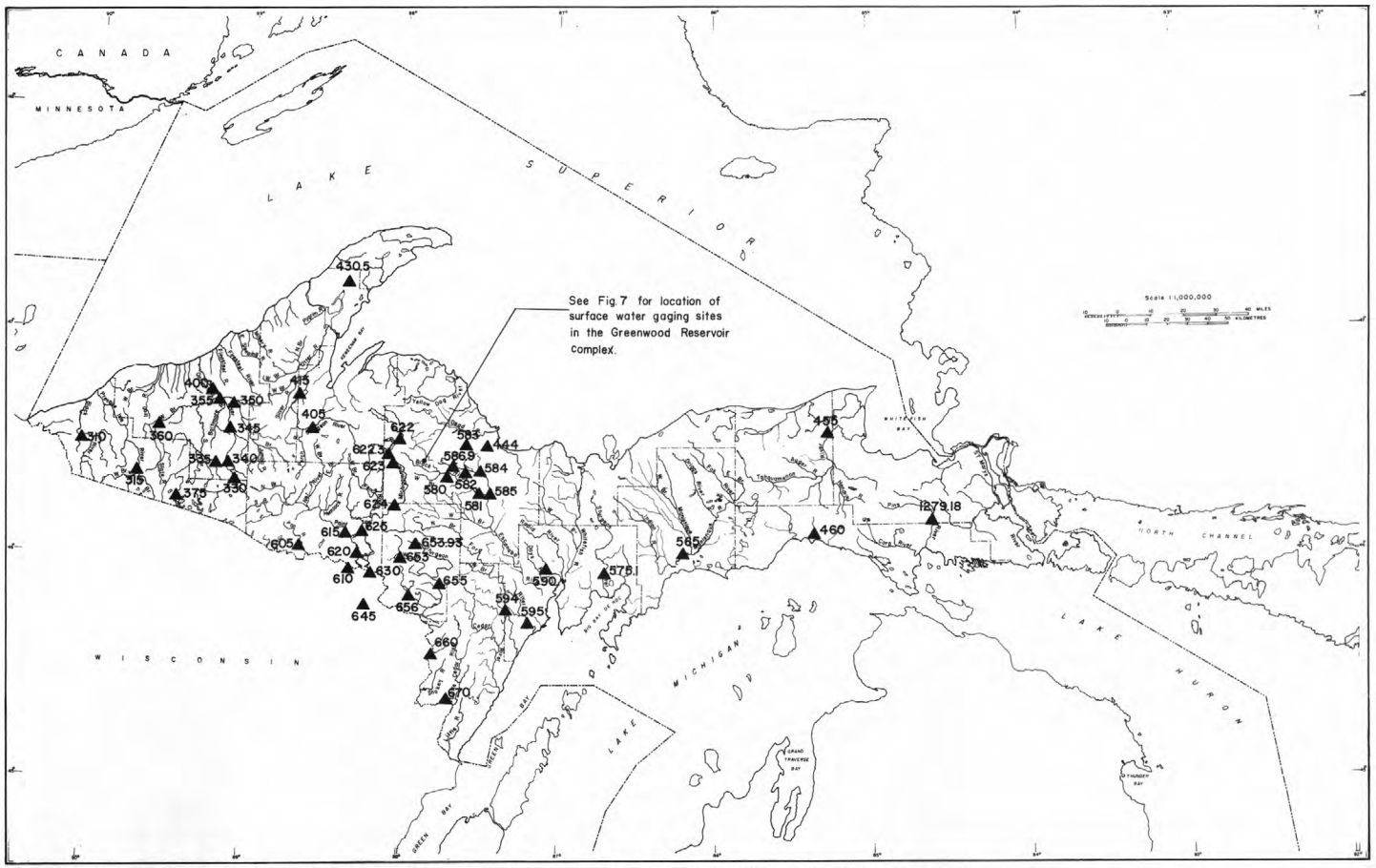

Figure 3.-Map showing identification number and location of gaging stations in Upper Peninsula of Michigan.

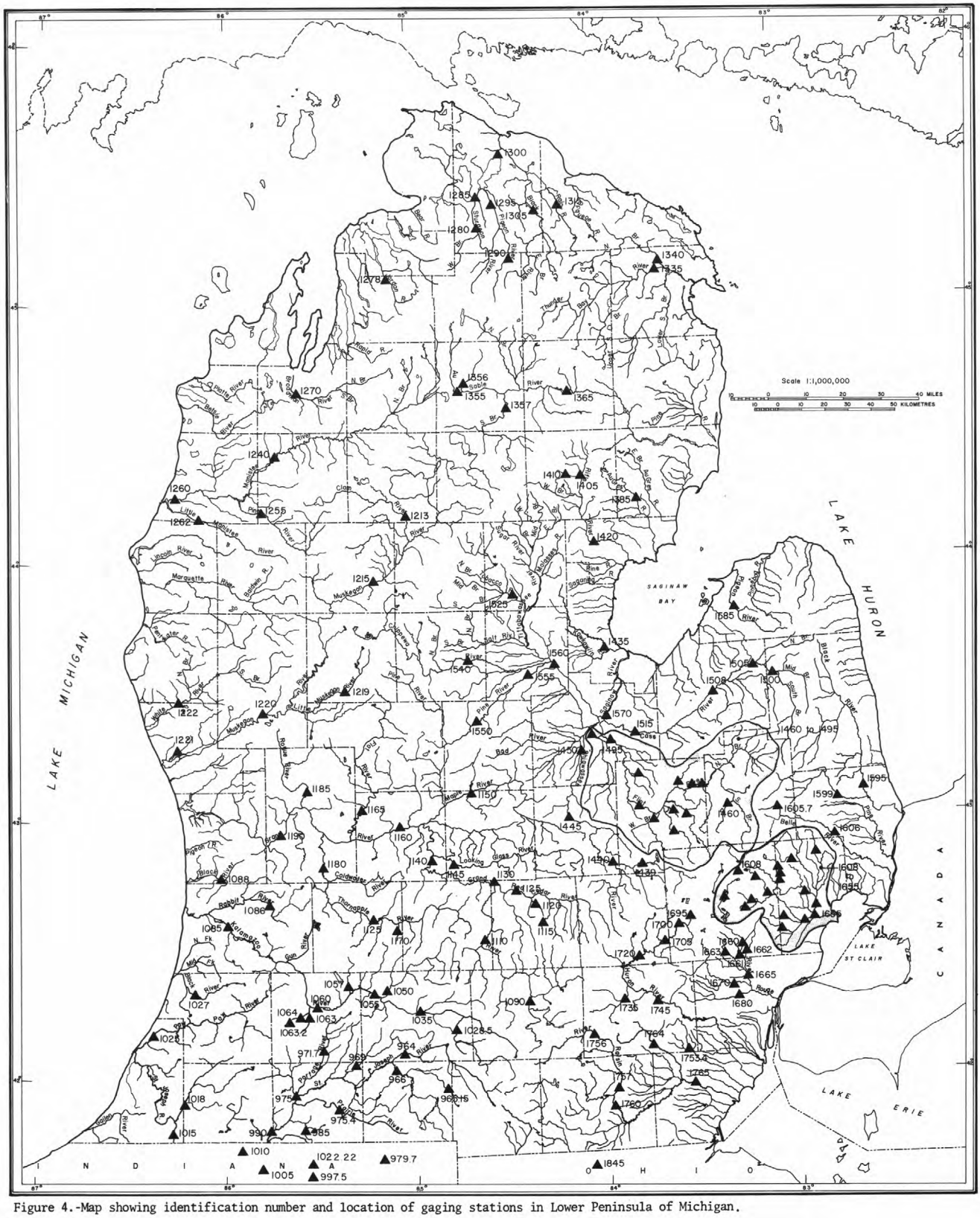

Figure 4.-Map showing identification number and location of gaging stations in Lower Peninsula of Michigan.

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 mi^2 (34.2 km^2).

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.--11 years, 19.8 ft^3/s (0.561 m^3/s), 20.37 in/yr (517 mm/yr).

EXTREMES.--Current year: Maximum discharge, 268 ft^3/s (7.59 m^3/s) Apr. 23, gage height, 5.92 ft (1.804 m); maximum gage height, 6.88 ft (2.097 m) Jan. 13, backwater from ice; minimum discharge, 0.99 ft^3/s (0.028 m^3/s) Sept. 15, gage height, 2.71 ft (0.826 m).
Period of record: Maximum discharge, 480 ft^3/s (13.6 m^3/s) May 1, 1972, gage height, 6.82 ft (2.079 m), from rating curve extended above 160 ft^3/s (4.53 m^3/s) based on runoff characteristics of nearby stations; maximum gage height, 6.88 ft (2.097 m) Jan. 13, 1975, backwater from ice; minimum discharge, 0.57 ft^3/s (0.016 m^3/s) Aug. 21, 1970, gage height, 2.57 ft (0.783 m).

REMARKS.--Records good except those for the winter period, which are fair. Recording rain gage at station and capacity rain gage located near mouth. Records of water quality for the current year are published in Section 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 assessement 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	11	7.2	6.0	6.2	5.7	7.6	121	8.8	5.4	1.5	1.1
2	7.3	16	7.0	6.0	6.5	5.5	7.8	109	7.5	7.0	1.8	1.0
3	6.2	15	6.7	6.0	7.0	5.5	7.5	92	6.4	5.8	2.1	1.3
4	5.8	13	6.6	6.0	7.0	5.4	7.3	79	5.7	4.9	2.0	1.3
5	8.5	11	6.5	5.9	6.9	5.7	7.2	72	6.9	4.5	1.8	1.2
6	10	9.4	6.3	5.8	6.8	6.0	6.7	65	12	4.1	1.6	1.2
7	13	8.5	6.2	5.8	6.7	6.4	6.4	60	9.7	3.7	1.5	3.8
8	12	7.9	6.2	5.8	6.5	6.0	6.2	53	7.9	3.3	1.4	4.5
9	10	7.5	6.0	5.8	6.4	5.6	6.3	43	6.5	3.5	1.3	2.3
10	9.2	7.2	6.2	8.0	6.2	5.4	6.9	35	5.7	3.1	1.3	2.3
11	8.2	30	6.2	15	6.1	5.3	7.1	31	5.5	2.8	1.3	2.2
12	7.2	37	6.0	27	6.0	6.2	7.5	26	21	2.6	1.2	1.8
13	6.5	28	5.7	30	5.8	5.7	8.4	23	55	2.3	1.2	1.6
14	7.6	20	5.7	17	5.7	5.6	12	21	36	3.6	1.2	1.5
15	11	16	6.0	14	5.6	5.8	20	19	24	4.0	1.1	1.3
16	9.1	14	6.9	12	5.5	6.0	45	17	25	3.1	1.2	1.4
17	9.2	12	6.5	11	5.5	6.4	90	15	20	2.7	1.2	1.4
18	7.9	12	6.3	10	5.5	7.2	130	14	15	2.3	1.1	4.6
19	7.2	11	6.2	9.0	5.4	8.2	110	13	10	2.1	1.0	15
20	6.6	18	6.1	8.5	5.4	10	90	13	18	2.9	1.0	8.7
21	6.2	16	6.2	8.2	5.4	9.0	140	18	38	3.1	1.6	13
22	6.0	14	6.3	8.0	5.7	8.0	190	16	27	2.4	1.5	9.5
23	5.7	12	6.4	8.0	6.2	7.0	225	13	18	2.3	1.4	7.4
24	5.5	11	6.4	7.8	7.0	6.5	205	11	12	2.7	1.4	5.9
25	5.4	10	6.4	7.7	6.9	7.2	148	9.5	9.7	2.4	1.4	5.1
26	5.2	9.2	6.3	7.5	6.6	8.0	128	8.5	7.9	2.1	1.3	4.4
27	5.0	9.2	6.2	7.3	6.3	7.7	115	7.5	6.7	2.0	1.2	3.9
28	4.9	8.9	6.2	7.2	6.0	7.6	116	7.7	6.1	1.9	1.2	3.5
29	5.0	8.6	6.1	7.0	---	7.5	110	7.2	5.4	1.7	1.2	3.1
30	5.7	7.8	6.1	6.7	---	7.4	110	6.6	5.5	1.6	1.2	2.9
31	5.7	---	6.0	6.5	---	7.4	---	6.5	---	1.6	1.2	---
TOTAL	231.7	411.2	195.1	296.5	172.8	206.9	2076.9	1032.5	442.9	97.5	42.4	118.2
MEAN	7.47	13.7	6.29	9.56	6.17	6.67	69.2	33.3	14.8	3.15	1.37	3.94
MAX	13	37	7.2	30	7.0	10	225	121	55	7.0	2.1	15
MIN	4.9	7.2	5.7	5.8	5.4	5.3	6.2	6.5	5.4	1.6	1.0	1.0
CFSM	.57	1.04	.48	.72	.47	.51	5.24	2.52	1.12	.24	.10	.30
IN.	.65	1.16	.55	.84	.49	.58	5.85	2.91	1.25	.27	.12	.33

CAL YR 1974 TOTAL 6128.1 MEAN 16.8 MAX 290 MIN 1.0 CFSM 1.27 IN 17.27
WTR YR 1975 TOTAL 5324.6 MEAN 14.6 MAX 225 MIN 1.0 CFSM 1.11 IN 15.01

PEAK DISCHARGE (BASE, 110 FT^3/S).--Apr. 23 (1400) 268 ft^3/s (5.92 ft), May 1 (2400) 133 ft^3/s (5.01 ft).

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 mi^2 (518 km^2).

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.--21 years, 235 ft^3/s (6.655 m^3/s), 15.96 in/yr (405 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,750 ft^3/s (106 m^3/s) Apr. 24, gage height, 8.21 ft (2.502 m); minimum, 12 ft^3/s (0.34 m^3/s) Aug. 1, gage height, 0.47 ft (0.143 m).
Period of record: Maximum discharge, 14,800 ft^3/s (419 m^3/s) Apr. 24, 1960, gage height, 14.27 ft (4.349 m), from floodmark, from rating curve extended above 5,300 ft^3/s (150 m^3/s) on basis of slope-area measurement of peak flow; minimum, 7.8 ft^3/s (0.22 m^3/s) Sept. 9, 1970, gage height, 0.36 ft (0.110 m).

REMARKS.--Records good except those for winter periods, which are fair. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	511	190	94	86	84	140	1260	85	124	13	20
2	91	563	180	92	86	84	140	1020	76	92	18	19
3	83	500	170	92	86	84	140	857	68	75	17	16
4	74	432	165	92	86	82	145	750	62	62	16	16
5	83	361	155	92	86	80	150	651	64	53	15	19
6	130	302	150	90	86	78	160	555	79	47	14	24
7	205	255	145	90	84	78	170	464	79	40	14	38
8	189	222	145	90	82	76	190	384	64	44	15	37
9	169	197	140	86	80	76	210	327	54	34	15	31
10	151	198	135	84	80	74	220	283	48	30	15	35
11	135	639	135	90	78	76	232	240	47	28	15	36
12	116	798	130	100	78	78	254	207	72	26	15	45
13	102	667	130	105	78	80	301	162	145	24	21	77
14	122	563	125	100	78	86	391	152	109	26	16	64
15	190	480	125	96	78	92	551	400	267	33	15	46
16	158	468	125	96	78	100	884	356	621	31	15	37
17	137	401	120	92	78	110	1330	282	395	26	15	32
18	121	378	120	90	76	125	2130	227	326	23	14	40
19	113	347	120	88	76	140	1910	211	259	21	15	88
20	101	556	120	86	74	150	1770	489	207	19	18	72
21	94	549	115	86	74	155	1630	412	198	18	17	96
22	90	482	110	86	74	160	1960	321	368	17	16	101
23	79	443	105	86	74	160	3220	284	310	17	15	110
24	75	403	100	86	74	160	3340	238	222	18	15	122
25	73	340	100	86	74	160	2600	183	217	16	21	91
26	68	300	98	96	76	155	2350	152	178	16	17	76
27	65	270	96	86	80	155	2000	124	150	17	17	68
28	66	250	96	86	82	150	1930	102	120	15	21	63
29	80	230	94	86	---	145	1940	96	99	15	27	57
30	113	210	94	86	---	145	1570	96	154	14	25	56
31	145	---	94	86	---	140	---	92	---	14	21	---
TOTAL	3503	12315	3927	2791	2222	3518	33958	11377	5143	1035	523	1631
MEAN	113	411	127	90.0	79.4	113	1132	367	171	33.4	16.9	54.4
MAX	205	798	190	105	86	160	3340	1260	621	124	27	122
MIN	65	197	94	84	74	74	140	92	47	14	13	16
CFSM	.57	2.06	.64	.45	.40	.57	5.66	1.84	.86	.17	.08	.27
IN.	.65	2.29	.73	.52	.41	.65	6.32	2.12	.96	.19	.10	.30

CAL YR 1974 TOTAL 80665 MEAN 221 MAX 3690 MIN 21 CFSM 1.11 IN 15.00
WTR YR 1975 TOTAL 81943 MEAN 225 MAX 3340 MIN 13 CFSM 1.13 IN 15.24

PEAK DISCHARGE (BASE, 1,500 FT^3/S).-- Apr. 24 (0100) 3,750 ft^3/s (8.21 ft).

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 mi^2 (443 km^2).

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.--30 years, 178 ft^3/s (5.041 m^3/s), 14.14 in/yr (359 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,470 ft^3/s (41.6 m^3/s) Apr. 24, gage height, 8.12 ft (2.475 m) minimum, 31 ft^3/s (0.88 m^3/s) Aug. 16-20, gage height, 3.26 ft (0.994 m).
Period of record: Maximum discharge, 3,520 ft^3/s (99.7 m^3/s) Apr. 25, 1960, gage height, 11.25 ft (3.429 m); minimum observed, 13 ft^3/s (0.37 m^3/s) Sept. 30, 1948, gage height, 2.25 ft (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 locations in the headwaters. Since 1959, occasional regulation by Presque Isle Flooding Reservoir, usable capacity, about 3,000 acre-ft (3.7 hm^3), 2.5 mi (4.0 km) upstream.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	277	195	110	95	100	125	953	203	91	36	53
2	102	385	185	110	95	100	125	758	185	88	38	48
3	98	380	170	110	95	100	125	548	172	82	37	45
4	91	334	160	110	100	100	125	603	156	78	36	44
5	91	298	160	110	100	100	130	593	151	75	35	44
6	115	251	160	110	100	100	130	571	142	71	35	47
7	142	224	155	110	100	95	135	546	139	67	35	67
8	142	213	155	110	100	95	140	493	129	65	35	78
9	139	191	150	115	100	95	145	443	120	60	35	72
10	123	194	150	115	100	95	150	401	114	55	35	75
11	115	298	145	120	100	95	160	353	114	52	35	74
12	102	377	140	120	100	100	165	324	136	50	34	89
13	98	378	135	115	100	100	170	287	138	50	33	125
14	95	355	130	110	100	100	185	269	130	49	33	117
15	94	319	130	110	105	105	210	301	152	64	32	93
16	92	323	130	110	105	105	242	333	230	60	31	78
17	86	298	130	110	105	105	296	308	228	55	31	70
18	83	270	125	110	105	110	510	266	240	50	31	67
19	82	266	125	115	100	115	628	270	212	47	31	87
20	80	294	125	110	105	120	637	424	221	45	34	81
21	80	302	120	105	105	120	633	482	226	44	39	84
22	78	293	120	100	105	125	688	433	211	41	37	86
23	77	286	115	100	105	130	971	407	188	40	36	89
24	76	281	115	100	105	135	1360	348	163	40	37	93
25	75	259	115	105	105	135	1370	280	145	39	50	83
26	75	250	115	105	105	135	1250	249	127	38	48	75
27	75	237	115	110	105	130	1130	232	101	37	45	67
28	77	225	120	110	100	125	1040	212	90	36	53	60
29	83	215	120	110	---	125	1000	205	92	35	77	55
30	104	205	115	105	---	125	993	227	91	33	66	53
31	125	---	110	100	---	125	---	217	---	32	58	---
TOTAL	2997	8478	4235	3390	2845	3445	14968	12336	4746	1669	1228	2199
MEAN	96.7	283	137	109	102	111	499	398	158	53.8	39.6	73.3
MAX	142	385	195	120	105	135	1370	953	240	91	77	125
MIN	75	191	110	100	95	95	125	205	90	32	31	44
CFSM	.57	1.65	.80	.64	.60	.65	2.92	2.33	.92	.31	.23	.43
IN.	.65	1.84	.92	.74	.62	.75	3.26	2.68	1.03	.36	.27	.48

CAL YR 1974 TOTAL 66681 MEAN 183 MAX 1300 MIN 58 CFSM 1.07 IN 14.51
WTR YR 1975 TOTAL 62536 MEAN 171 MAX 1370 MIN 31 CFSM 1.00 IN 13.60

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 mi^2 (425 km^2).

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.--33 years, 174 ft^3/s (4.928 m^3/s), 14.41 in/yr (366 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,040 ft^3/s (29.5 m^3/s) Apr. 25, gage height, 7.91 ft (2.411 m); minimum, 81 ft^3/s (2.29 m^3/s) Aug. 12, gage height, 3.43 ft (1.045 m).
Period of record: Maximum discharge, 2,050 ft^3/s (58.1 m^3/s) Apr. 30, 1951, gage height, 10.0 ft (3.048 m), from high-water mark; minimum, 27 ft^3/s (0.76 m^3/s) Nov. 22, 1946, result of freezeup; minimum gage height, 2.96 ft (0.902 m) Nov. 26, 1942, result of freezeup.

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

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	220	160	110	105	130	135	662	154	131	88	120
2	145	240	155	115	100	130	130	597	151	139	91	113
3	142	260	155	115	100	125	125	550	149	135	96	115
4	135	250	150	115	105	120	115	545	142	128	94	119
5	133	240	145	120	105	120	115	503	154	122	91	116
6	156	230	145	115	110	120	120	445	154	118	88	123
7	178	210	140	110	110	120	125	388	153	116	86	141
8	166	200	130	110	110	120	130	342	146	113	85	158
9	154	195	120	115	105	120	126	305	137	112	85	149
10	144	200	130	120	105	120	126	275	132	107	85	141
11	139	330	135	130	110	115	127	252	132	104	83	140
12	135	350	135	135	110	115	130	232	173	110	83	137
13	129	370	135	120	110	115	134	219	188	112	87	136
14	125	380	135	120	110	115	143	213	175	111	88	135
15	125	350	135	120	115	120	157	276	180	115	89	131
16	125	320	135	120	115	120	185	277	251	111	91	125
17	125	290	130	120	115	125	227	247	226	105	94	125
18	123	270	130	120	115	130	389	223	218	101	94	123
19	121	270	130	120	115	135	472	214	200	120	92	144
20	121	270	130	120	115	140	507	300	189	122	92	141
21	120	260	125	120	115	145	494	330	185	109	95	140
22	118	260	125	110	115	150	500	316	184	103	95	143
23	118	250	120	110	120	145	681	275	175	100	93	151
24	120	240	115	110	120	140	973	242	158	100	93	191
25	118	220	115	110	120	135	1010	215	148	98	107	170
26	116	200	120	110	125	135	935	198	140	96	117	150
27	115	190	120	110	130	140	864	185	145	95	108	140
28	120	180	125	110	130	140	802	166	157	94	118	133
29	130	170	120	110	---	140	764	160	143	91	167	126
30	160	165	110	110	---	140	715	172	133	90	159	123
31	180	---	110	105	---	140	---	164	---	88	132	---
TOTAL	4181	7580	4065	3585	3160	4005	11456	9488	4972	3396	3066	4099
MEAN	135	253	131	116	113	129	382	306	166	110	98.9	137
MAX	180	380	160	135	130	150	1010	662	251	139	167	191
MIN	115	165	110	105	100	115	115	160	132	88	83	113
CFSM	.82	1.54	.80	.71	.69	.79	2.33	1.87	1.01	.67	.60	.84
IN.	.95	1.72	.92	.81	.72	.91	2.60	2.15	1.13	.77	.70	.93

CAL YR 1974 TOTAL 60457 MEAN 166 MAX 584 MIN 99 CFSM 1.01 IN 13.71
WTR YR 1975 TOTAL 63053 MEAN 173 MAX 1010 MIN 83 CFSM 1.05 IN 14.30

NOTE.--No gage-height record Oct. 28 to Dec. 2.

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.--33 years, 139 ft^3/s (3.936 m^3/s).

EXTREMES.--Period of record: Maximum discharge, 373 ft^3/s (10.6 m^3/s) Sept. 23, 1960, gage height, 6.17 ft(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 ft^3/s (0 and 0.28 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	85	16	246	196	300	95	2.0	213	279	242	14
2	117	14	81	245	194	300	107	.40	212	278	241	14
3	106	14	147	244	210	300	119	0	243	276	240	14
4	103	14	147	243	228	300	119	0	268	275	238	13
5	103	14	147	242	229	300	119	0	268	274	190	14
6	103	14	147	241	228	297	119	0	267	273	148	14
7	103	14	147	269	225	293	119	0	266	272	147	14
8	103	14	146	291	234	294	119	0	265	271	146	14
9	80	14	212	290	250	295	118	0	264	270	145	14
10	57	14	265	289	260	285	116	.30	264	269	145	14
11	53	15	264	288	262	285	118	1.3	263	268	144	14
12	53	15	263	287	269	279	119	55	263	266	120	14
13	52	15	263	285	270	273	119	132	146	265	100	14
14	52	15	262	282	270	269	60	157	79	264	100	14
15	52	15	261	279	266	263	5.6	157	196	263	99	14
16	52	15	260	231	263	258	4.4	90	108	262	98	15
17	69	15	259	188	281	254	4.1	31	19	261	92	15
18	86	15	259	144	297	249	4.5	31	19	259	98	15
19	86	15	258	107	294	140	3.9	32	83	258	98	15
20	86	15	257	106	291	33	3.7	32	84	257	171	85
21	103	15	256	105	295	33	3.8	32	20	256	233	136
22	136	15	255	126	298	33	3.8	25	20	255	171	67
23	139	15	254	151	294	33	4.8	16	20	253	76	15
24	136	15	252	155	292	34	4.2	17	46	253	76	15
25	136	15	251	154	294	34	4.1	17	121	251	70	15
26	140	15	249	154	293	66	4.1	17	227	249	64	16
27	140	15	248	153	300	69	4.4	47	281	248	64	16
28	139	16	248	153	300	19	2.5	101	278	247	65	15
29	139	16	249	153	---	20	3.0	120	267	246	38	15
30	139	16	247	173	---	20	4.1	175	280	244	14	14
31	140	---	247	196	---	56	---	213	---	243	14	---
TOTAL	3169	514	6817	6470	7383	5684	1631.0	1501.00	5350	8105	3887	678
MEAN	102	17.1	220	209	264	183	54.4	48.4	178	261	125	22.6
MAX	164	85	265	291	300	300	119	213	281	279	242	136
MIN	52	14	16	105	194	19	2.5	0	19	243	14	13

CAL YR 1974 TOTAL 55215.08 MEAN 151 MAX 312 MIN 0
WTR YR 1975 TOTAL 51189.00 MEAN 140 MAX 300 MIN 0

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 mi^2 (492 km^2).

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, 33,750 acre-ft (41.6 hm^3) May 28, 29, gage height, 137.76 ft (41.989 m); no usable storage Mar. 6 to Apr. 18; minimum gage height, 116.50 ft (35.509 m) Mar. 19.
1947 - 75: Maximum contents observed, 42,880 acre-ft (52.9 hm^3) July 3, 1953, gage height, 141.66 ft (43.178 m), of which 1,610 acre-ft (2.0 hm^3) was uncontrolled storage; no usable storage at times; 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 hm^3) 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 1974 TO SEPTEMBER 1975

Date	Gage Height (feet)	Contents (acre-feet)	Change in contents during month: Acre-feet	Change in contents during month: Equivalent in ft^3/s
Sept. 30	128.8	15,320	--	--
Oct. 31	128.9	15,510	+190	+3.1
Nov. 30	134.1	25,710	+10,200	+171
Dec. 31	130.7	18,930	-6,780	-110
Calendar year 1974	--	--	-5,970	-8.2
Jan. 31	127.0	11,900	-7,030	-114
Feb. 28	121.5	2,250	-9,650	-174
Mar. 31	118.5	0	-2,250	-36.6
Apr. 30	130.2	17,980	+17,980	+302
May 31	137.6	33,380	+15,400	+250
June 30	136.0	29,800	-3,580	-60.2
July 31	129.8	17,220	-12,580	-205
Aug. 31	127.5	12,850	-4,370	-71.1
Sept. 30	130.5	18,550	+5,700	+95.8
Water year 1974-75	--	--	+3,230	+4.5

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 mi^2 (526 km^2).

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.--33 years, 70.2 ft^3/s (1.988 m^3/s).

EXTREMES.--Current year: Maximum discharge, 359 ft^3/s (10.2 m^3/s) June 20, gage height, 2.85 ft (0.869 m); minimum, 23 ft^3/s (0.65 m^3/s) Apr. 7, gage height, 1.37 ft (0.418 m), result of freezup; minimum daily, 41 ft^3/s (1.16 m^3/s) Dec. 30.
Period of record: Maximum discharge, 1,750 ft^3/s (49.6 m^3/s) Nov. 7, 1951, gage height, 5.05 ft (1.539 m); minimum, 14 ft^3/s (0.40 m^3/s) sometime during period Jan. 23 to Feb. 13, 1947, gage height, 1.14 ft (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 7.5 mi (12.1 km) upstream (see sta 04034000). Diversion to South Branch Ontonagon River 8.5 mi (13.7 km) above station by Bond Falls Canal (see sta 04033500).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	70	46	45	43	44	47	59	47	57	56	56
2	46	56	46	45	44	44	47	55	49	56	60	45
3	45	52	50	47	44	44	47	58	57	57	57	46
4	45	50	47	48	44	45	47	58	56	56	56	44
5	45	50	47	46	44	45	47	57	59	56	56	45
6	50	49	47	47	44	45	46	54	58	56	57	45
7	48	48	46	46	44	44	45	51	58	55	56	50
8	46	48	45	46	44	45	46	50	57	55	55	46
9	46	48	45	46	44	45	47	50	57	55	56	45
10	46	51	47	47	44	45	47	48	57	57	55	48
11	45	72	47	49	44	45	48	46	59	58	56	46
12	45	59	46	54	44	45	48	45	61	57	56	46
13	45	54	46	51	44	44	49	46	59	57	58	47
14	46	51	46	49	44	45	51	48	58	59	55	45
15	46	51	46	47	44	45	56	55	66	58	56	45
16	46	50	46	45	44	45	62	52	67	57	56	46
17	46	50	46	46	44	46	71	48	60	57	55	45
18	46	49	45	45	45	49	93	48	58	57	55	45
19	45	48	46	47	45	49	90	50	57	57	56	45
20	45	56	46	46	45	50	79	65	117	57	57	46
21	45	53	44	45	45	50	73	60	71	57	57	47
22	47	50	44	45	45	50	80	54	61	57	56	47
23	47	50	44	45	45	48	139	50	58	57	56	50
24	47	50	45	45	45	48	97	48	57	57	56	47
25	47	49	44	45	45	48	77	48	57	57	61	45
26	47	48	45	44	44	48	69	47	56	57	57	44
27	47	49	45	44	44	48	76	46	57	57	57	44
28	47	48	46	45	44	48	73	47	57	57	64	44
29	48	48	45	45	---	48	73	49	57	57	59	44
30	51	45	41	44	---	46	64	49	56	56	57	44
31	66	---	45	44	---	47	---	48	---	56	57	---
TOTAL	1456	1552	1414	1433	1239	1438	1935	1589	1804	1759	1761	1382
MEAN	47.0	51.7	45.6	46.2	44.3	46.4	64.5	51.3	60.1	56.7	56.8	46.1
MAX	66	72	50	54	45	50	139	65	117	59	64	56
MIN	45	45	41	44	43	44	46	45	47	55	55	44

CAL YR 1974 TOTAL 18476 MEAN 50.6 MAX 108 MIN 41
WTR YR 1975 TOTAL 18764 MEAN 51.4 MAX 139 MIN 41

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 mi^2 (704 km^2).

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.--33 years, 260 ft^3/s (7.363 m^3/s), 12.98 in/yr (330 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,320 ft^3/s (94.0 m^3/s) Apr. 23, gage height, 9.43 ft (2.874 m); minimum, 99 ft^3/s (2.80 m^3/s) Aug. 9, 11, 12, 20, gage height, 3.39 ft (1.033 m).
Period of record: Maximum discharge, 4,590 ft^3/s (130 m^3/s) July 1, 1953, gage height, 10.57 ft (3.222 m); maximum gage height, 10.65 ft (3.246 m) Apr. 24, 1960; minimum discharge, 60 ft^3/s (1.70 m^3/s) Aug. 25, 1948, gage height, 3.55 ft (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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	188	773	225	160	145	165	205	837	196	150	103	132
2	190	623	220	160	140	160	205	695	180	144	140	123
3	199	476	220	165	145	160	190	678	171	141	127	123
4	175	363	215	165	145	165	155	754	160	135	117	122
5	161	279	215	170	150	165	135	718	181	130	108	120
6	190	234	215	170	160	165	130	598	226	126	106	122
7	272	210	210	170	150	165	130	478	220	123	104	152
8	239	194	190	170	145	160	130	394	203	120	101	192
9	207	184	170	170	150	160	135	332	179	115	100	172
10	189	189	190	180	150	160	150	288	165	111	100	197
11	171	844	200	200	150	160	155	258	161	113	99	223
12	158	826	205	220	155	160	170	235	259	135	99	178
13	152	562	200	200	155	160	200	218	407	146	103	164
14	157	459	200	180	155	160	240	210	411	137	107	164
15	239	392	195	175	155	160	290	297	483	142	104	149
16	207	370	195	170	160	165	480	355	984	136	104	141
17	182	350	190	170	165	170	850	285	552	127	110	145
18	167	340	180	170	155	180	1600	240	382	120	108	141
19	157	324	160	175	150	195	1440	553	296	120	103	156
20	153	524	190	170	155	205	1270	1510	1500	152	101	178
21	149	470	180	150	160	215	1100	1490	1280	134	111	175
22	148	358	170	140	160	210	1280	1060	678	127	110	206
23	148	315	160	140	165	200	2500	727	478	122	109	207
24	147	290	155	150	165	185	2150	500	325	128	109	232
25	145	277	170	160	160	170	1520	346	234	126	122	207
26	142	263	165	160	155	185	1280	270	198	118	131	174
27	139	320	170	165	160	200	1150	228	179	114	116	157
28	141	257	175	165	165	205	1110	203	182	112	135	145
29	148	240	175	165	---	205	1070	193	165	107	213	136
30	180	230	165	160	---	205	943	227	153	106	189	132
31	272	---	150	150	---	205	---	221	---	104	152	---
TOTAL	5512	11536	5820	5215	4325	5525	22363	15398	11188	3921	3641	4865
MEAN	178	385	188	168	154	178	745	497	373	126	117	162
MAX	272	844	225	220	165	215	2500	1510	1500	152	213	232
MIN	139	184	150	140	140	160	130	193	153	104	99	120
CFSM	.65	1.42	.69	.62	.57	.65	2.74	1.83	1.37	.46	.43	.60
IN.	.75	1.58	.80	.71	.59	.76	3.06	2.11	1.53	.54	.50	.67

CAL YR 1974 TOTAL 92409 MEAN 253 MAX 1980 MIN 110 CFSM .93 IN 12.64
WTR YR 1975 TOTAL 99309 MEAN 272 MAX 2500 MIN 99 CFSM 1.00 IN 13.58

PEAK DISCHARGE (BASE, 1,400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
04-18	1700	7.75	2,020
04-23	1500	9.43	3,320
05-20	0200	8.49	2,550
06-20	1300	8.52	2,580

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 mi^2 (1,738 km^2).

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.--33 years, 530 ft^3/s (15.01 m^3/s).

EXTREMES.--Current year: Maximum discharge, 8,600 ft^3/s (244 m^3/s) Apr. 23, gage height, 11.00 ft (3.353 m); minimum, 185 ft^3/s (5.24 m^3/s) Aug. 18, 19, gage height, 4.28 ft (1.304 m); minimum daily, 185 ft^3/s (5.24 m^3/s) Aug. 19.
Period of record: Maximum discharge, 27,000 ft^3/s (765 m^3/s) Aug. 22, 1942, gage height, 21.2 ft (6.46 m), from floodmarks, from rating curve extended above 7,500 ft^3/s (212 m^3/s) on basis of slope-area measurement of peak flow; minimum observed, 142 ft^3/s (4.02 m^3/s) Dec. 3, 1963, discharge measurement; minimum daily, 145 ft^3/s (4.11 m^3/s) Dec. 3, 1963.

REMARKS.--Records good except those for winter periods, which are fair. Regulation by Bond Falls Reservoir 30.0 mi (48.3 km) above station (see sta 04034000). Diversion to South Branch Ontonagon River 31.0 mi (49.9 km) above station by Bond Falls Canal (see sta 04033500).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	311	2120	330	220	225	245	320	1380	345	262	197	242
2	320	1170	320	235	220	245	320	1110	324	255	229	228
3	325	922	310	235	220	250	290	1110	320	251	241	228
4	291	629	300	240	225	250	250	1380	312	240	214	223
5	276	482	300	240	230	250	220	1230	322	239	199	225
6	312	409	300	240	235	250	200	1060	371	227	197	221
7	477	362	300	240	235	250	200	860	375	217	193	263
8	413	340	270	245	230	250	200	710	343	197	197	303
9	351	325	250	250	230	245	210	590	318	192	197	284
10	314	334	265	255	230	245	230	510	304	191	197	318
11	327	2270	280	280	230	250	245	430	294	191	192	346
12	317	1830	290	340	235	250	260	392	394	201	191	293
13	295	983	285	310	235	250	280	365	555	208	191	279
14	316	771	280	270	235	250	420	347	615	214	191	284
15	433	642	280	255	240	250	620	540	739	220	191	262
16	398	590	280	250	245	255	920	710	1920	219	191	255
17	368	560	275	250	250	265	2400	540	947	209	201	255
18	322	540	270	245	245	275	5000	430	614	203	196	255
19	287	518	230	245	230	300	4020	870	483	198	185	259
20	290	1250	270	240	235	320	3380	4000	3300	220	191	282
21	263	1080	260	230	240	330	2640	3380	2630	217	198	280
22	260	705	240	200	245	330	2910	1750	1270	209	203	307
23	286	594	230	200	250	310	6440	1050	768	201	203	318
24	282	540	220	220	250	295	5070	698	527	208	203	375
25	291	480	240	235	250	270	3120	509	402	208	230	337
26	320	350	245	245	245	280	2450	418	343	210	246	288
27	320	430	245	250	240	300	2020	379	328	208	229	266
28	311	390	250	255	240	310	1900	347	309	203	258	249
29	315	360	250	255	---	315	1960	328	281	199	353	243
30	360	340	235	250	---	320	1680	365	267	197	329	237
31	621	---	220	240	---	320	---	379	---	197	266	---
TOTAL	10372	22316	8320	7665	6620	8525	50175	28167	20320	6611	6699	8205
MEAN	335	744	268	247	236	275	1673	909	677	213	216	274
MAX	621	2270	330	340	250	330	6440	4000	3300	262	353	375
MIN	260	325	220	200	220	245	200	328	267	191	185	221

CAL YR 1974 TOTAL 192572 MEAN 528 MAX 5070 MIN 203
WTR YR 1975 TOTAL 183995 MEAN 504 MAX 6440 MIN 185

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 mi^2 (420 km^2).

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.--33 years, 176 ft^3/s (4.984 m^3/s), 14.75 in/yr (375 mm/yr).

EXTREMES.--Current year: Maximum discharge, 876 ft^3/s (24.8 m^3/s) May 1, gage height, 4.79 ft (1.460 m); minimum daily, 2.4 ft^3/s (0.068 m^3/s) Sept. 24-29.
Period of record: Maximum discharge,1,400 ft^3/s (39.6 m^3/s) Apr. 26, 1960, gage height, 5.98 ft (1.823 m); minimum daily, 0.70 ft^3/s (0.030 m^3/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 ft^3/s (0.6 m^3/s), which are poor. Flow regulated by Gogebic Lake, usable capacity, 35,200 acre-ft (43.4 hm^3).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	56	495	119	294	176	155	853	201	198	5.2	3.5
2	60	4.7	512	116	286	172	151	850	192	183	5.2	3.4
3	66	5.0	447	115	278	171	149	845	200	162	5.2	3.4
4	57	5.5	397	111	273	167	148	835	190	155	5.2	3.4
5	64	5.5	366	108	264	165	145	816	191	146	5.0	3.3
6	59	5.2	342	103	262	161	144	793	168	126	5.0	3.3
7	66	6.8	316	123	255	159	141	612	147	125	5.0	3.3
8	66	75	300	153	250	157	138	311	139	112	5.0	3.2
9	68	137	291	146	241	154	136	134	131	99	5.0	3.2
10	67	129	273	142	234	150	135	133	130	82	5.0	3.1
11	70	111	254	157	230	149	135	122	119	32	5.0	3.1
12	110	4.4	238	110	225	151	134	126	126	8.9	4.8	3.0
13	161	4.4	225	172	221	147	134	127	62	7.5	4.8	2.9
14	136	7.0	217	210	214	145	135	126	99	6.0	4.8	2.9
15	147	88	208	210	208	142	138	186	122	6.0	4.8	2.7
16	159	98	215	208	203	139	146	315	57	6.0	4.8	2.5
17	150	105	214	223	199	137	158	421	23	6.0	4.7	2.5
18	148	94	205	246	195	137	195	364	22	6.0	4.6	2.5
19	140	68	194	257	192	135	230	218	103	6.0	4.6	2.5
20	138	128	186	260	186	133	259	501	86	6.0	4.6	2.5
21	161	170	180	283	182	135	285	763	34	6.0	4.6	2.5
22	132	290	171	301	182	136	317	819	39	5.8	4.6	2.5
23	117	326	171	323	174	133	407	667	120	5.5	4.6	2.5
24	119	390	162	312	168	140	527	534	191	5.5	4.6	2.4
25	108	427	158	309	174	157	610	497	230	5.5	4.6	2.4
26	107	447	152	304	186	154	673	348	259	5.5	3.8	2.4
27	103	332	145	299	182	153	721	172	257	5.5	3.9	2.4
28	103	296	141	288	178	156	763	81	240	5.5	3.5	2.4
29	102	374	133	281	---	158	814	58	230	5.5	3.5	2.4
30	110	523	127	294	---	156	841	85	214	5.5	3.5	2.5
31	116	---	123	304	---	154	---	166	---	5.2	3.5	---
TOTAL	3266	4712.5	7558	6587	6136	4679	9064	12878	4322	1539.4	142.9	84.6
MEAN	105	157	244	212	219	151	302	415	144	49.7	4.61	2.82
MAX	161	523	512	323	294	176	841	853	259	198	5.2	3.5
MIN	56	4.4	123	103	168	133	134	58	22	5.2	3.5	2.4

CAL YR 1974 TOTAL 60526.4 MEAN 166 MAX 901 MIN 2.7 CFSM 1.02 IN 13.90
WTR YR 1975 TOTAL 60969.4 MEAN 167 MAX 853 MIN 2.4 CFSM 1.03 IN 14.00

NOTE.--No gage-height record July 11 to Sept. 30.

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

LOCATION.--Lat 46°15'12", long 89°27'05", in NE¼ 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 mi^2 (131.3 km^2).

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.--31 years, 47.3 ft^3/s (1.340 m^3/s), 12.67 in/yr (322 mm/yr).

EXTREMES.--Current year: Maximum discharge, 136 ft^3/s (3.85 m^3/s) Oct. 21, gage height, 5.36 ft (1.634 m); minimum daily, 0.36 ft^3/s (0.010 m^3/s) Aug. 18, 19, 22-27; minimum gage height, 3.89 ft (1.186 m) July 18, Aug. 15, 17-28.
Period of record: Maximum discharge, 288 ft^3/s (8.16 m^3/s) May 1-4, 1951, gage height, 6.10 ft (1.859 m), present datum; minimum daily, 0.13 ft^3/s (0.004 m^3/s) Aug. 4-7, Aug. 22 to Sept. 5, 1970.

REMARKS.--Records good except those below 25 ft^3/s (0.7 m^3/s), which are fair. Flow completely regulated by Cisco Lake, usable capacity, 15,600 acre-ft (19.2 hm^3).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	114	48	29	46	60	61	115	1.9	45	.70	58
2	25	113	39	29	46	59	49	117	1.5	43	.70	57
3	27	110	31	30	46	59	41	117	1.4	42	.70	55
4	26	108	32	30	46	58	23	117	1.4	41	.70	53
5	25	105	31	30	45	41	11	116	26	18	.70	35
6	27	103	29	30	45	26	11	117	38	.41	.55	9.3
7	28	101	30	30	44	26	11	116	38	.40	.55	.61
8	47	99	31	30	44	26	11	52	36	.40	.40	.55
9	61	97	31	31	44	26	11	2.8	30	.45	.40	.61
10	61	95	31	41	36	27	11	1.4	19	.64	.40	.60
11	60	99	31	50	29	27	12	1.2	14	.68	.40	.56
12	77	101	31	49	29	37	12	1.1	30	.64	.40	16
13	93	101	31	57	29	44	12	1.3	71	.60	.40	38
14	88	101	32	62	28	44	40	1.1	94	.43	.40	46
15	109	100	32	62	26	44	73	1.6	93	.40	.39	44
16	121	100	57	62	28	43	78	1.4	94	.40	.40	44
17	115	99	76	60	29	43	74	1.2	93	.40	.38	44
18	121	97	75	52	30	43	77	1.0	53	.37	.36	44
19	123	95	74	44	30	42	77	1.0	24	.40	.36	44
20	119	94	73	44	30	42	83	13	26	.40	.39	43
21	124	93	66	45	30	42	82	64	27	.40	.38	44
22	124	94	60	45	30	42	85	110	27	.40	.36	44
23	120	91	59	45	30	40	93	84	27	.41	.36	65
24	120	89	42	45	31	42	99	54	27	.47	.36	78
25	118	88	28	46	50	44	102	53	27	.70	.36	77
26	115	87	29	47	63	54	101	109	27	.70	.36	56
27	112	86	29	47	62	62	98	54	39	.70	.36	42
28	109	76	29	46	61	62	107	2.8	47	.70	.41	41
29	108	65	29	48	---	62	116	2.3	46	.70	14	18
30	106	55	29	48	---	61	118	2.3	45	.70	49	.85
31	107	---	29	47	---	61	---	2.1	---	.70	61	---
TOTAL	2640	2856	1274	1361	1087	1389	1779	1432.6	1124.2	202.60	136.63	1098.08
MEAN	85.2	95.2	41.1	43.9	38.8	44.8	59.3	46.2	37.5	6.54	4.41	36.6
MAX	124	114	76	62	63	62	118	117	94	45	61	78
MIN	24	55	28	29	26	26	11	1.0	1.4	.37	.36	.55

CAL YR 1974 TOTAL 17568.88 MEAN 48.1 MAX 182 MIN .28 CFSM .95 IN 12.89
WTR YR 1975 TOTAL 16380.11 MEAN 44.9 MAX 124 MIN .36 CFSM .89 IN 12.02

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 Victoria Road, 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 mi^2 (3,470 km^2).

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.--33 years, 1,414 ft^3/s (40.04 m^3/s), 14.33 in/yr (364 mm/yr).

EXTREMES.--Current year: Maximum discharge, 19,000 ft^3/s (538 m^3/s) Apr. 23, gage height, 17.18 ft (5.236 m); minimum, 230 ft^3/s (6.51 m^3/s) Aug. 11, gage height, 5.25 ft (1.600 m).
Period of record: Maximum discharge, 42,000 ft^3/s (1,190 m^3/s) Aug. 22, 1942, gage height, 28.6 ft (8.73 m), from floodmark, from rating curve extended above 14,000 ft^3/s (396 m^3/s) on basis of slope-area measurement of peak flow; minimum daily, 192 ft^3/s (5.44 m^3/s) July 28, 29, 1963.

REMARKS.--Records 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 (62.6 hm^3), in headwaters. Records of water quality for the current year are published in Section 2 of this report.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	715	3220	1230	780	980	1000	1080	4830	820	1110	414	476
2	881	3330	1320	1000	1000	1050	1100	3720	881	973	525	436
3	908	2630	1150	800	1000	1000	1040	3330	1100	653	496	369
4	706	1840	1330	780	1000	1120	980	3690	914	597	484	327
5	640	1440	1200	760	1000	1100	860	3450	783	851	272	290
6	527	1320	1200	860	1000	1100	780	3110	1060	764	338	460
7	982	1270	1260	900	1100	1080	820	2520	1060	947	372	317
8	938	1170	1230	960	1200	980	840	2000	636	663	390	464
9	889	1060	1060	1000	960	1000	800	1650	974	607	251	334
10	818	850	846	1100	840	960	880	1530	868	679	281	742
11	774	3010	1160	1250	980	860	920	1180	831	724	372	575
12	728	4350	1090	1000	720	1000	1000	906	884	440	376	535
13	500	2820	1110	860	1000	1050	1100	880	1150	370	355	390
14	852	2400	1180	1080	1020	1080	1300	774	1210	848	408	334
15	883	1840	1100	1100	960	1000	2420	1310	1340	664	369	468
16	1160	1460	1070	1020	920	880	4720	1670	2780	815	302	330
17	902	1520	1080	1020	940	1000	7290	1580	1790	499	278	484
18	936	1500	1130	1020	920	1050	11300	1470	1450	526	422	355
19	576	1490	777	1020	920	1100	9720	1880	1340	342	348	305
20	688	2240	999	1020	1000	1120	8990	6410	4080	757	386	366
21	908	3110	1220	980	1040	1160	7420	7660	4320	809	302	397
22	849	2120	960	860	1000	1160	7650	5820	2080	767	505	680
23	860	1980	1230	880	1000	1160	14400	3670	1600	989	496	695
24	866	1800	1390	960	1100	1100	12500	2160	1370	528	341	515
25	790	2010	841	1000	1150	960	9700	1760	1060	529	404	630
26	787	1300	960	940	1150	1000	7810	1520	520	616	330	580
27	720	1690	900	1000	1150	1100	6570	1370	951	355	334	372
28	863	1370	880	1000	960	1180	6020	1160	1110	520	450	296
29	868	1310	940	960	---	1100	6050	926	626	464	428	436
30	869	1320	900	1020	---	1100	5660	915	1120	500	480	442
31	1060	---	840	1000	---	1080	---	950	---	492	327	---
TOTAL	25443	58770	33583	29930	28010	32630	141720	75801	40708	20398	11836	13400
MEAN	821	1959	1083	965	1000	1053	4724	2445	1357	658	382	447
MAX	1160	4350	1390	1250	1200	1180	14400	7660	4320	1110	525	742
MIN	500	850	777	760	720	860	780	774	520	342	251	290

CAL YR 1974 TOTAL 495875 MEAN 1359 MAX 10400 MIN 333 CFSM 1.01 IN 13.77
WTR YR 1975 TOTAL 512229 MEAN 1403 MAX 14400 MIN 251 CFSM 1.05 IN 14.22

PEAK DISCHARGE (BASE, 9,000 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
04-18	1300	14.25	12,000
04-23	1800	17.18	19,000
05-21	1800	12.91	9,460

04040500 Sturgeon River near Sidnaw, Mich.

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).

DRAINAGE AREA.--171 mi^2 (443 km^2).

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, non-recording 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.

AVERAGE DISCHARGE.--35 years, 212 ft^3/s (6.004 m^3/s), 16.84 in/yr (428 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,850 ft^3/s (52.4 m^3/s) May 5, gage height, 8.18 ft (2.493 m); minimum, 12 ft^3/s (0.34 m^3/s) Aug. 11-14, 20, 21; minimum gage height, 3.43 ft (1.045 m) Aug. 13, 14.
Period of record: Maximum discharge, 4,630 ft^3/s (131 m^3/s) Apr. 24, 1960, gage height, 11.63 ft (3.545 m); minimum, 4.6 ft^3/s (0.13 m^3/s) Oct. 8, 1948; minimum gage height, 3.42 ft (1.042 m) Aug. 30, 1969.

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

REVISIONS.--WSP 1507: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	466	165	80	80	83	82	1660	171	112	18	54
2	171	482	155	79	78	88	80	1710	153	98	20	43
3	159	438	147	78	76	90	78	1620	135	86	20	43
4	141	364	141	78	74	88	74	1780	122	77	18	43
5	131	304	137	78	72	85	72	1780	131	66	18	27
6	139	268	131	78	71	82	70	1510	131	63	16	38
7	182	232	125	78	70	77	68	1230	153	55	15	60
8	185	208	125	78	70	74	66	1000	153	48	14	121
9	171	192	120	78	69	72	61	830	135	42	14	126
10	153	192	120	80	68	70	56	685	117	37	13	200
11	143	490	115	110	67	67	50	570	103	35	13	283
12	135	700	115	150	67	65	50	474	137	47	12	250
13	126	655	112	135	67	64	54	400	245	48	12	205
14	121	586	110	120	67	65	61	350	328	47	15	175
15	165	466	108	110	67	66	94	382	292	47	15	147
16	171	426	107	95	67	68	175	400	598	43	14	126
17	159	396	107	90	66	72	347	372	522	37	13	124
18	141	328	105	85	66	78	810	319	442	34	13	105
19	130	301	105	80	66	84	835	286	331	34	13	169
20	119	347	107	77	66	90	785	890	558	32	12	289
21	112	350	103	75	66	86	765	910	590	28	15	298
22	107	325	98	75	65	84	890	790	602	26	18	307
23	103	301	95	74	66	82	1380	642	510	25	18	316
24	97	292	90	74	68	90	1580	534	378	33	16	325
25	93	250	88	76	70	100	1620	434	289	31	35	280
26	88	200	85	88	71	102	1730	361	230	26	51	238
27	84	205	84	94	74	102	1770	304	190	25	35	200
28	81	215	82	90	78	98	1780	250	163	22	45	171
29	81	195	80	88	---	92	1680	218	139	21	126	149
30	93	180	80	85	---	90	1510	210	121	20	105	131
31	163	---	80	82	---	86	---	195	---	18	74	---
TOTAL	4115	10354	3422	2738	1952	2540	18673	23096	8169	1363	836	5043
MEAN	133	345	110	88.3	69.7	81.9	622	745	272	44.0	27.0	168
MAX	185	700	165	150	80	102	1780	1780	602	112	126	325
MIN	81	180	80	74	65	64	50	195	103	18	12	27
CFSM	.78	2.02	.64	.52	.41	.48	3.64	4.36	1.59	.26	.16	.98
IN.	.90	2.25	.74	.60	.42	.55	4.06	5.02	1.78	.30	.18	1.10

CAL YR 1974 TOTAL 69336 MEAN 190 MAX 1720 MIN 16 CFSM 1.11 IN 15.08
WTR YR 1975 TOTAL 82301 MEAN 225 MAX 1780 MIN 12 CFSM 1.32 IN 17.90

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 mi^2 (896 km^2).

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.--41 years, (1932-40, 1942-75), 421 ft^3/s (11.92 m^3/s), 16.52 in/yr (420 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,960 ft^3/s (112 m^3/s) May 21, gage height, 9.15 ft (2.789 m); minimum, 7.8 ft^3/s (0.22 m^3/s) Sept. 30; minimum daily, 13 ft^3/s (0.37 m^3/s) Aug. 10.
Period of record: Maximum discharge, 7,360 ft^3/s (208 m^3/s) Apr. 24, 1960, gage height, 13.09 ft (3.990 m) present datum; minimum daily, 1 ft^3/s (0.03 m^3/s) Aug. 14-19, 1960.

REMARKS.--Records good except those below 20 ft^3/s (0.6 m^3/s), which are poor. Flow regulated by powerplant at station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	188	440	323	209	206	307	262	1720	306	322	436	239
2	226	801	319	206	203	307	290	2210	365	331	443	107
3	227	636	325	203	203	307	286	2220	388	328	221	107
4	230	519	322	206	203	304	201	2230	310	250	135	105
5	221	514	322	203	203	197	189	2440	278	252	138	105
6	229	491	299	203	206	194	191	2160	299	17	130	105
7	280	381	298	203	206	298	194	1090	302	251	135	195
8	267	279	297	206	206	298	186	1250	304	254	135	291
9	267	303	232	206	206	296	196	1370	305	257	132	291
10	273	316	247	203	206	300	197	1090	312	197	13	291
11	278	333	265	203	203	200	196	710	314	198	138	289
12	254	1230	234	206	203	194	290	789	313	200	138	289
13	264	904	227	203	203	244	287	653	441	328	75	290
14	296	807	221	206	203	244	285	561	449	175	75	291
15	264	812	206	206	107	240	338	559	618	168	75	289
16	246	612	227	206	105	244	395	586	800	168	15	289
17	258	539	227	206	203	240	555	637	903	168	14	289
18	245	537	234	206	200	342	1660	565	711	168	75	288
19	238	524	234	206	200	293	1690	575	620	168	75	289
20	220	315	227	203	200	290	1510	1280	1350	15	75	285
21	239	367	234	203	200	342	1080	2550	1520	170	77	287
22	185	534	234	206	200	310	1260	1440	826	170	77	438
23	176	532	227	203	197	293	2540	869	830	174	75	575
24	181	461	227	203	310	293	2890	818	682	170	74	572
25	176	353	227	206	307	293	2500	770	628	170	120	480
26	152	401	234	206	307	194	2490	642	634	170	109	284
27	130	401	227	203	293	191	2490	593	631	170	194	285
28	138	401	203	203	307	240	2590	592	489	383	312	287
29	178	402	206	203	---	290	2540	590	326	607	311	286
30	169	377	203	206	---	293	2110	587	334	425	310	229
31	178	---	206	203	---	290	---	573	---	440	310	---
TOTAL	6873	15522	7714	6344	5996	8368	31888	34719	16588	7264	4642	8447
MEAN	222	517	249	205	214	270	1063	1120	553	234	150	282
MAX	296	1230	325	209	310	342	2890	2550	1520	607	443	575
MIN	130	279	203	203	105	191	186	559	278	15	13	105
CFSM	.64	1.49	.72	.59	.62	.78	3.07	3.24	1.60	.68	.43	.82
IN.	.74	1.67	.83	.68	.64	.90	3.43	3.73	1.78	.78	.50	.91

CAL YR 1974 TOTAL 133579.4 MEAN 366 MAX 2690 MIN 3.2 CFSM 1.06 IN 14.36
WTR YR 1975 TOTAL 154365.0 MEAN 423 MAX 2890 MIN 13 CFSM 1.22 IN 16.60

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 mi^2 (72.5 km^2).

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.--9 years, 42.9 ft^3/s (1.215 m^3/s), 20.81 in/yr (529 mm/yr).

EXTREMES.--Current year: Maximum discharge, 632 ft^3/s (17.9 m^3/s) Apr. 23, gage height, 7.51 ft (2.289 m); minimum, 10 ft^3/s (0.28 m^3/s) Mar. 24, Aug. 18-20; minimum gage height, 3.93 ft (1.198 m) Mar. 24, result of freezeup.
Period of record: Maximum discharge, 1,180 ft^3/s (33.4 m^3/s) May 2, 1972, gage height, 9.30 ft (2.835 m); minimum, 7.0 ft^3/s (0.20 m^3/s) Sept. 17, 1971, gage height, 3.86 ft (1.177 m).

REMARKS.--Records good except those for winter periods, which are fair. Since 1973, flow includes about 0.1 ft^3/s (0.003 m^3/s) mine pumpage. Small diversions for sprinkler irrigation. Records of water quality for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	34	24	19	22	20	28	404	26	18	13	11
2	19	34	22	18	23	19	28	296	24	17	14	11
3	17	38	22	18	23	19	25	264	23	16	14	22
4	15	30	21	18	24	19	25	220	22	15	13	23
5	15	25	21	19	24	19	24	170	28	14	12	19
6	17	22	21	18	24	19	25	150	37	14	12	30
7	22	20	21	18	23	19	24	130	40	14	12	35
8	20	19	21	19	23	19	22	109	33	13	11	46
9	18	19	22	19	22	19	22	91	28	13	11	29
10	16	19	20	21	22	18	23	75	24	15	11	27
11	16	73	20	45	21	18	24	65	23	14	11	27
12	15	104	20	95	21	18	25	60	42	15	11	21
13	15	67	19	100	20	19	28	53	62	14	11	18
14	16	49	19	70	20	19	36	48	44	13	11	16
15	34	41	19	50	19	18	52	71	42	13	11	15
16	27	37	20	45	19	19	92	66	245	13	11	14
17	22	35	20	40	19	20	151	53	99	13	11	13
18	19	37	20	35	19	24	274	47	58	12	10	13
19	17	35	20	32	19	28	292	42	42	12	10	14
20	17	75	20	30	18	34	249	89	41	12	10	13
21	16	72	19	29	18	33	205	72	38	12	29	14
22	15	55	20	28	20	30	263	54	33	12	22	14
23	15	47	20	28	20	25	481	48	39	17	17	15
24	14	40	20	27	20	21	498	56	29	48	16	16
25	14	37	20	27	20	25	444	46	24	29	14	15
26	14	34	20	26	20	27	382	38	22	21	13	14
27	14	32	20	25	20	26	345	34	20	18	12	14
28	14	30	20	25	21	25	351	31	19	15	12	13
29	15	28	20	24	---	26	228	28	18	14	12	14
30	21	26	24	24	---	24	256	29	18	13	12	13
31	21	---	19	23	---	24	---	28	---	12	12	---
TOTAL	548	1214	634	1015	584	693	4922	2967	1243	491	401	559
MEAN	17.7	40.5	20.5	32.7	20.9	22.4	164	95.7	41.4	15.8	12.9	18.6
MAX	34	104	24	100	24	34	498	404	245	48	29	46
MIN	14	19	19	18	18	18	22	28	18	12	10	11
CFSM	.63	1.45	.73	1.17	.75	.80	5.86	3.42	1.48	.56	.46	.66
IN.	.73	1.61	.84	1.35	.78	.92	6.54	3.94	1.65	.65	.53	.74

CAL YR 1974 TOTAL 14200 MEAN 38.9 MAX 867 MIN 11 CFSM 1.39 IN 18.87
WTR YR 1975 TOTAL 15271 MEAN 41.8 MAX 498 MIN 10 CFSM 1.49 IN 20.29

PEAK DISCHARGE (BASE, 380 FT^3/S).--Apr. 23 (2000) 632 ft^3/s (7.51 ft.), May 1 (0100) 506 ft^3/S (6.81 ft).

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 mi^2 (133.1 km^2).

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

GAGE.--Water-stage recorder. Datum of gage is 1,319.90 ft (402.306 m) above mean sea level (Michigan Department of Highway and Transportation bench mark). Prior to Aug. 24, 1961, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--14 years, 59.6 ft^3/s (1.688 m^3/s).

EXTREMES.--Current year: Maximum discharge, 299 ft^3/s (8.47 m^3/s) May 20, gage height, 4.42 ft (1.347 m); minimum daily, 28 ft^3/s (0.79 m^3/s) Sept. 29, 30; minimum gage height, 2.61 ft (0.796 m) Sept. 30.
Period of record: Maximum discharge, 351 ft^3/s (9.94 m^3/s) June 27, 28, 1968, gage height, 4.68 ft (1.426 m); maximum gage height, 5.24 ft (1.597 m) Mar. 2, 1972 (backwater from ice); minimum discharge, 3.7 ft^3/s (0.10 m^3/s) July 29, 1965; minimum gage height, 1.94 ft (0.591 m) Aug. 1, 1962; minimum daily discharge, 3.9 ft^3/s (0.11 m^3/s) July 29, 30, 1965.

REMARKS.--Records good except those for winter period, which are fair. Flow regulated by Deer Lake storage reservoir (capacity, 22,500 acre-ft or 27.7 hm^3) 5 mi (8 km) above station. The city of Ishpeming diverted an average of 3.0 ft^3/s (0.085 m^3/s) into basin as waste effluent (see sta 04058200).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	93	90	47	47	85	77	76	117	35	46	43	33
2	93	79	50	37	85	79	73	95	35	45	44	32
3	92	60	47	43	85	78	71	90	36	44	44	32
4	93	54	46	43	85	78	73	105	49	44	44	41
5	91	52	45	43	84	77	70	81	56	43	46	52
6	95	51	45	43	86	76	71	68	54	43	45	57
7	96	49	45	42	86	76	70	60	52	42	45	61
8	92	49	34	43	86	76	70	53	50	42	46	68
9	89	48	38	42	86	76	69	47	48	43	45	61
10	87	49	54	43	86	76	69	42	46	44	44	66
11	87	80	49	46	80	76	69	41	48	48	44	68
12	85	97	46	40	76	75	69	38	65	65	45	60
13	85	66	45	48	67	76	70	37	74	62	48	55
14	85	57	44	52	95	76	72	38	67	53	49	53
15	85	54	45	82	87	76	68	54	65	50	46	51
16	85	52	45	100	81	74	46	45	84	47	48	51
17	85	50	46	100	80	74	56	38	62	42	50	50
18	84	49	44	98	80	75	90	35	61	42	50	51
19	84	50	45	94	79	77	97	52	55	44	47	54
20	85	55	44	92	80	77	95	239	76	44	47	54
21	84	53	44	92	80	75	88	92	74	45	59	53
22	85	51	45	92	79	75	98	58	58	45	48	53
23	85	50	44	92	79	74	157	47	57	45	38	53
24	84	52	44	92	79	37	194	43	51	46	31	54
25	83	50	43	90	81	45	170	42	49	47	34	52
26	84	48	44	88	79	89	138	39	48	46	35	43
27	82	49	44	91	79	109	115	37	50	46	32	34
28	81	48	44	91	78	109	111	35	51	44	38	30
29	82	49	43	88	------	100	89	36	48	43	49	28
30	86	49	44	90	------	78	93	39	47	43	44	28
31	72	------	43	85	------	78	------	38	------	43	36	------
TOTAL	2,679	1,690	1,386	2,169	2,293	2,394	2,697	1,881	1,651	1,426	1,364	1,478
MEAN	86.4	56.3	44.7	70.0	81.9	77.2	89.9	60.7	55.0	46.0	44.0	49.3
MAX	96	97	54	100	95	109	194	239	84	65	59	68
MIN	72	48	34	37	67	37	46	35	35	42	31	28

CAL YR 1974 TOTAL 22,643 MEAN 62.0 MAX 271 MIN 15
WTR YR 1975 TOTAL 23,108 MEAN 63.3 MAX 239 MIN 28

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 mi^2 (2,046 km^2).

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.--22 years, 924 ft^3/s (26.17 m^3/s), 15.88 in/yr (403 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,590 ft^3/s (130 m^3/s) May 1, 4, 5, gage height, 8.64 ft (2.633 m); minimum, 220 ft^3/s (6.23 m^3/s) Aug. 9, gage height, 3.06 ft (0.933 m).
Period of record: Maximum discharge, 6,990 ft^3/s (198 m^3/s) May 10, 1960, gage height, 10.26 ft (3.127 m); minimum, 157 ft^3/s (4.45 m^3/s) July 26, 1955; minimum gage height, 2.86 ft (0.872 m) July 7, 1963.

REMARKS.--Records good. Water-quality records for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	997	967	942	494	524	548	674	4,560	878	640	357	525
2	938	1,230	870	487	519	548	664	4,530	947	510	331	487
3	890	1,390	802	497	511	546	658	4,520	967	440	299	470
4	823	1,510	721	494	503	543	658	4,570	912	399	284	439
5	771	1,560	631	487	494	541	653	4,560	849	372	270	419
6	742	1,560	582	485	492	538	640	4,450	868	339	264	443
7	746	1,530	564	483	492	533	623	4,310	918	317	261	536
8	773	1,460	565	482	491	533	615	4,130	936	303	260	732
9	837	1,380	566	484	489	527	613	3,920	899	289	234	893
10	878	1,290	573	488	482	514	616	3,700	828	268	237	1,030
11	907	1,250	592	595	471	509	622	3,440	734	265	235	1,170
12	865	1,280	608	719	467	507	629	3,190	677	270	241	1,350
13	880	1,300	616	766	461	503	643	2,950	645	277	243	1,530
14	854	1,300	621	817	450	500	681	2,670	665	278	248	1,650
15	848	1,290	610	859	447	493	764	2,420	711	278	249	1,700
16	838	1,240	583	877	445	490	900	2,240	860	275	249	1,660
17	826	1,200	590	874	445	499	1,080	2,080	1,020	262	249	1,610
18	852	1,140	599	853	451	516	1,390	1,870	1,200	258	264	1,540
19	842	1,090	590	827	451	548	1,710	1,720	1,370	281	272	1,460
20	825	1,060	577	805	455	609	2,010	1,550	1,460	360	274	1,370
21	820	1,060	568	766	456	667	2,410	1,400	1,510	444	282	1,280
22	773	1,090	559	730	461	701	2,850	1,210	1,510	515	305	1,200
23	758	1,080	555	689	472	718	3,290	1,060	1,440	544	328	1,110
24	765	1,130	545	646	494	728	3,740	907	1,360	545	341	1,010
25	740	1,200	537	617	515	689	4,050	766	1,290	529	371	895
26	734	1,230	528	596	537	686	4,300	673	1,200	529	425	793
27	716	1,210	517	579	543	705	4,460	617	1,100	487	463	708
28	694	1,170	525	560	546	713	4,510	582	970	460	475	638
29	674	1,080	524	551	------	711	4,490	536	849	445	498	571
30	672	1,020	521	541	------	697	4,450	519	741	400	527	522
31	684	------	502	532	------	684	------	701	------	379	532	------
TOTAL	24,967	37,297	18,683	19,680	13,564	18,244	55,393	76,351	30,314	11,958	9,868	29,741
MEAN	805	1,243	603	635	484	589	1,846	2,463	1,010	386	318	991
MAX	997	1,560	942	877	546	728	4,510	4,570	1,510	640	532	1,700
MIN	672	967	502	482	445	490	613	519	645	258	234	419
CFSM	1.02	1.57	.76	.80	.61	.75	2.34	3.12	1.28	.49	.40	1.25
IN.	1.18	1.76	.88	.93	.64	.86	2.61	3.60	1.43	.56	.46	1.40

CAL YR 1974 TOTAL 363,053 MEAN 995 MAX 4,970 MIN 231 CFSM 1.26 IN 17.10
WTR YR 1975 TOTAL 346,060 MEAN 948 MAX 4,570 MIN 234 CFSM 1.20 IN 16.30

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 mi^2 (73 km^2) approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 629.7 ft (191.93 m) above mean sea level.

AVERAGE DISCHARGE.--24 years, 29.2 ft^3/s (0.827 m^3/s), 14.16 in/yr (360 mm/yr).

EXTREMES.--Current year: Maximum discharge, 234 ft^3/s (6.63 m^3/s) Apr. 23, gage height, 5.00 ft (1.524 m); minimum, 7.9 ft^3/s (0.22 m^3/s) Aug. 12, 13, 15; minimum gage height, 2.45 ft (0.747 m) Aug. 4.
Period of record: Maximum discharge, 860 ft^3/s (24.4 m^3/s) May 7, 1960, gage height, 8.55 ft (2.606 m), from rating curve extended above 400 ft^3/s (11.3 m^3/s); minimum, 4.9 ft^3/s (0.14 m^3/s) Mar. 11, 1956, gage height, 2.10 ft (0.640 m).

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

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	90	30	19	18	18	18	195	45	15	10	9.2
2	24	74	29	18	17	17	18	159	37	14	10	8.7
3	22	65	28	18	17	17	17	137	32	13	10	9.0
4	22	58	26	18	17	17	17	142	28	13	9.6	9.0
5	21	51	26	18	16	16	17	121	27	12	9.3	9.3
6	24	46	25	18	16	16	17	104	30	12	9.6	12
7	27	42	29	18	16	16	17	88	28	12	9.4	24
8	27	39	30	18	16	16	17	75	25	12	10	38
9	29	37	28	18	16	16	17	66	23	12	9.1	32
10	26	36	28	19	16	16	18	58	21	12	9.2	37
11	26	53	26	40	16	15	18	50	20	12	9.2	46
12	25	60	26	56	15	15	19	46	22	12	8.5	41
13	24	51	25	57	15	15	20	40	26	12	8.4	37
14	28	46	24	39	15	15	23	37	27	12	8.3	32
15	28	42	23	36	15	15	29	50	30	12	8.2	28
16	25	38	24	32	15	15	37	50	42	12	8.4	25
17	27	37	24	29	15	15	46	42	56	11	8.9	23
18	26	36	23	27	15	16	85	38	76	11	8.5	21
19	24	35	23	25	15	18	108	36	57	13	8.3	22
20	22	40	22	24	15	22	125	37	48	12	8.4	21
21	22	42	22	23	15	22	151	34	40	13	11	26
22	22	38	21	22	15	22	195	31	35	13	9.4	23
23	27	38	21	21	16	21	219	28	31	12	8.9	22
24	24	58	20	20	17	20	215	26	27	13	8.8	19
25	23	52	21	20	19	20	191	25	24	12	10	18
26	22	43	20	20	19	20	181	25	21	12	9.4	17
27	21	39	20	20	18	20	170	23	19	11	9.0	16
28	20	38	20	19	18	19	154	21	18	11	9.3	15
29	21	34	19	19	------	19	135	21	17	11	12	14
30	25	33	19	18	------	19	133	28	15	11	11	14
31	34	------	18	18	------	19	------	56	------	11	10	------
TOTAL	765	1,391	740	767	453	547	2,427	1,889	947	376	290.1	668.2
MEAN	24.7	46.4	23.9	24.7	16.2	17.6	80.9	60.9	31.6	12.1	9.36	22.3
MAX	34	90	30	57	19	22	219	195	76	15	12	46
MIN	20	33	18	18	15	15	17	21	15	11	8.2	8.7
CFSM	.88	1.66	.85	.88	.58	.63	2.89	2.18	1.13	.43	.33	.80
IN.	1.02	1.85	.98	1.02	.60	.73	3.22	2.51	1.26	.50	.39	.89

CAL YR 1974 TOTAL 13,149.0 MEAN 36.0 MAX 277 MIN 10 CFSM 1.29 IN 17.47
WTR YR 1975 TOTAL 11,260.3 MEAN 30.9 MAX 219 MIN 8.2 CFSM 1.10 IN 14.96

PEAK DISCHARGE (BASE, 120 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
04-23	2200	5.00	234
05-01	0700	4.76	203

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 mi^2 (2,849 km^2), 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.--37 years, 1,410 ft^3/s (39.93 m^3/s), 17.41 in/yr (442 mm/yr).

EXTREMES.--Current year: Maximum discharge, 9,230 ft^3/s (261 m^3/s) Apr. 27, 28, gage height, 11.27 ft (3.435 m); minimum, 574 ft^3/s (16.3 m^3/s) Aug. 12, 21, gage height, 2.67 ft (0.814 m).
Period of record: Maximum discharge, 16,900 ft^3/s (479 m^3/s) May 11, 1960, gage height, 12.85 ft (3.917 m); minimum, 288 ft^3/s (8.16 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,400	1,310	1,650	1,050	1,100	1,050	1,250	7,410	1,470	1,110	828	1,000
2	1,370	1,670	1,600	1,050	1,050	1,050	1,200	7,020	1,450	1,060	768	912
3	1,350	1,860	1,550	1,050	1,050	1,050	1,200	6,830	1,390	1,030	755	841
4	1,340	1,900	1,550	1,000	1,020	1,050	1,150	6,720	1,320	997	746	821
5	1,310	1,880	1,550	1,000	1,020	1,020	1,150	6,560	1,280	943	722	821
6	1,280	1,830	1,600	1,000	1,000	1,020	1,150	6,430	1,280	905	691	855
7	1,310	1,740	1,600	1,050	1,000	1,020	1,150	6,180	1,310	880	664	1,050
8	1,360	1,650	1,550	1,050	980	1,000	1,150	5,770	1,300	861	641	1,730
9	1,390	1,560	1,550	1,100	980	1,000	1,150	5,310	1,260	838	629	2,240
10	1,380	1,480	1,550	1,150	980	1,000	1,150	4,880	1,190	814	609	2,370
11	1,350	1,510	1,550	1,300	960	980	1,150	4,350	1,120	793	594	2,480
12	1,340	1,800	1,500	1,400	960	980	1,150	3,900	1,110	814	580	2,660
13	1,340	2,070	1,500	1,400	960	960	1,200	3,490	1,170	873	603	2,720
14	1,330	2,170	1,450	1,350	940	960	1,200	3,110	1,210	880	630	2,660
15	1,300	2,170	1,400	1,300	940	940	1,300	2,810	1,260	845	611	2,550
16	1,280	2,120	1,400	1,300	940	940	1,440	2,580	1,630	757	594	2,390
17	1,290	2,020	1,350	1,250	940	940	1,660	2,380	1,980	756	620	2,180
18	1,280	1,920	1,320	1,250	940	980	2,000	2,230	2,190	787	636	2,010
19	1,270	1,830	1,300	1,200	940	1,050	2,500	2,110	2,390	1,180	610	1,880
20	1,240	1,800	1,300	1,200	940	1,150	3,030	2,000	2,400	2,180	587	1,760
21	1,200	1,870	1,260	1,200	940	1,250	3,650	1,890	2,280	2,520	621	1,660
22	1,180	1,970	1,240	1,200	940	1,300	4,620	1,820	2,110	2,240	700	1,570
23	1,180	2,010	1,200	1,150	960	1,350	5,890	1,750	1,940	1,860	715	1,490
24	1,190	2,060	1,200	1,150	980	1,350	7,420	1,680	1,760	1,590	702	1,440
25	1,170	2,190	1,200	1,150	980	1,350	8,650	1,640	1,590	1,420	727	1,400
26	1,140	2,260	1,150	1,100	1,000	1,350	9,030	1,590	1,420	1,290	881	1,340
27	1,120	2,210	1,150	1,100	1,020	1,350	9,100	1,530	1,290	1,190	916	1,290
28	1,100	2,150	1,150	1,100	1,050	1,350	9,040	1,460	1,240	1,120	887	1,230
29	1,090	1,980	1,100	1,100	------	1,300	8,600	1,390	1,210	1,050	975	1,180
30	1,090	1,790	1,100	1,100	------	1,300	7,940	1,360	1,170	994	1,090	1,150
31	1,130	------	1,050	1,100	------	1,250	------	1,410	------	935	1,090	------
TOTAL	39,100	56,780	42,620	35,900	27,510	34,640	102,270	109,590	45,720	35,512	22,422	49,680
MEAN	1,261	1,893	1,375	1,158	983	1,117	3,409	3,535	1,524	1,146	723	1,656
MAX	1,400	2,260	1,650	1,400	1,100	1,350	9,100	7,410	2,400	2,520	1,090	2,720
MIN	1,090	1,310	1,050	1,000	940	940	1,150	1,360	1,110	756	580	821
CFSM	1.15	1.72	1.25	1.05	.89	1.02	3.10	3.21	1.39	1.04	.66	1.51
IN.	1.32	1.92	1.44	1.21	.93	1.17	3.46	3.71	1.55	1.20	.76	1.68

CAL YR 1974 TOTAL 581,040 MEAN 1,592 MAX 7,070 MIN 701 CFSM 1.45 IN 19.65
WTR YR 1975 TOTAL 601,744 MEAN 1,649 MAX 9,100 MIN 580 CFSM 1.50 IN 20.35

04057510 Sturgeon River near Nahma Junction, Mich.

LOCATION.--Lat 45°56'35", long 86°42'20", in SW¼ SE¼ 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 mi^2 (474 km^2).

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.--9 years, 206 ft^3/s (5,834 m^3/s), 15.29 in/yr (388 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,210 ft^3/s (34.3 m^3/s) Apr. 26, gage height, 8.62 ft (2.627 m); minimum, 42 ft^3/s (1.19 m^3/s) Aug. 10, gage height, 3.71 ft (1.131 m).
Period of record: Maximum discharge, 1,580 ft^3/s (44.7 m^3/s) Apr. 18, 1971, Apr. 30, 1972, gage height, 9.85 ft (3.002 m); minimum, 39 ft^3/s (1.10 m^3/s) Sept. 20, 1967, gage height, 3.71 ft (1.131 m).

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	293	215	125	115	115	130	853	151	132	52	132
2	175	334	210	125	115	115	130	809	143	123	51	114
3	177	306	200	120	110	115	125	746	136	115	52	110
4	168	276	200	120	110	115	125	726	142	107	55	137
5	160	244	200	120	105	110	120	689	145	100	50	127
6	164	217	200	120	105	110	120	637	160	95	48	179
7	181	195	203	120	100	110	120	582	149	92	47	257
8	177	180	204	120	95	110	125	530	135	95	45	387
9	177	170	200	125	95	110	125	473	124	88	44	315
10	170	161	195	130	90	110	130	418	116	81	43	272
11	167	306	190	150	90	110	135	369	113	78	45	414
12	157	483	185	170	90	110	140	326	167	167	44	482
13	147	422	175	180	90	110	150	288	189	181	72	376
14	148	367	165	180	90	110	170	269	393	148	66	298
15	150	326	160	175	95	110	200	272	488	129	56	244
16	145	288	160	165	95	110	218	272	686	111	53	204
17	142	259	160	160	95	110	286	262	627	97	77	176
18	137	236	155	155	100	115	409	239	527	86	63	180
19	132	218	155	150	105	120	494	218	438	84	56	237
20	129	254	150	145	105	125	556	224	411	79	52	229
21	125	292	150	140	110	130	568	235	455	92	110	195
22	124	278	150	135	115	140	609	223	366	81	122	172
23	133	260	145	130	115	145	773	177	343	74	99	163
24	132	311	145	130	115	145	1,030	167	298	72	93	154
25	128	300	145	130	115	140	1,120	159	244	69	101	142
26	124	289	140	125	115	140	1,190	155	206	66	100	133
27	122	276	135	120	115	140	1,150	153	182	63	91	124
28	119	257	130	120	115	140	1,060	145	167	60	105	117
29	119	229	130	120	------	135	979	137	154	58	235	111
30	133	220	130	115	------	135	885	138	142	56	211	106
31	140	------	130	115	------	135	------	153	------	53	162	------
TOTAL	4,567	8,247	5,212	4,235	2,910	3,775	13,371	11,044	7,997	2,932	2,500	6,287
MEAN	147	275	168	137	104	122	446	356	267	94.6	80.6	210
MAX	181	483	215	180	115	145	1,190	853	686	181	235	482
MIN	119	161	130	115	90	110	120	137	113	53	43	106
CFSM	.80	1.50	.92	.75	.57	.67	2.44	1.95	1.46	.52	.44	1.15
IN.	.93	1.68	1.06	.86	.59	.77	2.72	2.25	1.63	.60	.51	1.28

CAL YR 1974 TOTAL 71,370 MEAN 196 MAX 776 MIN 67 CFSM 1.07 IN 14.51
WTR YR 1975 TOTAL 73,077 MEAN 200 MAX 1,190 MIN 43 CFSM 1.09 IN 14.85

04057800 Middle Branch Escanaba River at Humboldt, Mich.

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.

DRAINAGE AREA.--46.0 mi^2 (119.1 km^2).

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.--16 years, 61.1 ft^3/s (1.730 m^3/s), 18.04 in/yr (458 mm/yr), adjusted for diversion 1960 to 1972.

EXTREMES.--Current year: Maximum discharge, 706 ft^3/s (20.0 m^3/s) May 4, 5, gage height, 6.04 ft (1.841 m); minimum, 5.9 ft^3/s (0.17 m^3/s Aug. 19, gage height, 1.56 ft (0.475 m).
Period of record: Maximum discharge, 1,640 ft^3/s (46.4 m^3/s) Apr. 24, 1960, gage height, 8.30 ft (2.530 m), from flood-mark; minimum, 4.5 ft^3/s (0.13 m^3/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 quality for the current year are published in Section 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	141	43	26	30	31	29	461	65	31	10	16
2	42	159	42	25	29	30	28	496	58	28	10	14
3	39	110	40	25	28	29	26	437	53	26	9.7	13
4	36	84	39	25	27	27	26	556	53	23	9.1	13
5	33	70	38	24	27	25	25	635	63	21	9.0	14
6	42	61	37	24	27	24	25	457	64	21	8.7	19
7	55	54	37	24	26	23	24	349	57	20	8.1	26
8	49	49	33	24	25	23	24	282	50	18	7.7	35
9	44	47	39	25	25	22	24	229	44	17	7.1	29
10	39	48	37	25	24	22	25	187	41	15	6.9	55
11	38	112	35	35	24	21	25	149	40	19	6.7	68
12	34	183	34	40	24	21	26	122	69	49	6.6	47
13	30	162	33	37	24	21	27	104	97	44	7.8	36
14	29	113	33	35	24	21	32	94	86	30	7.1	28
15	31	92	32	33	24	21	42	117	75	26	7.4	23
16	32	84	33	31	24	21	61	112	119	22	8.4	20
17	31	73	34	29	24	23	77	93	100	19	8.3	19
18	29	65	33	28	24	25	127	80	81	17	7.8	17
19	28	60	32	27	25	27	150	80	67	22	6.9	19
20	29	68	31	27	24	29	182	241	82	20	6.7	18
21	28	67	30	27	23	29	205	350	108	19	19	19
22	29	61	29	26	24	28	238	412	80	17	19	18
23	30	58	29	26	27	27	300	294	65	17	15	22
24	30	58	29	26	31	25	430	184	54	18	13	27
25	27	53	28	26	32	25	543	135	46	17	16	24
26	25	51	28	32	34	25	560	114	40	15	13	21
27	24	48	27	34	34	25	534	97	40	14	11	19
28	24	48	27	32	32	27	469	82	42	13	23	17
29	26	48	27	31	---	29	425	74	38	12	48	14
30	34	46	26	31	---	30	399	78	33	11	33	14
31	51	---	26	30	---	30	---	71	---	11	22	---
TOTAL	1058	2373	1021	890	746	786	5108	7172	1910	652	392.0	724
MEAN	34.1	79.1	32.9	28.7	26.6	25.4	170	231	63.7	21.0	12.6	24.1
MAX	55	183	43	40	34	31	560	635	119	49	48	68
MIN	24	46	26	24	23	21	24	71	33	11	6.6	13
CFSM	.74	1.72	.72	.62	.58	.55	3.70	5.02	1.38	.46	.27	.52
IN.	.86	1.92	.83	.72	.60	.64	4.13	5.80	1.54	.53	.32	.59

CAL YR 1974 TOTAL 20268.0 MEAN 55.5 MAX 548 MIN 11 CFSM 1.21 IN 16.39
WTR YR 1975 TOTAL 22832.0 MEAN 62.6 MAX 635 MIN 6.6 CFSM 1.36 IN 18.46

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, on Middle Branch Escanaba River, 3.7 mi (6.0 km) southwest of Greenwood.

DRAINAGE AREA.--67.4 mi^2 (174.6 km^2).

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 24,840 acre-ft (30.6 hm^3) May 5,6, elevation, 1516.1 ft (462.11 m); minimum, 19,380 acre-ft (23.9 hm^3) Sept. 30, elevation, 1511.9 ft (460.83 m).
Period of record: Maximum contents, 24,840 acre-ft (30.6 hm^3) May 5,6, 1975, elevation, 1516.1 ft (462.11 m); minimum since first filling, 18,300 acre-ft (22.6 hm^3) Aug. 17, 1973, elevation, 1511.0 ft (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 hm^3) 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 m^3) 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 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents during month	
			Acre-feet	Equivalent in ft^3/s
Sept. 30	1513.9	21,870	--	--
Oct. 31	1514.4	22,520	+650	+10.6
Nov. 30	1515.2	23,580	+1,060	+17.8
Dec. 31	1514.8	23,040	-540	-8.8
Calendar year 1974	--	--	+1,690	+2.3
Jan. 31	1514.1	22,130	-910	-14.8
Feb. 28	1513.1	20,830	-1,300	-23.4
Mar. 31	1512.6	20,220	-610	-9.9
Apr. 30	1515.9	24,560	+4,340	+72.9
May 31	1515.2	23,580	-980	-15.9
June 30	1515.2	23,580	0	0
July 31	1514.1	22,130	-1,450	-23.6
Aug. 31	1512.3	19,860	-2,270	-36.9
Sept. 30	1511.9	19,380	-480	-8.1
Water year 1974-75	--	--	-2,490	-3.4

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 and 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 ft^3/s (0.79 m^3/s) Sept. 6-11, 1974, Jan. 7, 13, 14, 1975; 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 some returned to Middle Branch Escanaba River via another Green Creek (tributary to Middle Branch Escanaba River); 27 mi (43 km) below station. Water-quality records for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.42	25	12	22	25	16	10	11	11	11	10	16
2	.42	25	12	23	24	14	10	11	11	11	10	16
3	.42	24	12	24	24	14	10	11	11	11	11	15
4	.42	24	12	24	24	14	10	11	11	11	11	13
5	.42	24	12	24	23	14	10	11	11	11	11	13
6	.42	24	12	25	20	14	10	11	11	11	13	12
7	.42	25	12	28	21	14	10	11	11	11	16	12
8	.42	25	13	27	21	14	10	11	11	10	18	12
9	.42	25	13	26	21	14	10	11	11	10	19	12
10	.42	25	13	25	21	14	10	10	11	10	19	11
11	.42	25	13	26	21	14	10	10	11	10	21	9.4
12	.42	15	13	27	21	14	10	10	11	10	23	8.7
13	.42	.30	13	28	21	14	9.9	10	11	10	25	5.2
14	.48	.29	13	28	19	14	9.8	10	11	10	25	5.2
15	.48	7.7	12	26	18	14	9.8	11	11	10	25	5.2
16	.48	12	12	25	19	14	9.8	11	11	10	25	5.3
17	.48	12	12	25	19	13	10	11	11	10	25	5.3
18	.48	12	12	25	19	12	11	11	11	10	25	5.3
19	.48	12	12	25	19	12	11	11	11	10	25	5.3
20	.48	13	12	25	19	12	11	11	11	10	25	5.3
21	3.4	13	13	25	18	12	11	11	11	10	25	5.3
22	12	13	13	25	17	11	11	11	11	10	25	5.3
23	15	13	14	25	17	11	11	11	11	10	25	5.3
24	14	13	17	25	17	11	11	11	11	10	25	5.3
25	15	13	17	25	17	11	11	17	11	10	25	5.3
26	15	13	18	25	17	11	11	17	11	10	25	5.3
27	15	12	19	25	17	11	11	17	11	10	25	5.3
28	18	12	18	25	17	11	11	14	11	10	22	5.3
29	24	12	18	25	------	11	11	13	11	10	17	5.3
30	25	12	19	25	------	11	11	11	11	10	17	5.3
31	25	------	22	25	------	11	------	11	------	10	16	------
TOTAL	190.22	481.29	435	783	556	397	312.3	359	330	317	629	245.2
MEAN	6.14	16.0	14.0	25.3	19.9	12.8	10.4	11.6	11.0	10.2	20.3	8.17
MAX	25	25	22	28	25	16	11	17	11	11	25	16
MIN	.42	.29	12	22	17	11	9.8	10	11	10	10	5.2

CAL YR 1974 TOTAL 2,558.28 MEAN 7.01 MAX 28 MIN .15
WTR YR 1975 TOTAL 5,035.01 MEAN 13.8 MAX 28 MIN .29

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 mi^2 (174.6 km^2).

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

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

EXTREMES.--Period of record: Maximum daily discharge (prior to regulation), 290 ft^3/s (8.21 m^3/s) Oct. 1, 1972; maximum daily discharge (since regulation began), 63 ft^3/s (1.78 m^3/s) July 10, 11, 1974; minimum daily, 10 ft^3/s (0.28 m^3/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 some 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. Water-quality records for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	26	24	26	27	28	29	42	42	42	26	23
2	25	26	24	26	27	29	29	42	42	42	26	24
3	25	26	24	25	26	29	29	42	42	41	26	27
4	25	26	25	24	26	29	29	42	42	41	26	29
5	25	26	25	24	26	29	29	42	42	41	26	28
6	26	26	26	25	27	29	29	42	42	41	25	28
7	26	26	26	28	27	29	29	42	42	41	25	27
8	26	26	26	27	27	29	29	42	42	37	25	27
9	25	26	27	26	27	29	29	42	42	36	25	26
10	25	26	27	26	28	29	29	43	42	34	24	26
11	25	26	27	27	28	29	29	42	42	32	24	27
12	26	26	27	28	28	29	30	42	42	30	24	27
13	26	27	26	29	28	29	30	42	42	30	26	27
14	26	27	26	29	28	29	30	34	42	28	26	27
15	27	26	26	29	28	29	30	29	42	26	26	28
16	27	24	26	27	29	28	30	30	42	27	26	28
17	27	24	26	27	29	28	30	30	42	27	26	28
18	27	25	26	27	29	29	37	30	43	27	26	28
19	27	26	26	27	29	29	41	30	43	27	26	28
20	27	26	26	27	29	29	41	31	43	27	26	28
21	27	26	26	27	29	30	41	32	43	27	26	28
22	27	27	27	27	29	30	42	32	43	27	26	28
23	26	27	27	27	29	30	42	32	43	27	26	28
24	25	27	27	27	29	30	42	32	42	27	26	28
25	25	27	27	27	29	29	42	32	42	27	26	28
26	25	26	26	27	29	29	41	32	42	27	26	28
27	25	26	25	27	29	29	41	32	42	27	26	28
28	25	26	25	27	29	29	41	34	42	27	26	28
29	26	25	25	27	------	29	42	36	42	27	25	27
30	26	25	25	27	------	29	42	40	42	27	24	27
31	25	------	26	27	------	29	------	42	------	27	23	------
TOTAL	800	779	802	831	785	900	1,034	1,137	1,266	974	790	819
MEAN	25.8	26.0	25.9	26.8	28.0	29.0	34.5	36.7	42.2	31.4	25.5	27.3
MAX	27	27	27	29	29	30	42	43	43	42	26	29
MIN	25	24	24	24	26	28	29	29	42	26	23	23

CAL YR 1974 TOTAL 10,576 MEAN 29.0 MAX 63 MIN 24
WTR YR 1975 TOTAL 10,917 MEAN 29.9 MAX 43 MIN 23

04057820 Middle Branch Escanaba River near Greenwood, Mich.

LOCATION--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 mi^2 (189.8 km^2).

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, 772 ft^3/s (21.9 m^3/s) May 5, gage height, 12.03 ft (3.667 m); minimum, 26 ft^3/s (0.74 m^3/s) Jan. 6, Aug. 10, 11, gage height, 7.75 ft (2.362 m).
Period of record: Maximum discharge, 1,060 ft^3/s (30.0 m^3/s) May 5, 1972, gage height, 13.35 ft (4.069 m); minimum daily, 12 ft^3/s (0.34 m^3/s) Dec. 28, 1972, Jan. 2-4, Nov. 5, 1973, result of construction upstream.
A discharge of 8.62 ft^3/s (0.24 m^3/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, flow diverted 2.3 mi (3.7 km) above station at Greenwood Afterbay to Green Creek (see sta. 04057813) for iron ore processing and some returned to Middle Branch Escanaba River 24 mi (39 km) below station via another Green Creek. Water-quality records for current year published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	40	48	30	31	33	32	564	100	44	29	29
2	28	38	45	30	31	32	32	599	92	44	29	29
3	28	36	43	30	31	32	32	624	85	44	29	31
4	29	33	41	28	31	32	32	644	81	43	29	32
5	29	32	39	28	30	32	32	735	84	43	29	32
6	31	32	37	27	31	32	32	730	87	43	28	32
7	30	31	37	30	31	32	32	601	84	43	28	33
8	30	31	36	31	31	32	32	477	75	40	27	34
9	30	31	35	30	31	32	32	385	66	38	27	34
10	30	32	34	30	31	32	32	316	61	38	27	36
11	30	65	34	32	32	32	32	261	59	36	27	37
12	30	109	33	33	32	32	32	210	73	38	27	34
13	31	155	33	33	32	32	33	172	93	37	28	33
14	31	165	32	33	32	32	33	140	110	35	28	32
15	31	151	33	33	32	32	34	154	110	32	28	32
16	31	123	34	32	32	32	36	159	123	32	28	32
17	32	96	35	31	32	32	39	145	126	32	29	32
18	32	82	34	31	32	32	67	131	125	32	29	32
19	32	75	33	31	32	32	75	123	107	32	29	32
20	32	75	32	31	32	32	74	288	107	32	29	32
21	32	73	32	31	32	32	74	393	118	32	33	32
22	32	66	32	31	32	32	73	510	116	32	33	32
23	31	63	31	31	32	32	91	510	105	32	31	32
24	30	61	31	31	32	32	100	400	85	32	31	32
25	30	58	31	31	32	32	317	303	72	31	32	32
26	30	54	30	31	32	32	606	242	61	31	31	32
27	29	54	29	31	32	32	704	188	54	32	31	32
28	30	55	29	31	32	32	696	148	51	32	33	32
29	32	52	29	31	------	32	649	126	47	31	38	32
30	32	50	29	31	------	32	593	124	45	29	32	32
31	36	------	29	31	------	32	------	113	------	29	29	------
TOTAL	950	2,018	1,060	955	885	993	4,678	10,515	2,602	1,101	918	970
MEAN	30.6	67.3	34.2	30.8	31.6	32.0	156	339	86.7	35.5	29.6	32.3
MAX	36	165	48	33	32	33	704	735	126	44	38	37
MIN	28	31	29	27	30	32	32	113	45	29	27	29

CAL YR 1974 TOTAL 23,555 MEAN 64.5 MAX 570 MIN 28
WTR YR 1975 TOTAL 27,645 MEAN 75.7 MAX 735 MIN 27

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 mi^2 (332 km^2).

PERIOD OF RECORD.--June 1954 to September 1975 (discontinued).

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.--21 years, 142 ft^3/s (4.021 m^3/s), 15.07 in/yr (383 mm/yr), adjusted for storage and diversion since December 1972.

EXTREMES.--Current year: Maximum discharge, 1,090 ft^3/s (30.9 m^3/s) Apr. 27, gage height, 8.12 ft (2.475 m); minimum, 33 ft^3/s (0.93 m^3/s) Aug. 10-12, gage height, 1.57 ft (0.479 m).
Period of record: Maximum discharge, 2,680 ft^3/s (75.9 m^3/s) Apr. 25, 1960, gage height, 12.55 ft (3.825 m); minimum, 12 ft^3/s (0.34 m^3/s) Aug. 21-23, 1957; minimum gage height, 1.17 ft (0.357 m) Aug. 22, 23, 1957.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	122	93	54	54	58	60	874	192	83	39	47
2	61	147	90	54	54	58	60	883	172	80	38	44
3	60	131	85	52	54	58	62	898	156	77	38	48
4	59	116	80	52	56	58	64	917	148	74	38	48
5	58	110	75	52	56	58	62	1,010	149	71	37	49
6	60	108	72	52	56	58	62	1,040	158	71	36	47
7	70	95	70	52	56	58	62	906	152	70	35	56
8	74	90	68	52	56	58	64	754	141	66	35	64
9	72	86	68	52	54	56	66	627	125	64	35	60
10	67	83	66	54	54	56	66	519	116	63	34	74
11	65	150	64	56	52	56	66	430	109	62	33	104
12	61	261	64	58	52	56	68	352	135	82	34	93
13	60	305	62	60	52	56	70	295	193	96	34	80
14	59	306	62	60	52	56	74	257	241	89	34	74
15	58	274	62	60	52	56	84	300	226	79	35	65
16	58	218	62	58	52	56	100	340	255	74	35	61
17	58	195	62	58	52	56	130	308	260	68	35	57
18	58	164	62	56	52	56	218	248	253	60	35	55
19	58	152	60	56	52	58	276	223	214	58	34	55
20	58	148	60	54	52	60	317	425	210	56	37	53
21	56	149	60	54	52	60	344	693	295	52	49	50
22	56	139	58	54	54	62	400	848	303	50	44	50
23	58	131	58	54	54	62	510	942	253	48	40	51
24	55	127	56	54	56	62	635	772	201	47	40	53
25	55	119	56	54	56	62	773	586	160	46	48	54
26	54	112	54	54	56	62	983	472	134	44	41	57
27	53	110	54	54	58	62	1,090	387	115	43	39	51
28	53	110	54	54	58	62	1,070	306	103	42	53	48
29	56	106	54	54	------	60	987	250	97	41	75	47
30	66	99	54	54	------	60	920	237	89	41	62	45
31	74	------	54	54	------	60	------	217	------	40	50	------
TOTAL	1,872	4,463	1,999	1,696	1,514	1,816	9,743	17,316	5,355	1,937	1,252	1,740
MEAN	60.4	149	64.5	54.7	54.1	58.6	325	559	179	62.5	40.4	58.0
MAX	74	306	93	60	58	62	1,090	1,040	303	96	75	104
MIN	53	83	54	52	52	56	60	217	89	40	33	44

CAL YR 1974 TOTAL 41,940 MEAN 115 MAX 847 MIN 39 MEAN† 124 CFSM† .97 IN† 13.15
WTR YR 1975 TOTAL 50,703 MEAN 139 MAX 1,090 MIN 33 MEAN† 149 CFSM† 1.16 IN† 15.81

†Adjusted for diversion and change in contents in Greenwood Reservoir

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 mi^2 (544 km^2).

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.--14 years, 222 ft^3/s (6.287 m^3/s), 14.36 in/yr (365 mm/yr), adjusted for storage and diversion since December 1972.

EXTREMES.--Current year: Maximum discharge, 1,380 ft^3/s (39.1 m^3/s) Apr. 28, gage height, 5.70 ft (1.737 m); minimum, 7.2 ft^3/s (0.20 m^3/s) Mar. 14, gage height, 0.72 ft (0.219 m); minimum daily, 14 ft^3/s (0.40 m^3/s) July 21.
Period of record: Maximum discharge, 2,580 ft^3/s (73.1 m^3/s) May 6, 1972, gage height, 7.85 ft (2.393 m); minimum recorded, 2.2 ft^3/s (0.062 m^3/s) Oct. 5, 1964; minimum daily, 4.1 ft^3/s (0.12 m^3/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 ft^3/s or 109 m^3/s).

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	105	155	105	89	95	113	1,180	380	112	92	179
2	98	209	154	97	89	95	115	1,120	225	122	82	177
3	98	301	154	89	87	95	114	1,130	180	122	81	176
4	98	213	137	89	87	134	118	1,170	322	122	81	173
5	97	165	130	89	126	108	104	1,190	315	122	81	107
6	97	164	130	91	149	106	104	1,260	252	122	81	78
7	97	164	130	91	101	91	146	1,220	208	122	78	79
8	134	164	130	91	91	91	117	1,070	210	103	75	94
9	139	164	130	91	95	93	135	896	182	85	75	101
10	130	164	130	91	97	119	100	743	205	85	75	102
11	130	166	129	97	97	107	118	626	205	85	75	237
12	131	320	127	93	95	122	101	530	208	87	75	247
13	130	383	127	93	132	93	102	449	218	89	75	170
14	130	382	127	105	127	98	138	401	245	222	75	170
15	130	380	127	130	97	102	144	396	392	245	75	170
16	128	376	85	130	97	102	148	425	392	232	74	168
17	114	372	67	130	95	129	153	440	392	180	71	167
18	108	225	91	130	95	98	296	404	392	95	70	166
19	108	224	102	130	95	99	431	380	389	78	70	144
20	108	254	102	91	124	127	506	295	389	42	71	104
21	107	252	102	87	101	131	507	677	395	14	74	105
22	106	252	102	87	101	104	584	878	386	46	70	106
23	106	251	102	87	99	98	734	1,020	395	198	76	107
24	105	249	104	87	112	118	970	1,060	392	234	76	106
25	104	183	104	87	95	176	1,020	861	386	121	80	106
26	103	154	104	87	122	139	1,130	674	252	76	79	105
27	103	154	104	87	95	104	1,290	572	222	76	97	104
28	103	154	104	87	95	101	1,370	473	245	85	101	104
29	103	155	104	89	------	100	1,320	401	198	102	155	104
30	103	155	104	89	------	100	1,240	389	112	99	180	104
31	104	------	104	89	------	101	------	386	------	98	180	------
TOTAL	3,450	6,854	3,602	3,016	2,885	3,376	13,468	22,716	8,684	3,621	2,700	4,060
MEAN	111	228	116	97.3	103	109	449	733	289	117	87.1	135
MAX	139	383	155	130	149	176	1,370	1,260	395	245	180	247
MIN	97	105	67	87	87	91	100	295	112	14	70	78

CAL YR 1974 TOTAL 68,408 MEAN 187 MAX 1,010 MIN 40 MEAN† 196 CFSM† .93 IN† 12.67
WTR YR 1975 TOTAL 78,432 MEAN 215 MAX 1,370 MIN 14 MEAN† 225 CFSM† 1.07 IN† 14.55

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

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 mi^2 (59.8 km^2).

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, 5,620 acre-ft (6.93 hm^3) Apr. 24, elevation, 1,338.8 ft (408.07 m); minimum, 3,750 acre-ft (4.62 hm^3) Apr. 13, elevation, 1,333.0 ft (406.30 m).
Period of record: Maximum contents recorded, 5,900 acre-ft (7.27 hm^3) May 31, 1970, elevation, 1,339.5 ft (408.28 m); minimum recorded since first filling, 2,920 acre-ft (3.60 hm^3) Apr. 10, 1974, elevation, 1.329.7 ft (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 hm^3) 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 3.0 ft^3/s (0.085 m^3/s) was diverted from the headwaters of basin by the City of Ishpeming for municipal supply and the effluent discharged to the Carp River basin. An average of 30 ft^3/s (0.85 m^3/s) was diverted from reservoir for iron ore processing and some 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 13.8 ft^3/s (0.39 m^3/s) for the year.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents during month: Acre-feet	Change in contents during month: Equivalent in ft^3/s
Sept. 30	1337.2	5,020	--	--
Oct. 31	1337.0	4,950	-70	-1.1
Nov. 30	1337.8	5,230	+280	+4.7
Dec. 31	1336.0	4,650	-580	-9.4
Calendar year 1974	--	--	+480	+.7
Jan. 31	1337.1	4,980	+330	+5.4
Feb. 28	1336.1	4,680	-300	-5.4
Mar. 31	1334.0	4,050	-630	-10.2
Apr. 30	1338.3	5,420	+1,370	+23.0
May 31	1338.0	5,300	-120	-2.0
June 30	1337.8	5,230	-70	-1.2
July 31	1336.7	4,860	-370	-6.0
Aug. 31	1336.6	4,830	-30	-.5
Sept. 30	1336.4	4,770	-60	-1.0
Water year 1974-75	--	--	-250	-.3

04058200 Schweitzer Creek near Palmer, Mich.

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.

DRAINAGE AREA.--23.6 mi^2 (61.1 km^2).

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, 265 ft^3/s (7.50 m^3/s) Apr. 22, gage height, 4.74 ft (1.445 m); minimum, 2.3 ft^3/s (0.065 m^3/s) Feb. 3, gage height, 2.71 ft (0.826 m), result of freezeup; minimum daily, 3.8 ft^3/s (0.11 m^3/s) Feb. 3.
Period of record: Maximum discharge, 860 ft^3/s (24.4 m^3/s) May 31, 1970, gage height, 6.50 ft (1.981 m); minimum, 0.4 ft^3/s (0.011 m^3/s) Sept. 6, 1962, gage height, 1.22 ft (0.372 m); minimum daily, 1.0 ft^3/s (0.028 m^3/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 3.0 ft^3/s (0.085 m^3/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 30 ft^3/s (0.85 m^3/s) was diverted from Schweitzer Reservoir by industry for iron ore processing and some returned to the Middle Branch Escanaba River via Green Creek. Diversion into Schweitzer Reservoir from Greenwood Reservoir via Greenwood Diversion (see sta 04057813).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.4	4.9	4.7	4.2	4.2	4.0	63	5.3	4.9	4.7	4.8
2	4.8	5.1	4.9	4.7	4.0	4.3	4.2	75	5.2	4.9	4.7	4.7
3	4.7	4.9	4.7	4.7	3.8	4.2	4.2	72	5.4	4.9	4.7	4.9
4	4.7	4.9	4.7	4.7	4.3	4.2	3.9	60	5.3	4.9	4.6	4.7
5	4.7	4.9	4.7	4.7	4.4	4.2	4.2	45	5.4	4.9	4.6	4.9
6	5.0	4.9	4.7	4.7	4.3	4.2	4.2	34	5.1	4.9	4.6	5.0
7	4.8	4.9	4.7	4.7	4.5	4.2	4.3	27	5.0	4.7	4.6	5.2
8	4.9	4.9	4.7	4.7	4.0	4.1	4.2	21	4.9	4.7	4.5	5.1
9	4.9	4.9	4.7	4.7	4.0	4.2	4.3	16	4.9	4.7	4.5	4.8
10	4.7	5.1	4.8	4.7	4.0	4.2	4.4	11	5.7	4.7	4.6	5.4
11	4.7	8.3	4.7	5.2	4.0	4.2	4.6	8.6	12	6.0	4.5	5.8
12	4.7	35	4.8	5.5	4.0	4.2	4.9	7.0	37	5.2	4.8	5.0
13	4.7	33	4.8	5.0	4.0	4.2	5.3	15	55	4.9	4.7	4.9
14	4.7	13	4.7	5.0	4.1	4.2	6.4	25	50	4.9	4.6	4.8
15	4.7	6.6	4.7	4.5	4.2	4.2	6.4	22	53	4.8	4.5	4.8
16	4.7	5.1	4.7	4.4	4.2	4.2	8.4	16	46	4.7	4.5	4.6
17	4.7	5.0	4.7	4.5	4.2	4.2	7.8	11	41	4.7	4.5	4.6
18	4.7	5.0	4.7	4.5	4.2	4.3	6.6	47	31	4.8	4.4	4.7
19	4.7	5.4	4.7	4.4	4.2	4.4	6.4	104	38	4.9	4.5	4.9
20	4.7	12	4.7	4.5	4.3	4.5	6.7	73	48	4.9	4.5	4.7
21	4.7	17	4.7	4.5	4.4	4.5	76	60	36	4.9	5.6	4.9
22	4.9	15	4.7	4.4	4.5	4.5	237	35	27	4.6	4.6	5.0
23	4.7	15	4.7	4.5	4.4	4.3	191	24	18	4.9	4.7	5.4
24	4.7	17	4.7	4.3	4.5	4.4	150	21	12	4.9	4.7	5.9
25	4.7	15	4.7	4.5	4.5	4.5	115	22	9.0	4.7	5.0	6.2
26	4.7	10	4.7	4.3	4.4	4.5	104	17	7.1	4.7	4.8	6.1
27	4.7	8.4	4.7	4.0	4.2	4.3	90	11	5.5	4.8	4.8	6.2
28	4.7	7.7	4.7	4.0	4.3	4.4	82	11	5.0	4.6	5.9	6.3
29	4.9	6.1	4.7	4.0	------	4.4	78	11	5.0	4.6	5.4	6.6
30	4.9	5.0	4.7	4.1	------	4.3	71	8.9	5.0	4.6	4.9	7.4
31	5.6	------	4.7	4.3	------	4.2	------	5.9	------	4.7	4.7	------
TOTAL	148.4	294.5	146.4	141.4	118.1	132.9	1,299.4	979.4	592.8	150.0	146.7	158.3
MEAN	4.79	9.82	4.72	4.56	4.22	4.29	43.3	31.6	19.8	4.84	4.73	5.28
MAX	5.6	35	4.9	5.5	4.5	4.5	237	104	55	6.0	5.9	7.4
MIN	4.7	4.9	4.7	4.0	3.8	4.1	3.9	5.9	4.9	4.6	4.4	4.6

CAL YR 1974 TOTAL 3,575.1 MEAN 9.79 MAX 142 MIN 3.6
WTR YR 1975 TOTAL 4,308.3 MEAN 11.8 MAX 237 MIN 3.8

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 mi^2 (36.8 km^2).

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, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--7 years (1962-68), 15.8 ft^3/s (0.447 m^3/s), 15.11 in/yr (384 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 190 ft^3/s (5.38 m^3/s) Apr. 24; maximum gage height, 5.40 ft (1.646 m) Apr. 24 (backwater from Schweitzer Creek); minimum discharge, 2.0 ft^3/s (0.057 m^3/s) July 23, 25; minimum gage height, 1.04 ft (0.317 m) July 25.
Period of record: Maximum discharge, 267 ft^3/s (7.56 m^3/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 ft^3/s (0.014 m^3/s) Sept. 10, 1961, gage height, 0.79 ft (0.241 m).

REMARKS.--Records fair except those over 50 ft^3/s (1.42 m^3/s), which are poor. Since 1970, waste effluent and ground-water pumpage into the headwaters have increased.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	34	11	6.0	5.0	5.0	7.5	70	13	6.9	3.9	10
2	13	24	11	6.0	5.0	5.0	7.5	60	10	3.9	6.4	11
3	12	19	12	6.0	5.0	5.0	7.5	50	8.0	4.4	5.8	9.7
4	10	16	11	6.0	4.5	5.0	7.5	50	6.7	3.5	4.7	8.0
5	9.3	14	10	5.5	4.5	5.0	7.5	55	9.8	3.2	4.3	7.4
6	15	13	8.9	5.5	4.5	5.0	8.0	50	9.3	2.7	4.2	10
7	14	11	9.2	5.5	4.5	5.0	9.5	40	8.0	2.9	4.3	12
8	12	10	12	5.5	4.5	5.0	11	34	6.6	2.6	4.5	12
9	11	9.8	11	5.5	4.5	5.0	11	24	8.0	2.6	3.9	9.2
10	11	10	11	5.5	4.5	5.0	11	22	9.5	2.5	3.8	18
11	11	42	11	7.0	4.5	5.0	12	21	7.4	3.1	3.7	30
12	9.3	67	8.8	6.5	4.5	5.0	12	21	16	12	3.2	19
13	9.5	50	10	6.0	4.5	5.0	13	18	23	10	3.1	13
14	8.9	23	8.9	5.5	4.5	5.0	15	18	42	7.1	4.1	14
15	9.8	19	8.2	5.5	4.5	5.0	18	28	33	6.5	4.7	11
16	12	22	8.4	5.0	4.5	5.5	25	25	48	5.5	3.7	7.9
17	12	22	7.4	5.0	4.5	6.0	40	21	35	4.5	3.5	6.4
18	10	17	7.3	5.0	5.0	7.0	70	15	29	4.0	2.8	6.2
19	8.1	17	7.5	4.5	5.0	7.5	90	15	14	4.6	2.6	7.2
20	9.2	18	7.4	4.5	5.0	7.5	88	50	26	7.0	2.6	6.1
21	9.8	19	7.5	4.5	5.0	7.0	86	80	36	11	9.6	5.3
22	9.2	17	7.5	4.5	5.0	7.0	110	60	17	14	7.7	5.1
23	9.1	16	7.0	4.5	5.0	7.0	150	42	12	4.6	5.0	5.3
24	8.3	16	6.9	4.5	5.0	7.0	190	21	9.5	6.2	4.5	5.9
25	9.0	14	6.4	4.5	5.0	7.0	140	22	10	2.9	6.0	5.3
26	10	14	6.4	4.5	5.0	7.0	130	21	11	2.9	5.2	4.6
27	8.8	12	6.5	4.5	5.0	7.0	110	18	8.3	3.7	3.9	4.6
28	8.2	12	6.0	5.0	5.0	7.0	100	14	6.7	3.3	9.7	4.6
29	9.5	12	6.0	5.0	------	7.0	80	13	5.4	3.2	19	4.2
30	17	12	5.9	5.0	------	7.5	75	16	9.5	3.1	9.6	4.3
31	18	------	6.3	5.0	------	7.5	------	16	------	2.8	7.8	------
TOTAL	335.0	601.8	264.4	163.0	133.0	186.5	1,642.0	1,010	487.7	157.2	167.8	277.3
MEAN	10.8	20.1	8.53	5.26	4.75	6.02	54.7	32.6	16.3	5.07	5.41	9.24
MAX	18	67	12	7.0	5.0	7.5	190	80	48	14	19	30
MIN	8.1	9.8	5.9	4.5	4.5	5.0	7.5	13	5.4	2.5	2.6	4.2

CAL YR 1974 TOTAL 6,259.6 MEAN 17.1 MAX 196 MIN 4.0
WTR YR 1975 TOTAL 5,425.7 MEAN 14.9 MAX 190 MIN 2.5

04058400 Goose Lake Outlet near Sands Station, Mich.

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.

DRAINAGE AREA.--37.5 mi^2 (97.1 km^2).

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.--10 years, 32.8 ft^3/s (0.929 m^3/s), 11.88 in/yr (302 mm/yr).

EXTREMES.--Current year: Maximum discharge, 362 ft^3/s (10.3 m^3/s) Apr. 24, gage height, 5.45 ft (1.661 m); minimum, 4.5 ft^3/s (0.13 m^3/s) Aug. 20, 21, gage height, 1.40 ft (0.427 m).
Period of record: Maximum discharge, 458 ft^3/s (13.0 m^3/s) May 31, 1970, gage height, 5.89 ft (1.795 m); minimum, 4.5 ft^3/s (0.13 m^3/s) Aug. 20, 21, 1975, gage height, 1.40 ft (0.427 m).

REMARKS.--Records good. Some mine water pumped into basin at headwaters.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	25	20	14	11	11	16	140	41	23	9.8	14
2	14	24	18	13	11	11	16	128	38	22	10	13
3	13	26	20	13	11	11	16	118	36	20	11	14
4	13	26	19	13	11	11	16	114	34	19	9.7	13
5	13	25	19	13	11	12	16	114	36	18	8.7	14
6	17	23	19	13	11	12	16	103	34	17	8.2	15
7	17	22	19	13	11	12	16	93	32	17	7.6	16
8	16	21	17	13	11	12	17	85	30	16	7.3	15
9	16	20	17	13	11	12	17	77	28	15	6.8	14
10	15	20	17	13	11	12	18	69	27	14	6.7	20
11	15	37	17	17	11	12	18	62	28	17	6.5	24
12	15	33	17	14	11	12	18	56	37	27	6.5	21
13	14	38	17	13	11	12	19	51	37	21	7.1	21
14	14	40	17	12	11	11	22	49	44	21	6.6	21
15	14	37	18	12	11	11	27	53	50	21	6.7	19
16	13	33	17	12	11	12	34	50	52	20	6.7	18
17	13	30	17	12	11	12	40	47	49	19	6.5	17
18	13	28	17	12	11	13	64	45	49	18	6.1	16
19	13	28	16	12	11	13	95	47	44	17	6.2	16
20	13	29	16	11	11	14	124	84	51	18	6.2	15
21	12	27	16	11	11	14	193	121	48	18	13	14
22	13	26	15	11	11	14	219	112	45	16	10	14
23	12	26	16	11	11	14	294	96	42	16	10	14
24	13	25	15	11	11	13	354	84	38	16	10	14
25	12	23	16	12	12	13	328	76	34	15	12	13
26	12	21	14	11	11	14	287	67	31	14	10	12
27	12	22	14	11	11	14	247	58	30	13	9.6	12
28	12	22	14	11	11	14	209	51	28	12	15	11
29	13	21	14	11	------	15	180	47	27	12	17	11
30	17	20	14	11	------	15	156	47	25	11	15	11
31	18	------	13	11	------	15	------	43	------	10	14	------
TOTAL	431	798	515	380	309	393	3,092	2,387	1,125	533	286.5	462
MEAN	13.9	26.6	16.6	12.3	11.0	12.7	103	77.0	37.5	17.2	9.24	15.4
MAX	18	40	20	17	12	15	354	140	52	27	17	24
MIN	12	20	13	11	11	11	16	43	25	10	6.1	11
CFSM	.37	.71	.44	.33	.29	.34	2.75	2.05	1.00	.46	.25	.41
IN.	.43	.79	.51	.38	.31	.39	3.07	2.37	1.12	.53	.28	.46

CAL YR 1974 TOTAL 10,370.8 MEAN 28.4 MAX 340 MIN 8.7 CFSM .76 IN 10.29
WTR YR 1975 TOTAL 10,711.5 MEAN 29.3 MAX 354 MIN 6.1 CFSM .78 IN 10.63

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 mi^2 (321 km^2).

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.--21 years, 112 ft^3/s (3.172 m^3/s), 12.27 in/yr (312 mm/yr), adjusted for storage and diversion.

EXTREMES.--Current year: Maximum discharge, 1,190 ft^3/s (33.7 m^3/s) Apr. 24, gage height, 12.31 ft (3.752 m); minimum, 29 ft^3/s (0.82 m^3/s) Aug. 19-21, gage height, 6.61 ft (2.015 m).
Period of record: Maximum discharge, 2,390 ft^3/s (67.7 m^3/s) June 1, 1970, gage height, 14.97 ft (4.563 m); minimum, 19 ft^3/s (0.54 m^3/s) July 30, Oct. 11, 1963, gage height, 6.48 ft (1.975 m).

REMARKS.--Records good except those for winter periods, which are fair. Since August, 1962 some regulation by Schweitzer Reservoir (see sta 04058190) about 16 mi (26 km) above station. An average of 3.0 ft^3/s (0.085 m^3/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 30 ft^3/s (0.85 m^3/s) was diverted from Schweitzer Reservoir by industry for iron ore processing and some returned to the Middle Branch Escanaba River via Green Creek. Diversion into Schweitzer Reservoir from Greenwood Reservoir via Greenwood Diversion (see sta 04057813). Water-quality records for the current year are published in Section 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	100	68	43	38	37	51	453	106	68	35	56
2	64	145	64	44	37	37	50	408	95	59	38	54
3	64	130	63	44	37	36	49	369	87	54	45	55
4	58	110	63	43	36	36	50	388	81	51	40	57
5	55	90	61	43	36	36	51	378	86	49	36	50
6	54	80	60	43	36	36	54	351	90	48	35	60
7	69	70	60	43	35	36	56	293	82	46	33	64
8	68	70	62	43	35	36	60	246	77	44	33	73
9	63	67	64	43	35	36	62	208	71	43	33	61
10	60	66	60	44	35	36	62	183	72	41	32	73
11	57	137	58	50	35	36	64	164	71	45	31	135
12	54	226	56	46	34	35	68	148	121	97	32	139
13	51	201	56	44	34	35	76	132	168	99	32	98
14	50	158	57	42	34	36	85	121	198	73	32	80
15	50	122	55	40	35	37	101	165	202	67	31	71
16	50	109	55	40	35	38	123	174	235	61	32	63
17	49	115	54	38	35	39	168	155	205	60	32	57
18	47	102	52	38	36	41	242	133	201	50	31	53
19	46	89	52	36	36	44	359	117	171	47	30	55
20	45	127	52	35	37	48	410	234	183	48	29	54
21	45	110	50	35	37	50	397	340	226	62	65	49
22	45	105	50	35	38	48	494	318	191	54	66	46
23	44	99	48	35	38	46	672	253	161	57	47	46
24	44	98	48	35	38	45	1,100	203	129	51	42	50
25	44	94	47	36	38	46	1,090	181	106	47	50	46
26	43	85	47	36	38	48	876	159	95	42	50	43
27	43	80	47	38	38	49	710	145	85	41	40	42
28	43	77	46	38	37	50	596	126	79	40	45	41
29	48	75	45	38	------	51	502	112	71	38	121	40
30	60	70	45	38	------	51	464	118	66	37	86	39
31	70	------	45	38	------	52	------	117	------	36	64	------
TOTAL	1,638	3,207	1,690	1,244	1,013	1,287	9,142	6,892	3,811	1,655	1,348	1,850
MEAN	52.8	107	54.5	40.1	36.2	41.5	305	222	127	53.4	43.5	61.7
MAX	70	226	68	50	38	52	1,100	453	235	99	121	139
MIN	43	66	45	35	34	35	49	112	66	36	29	39

CAL YR 1974 TOTAL 34,378 MEAN 94.2 MAX 939 MIN 35 MEAN† 107 CFSM† .86 IN† 11.72
WTR YR 1975 TOTAL 34,777 MEAN 95.3 MAX 1,100 MIN 29 MEAN† 114 CFSM† .92 IN† 12.48

†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.

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 bridge on County Road 519, 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 mi^2 (2,253 km^2).

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.--34 years, (1903-12, 1950-75), 896 ft^3/s (25.37 m^3/s), 13.99 in/yr (355 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,300 ft^3/s (207 m^3/s) Apr. 25, gage height, 4.30 ft (1.31 m); minimum, 197 ft^3/s (5.58 m^3/s) July 28, gage height, 1.32 ft (0.402 m).
Period of record: Maximum discharge, 10,500 ft^3/s (297 m^3/s) May 7, 1960, gage height, 4.90 ft (1.494 m); maximum gage height, 6.40 ft (1.951 m) Apr. 9, 1971, backwater from ice ; minimum discharge observed, 90 ft^3/s (2.55 m^3/s) July 5, 1910, gage height, 1.5 ft (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, which are fair. Since 1950, diurnal fluctuation and occasional slight regulation caused by Boney Falls powerplant, 7 mi (11 km) upstream. 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). Records of water quality for the current year are published in Section 2 of this report.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	504	947	632	370	310	350	470	4280	1020	499	352	558
2	543	1170	581	370	300	350	500	3930	878	452	298	487
3	559	1260	630	360	320	350	520	3700	630	470	236	480
4	454	1120	676	360	320	350	510	3780	743	485	288	537
5	485	883	771	350	320	360	500	3750	937	485	275	509
6	466	774	577	360	320	360	480	3600	879	462	275	452
7	525	746	485	370	320	360	470	3370	724	406	275	478
8	540	619	464	370	320	340	500	2940	665	353	270	533
9	524	671	442	380	310	340	510	2530	629	334	245	561
10	503	619	655	400	310	340	530	2180	560	337	239	549
11	494	1140	632	440	310	340	550	1900	558	318	244	859
12	467	1740	553	300	310	340	580	1660	869	314	238	1280
13	458	1950	559	350	310	340	630	1510	1350	477	251	1050
14	428	1760	517	430	300	350	700	1260	1770	689	245	841
15	464	1460	470	470	300	360	800	1380	1880	735	234	701
16	400	1240	444	460	300	390	1050	1570	2150	657	233	625
17	448	1150	440	430	300	430	1590	1500	2160	544	230	565
18	382	1080	420	400	300	450	2100	1340	2080	464	227	580
19	415	828	410	350	310	480	2860	1180	1910	378	227	620
20	396	961	400	320	310	500	3250	1350	1850	359	227	613
21	390	1010	390	290	330	500	3210	1870	2320	341	246	536
22	354	959	400	260	340	490	3310	2150	2330	294	237	502
23	428	917	400	260	340	470	4600	2190	2290	330	247	495
24	457	930	400	280	330	450	6450	2150	1750	332	248	493
25	416	831	390	290	340	430	6900	1930	1400	375	250	496
26	351	787	370	290	340	430	6350	1560	1230	401	314	435
27	397	721	370	290	350	480	5770	1470	780	378	337	427
28	397	689	400	290	350	500	5130	1320	913	217	337	420
29	395	609	390	300	---	500	4540	979	726	268	603	378
30	412	578	380	300	---	490	4350	1010	619	268	808	328
31	630	---	370	310	---	470	---	1050	---	280	674	---
TOTAL	14082	30149	15018	10800	8920	12690	69710	66389	38600	12702	9410	17388
MEAN	454	1005	484	348	319	409	2324	2142	1287	410	304	580
MAX	630	1950	771	470	350	500	6900	4280	2330	735	808	1280
MIN	351	578	370	260	300	340	470	979	558	217	227	328
CFSM	.52	1.16	.56	.40	.37	.47	2.67	2.46	1.48	.47	.35	.67
IN.	.60	1.29	.64	.46	.38	.54	2.98	2.84	1.65	.54	.40	.74

CAL YR 1974 TOTAL 256842 MEAN 704 MAX 4200 MIN 212 CFSM .81 IN 10.98
WTR YR 1975 TOTAL 305858 MEAN 838 MAX 6900 MIN 217 CFSM .96 IN 13.08

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 bridge on county road, 700 ft (213 m) upstream from County Road 569, and 1.0 mi (1.6 km) northwest of Perronville.

DRAINAGE AREA.--38.4 mi^2 (99.5 km^2).

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, 810 ft^3/s (22.9 m^3/s) Apr. 24, gage height, 5.42 ft (1.652 m); minimum, 0.26 ft^3/s (0.007 m^3/s) Aug. 12, gage height, 1.95 ft (0.594 m).
Period of record: Maximum discharge, 810 ft^3/s (22.9 m^3/s) Apr. 24, 1975, gage height, 5.42 ft (1.652 m); minimum, 0.18 ft^3/s (0.005 m^3/s) Sept. 18, 1971; minimum gage height, 1.95 ft (0.594 m) Aug. 12, 1975.
A discharge of 0.09 ft^3/s (0.003 m^3/s) was measured, Aug. 25, 1970.

REMARKS.--Records good except those for winter periods and those below 10 ft^3/s (0.28 m^3/s), which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	91	52	16	7.6	10	13	287	39	16	.95	18
2	27	100	49	16	7.4	10	13	250	33	14	.86	14
3	26	91	47	16	7.2	9.8	13	236	32	12	1.0	15
4	25	76	46	16	7.0	9.8	13	235	29	9.6	.95	21
5	24	69	45	16	7.0	9.8	13	233	29	7.6	.77	21
6	26	59	43	16	7.0	9.8	13	232	30	6.8	.50	24
7	27	52	41	16	7.0	10	13	211	26	6.2	.46	27
8	27	47	38	17	6.8	10	13	187	23	5.5	.42	31
9	26	42	35	17	6.6	10	13	166	19	4.3	.46	26
10	26	44	33	19	6.6	10	14	146	17	4.1	.42	29
11	26	138	31	22	6.6	10	14	128	17	3.8	.34	72
12	25	168	28	25	6.6	10	15	112	52	12	.26	94
13	24	152	27	23	6.8	10	18	98	84	15	1.1	75
14	24	130	25	22	6.8	10	24	88	140	14	.95	57
15	24	109	24	21	7.0	10	60	97	156	13	.95	42
16	23	94	23	19	7.2	11	90	99	197	12	.77	31
17	23	91	22	18	7.2	11	120	87	185	9.4	.68	25
18	23	78	22	17	7.4	11	170	75	185	6.4	.50	23
19	22	76	21	16	7.8	12	200	66	163	7.0	.46	27
20	22	75	20	15	8.4	13	240	76	145	6.4	.42	29
21	21	75	20	14	8.8	13	263	80	130	6.4	.50	26
22	21	78	20	13	9.4	14	282	72	108	5.2	.50	22
23	22	76	19	12	9.6	14	414	70	94	3.5	.46	19
24	22	76	19	11	9.8	14	680	69	76	3.5	.46	19
25	22	73	19	11	10	15	680	68	58	3.0	.68	19
26	21	68	18	10	10	15	472	62	43	2.2	.86	18
27	21	64	18	9.4	10	14	374	55	34	2.2	.86	16
28	22	58	18	9.0	10	14	315	44	28	1.9	7.6	14
29	22	56	17	8.6	---	14	268	36	23	1.7	27	13
30	27	54	17	8.2	---	14	281	39	19	1.3	29	12
31	33	---	17	7.8	---	14	---	45	---	1.1	22	---
TOTAL	752	2460	874	477.0	219.6	362.2	5111	3749	2214	217.1	103.14	879
MEAN	24.3	82.0	28.2	15.4	7.84	11.7	170	121	73.8	7.00	3.33	29.3
MAX	33	168	52	25	10	15	680	287	197	16	29	94
MIN	21	42	17	7.8	6.6	9.8	13	36	17	1.1	.26	12
CFSM	.63	2.14	.73	.40	.20	.30	4.43	3.15	1.92	.18	.09	.76
IN.	.73	2.38	.85	.46	.21	.35	4.95	3.63	2.14	.21	.10	.85

CAL YR 1974 TOTAL 19393.80 MEAN 53.1 MAX 334 MIN 2.5 CFSM 1.38 IN 18.79
WTR YR 1975 TOTAL 17418.04 MEAN 47.7 MAX 680 MIN .26 CFSM 1.24 IN 16.87

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 bridge on County Road 533, 1.4 mi (2.3 km) downstream from Tenmile Creek, and 1.5 mi (2.4 km) north of Hyde.

DRAINAGE AREA.--450 mi^2 (1,166 km^2).

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.--21 years, 376 ft^3/s (10.65 m^3/s), 11.35 in/yr (288 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,270 ft^3/s (121 m^3/s) Apr. 25, gage height, 6.61 ft (2.015 m); minimum, 34 ft^3/s (0.96 m^3/s) Aug. 12, gage height, 1.53 ft (0.466 m).
Period of record: Maximum discharge, 7,590 ft^3/s (215 m^3/s) May 7, 1960, gage height, 8.27 ft (2.521 m); minimum, 21 ft^3/s (0.595 m^3/s) Sept. 1, 2, 1970, gage height, 1.34 ft (0.408 m).

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	253	515	295	145	115	94	120	2400	447	268	47	304
2	252	665	280	145	115	94	120	2130	413	228	45	256
3	242	685	270	140	115	94	115	2000	372	196	52	220
4	226	666	260	140	115	94	115	2030	352	172	61	214
5	216	617	255	140	115	96	115	2000	357	160	77	224
6	226	549	250	145	115	98	115	1950	354	148	63	232
7	242	477	240	145	110	100	115	1790	337	140	55	272
8	241	419	230	150	105	100	115	1630	320	128	49	284
9	237	375	215	160	105	100	120	1460	284	115	45	292
10	237	349	200	170	100	100	130	1280	244	104	42	296
11	231	728	200	185	94	100	140	1120	224	110	39	440
12	225	1100	200	210	90	100	160	957	410	130	35	570
13	211	1090	200	205	86	98	230	818	638	150	48	575
14	218	1040	195	200	84	96	450	724	1350	209	49	540
15	215	978	190	200	84	98	700	738	1310	231	59	475
16	206	838	185	195	84	100	1000	736	1520	206	62	405
17	200	706	185	190	86	105	1200	720	1400	170	57	340
18	193	622	185	180	86	110	1500	696	1350	141	50	320
19	187	580	180	175	88	115	1700	643	1240	141	45	360
20	180	582	180	170	90	120	2100	626	1140	120	43	340
21	173	570	175	165	92	125	2500	707	1140	113	46	312
22	175	540	175	155	94	130	2660	759	1140	96	48	288
23	186	516	175	150	94	135	3190	847	1170	85	54	268
24	187	536	170	145	94	140	4180	898	1120	80	58	264
25	186	488	170	140	94	140	4250	892	1040	70	60	256
26	182	335	165	135	94	135	4080	851	840	67	55	240
27	177	330	160	130	94	130	3770	736	644	68	64	220
28	172	325	155	130	94	130	3320	595	500	63	102	199
29	176	315	150	125	---	125	2740	502	390	59	169	184
30	195	305	150	120	---	125	2440	466	320	54	272	166
31	236	---	145	115	---	120	---	470	---	51	332	---
TOTAL	6483	17841	6185	4900	2732	3447	43490	34171	22366	4073	2283	9356
MEAN	209	595	200	158	97.6	111	1450	1102	746	131	73.6	312
MAX	253	1100	295	210	115	140	4250	2400	1520	268	332	575
MIN	172	305	145	115	84	94	115	466	224	51	35	166
CFSM	.46	1.32	.44	.35	.22	.25	3.22	2.45	1.66	.29	.16	.69
IN.	.54	1.47	.51	.41	.23	.28	3.60	2.82	1.85	.34	.19	.77

CAL YR 1974 TOTAL 153039 MEAN 419 MAX 2160 MIN 86 CFSM .93 IN 12.65
WTR YR 1975 TOTAL 157327 MEAN 431 MAX 4250 MIN 35 CFSM .96 IN 13.01

04060500 Iron River at Caspian, Mich.

LOCATION.--Lat 46°03'31", long 88°37'38", in SE¼ SW¼ 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.

DRAINAGE AREA.--92.1 mi^2 (238.5 km^2).

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.

AVERAGE DISCHARGE.--27 years, 87.3 ft^3/s (2.472 m^3/s).

EXTREMES.--Current year: Maximum discharge, 836 ft^3/s (23.7 m^3/s) Apr. 24, gage height, 8.89 ft (2.710 m); minimum, 47 ft^3/s (1.33 m^3/s) Mar. 14, gage height, 3.84 ft (1.170 m), result of freezeup.
Period of record: Maximum discharge, 1,430 ft^3/s (40.5 m^3/s) July 2, 1953, gage height, 10.20 ft (3.109 m); minimum 25 ft^3/s (0.71 m^3/s) Mar. 29, 1969, gage height, 3.30 ft (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 ft^3/s (0.3 m^3/s).

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	143	77	66	71	69	70	289	87	72	57	67
2	66	114	77	75	71	70	70	252	86	71	57	65
3	66	90	76	68	70	68	66	239	86	70	61	79
4	66	80	74	62	66	68	64	273	84	70	61	74
5	65	77	74	66	68	68	69	253	94	69	58	73
6	69	74	73	67	69	67	70	224	91	70	58	81
7	73	73	74	67	70	67	71	192	85	68	58	94
8	72	73	72	67	70	68	71	169	83	67	57	89
9	67	72	72	62	70	69	71	150	79	66	57	80
10	66	79	72	67	70	70	72	134	79	66	51	89
11	65	168	71	78	72	73	74	124	82	68	52	108
12	64	182	70	92	72	67	76	116	128	92	60	91
13	61	138	70	105	70	70	79	110	110	94	62	80
14	63	115	70	90	70	73	85	112	112	87	62	74
15	63	105	72	81	69	72	97	122	108	84	61	70
16	64	95	73	75	68	66	137	118	123	81	62	67
17	66	93	72	73	65	68	208	107	108	77	59	64
18	62	87	70	70	64	69	605	101	104	73	59	64
19	61	86	71	67	66	70	650	99	97	69	59	84
20	61	100	71	65	69	73	538	115	96	66	59	77
21	62	101	71	64	73	76	403	181	92	62	59	76
22	64	94	70	63	68	74	353	164	87	61	59	73
23	63	90	69	62	67	72	498	141	84	64	59	77
24	62	88	67	62	67	67	792	126	81	66	59	85
25	62	82	66	62	68	70	599	111	78	65	70	77
26	62	79	65	63	66	70	418	105	76	63	61	72
27	62	80	65	70	70	73	361	100	76	62	60	69
28	63	80	68	75	70	72	338	94	74	61	92	68
29	67	78	69	73	------	72	332	93	73	59	84	66
30	77	77	72	74	------	71	319	96	74	58	78	66
31	91	------	69	74	------	70	------	91	------	58	69	------
TOTAL	2,048	2,893	2,202	2,205	1,929	2,172	7,656	4,601	2,717	2,159	1,920	2,299
MEAN	66.1	96.4	71.0	71.1	68.9	70.1	255	148	90.6	69.6	61.9	76.6
MAX	91	182	77	105	73	76	792	289	128	94	92	108
MIN	61	72	65	62	64	66	64	91	73	58	51	64

CAL YR 1974 TOTAL 33,366 MEAN 91.4 MAX 362 MIN 60
WTR YR 1975 TOTAL 34,801 MEAN 95.3 MAX 792 MIN 51

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 mi^2 (1,008 km^2).

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.--32 years, (1914-15, 1944-75), 360 ft^3/s (10.20 m^3/s), 12.57 in/yr (319 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,340 ft^3/s (66.3 m^3/s) Apr. 25, gage height, 4.60 ft (1.402 m); maximum gage height, 8.22 ft (2.505 m) Dec. 27 (backwater from ice); minimum discharge, 188 ft^3/s (5.32 m^3/s) Aug. 11,12, gage height, 1.90 ft (0.579 m).

Period of record: Maximum discharge, 4,700 ft^3/s (133 m^3/s) July 2, 1953, gage height, 6.57 ft (2.003 m); maximum gage height, 8.27 ft (2.521 m) Dec. 26, 1969 (backwater from ice); minimum discharge, 118 ft^3/s (3.34 m^3/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 period, 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	301	464	270	240	255	275	290	1,020	377	263	201	282
2	285	482	270	250	245	270	300	902	359	256	201	265
3	271	428	270	250	250	275	290	858	357	250	208	324
4	263	394	265	250	255	280	275	980	347	246	209	342
5	259	340	265	250	260	280	270	930	372	239	202	315
6	265	312	270	250	260	270	260	843	377	241	201	330
7	278	291	260	250	260	270	255	747	352	239	198	357
8	278	276	240	250	255	265	250	673	339	233	195	373
9	272	273	210	260	255	260	250	617	329	229	193	325
10	267	285	235	270	255	260	255	566	320	226	208	343
11	258	514	260	280	255	260	260	529	319	236	196	409
12	252	641	265	285	255	265	270	497	493	323	195	389
13	246	538	260	280	250	265	273	467	546	328	358	341
14	244	457	260	275	250	265	294	452	498	289	262	315
15	245	410	255	275	260	265	330	527	462	282	238	295
16	242	385	250	270	265	270	424	516	526	278	230	279
17	244	391	250	260	270	285	571	473	516	253	226	271
18	242	363	240	255	270	300	1,010	440	543	239	217	265
19	240	338	240	250	260	320	1,590	417	473	238	215	294
20	237	354	240	260	255	330	1,600	488	433	230	221	315
21	235	379	240	260	255	340	1,380	591	432	224	232	311
22	235	354	235	250	270	340	1,170	655	383	221	225	307
23	238	337	235	240	280	330	1,380	691	351	231	220	316
24	235	325	230	245	290	320	1,970	650	325	246	229	359
25	236	307	225	250	270	280	2,280	513	309	232	282	330
26	236	235	225	260	265	300	1,900	670	300	224	283	314
27	234	320	235	270	270	320	1,450	536	288	223	253	295
28	235	300	245	275	270	320	1,210	440	281	219	306	276
29	250	290	250	280	------	310	1,150	403	274	213	470	266
30	306	280	240	275	------	300	1,120	418	268	207	382	260
31	322	------	220	265	------	300	------	403	------	203	311	------
TOTAL	7,951	11,063	7,655	8,080	7,310	8,990	24,327	18,912	11,549	7,561	7,567	9,463
MEAN	256	369	247	261	261	290	811	610	385	244	244	315
MAX	322	641	270	285	290	340	2,280	1,020	546	328	470	409
MIN	234	235	210	240	245	260	250	403	268	203	193	260
CFSM	.66	.95	.64	.67	.67	.75	2.08	1.57	.99	.63	.63	.81
IN.	.76	1.06	.73	.77	.70	.86	2.33	1.81	1.10	.72	.72	.90

CAL YR 1974 TOTAL 129,431 MEAN 355 MAX 1,010 MIN 210 CFSM .91 IN 12.38
WTR YR 1975 TOTAL 130,428 MEAN 357 MAX 2,280 MIN 193 CFSM .92 IN 12.47

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 mi^2 (1,546 km^2).

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.--31 years, 594 ft^3/s (16.82 m^3/s) 13.51 in/yr (343 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,390 ft^3/s (153 m^3/s) Apr. 24, gage height, 6.82 ft (2.079 m); minimum, 79 ft^3/s (2.24 m^3/s) July 25, gage height, 1.62 ft (0.494 m); minimum daily, 156 ft^3/s (4.42 m^3/s) Aug. 11.
Period of record: Maximum discharge, 10,900 ft^3/s (309 m^3/s) Apr. 25, 1960, gage height, 9.82 ft (2.993 m); minimum, 7.7 ft^3/s (0.22 m^3/s) Sept. 17, 1950, gage height, 0.89 ft (0.271 m); minimum daily, 81 ft^3/s (2.29 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	428	650	429	308	273	317	337	3,090	632	385	206	314
2	427	864	392	308	263	309	351	2,710	570	366	205	299
3	416	817	415	300	271	313	348	2,460	538	355	208	299
4	398	748	384	321	273	317	285	2,650	498	339	210	322
5	389	684	406	321	281	317	241	2,700	517	318	197	313
6	388	632	389	322	302	317	233	2,540	544	308	197	333
7	498	574	412	312	303	317	246	2,250	537	286	190	368
8	460	540	344	318	273	313	246	1,990	518	281	169	449
9	545	493	310	322	273	317	241	1,690	469	269	171	411
10	462	504	359	328	292	301	241	1,450	435	255	168	380
11	402	697	375	367	281	309	282	1,220	432	287	156	403
12	253	1,210	381	368	299	309	294	1,060	557	489	159	432
13	348	1,200	365	313	294	313	298	931	726	436	169	412
14	352	1,070	368	339	285	309	360	833	787	330	171	396
15	340	962	357	327	291	309	414	841	782	251	172	370
16	343	804	364	318	302	313	511	965	884	237	181	342
17	344	780	359	314	317	321	718	936	964	220	182	332
18	339	715	348	313	300	338	1,430	851	876	211	178	352
19	337	669	342	323	279	370	2,230	788	794	202	168	445
20	333	645	346	348	306	379	2,360	860	742	195	170	525
21	332	668	353	297	295	406	2,190	1,700	938	191	175	533
22	332	657	321	254	305	406	2,190	2,230	986	192	181	536
23	327	624	325	257	313	392	3,090	2,210	954	190	188	540
24	323	593	282	289	317	366	5,090	1,980	854	187	184	603
25	320	539	332	309	302	317	5,020	1,820	755	169	214	611
26	306	397	305	300	287	343	4,470	1,480	664	179	244	541
27	308	537	323	309	309	388	4,200	1,210	561	176	237	483
28	316	518	338	319	317	388	4,030	956	471	170	308	458
29	329	446	339	317	------	379	3,790	790	447	165	496	427
30	357	413	319	310	------	366	3,490	712	409	202	457	396
31	413	------	269	287	------	348	------	681	------	211	362	------
TOTAL	11,465	20,650	10,951	9,738	8,203	10,507	49,226	48,584	19,841	8,052	6,673	12,625
MEAN	370	688	353	314	293	339	1,641	1,567	661	260	215	421
MAX	545	1,210	429	368	317	406	5,090	3,090	986	489	496	611
MIN	253	397	269	254	263	301	233	681	409	165	156	299
CFSM	.62	1.15	.59	.53	.49	.57	2.75	2.62	1.11	.44	.36	.71
IN.	.71	1.29	.68	.61	.51	.65	3.07	3.03	1.24	.50	.42	.79

CAL YR 1974 TOTAL 202,318 MEAN 554 MAX 2,930 MIN 249 CFSM .93 IN 12.61
WTR YR 1975 TOTAL 216,515 MEAN 593 MAX 5,090 MIN 156 CFSM .99 IN 13.49

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 mi^2 (1,634 km^2).

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 topograhic map (nearest 10 ft).

AVERAGE DISCHARGE.--23 years, 172 ft^3/s (4.871 m^3/s).

EXTREMES.--Current year: Maximum discharge, 3,320 ft^3/s (94.0 m^3/s) Apr. 25, gage height, 7.40 ft (2.256 m); minimum daily, 68 ft^3/s (1.93 m^3/s) Sept. 27, 28; minimum gage height, 2.69 ft (0.820 m) Apr. 11.
Period of record: Maximum discharge, 8,050 ft^3/s (228 m^3/s) July 2, 1953, gage height, 10.50 ft (3.200 m); minimum daily, 62 ft^3/s (1.76 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	92	95	93	90	88	90	766	84	86	93	92
2	95	91	95	92	88	88	90	613	84	86	93	92
3	95	90	95	91	88	88	90	676	84	86	93	93
4	95	90	95	95	88	88	90	942	84	86	93	92
5	95	94	95	96	88	90	90	1,540	84	86	93	93
6	95	95	94	96	88	90	90	1,920	84	87	93	92
7	95	95	93	95	88	88	92	1,700	84	88	93	93
8	95	95	93	94	88	90	92	1,500	84	86	93	92
9	95	95	94	95	87	90	92	1,280	84	87	93	92
10	95	96	95	95	86	90	92	1,040	84	87	93	94
11	95	99	95	95	86	88	92	406	85	88	93	93
12	95	98	94	95	86	90	92	92	86	88	93	92
13	96	224	92	95	86	90	92	93	87	88	93	92
14	96	257	92	95	87	90	90	93	86	90	93	92
15	95	185	92	94	88	90	90	93	86	90	93	92
16	95	109	92	94	89	90	92	92	86	91	93	92
17	95	97	93	92	90	90	98	92	87	91	93	91
18	95	95	94	92	88	90	100	92	87	91	93	91
19	95	95	94	92	86	90	149	93	86	90	93	90
20	95	94	95	91	87	92	283	345	87	90	93	90
21	95	94	95	90	88	94	254	1,060	86	90	93	90
22	95	95	95	90	88	94	191	1,740	86	91	93	90
23	95	95	94	91	89	94	687	1,700	86	93	93	90
24	95	94	94	92	90	92	2,560	1,390	86	92	93	90
25	96	96	93	91	89	90	3,200	1,070	86	92	93	104
26	97	94	93	90	88	92	2,570	949	86	92	93	100
27	97	94	93	92	87	94	2,180	374	86	92	93	68
28	96	94	92	92	87	92	2,030	86	86	92	95	68
29	92	94	93	90	------	90	1,730	86	86	92	97	81
30	91	95	95	91	------	90	1,240	84	86	92	92	90
31	91	------	95	90	------	90	------	84	------	90	92	------
TOTAL	2,942	3,231	2,909	2,876	2,458	2,802	18,728	22,091	2,563	2,770	2,887	2,711
MEAN	94.9	108	93.8	92.8	87.8	90.4	624	713	85.4	89.4	93.1	90.4
MAX	97	257	95	96	90	94	3,200	1,920	87	93	97	104
MIN	91	90	92	90	86	88	90	84	84	86	92	68

CAL YR 1974 TOTAL 39,261 MEAN 108 MAX 679 MIN 85
WTR YR 1975 TOTAL 68,968 MEAN 189 MAX 3,200 MIN 68

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 Road 607, 0.6 mi (1.0 km) downstream from West Branch, and 3.5 mi (5.6 km) northwest of Champion.

DRAINAGE AREA.--133 mi^2 (344 km^2).

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.--14 years, 214 ft^3/s (6.060 m^3/s), 21.85 in/yr (555 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,720 ft^3/s (77.0 m^3/s) May 4, gage height, 6.83 ft (2.082 m); minimum, 3.2 ft^3/s (0.091 m^3/s) Aug. 11, 12, gage height, 1.16 ft (0.354 m).
Period of record: Maximum discharge, 3,610 ft^3/s (102 m^3/s) May 8, 1965, gage height, 8.01 ft (2.441 m); minimum, 3.2 ft^3/s (0.091 m^3/s) Aug. 11, 12, 1975; gage height, 1.16 ft (0.354 m).

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	424	185	94	70	84	88	1990	174	81	5.6	31
2	168	506	180	96	70	86	86	2130	152	72	5.6	25
3	165	466	170	96	68	84	84	2060	131	62	6.8	22
4	168	385	165	96	68	82	82	2600	116	53	6.4	20
5	158	320	160	96	66	80	80	2520	126	49	5.2	18
6	177	272	155	96	66	76	80	2030	136	43	4.4	23
7	218	231	150	96	66	72	78	1670	146	39	4.0	40
8	211	205	145	96	66	70	76	1420	153	34	3.8	95
9	192	185	140	96	66	68	76	1170	138	30	3.6	116
10	171	180	135	100	66	66	78	950	113	31	3.4	162
11	153	334	130	120	66	64	80	771	100	25	3.4	206
12	140	548	125	150	64	62	82	629	137	39	3.2	167
13	126	569	120	140	64	62	86	515	232	45	4.0	133
14	117	500	120	130	64	62	100	437	319	44	3.8	104
15	150	417	115	120	64	64	130	421	320	40	3.6	80
16	183	372	115	110	64	66	200	396	544	33	4.0	65
17	186	340	110	100	64	70	350	347	707	27	4.0	56
18	168	296	110	94	64	74	450	297	572	23	3.6	51
19	147	255	110	90	66	80	640	274	393	26	3.4	92
20	135	255	110	84	66	88	800	854	337	22	3.6	132
21	124	262	105	78	66	88	1000	1080	388	18	20	156
22	119	258	105	74	68	88	1200	986	348	16	23	182
23	117	245	100	72	68	90	1400	751	281	15	14	217
24	111	235	100	70	70	96	1500	552	214	15	14	229
25	103	215	98	72	72	105	1700	441	168	14	19	194
26	95	210	98	74	74	100	1910	360	133	12	17	158
27	87	200	96	76	78	100	1910	297	122	11	13	125
28	82	190	96	74	82	98	1820	245	128	9.2	18	101
29	85	195	96	74	---	96	1660	207	107	8.0	51	82
30	105	190	96	72	---	92	1630	199	95	7.2	50	69
31	161	---	94	70	---	90	---	186	---	6.4	38	---
TOTAL	4480	9260	3834	2906	1896	2503	19456	28785	7030	949.8	362.4	3151
MEAN	145	309	124	93.7	67.7	80.7	649	929	234	30.6	11.7	105
MAX	218	569	185	150	82	105	1910	2600	707	81	51	229
MIN	82	180	94	70	64	62	76	186	95	6.4	3.2	18
CFSM	1.09	2.32	.93	.70	.51	.61	4.88	6.98	1.76	.23	.09	.79
IN.	1.25	2.59	1.07	.81	.53	.70	5.44	8.05	1.97	.27	.10	.88

CAL YR 1974 TOTAL 69603.0 MEAN 191 MAX 2050 MIN 12 CFSM 1.44 IN 19.47
WTR YR 1975 TOTAL 84613.2 MEAN 232 MAX 2600 MIN 3.2 CFSM 1.74 IN 23.67

PEAK DISCHARGE (BASE, 600 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
05-04	1400	6.83	2,720
05-21	0700	4.68	1,120
06-17	1100	4.06	730

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 Nautral Gas Co. pipeline, 0.6 mi (1.0 km) upstream from 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 mi^2 (502 km^2).

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.--7 years, 296 ft^3/s (8.383 m^3/s), 20.72 in/yr (526 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,520 ft^3/s (71.4 m^3/s) May 5, 6, gage height, 7.38 ft (2.249 m); minimum, 35 ft^3/s (0.99 m^3/s) Aug. 20, 21, gage height, 2.38 ft (0.725 m).
Period of record: Maximum discharge, 2,590 ft^3/s (73.3 m^3/s) May 7, 8, 1972, gage height, 7.42 ft (2.262 m); maximum gage height, 7.54 ft (2.298 m) Apr. 23, 1969; minimum discharge, 35 ft^3/s (0.99 m^3/s) Aug. 20, 21, 1975, gage height, 2.38 ft (0.725 m).

REMARKS.--Records good. Records of water quality for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	123	237	319	155	146	117	138	1900	453	277	65	44
2	126	279	303	149	144	117	138	2030	420	260	64	45
3	130	313	295	148	141	117	138	2150	394	243	62	44
4	137	337	282	147	138	116	136	2310	372	224	60	43
5	143	352	272	144	138	115	136	2460	357	204	58	44
6	156	354	264	141	136	115	134	2470	344	190	55	44
7	166	351	258	138	133	116	132	2360	328	173	52	46
8	176	344	251	136	132	116	130	2220	313	158	49	48
9	186	335	240	136	129	114	129	2040	300	139	48	48
10	191	330	233	136	127	112	128	1820	287	127	47	57
11	196	357	228	143	128	112	127	1610	278	119	46	62
12	201	393	222	142	126	112	125	1440	281	122	44	66
13	192	443	216	141	125	112	125	1290	283	116	43	69
14	192	484	209	145	123	112	125	1150	293	112	42	71
15	193	510	206	147	121	110	126	1050	314	107	41	73
16	193	503	206	148	120	109	132	955	342	103	41	74
17	202	491	204	148	117	108	147	863	397	97	41	74
18	202	476	199	148	118	108	189	784	458	94	39	75
19	202	458	195	148	117	110	234	712	483	101	37	84
20	203	450	192	145	117	110	279	755	512	96	36	84
21	197	435	190	148	115	112	328	859	518	92	39	90
22	197	417	185	145	114	115	391	966	515	88	38	96
23	196	409	184	144	113	115	530	988	504	85	38	106
24	193	403	183	144	113	128	747	955	470	84	38	117
25	192	387	179	148	118	132	972	895	427	80	40	126
26	188	368	174	151	119	133	1220	828	393	74	40	131
27	184	362	172	147	119	133	1450	751	368	74	39	135
28	181	354	168	146	118	132	1620	667	344	71	42	136
29	181	342	164	150	---	135	1730	597	318	69	44	135
30	184	328	160	149	---	137	1800	548	295	67	44	132
31	198	---	157	148	---	138	---	495	---	67	44	---
TOTAL	5601	11602	6710	4505	3505	3668	13736	40918	11361	3913	1416	2399
MEAN	181	387	216	145	125	118	458	1320	379	126	45.7	80.0
MAX	203	510	319	155	146	138	1800	2470	518	277	65	136
MIN	123	237	157	136	113	108	125	495	278	67	36	43
CFSM	.93	1.99	1.11	.75	.64	.61	2.36	6.80	1.95	.65	.24	.41
IN.	1.07	2.22	1.29	.86	.67	.70	2.63	7.85	2.18	.75	.27	.46

CAL YR 1974 TOTAL 92862 MEAN 254 MAX 1390 MIN 68 CFSM 1.31 IN 17.81
WTR YR 1975 TOTAL 109334 MEAN 300 MAX 2470 MIN 36 CFSM 1.55 IN 20.97

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 mi^2 (622 km^2).

PERIOD OF RECORD.--July 1961 to September 1975 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

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

AVERAGE DISCHARGE.--14 years, 322 ft^3/s (9.119 m^3/s).

EXTREMES.--Current year: Maximum discharge, 3,030 ft^3/s (85.8 m^3/s) May 6, gage height, 6.86 ft (2.091 m); minimum, 27 ft^3/s (0.76 m^3/s) Sept. 2, 4, 5; minimum gage height, 0.38 ft (0.116 m) Sept. 2.
Period of record: Maximum discharge, 3,950 ft^3/s (112 m^3/s) May 10, 1965, gage height, 8.17 ft (2.490 m); minimum, 7.0 ft^3/s (0.20 m^3/s) Mar. 26-28, 1964, gage height, 0.14 ft (0.043 m); minimum daily, 7.7 ft^3/s (0.22 m^3/s) Mar. 26-29, 1964.

REMARKS.--Records good except those for winter periods, 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	131	206	333	159	140	110	133	2230	492	287	66	39
2	131	290	318	154	140	109	133	2330	451	261	57	29
3	130	509	291	142	135	108	131	2450	428	236	57	29
4	129	384	281	135	135	112	131	2680	393	224	57	27
5	129	331	270	136	135	116	130	2930	379	189	57	37
6	131	327	258	136	130	120	133	3010	360	161	57	45
7	163	342	256	135	130	118	132	2900	310	173	53	46
8	186	351	255	127	130	106	132	2690	363	175	42	55
9	183	350	235	120	130	98	127	2460	297	132	35	64
10	183	349	201	122	130	98	121	2190	296	110	35	68
11	183	414	190	130	125	100	122	1940	225	88	37	145
12	181	490	192	145	125	100	123	1700	343	186	35	154
13	181	501	205	145	120	100	124	1480	380	189	35	100
14	180	498	218	145	120	100	126	1370	348	60	35	52
15	179	530	216	145	115	100	151	1270	322	80	35	42
16	179	563	213	141	113	96	257	1160	401	130	35	52
17	178	540	198	142	112	92	173	1040	426	113	35	60
18	179	509	167	142	110	101	281	937	458	94	34	87
19	179	466	161	142	109	119	447	852	501	88	31	105
20	179	445	177	140	108	119	450	956	565	88	29	104
21	179	462	189	140	110	120	450	1120	684	88	32	116
22	178	470	189	140	116	119	531	1360	681	88	32	124
23	179	447	185	140	116	119	732	1320	571	89	32	112
24	177	416	170	140	126	130	1150	1190	514	89	32	102
25	177	392	161	140	124	131	1300	1080	470	89	32	104
26	176	385	150	140	124	129	1490	988	417	68	30	113
27	162	373	143	145	124	135	1730	903	371	59	30	160
28	150	359	150	145	120	135	1910	776	356	59	33	146
29	151	346	155	145	---	133	2060	683	333	59	63	104
30	154	335	161	145	---	133	2150	606	296	67	86	99
31	173	---	161	140	---	138	---	547	---	75	57	---
TOTAL	5150	12380	6449	4343	3452	3544	17060	49148	12431	3894	1316	2520
MEAN	166	413	208	140	123	114	569	1585	414	126	42.5	84.0
MAX	186	563	333	159	140	138	2150	3010	684	287	86	160
MIN	129	206	143	120	108	92	121	547	225	59	29	27

CAL YR 1974 TOTAL 101133 MEAN 277 MAX 1590 MIN 49
WTR YR 1975 TOTAL 121687 MEAN 333 MAX 3010 MIN 27

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 mi^2 (818 km^2).

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.--11 years, 442 ft^3/s (12.52 m^3/s), 18.99 in/yr (482 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,340 ft^3/s (94.6 m^3/s) May 7, gage height, 9.90 ft (3.018 m); minimum, 57 ft^3/s (1.61 m^3/s) Aug. 20, 21, gage height, 2.22 ft (0.677 m).
Period of record: Maximum discharge, 4,360 ft^3/s (123 m^3/s) May 11, 1965, gage height, 11.60 ft (3.536 m); minimum, 44 ft^3/s (1.25 m^3/s) Sept. 22, 23, 1971, gage height, 2.13 ft (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 water quality for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	186	317	420	212	190	150	206	2420	666	394	110	107
2	182	338	400	214	185	150	196	2510	606	360	98	92
3	179	627	380	203	180	150	194	2620	560	322	91	84
4	177	570	365	185	180	150	204	2790	526	286	90	83
5	179	460	350	178	180	150	200	3070	497	267	88	82
6	184	426	323	183	175	155	204	3300	494	223	88	99
7	198	429	316	182	175	155	223	3310	418	207	87	112
8	250	453	268	181	170	155	230	3120	442	220	82	120
9	251	445	300	169	170	155	230	2810	416	197	71	129
10	247	447	285	170	165	155	225	2520	387	160	64	146
11	242	545	270	180	165	150	220	2240	324	146	63	211
12	239	697	251	185	160	150	215	1970	377	196	64	286
13	235	695	246	185	160	150	220	1720	522	324	66	226
14	238	682	268	190	160	150	220	1510	507	183	63	167
15	236	675	270	190	155	150	236	1460	460	134	62	121
16	234	715	271	190	155	150	361	1350	519	174	63	107
17	231	708	265	190	150	150	362	1240	594	186	64	117
18	225	661	240	190	150	155	445	1120	616	158	62	115
19	223	625	227	190	150	155	672	1040	675	146	61	155
20	220	575	217	190	150	160	740	1120	808	138	59	157
21	219	584	236	190	150	160	688	1240	939	134	62	157
22	221	608	251	190	150	165	773	1420	957	135	63	172
23	221	593	244	190	145	170	975	1520	831	136	62	176
24	222	548	235	190	145	180	1330	1390	730	138	64	159
25	220	504	216	185	150	192	1560	1280	674	135	73	155
26	217	500	210	185	150	198	1690	1180	595	129	66	153
27	213	475	190	185	150	206	1880	1100	524	107	63	181
28	190	448	199	185	150	202	2070	982	486	101	77	209
29	193	450	197	185	---	200	2220	885	464	100	110	171
30	205	430	215	185	---	199	2340	806	408	99	143	144
31	222	---	220	190	---	215	---	743	---	108	134	---
TOTAL	6699	16230	8345	5817	4515	5132	21329	55786	17022	5743	2413	4393
MEAN	216	541	269	188	161	166	711	1800	567	185	77.8	146
MAX	251	715	420	214	190	215	2340	3310	957	394	143	286
MIN	177	317	190	169	145	150	194	743	324	99	59	82
CFSM	.68	1.71	.85	.59	.51	.53	2.25	5.70	1.79	.59	.25	.46
IN.	.79	1.91	.98	.68	.53	.60	2.51	6.57	2.00	.68	.28	.52

CAL YR 1974 TOTAL 129805 MEAN 356 MAX 1730 MIN 96 CFSM 1.13 IN 15.28
WTR YR 1975 TOTAL 153424 MEAN 420 MAX 3310 MIN 59 CFSM 1.33 IN 18.06

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 mi^2 (1,699 km^2).

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.--31 years, 704 ft^3/s (19.94 m^3/s).

EXTREMES.--Current year: Maximum discharge, 3,850 ft^3/s (109 m^3/s) May. 8, gage height, 8.08 ft (2.463 m); minimum, 98 ft^3/s (2.78 m^3/s) Oct. 29, gage height, 1.42 ft (0.433 m); minimum daily, 125 ft^3/s (3.54 m^3/s) Oct. 12.
Period of record: Maximum discharge, 7,260 ft^3/s (206 m^3/s) Apr. 28, 1960, gage height, 10.73 ft (3.271 m); minimum daily, 71 ft^3/s (2.01 m^3/s) Nov. 26, 1950.

REMARKS.--Records excellent. Flow regulated by powerplant and by Michigamme Reservoir, capacity, 119,950 acre-ft (148 hm^3) 5 mi (8 km) above station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	591	147	938	972	869	434	411	680	896	665	599	139
2	583	146	1,000	970	864	430	410	672	708	705	340	137
3	578	135	1,050	967	859	422	414	747	707	703	159	139
4	457	132	1,040	964	855	421	410	1,180	642	650	415	136
5	133	134	1,040	961	922	401	419	1,640	616	612	594	139
6	138	143	1,040	958	968	404	401	2,740	896	614	596	140
7	384	142	1,050	956	934	390	399	3,520	1,110	447	593	141
8	592	142	1,050	955	962	406	406	3,810	1,110	612	480	138
9	583	141	1,040	951	950	398	413	3,540	1,100	608	149	324
10	588	145	1,040	950	986	396	415	2,750	1,100	608	140	142
11	452	159	1,120	953	1,060	382	411	1,950	828	610	414	136
12	125	140	1,180	946	1,040	369	418	1,450	497	425	587	137
13	126	142	1,190	943	1,020	408	433	1,180	181	186	588	137
14	396	136	1,190	939	1,010	445	466	1,180	193	457	583	137
15	582	132	1,190	936	1,020	456	510	1,450	536	795	486	137
16	591	133	1,190	932	1,020	426	563	1,710	734	1,180	151	137
17	585	141	1,150	928	1,000	393	634	1,670	735	973	141	214
18	449	387	1,110	926	943	374	390	1,550	992	612	394	140
19	134	669	1,110	921	890	378	202	1,220	1,180	611	584	319
20	138	722	1,050	917	857	421	207	1,470	1,190	609	583	143
21	400	769	1,010	915	820	445	442	1,950	1,400	610	585	152
22	584	950	1,000	909	781	439	621	2,230	1,880	609	482	151
23	582	949	1,000	906	735	430	731	2,450	1,790	613	146	153
24	582	943	998	901	683	360	780	2,440	1,370	610	137	154
25	306	943	995	902	622	336	727	1,930	1,300	607	398	151
26	164	808	991	893	536	397	695	1,690	1,180	347	576	150
27	164	847	989	890	469	438	689	1,450	1,170	180	574	133
28	396	943	985	886	445	433	685	1,160	856	434	468	137
29	337	941	981	884	------	423	687	1,150	614	600	145	151
30	148	940	980	878	------	413	684	1,150	613	598	143	153
31	143	------	975	873	------	407	------	1,150	------	599	140	------
TOTAL	12,011	13,201	32,672	28,782	24,120	12,675	15,073	54,859	28,124	18,489	12,370	4,697
MEAN	387	440	1,054	928	861	409	502	1,770	937	596	399	157
MAX	592	950	1,190	972	1,060	456	780	3,810	1,880	1,180	599	324
MIN	125	132	938	873	445	336	202	672	181	180	137	133

CAL YR 1974 TOTAL 236,147 MEAN 647 MAX 1,220 MIN 125
WTR YR 1975 TOTAL 257,073 MEAN 704 MAX 3,810 MIN 125

04063000 Menominee River near Florence, Wis.

LOCATION.--Lat 45°57'04", long 88°11'13", in NE¼ sec.16, T.41 N., R.31 W., Michigan meridian, Iron County, on left bank 0.5 mi (0.8 km) downstream from confluence of Brule and Michigamme Rivers, 3.5 mi (5.6 km) northeast of Florence, and at mile 117 (188 km).

DRAINAGE AREA.--1,780 mi^2 (4,610 km^2).

PERIOD OF RECORD.--January 1914 to current year. Published as "at Twin Falls near Iron Mountain, Mich." 1914-57. Records published for both sites July 1950 to September 1957.

GAGE.--Water-stage recorder. Altitude of gage is 1,120 ft (341 m), from topographic map (nearest 10 ft). Prior to July 1950, headwater and tailwater gages and generation data entered hourly in daily log sheets by company employees at the Twin Falls Powerplant of Wisconsin-Michigan Power Co., 10.4 mi (16.7 km) downstream.

AVERAGE DISCHARGE.--61 years, 1,802 ft^3/s (51.03 m^3/s).

EXTREMES.--Current year: Maximum discharge, 8,240 ft^3/s (233 m^3/s) Apr. 25, gage height, 8.72 ft (2.658 m); minimum, 38 ft^3/s (1.08 m^3/s) Sept. 26, gage height, 1.21 ft (0.369 m); minimum daily, 57 ft^3/s (1.61 m^3/s) Sept. 26.
Period of record: Maximum discharge, 19,500 ft^3/s (552 m^3/s) Apr. 26, 1960, gage height, 14.15 ft (4.313 m); minimum, 38 ft^3/s (1.08 m^3/s) Aug. 21, 1962, Sept. 26, 1975; minimum gage height, 1.18 ft (0.360 m) Aug. 21, 1962, Nov. 4, 1965; minimum daily discharge, 57 ft^3/s (1.61 m^3/s) Sept. 26, 1975.

REMARKS.--Records excellent. Prior to July 1950 discharge determined from powerplant records computed on basis of load-discharge rating of hydroelectric units and rating for tailwater gage during periods of spill. Rating developed by Geological Survey. Flow regulated by powerplants, Michigamme Reservoir, capacity, 119,950 acre-ft (148 hm^3), and Peavy Pond, capacity, 33,860 acre-ft (41.7 hm^3), on Michigamme River, and by many smaller reservoirs above station.

REVISIONS (WATER YEARS).--WSP 1707: 1953 (M). WSP 1911: Drainage area of former site.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,400	1,720	1,930	1,540	1,580	1,930	1,150	4,490	2,120	1,360	1,150	655
2	1,270	1,600	1,790	1,720	1,640	1,950	1,010	4,130	2,030	1,240	903	1,130
3	1,370	1,330	1,830	1,550	1,640	1,870	1,090	4,170	1,770	1,330	676	1,280
4	1,310	1,450	1,970	1,680	1,540	2,100	1,090	4,450	1,550	1,290	1,290	1,030
5	681	1,290	1,950	1,600	1,670	1,760	1,080	5,350	1,500	1,300	983	1,130
6	1,120	1,460	1,860	1,690	1,630	2,060	920	6,620	1,440	1,170	1,010	917
7	1,250	1,240	1,830	1,710	1,700	1,820	1,050	6,960	1,450	1,410	982	965
8	1,350	1,180	1,900	1,710	1,650	2,030	1,350	6,970	1,520	1,320	981	1,010
9	1,480	894	1,780	1,820	1,700	1,900	873	6,490	1,940	1,280	660	1,060
10	1,530	1,010	1,850	1,730	1,780	1,940	1,030	5,410	2,040	1,220	785	1,100
11	1,420	1,840	1,910	1,800	1,610	1,880	1,060	3,740	1,990	1,130	1,190	1,240
12	858	1,800	1,820	1,670	1,700	1,860	1,150	2,970	2,000	1,190	1,010	1,240
13	823	1,560	1,870	1,810	1,620	1,680	1,390	2,920	2,420	986	1,060	777
14	1,190	2,100	1,760	1,730	1,670	1,320	2,040	2,680	2,270	1,310	1,060	922
15	1,300	2,100	1,990	1,570	1,680	1,090	1,810	2,950	2,010	1,320	1,100	1,320
16	1,250	2,130	1,860	1,750	1,740	1,060	1,700	3,270	2,430	1,670	605	1,330
17	1,320	2,270	1,950	1,590	1,720	1,360	2,430	3,060	2,440	1,640	887	1,500
18	1,400	1,870	1,880	1,620	1,470	1,220	2,980	2,830	3,130	1,540	1,020	1,470
19	922	1,850	1,900	1,540	1,700	1,080	4,030	2,770	2,890	1,010	945	1,850
20	851	1,890	1,840	1,540	1,890	1,310	3,950	3,160	2,950	1,220	1,020	1,460
21	1,110	1,980	1,880	1,540	1,930	1,870	3,210	3,990	3,010	1,420	973	1,540
22	1,210	2,020	1,760	1,590	1,700	1,740	3,780	5,070	2,830	1,240	1,000	1,580
23	972	2,190	1,620	1,690	1,880	1,440	4,490	5,700	2,810	1,320	785	1,730
24	998	1,780	1,680	1,610	1,820	1,190	6,890	5,770	2,850	1,170	746	1,180
25	907	1,710	1,590	1,560	1,790	1,110	8,130	4,820	2,650	1,140	916	868
26	678	1,950	1,640	1,580	1,760	1,060	7,060	4,290	2,630	573	1,080	57
27	710	1,710	1,640	1,600	1,540	1,080	6,360	3,510	2,550	607	968	235
28	1,260	1,920	1,540	1,520	1,810	932	5,810	2,820	2,020	1,380	1,330	260
29	1,150	1,820	1,840	1,540	------	1,100	5,410	2,840	1,450	1,060	1,690	690
30	1,550	1,920	1,780	1,610	------	957	4,990	2,720	1,330	1,070	1,010	506
31	1,520	------	1,530	1,720	------	1,180	------	2,630	------	1,140	860	------
TOTAL	36,160	51,584	55,970	50,930	47,560	46,879	89,313	129,550	66,020	38,056	30,675	32,032
MEAN	1,166	1,719	1,805	1,643	1,699	1,512	2,977	4,179	2,201	1,228	990	1,068
MAX	1,550	2,270	1,990	1,820	1,930	2,100	8,130	6,970	3,130	1,670	1,690	1,850
MIN	678	894	1,530	1,520	1,470	932	873	2,630	1,330	573	605	57

CAL YR 1974 TOTAL 627,494 MEAN 1,719 MAX 3,820 MIN 678
WTR YR 1975 TOTAL 674,729 MEAN 1,849 MAX 8,130 MIN 57

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 Highway 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 mi^2 (1,368 km^2).

PERIOD OF RECORD.--October 1923 to December 1975 (discontinued).

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 mi^2 (1,368 km^2).

AVERAGE DISCHARGE.--52 years, 430 ft^3/s (12.18 m^3/s) 11.06 in/yr (281 mm/yr).

EXTREMES.--Water year 1975: Maximum discharge, 3,250 ft^3/s (92.0 m^3/s) Apr. 23, gage height, 7.71 ft (2.350 m); minimum daily discharge, 81 ft^3/s (2.29 m^3/s) Aug. 18.
October to December 1975: Maximum discharge during period, 950 ft^3/s (26.9 m^3/s) Nov. 11, gage height, 4.14 ft (1.262 m); maximum gage height, 5.16 ft (1.573 m) Dec. 20, backwater from ice; minimum daily discharge, 130 ft^3/s (4.25 m^3/s) Oct. 10.
Period of record: Maximum daily discharge, 4,380 ft^3/s (124 m^3/s) Apr. 9, 1929; no flow at times during 1924, 1926-27, 1930-31, 1933, 1940.

REMARKS.--Records good except those for winter months, 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 (WATER YEARS).--WSP 1237: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	266	449	245	220	180	170	270	1940	361	286	152	300
2	274	548	343	220	180	200	250	1710	372	255	116	257
3	259	598	286	220	200	210	240	1620	341	254	120	259
4	270	454	354	200	200	210	230	1690	330	226	118	262
5	214	429	251	180	200	200	229	1630	344	208	153	284
6	235	337	248	220	200	190	230	1460	405	212	116	259
7	248	356	236	220	200	200	240	1330	353	233	120	299
8	294	322	247	220	190	190	244	1140	356	199	112	322
9	271	316	266	210	200	190	266	1060	340	153	125	415
10	205	390	197	230	200	190	266	913	217	177	106	306
11	209	625	200	290	200	190	291	851	227	178	121	390
12	187	809	210	240	190	200	290	759	452	334	94	307
13	211	821	220	230	180	180	345	639	639	285	151	321
14	244	734	220	220	190	180	359	635	766	292	128	365
15	279	616	229	220	180	200	395	721	780	358	151	357
16	158	509	229	160	210	210	631	723	777	233	147	295
17	227	481	230	180	210	240	749	650	857	253	119	253
18	187	457	230	200	200	220	1290	649	1140	230	81	248
19	176	470	220	200	200	210	1590	636	1050	184	89	248
20	181	394	210	170	190	210	1530	649	967	174	91	232
21	252	422	200	190	180	290	1410	668	919	212	124	266
22	187	427	210	170	190	300	1430	768	776	163	129	271
23	193	373	220	190	210	250	2160	678	703	162	130	226
24	208	358	220	190	220	270	2620	532	536	172	134	247
25	202	372	200	190	220	220	2650	521	533	184	192	243
26	174	228	210	180	210	220	2610	436	410	191	221	251
27	176	261	220	190	190	220	2530	427	351	170	191	255
28	205	309	220	190	190	300	2340	397	290	177	338	246
29	232	288	230	190	---	310	2190	400	309	145	423	251
30	321	272	220	160	---	300	2060	396	281	135	437	237
31	356	---	220	190	---	290	---	378	---	143	406	---
TOTAL	7101	13425	7241	6280	5510	6960	31935	27006	16182	6578	5135	8472
MEAN	229	448	234	203	197	225	1065	871	539	212	166	282
MAX	356	821	354	290	220	310	2650	1940	1140	358	437	415
MIN	158	228	197	160	180	170	229	378	217	135	81	226
CFSM	.43	.85	.44	.38	.37	.43	2.02	1.65	1.02	.40	.31	.53
IN.	.50	.95	.51	.44	.39	.49	2.25	1.90	1.14	.46	.36	.60

CAL YR 1974 TOTAL 131759 MEAN 361 MAX 1430 MIN 148 CFSM .68 IN 9.28
WTR YR 1975 TOTAL 141825 MEAN 389 MAX 2650 MIN 81 CFSM .74 IN 9.99

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1975 TO SEPTEMBER 1976
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	246	448									
2	175	248	430									
3	203	262	480									
4	184	216	479									
5	170	189	480									
6	176	225	440									
7	170	225	310									
8	174	225	290									
9	170	271	320									
10	150	458	300									
11	186	744	290									
12	185	821	270									
13	207	799	220									
14	173	769	430									
15	174	643	540									
16	217	529	520									
17	173	499	520									
18	130	454	440									
19	171	415	330									
20	257	400	390									
21	194	400	330									
22	173	403	310									
23	201	325	290									
24	257	372	310									
25	294	278	290									
26	382	237	300									
27	339	280	290									
28	326	311	280									
29	317	311	250									
30	296	430	260									
31	251	---	260									
TOTAL	6693	11985	11097									
MEAN	216	400	358									
MAX	382	821	540									
MIN	130	189	220									
CFSM	.41	.76	.68									
IN.	.47	.84	.78									

CAL YR 1975 TOTAL 143833 MEAN 394 MAX 2650 MIN 81 CFSM .75 IN 10.13

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 mi^2 (145.3 km^2).

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.--17 years, 43.3 ft^3/s (1.226 m^3/s), 10.48 in/yr (266 mm/yr), adjusted for industrial diversion.

EXTREMES.--Current year: Maximum discharge, 457 ft^3/s (12.9 m^3/s) Apr. 24, gage height, 5.98 ft (1.823); minimum daily, 7.5 ft^3/s (0.21 m^3/s) Aug. 21-23.
Period of record: Maximum discharge, 570 ft^3/s (16.1 m^3/s) May 7, 1960, gage height, 6.40 ft (1.951 m); minimum, 1.5 ft^3/s (0.042 m^3/s) July 22, 1964, gage height, 1.35 ft (0.411 m); minimum daily, 3.4 ft^3/s (0.096 m^3/s) July 22, 1964.

REMARKS.--Records 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	86	20	14	10	13	15	169	24	22	9.5	32
2	22	94	20	14	10	13	14	152	17	21	11	35
3	21	78	19	14	10	13	14	135	15	21	12	40
4	19	61	19	14	10	13	13	147	13	20	10	45
5	18	50	18	14	10	13	12	160	20	19	9.0	47
6	19	44	18	14	10	13	11	161	25	18	8.0	45
7	23	39	17	14	10	12	11	144	20	16	8.5	43
8	25	37	16	14	10	12	10	121	13	15	9.0	42
9	24	36	16	15	10	12	11	102	13	14	8.0	40
10	21	39	16	15	10	12	14	85	10	13	8.5	55
11	18	85	17	17	10	12	18	72	12	16	10	75
12	15	158	16	19	10	12	23	62	36	20	17	85
13	15	165	16	20	11	12	30	53	52	27	25	70
14	14	133	16	19	11	13	38	53	56	23	22	50
15	14	90	16	18	11	14	50	94	54	18	18	43
16	14	75	16	17	11	16	70	105	60	16	14	37
17	17	60	16	16	11	17	95	84	65	15	12	34
18	16	45	16	15	12	19	120	61	70	14	10	33
19	16	37	15	14	12	20	150	48	70	13	9.0	32
20	15	41	15	13	12	21	190	97	75	13	8.0	30
21	14	47	15	13	12	21	246	132	90	13	7.5	29
22	14	42	15	12	13	21	204	133	100	13	7.5	30
23	14	38	15	12	13	20	245	99	80	12	7.5	30
24	14	34	15	11	13	19	423	67	60	12	8.0	28
25	15	31	15	11	13	18	367	51	50	11	8.5	26
26	16	28	15	11	13	18	269	45	40	11	10	25
27	19	26	15	11	13	17	217	41	33	10	14	23
28	25	24	15	11	13	17	197	28	30	9.0	30	22
29	32	22	14	11	---	16	184	20	27	8.5	55	21
30	52	21	14	10	---	15	177	31	25	8.0	45	20
31	70	---	14	10	---	15	---	35	---	8.0	35	---
TOTAL	654	1766	500	433	314	479	3438	2787	1255	469.5	466.5	1167
MEAN	21.1	58.9	16.1	14.0	11.2	15.5	115	89.9	41.8	15.1	15.0	38.9
MAX	70	165	20	20	13	21	423	169	100	27	55	85
MIN	14	21	14	10	10	12	10	20	10	8.0	7.5	20
+	5.6	5.5	5.8	5.6	5.6	5.5	5.5	5.2	5.4	3.1	4.1	5.7
MEAN‡	26.7	64.4	21.9	19.6	16.8	21.0	120	95.1	47.2	18.2	19.1	44.6
CFSM‡	.48	1.15	.39	.35	.30	.37	2.14	1.70	.84	.32	.34	.80
IN‡	.55	1.28	.45	.40	.31	.43	2.39	1.95	.94	.38	.39	.89

CAL YR 1974 TOTAL 12365.0 MEAN 33.9 MAX 241 MIN 7.0 MEAN‡ 39.3 CFSM‡ .70 IN‡ 9.52
WTR YR 1975 TOTAL 13729.0 MEAN 37.6 MAX 423 MIN 7.5 MEAN‡ 42.8 CFSM‡ .76 IN‡ 10.36

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

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 mi^2 (160 km^2).

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, 612 ft^3/s (17.3 m^3/s) Apr. 24, gage height, 4.26 ft (1.298 m); minimum, 5.1 ft^3/s (0.14 m^3/s) Aug. 23, 24, gage height, 0.04 ft (0.012 m), result of initial filling of Gene Lake Reservoir.
Period of record: Maximum discharge, 612 ft^3/s (17.3 m^3/s) Apr. 24, 1975, gage height, 4.26 ft (1.298 m); minimum, 5.1 ft^3/s (0.14 m^3/s) Aug. 23, 24, 1975, gage height, 0.04 ft (0.012 m), result of initial filling of Gene Lake Reservoir.

REMARKS.--Records fair. Since June 1975, occasional regulation by Gene Lake Reservoir, usable capacity, 3,990 acre-ft (4.92 hm^3), 3 mi (5 km) above station. Initial filling stored 2,300 acre-ft (2.84 hm^3) during period June to September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	118	29	20	16	17	20	257	83	66	8.8	26
2	25	155	28	19	16	17	19	248	40	62	11	20
3	23	146	27	19	15	17	18	243	33	60	16	28
4	22	106	27	19	15	17	17	261	26	56	12	42
5	21	77	24	19	15	18	15	275	27	44	11	38
6	23	59	24	19	15	18	14	271	27	40	10	40
7	25	50	24	19	15	18	14	252	24	31	10	45
8	26	43	23	20	15	18	14	235	21	15	10	45
9	26	37	22	20	15	18	15	215	18	10	12	35
10	26	40	21	21	14	18	18	196	15	7.1	11	37
11	25	109	23	23	14	17	23	180	15	5.9	10	70
12	24	192	24	25	14	17	28	162	43	14	10	87
13	22	207	23	27	14	17	35	146	77	15	22	71
14	22	192	22	28	14	18	45	133	87	11	18	50
15	23	142	22	25	14	18	60	147	78	19	14	37
16	25	95	22	23	15	19	90	154	102	19	14	29
17	26	80	22	22	15	21	120	146	105	17	13	25
18	23	61	22	21	15	23	170	112	117	16	12	22
19	20	51	22	20	15	26	220	82	113	13	12	25
20	18	58	22	20	15	28	270	136	116	24	12	23
21	16	65	21	19	15	28	337	192	156	24	13	33
22	17	59	21	19	15	28	311	256	165	20	7.9	29
23	17	53	21	18	15	27	366	288	176	18	5.3	24
24	18	48	21	18	16	26	594	256	175	17	6.8	27
25	18	43	21	17	16	25	499	226	150	14	11	24
26	18	37	21	17	16	23	382	199	127	12	13	20
27	18	35	20	17	16	22	319	149	109	11	17	16
28	24	33	20	17	16	22	288	94	88	11	24	14
29	29	31	20	16	---	21	268	69	76	11	63	15
30	47	30	20	16	---	21	258	76	70	10	56	14
31	67	---	20	16	---	20	---	92	---	9.4	36	---
TOTAL	760	2452	699	619	421	643	4847	5748	2459	702.4	501.8	1011
MEAN	24.5	81.7	22.5	20.0	15.0	20.7	162	185	82.0	22.7	16.2	33.7
MAX	67	207	29	28	16	28	594	288	176	66	63	87
MIN	16	30	20	16	14	17	14	69	15	5.9	5.3	14
CFSM	.40	1.32	.36	.32	.24	.34	2.62	2.99	--	--	--	--
IN.	.46	1.48	.42	.37	.25	.39	2.92	3.46	--	--	--	--

CAL YR 1974 TOTAL 17856.9 MEAN 48.9 MAX 450 MIN 9.0 CFSM .79 IN 10.75
CAL YR 1975 TOTAL 20863.2 MEAN 57.2 MAX 594 MIN 5.3 CFSM -- IN -- MEAN+ 60.4 CFSM+ .98 IN+ 13.27

+Adjusted for initial filling of Gene Lake Reservoir; storage began in June 1975.

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 mi^2 (614 km^2).

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.--21 years, 185 ft^3/s (5.239 m^3/s), 10.60 in/yr (269 mm/yr), adjusted for industrial diversion.

EXTREMES.--Current year: Maximum discharge, 1,790 ft^3/s (50.7 m^3/s) Apr. 25, gage height, 9.32 ft (2.841 m); minimum, 27 ft^3/s (0.76 m^3/s) Aug. 11; minimum gage height, 2.48 ft (0.756 m) Aug. 1, 2.
Period of record: Maximum discharge, 2,570 ft^3/s (72.8 m^3/s) May 8, 1960, gage height, 10.35 ft (3.155 m); minimum, 15 ft^3/s (0.42 m^3/s) July 24, 1964; minimum gage height, 1.96 ft (0.597 m) Aug. 21, 1970.

REMARKS.--Records good except those for the winter period, which are fair. Since December 1958, diversion above station for industrial use, figures of runoff adjusted thereafter. Since June 1975, occasional regulation by Gene Lake Reservoir in headwaters of East Branch (see sta 04065393). Initial filling stored 2,300 acre-ft (2.84 hm^3) during year. Small diversions for sprinkler irrigation. Records of water quality for the current year are published in Section 2 of this report.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	268	130	87	68	80	90	877	252	156	31	215
2	112	362	130	87	67	80	88	837	232	143	33	156
3	106	364	125	86	66	80	82	789	205	131	55	151
4	100	341	124	86	65	79	70	821	174	120	60	223
5	94	308	115	86	64	79	60	856	167	114	53	235
6	92	262	112	86	64	78	58	887	168	107	44	239
7	99	212	112	87	64	78	57	849	161	98	39	232
8	104	177	110	88	64	78	58	764	147	91	33	225
9	105	159	110	90	64	78	60	660	131	77	30	207
10	104	149	110	92	64	77	72	560	118	63	28	199
11	102	252	105	100	64	76	85	481	110	57	27	290
12	97	433	105	110	65	76	100	426	189	69	28	422
13	90	486	105	125	65	76	125	381	310	97	80	430
14	102	489	100	125	65	77	160	346	361	117	122	372
15	99	453	100	110	66	78	220	366	364	107	106	291
16	93	374	100	95	66	80	320	402	384	89	82	221
17	91	320	100	90	66	84	500	399	384	82	64	178
18	92	260	100	86	67	95	688	372	426	73	53	157
19	92	228	98	83	67	110	904	333	439	68	46	158
20	88	227	96	82	68	120	1120	328	424	62	43	157
21	84	237	96	80	69	125	1190	387	471	57	43	151
22	85	234	95	78	70	120	1170	443	466	59	43	145
23	88	223	94	77	72	115	1210	518	473	59	42	146
24	88	216	93	76	74	110	1640	545	449	58	38	155
25	89	193	93	75	77	105	1790	556	385	57	39	154
26	89	153	92	74	78	100	1740	497	318	54	43	146
27	88	170	92	72	79	92	1500	435	272	50	47	134
28	94	155	91	70	80	92	1230	373	235	44	72	119
29	98	140	90	70	---	91	1040	312	204	41	206	108
30	125	135	90	69	---	90	914	277	177	36	281	101
31	154	---	88	68	---	90	---	270	---	33	272	---
TOTAL	3055	7980	3201	2690	1908	2789	18341	16347	8596	2469	2183	6117
MEAN	98.5	266	103	86.8	68.1	90.0	611	527	287	79.6	70.4	204
MAX	154	489	130	125	80	125	1790	887	473	156	281	430
MIN	84	135	88	68	64	76	57	270	110	33	27	101
+	5.6	5.5	5.8	5.6	5.6	5.5	5.5	5.2	5.4	3.1	4.1	5.7
MEAN‡	104	272	109	92.4	73.7	95.5	616	532	292	82.7	74.5	210
CFSM‡	.44	1.15	.46	.39	.31	.40	2.60	2.25	1.24	.35	.31	.89
IN‡	.51	1.28	.53	.45	.32	.46	2.90	2.59	1.37	.40	.36	.99

CAL YR 1974 TOTAL 65960 MEAN 181 MAX 1110 MIN 51 MEAN‡ 186 CFSM‡ .78 IN‡ 10.66
WTR YR 1975 TOTAL 75676 MEAN 207 MAX 1790 MIN 27 MEAN‡ 213 CFSM‡ .90 IN‡ 12.18

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

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 mi^2 (43.5 km^2).

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, 250 ft^3/s (7.08 m^3/s) Apr. 23, gage height, 6.23 ft (1.899 m); minimum, 0.70 ft^3/s (0.020 m^3/s) Aug. 11, 12, gage height, 1.46 ft (0.445 m), during the period of initial filling of 2A Reservoir.
Period of record: Maximum discharge, 250 ft^3/s (7.08 m^3/s) Apr. 23, 1975, gage height, 6.23 ft (1.899 m); minimum, 0.70 ft^3/s (0.020 m^3/s) Aug. 11, 12, 1975, gage height, 1.46 ft (0.445 m), during the period of initial filling of 2A Reservoir.

REMARKS.--Records good except those for winter periods, which are fair. Flow includes an average of 5.2 ft^3/s (0.147 m^3/s) diverted from West Branch Sturgeon River Basin. Some regulation by mine tailings ponds in headwaters. Since August 1975, additional regulation by 2A Reservoir, usable capacity, 4,700 acre-ft (5.80 hm^3), 4.2 mi (6.8 km) upstream. Records of water quality for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	33	10	7.4	6.0	13	16	66	9.0	9.5	1.1	3.4
2	11	34	10	7.2	5.9	13	15	55	7.5	9.1	1.1	2.9
3	9.8	29	9.6	7.2	5.8	13	15	48	6.5	9.5	1.4	8.7
4	9.0	25	9.2	7.1	5.7	14	14	52	6.0	9.6	1.2	7.2
5	8.5	22	9.3	7.1	5.6	14	13	60	14	7.6	1.1	6.1
6	9.2	20	9.5	7.0	5.6	15	12	58	11	6.7	1.1	9.6
7	11	18	9.4	7.4	5.5	15	11	49	8.0	6.0	.94	8.0
8	11	17	9.2	7.7	5.5	15	11	40	6.5	4.9	3.1	6.7
9	11	16	9.0	8.0	5.4	14	11	34	5.5	3.8	1.3	4.3
10	11	17	8.9	8.5	5.4	14	12	30	4.5	3.2	.90	11
11	11	51	8.5	9.0	5.5	14	14	26	6.5	2.7	.76	34
12	10	64	8.7	11	5.7	14	17	23	20	8.0	.71	22
13	8.6	50	8.9	13	6.3	14	22	21	24	7.4	7.8	13
14	9.1	36	9.4	15	6.8	14	28	21	23	5.7	3.7	9.6
15	9.5	29	9.7	13	7.8	15	35	31	21	6.2	2.2	6.8
16	10	25	9.8	12	9.0	16	45	31	25	5.9	2.1	4.9
17	11	22	9.6	11	10	17	69	27	21	5.1	1.8	4.7
18	9.7	20	9.6	10	11	20	111	24	32	4.4	1.4	4.6
19	8.7	19	9.4	9.0	13	22	148	22	25	4.0	1.2	7.2
20	7.4	23	9.0	8.5	14	23	133	24	31	3.5	1.1	6.8
21	6.5	23	8.8	8.0	14	23	102	60	34	3.1	1.3	9.1
22	6.6	20	8.6	7.5	14	23	87	59	26	7.0	1.6	9.5
23	6.8	20	8.5	7.0	14	22	151	45	29	4.2	1.4	11
24	7.4	19	8.3	6.7	14	21	198	35	26	2.3	1.6	16
25	7.3	17	7.9	6.5	14	20	126	25	21	1.6	3.1	14
26	7.1	16	7.6	6.4	14	19	97	21	17	1.5	2.7	13
27	7.1	14	7.6	6.3	14	18	85	19	15	1.5	2.1	12
28	7.3	13	7.6	6.2	14	17	80	16	13	1.3	11	11
29	8.8	12	7.5	6.1	---	17	75	11	12	1.2	17	11
30	18	11	7.4	6.0	---	17	72	9.0	12	1.1	8.1	10
31	21	---	7.2	6.0	---	16	---	14	---	1.1	4.4	---
TOTAL	303.4	735	273.7	258.8	257.5	522	1825	1056.0	512.0	148.7	90.31	298.1
MEAN	9.79	24.5	8.83	8.35	9.20	16.8	60.8	34.1	17.1	4.80	2.91	9.94
MAX	21	64	10	15	14	23	198	66	34	9.6	17	34
MIN	6.5	11	7.2	6.0	5.4	13	11	9.0	4.5	1.1	.71	2.9

CAL YR 1974 TOTAL 6116.80 MEAN 16.8 MAX 180 MIN 3.1
WTR YR 1975 TOTAL 6280.51 MEAN 17.2 MAX 198 MIN .71

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 mi^2 (8,390 km^2), 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.--26 years, 3,007 ft^3/s (85.16 m^3/s).

EXTREMES.--Current year: Maximum discharge, 17,200 ft^3/s (487 m^3/s) Apr. 25, gage height, 15.30 ft (4.663 m); minimum daily, 990 ft^3/s (28.0 m^3/s) Aug. 17.
Period of record: Maximum discharge, 26,900 ft^3/s (762 m^3/s) May 8, 1960, gage height, 13.90 ft (4.237 m); minimum, 694 ft^3/s (19.7 m^3/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 hm^3), and Peavy Pond, capacity, 33,860 acre-ft (41.7 hm^3), on the Michigamme River, and by many smaller reservoirs above station.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1860	2730	2670	2200	2100	2200	1800	9540	3840	2270	1360	1580
2	2220	3580	2500	2100	2100	2400	2180	8420	3300	1980	1130	1710
3	2100	3340	2590	2100	2000	2200	1540	8220	3010	1940	990	1920
4	1860	3120	2670	2200	1800	2100	1670	8420	2950	1690	1160	1940
5	1970	2880	2780	2200	2100	2400	1620	8770	2600	1540	1210	1860
6	1840	2760	2570	2200	2200	2400	1430	10200	2390	1750	1170	1960
7	1780	2230	2400	2100	2100	2400	1390	11000	2660	1970	1360	2170
8	1750	2120	2200	2200	2100	2400	1610	10500	2690	2030	1340	2000
9	1980	1990	2100	2400	2100	2400	1840	9890	2390	1850	1140	1800
10	2630	1970	2100	2500	2100	2300	1740	8840	2950	1730	1010	1900
11	2030	2900	2500	2400	2100	2300	1720	7000	2850	1590	1150	2100
12	2090	4400	2700	2200	2100	2300	1870	5300	3340	1500	1190	2500
13	1490	4210	2700	2400	2100	2400	2090	4810	4050	1990	1200	3200
14	1540	4290	2600	2100	2100	2300	2430	4490	3480	1670	1430	4700
15	1760	4380	2300	2000	2000	2200	3040	4900	4420	1790	1500	3000
16	1960	3950	2100	2400	2000	2300	3730	4710	4710	2160	1280	2100
17	2350	3710	2600	2300	2000	1600	4690	5410	4780	2310	990	2200
18	1820	3680	2500	2200	2200	1800	5980	4440	5680	2220	1050	2190
19	1690	2970	2400	2100	2200	1700	8860	4830	5790	2020	1150	2410
20	1450	3120	2500	2300	2300	1900	9980	4740	5620	1720	1210	2380
21	1420	3060	2600	2100	2200	2100	8420	6020	5680	1730	1190	2440
22	1680	3120	2600	2000	2300	2400	7940	6600	5120	1580	1200	2220
23	1640	3600	2500	2000	2100	2600	9450	7900	4960	1450	1260	2440
24	1570	3440	2400	1900	2200	2700	13300	8240	4990	1600	1060	2400
25	1590	2920	2200	2100	2200	2200	16400	7040	4260	1520	1160	1880
26	1420	2710	2100	2100	2300	2100	16200	6480	4190	1430	1120	1410
27	1290	2640	2200	2300	2300	2300	13800	5860	4000	1120	1350	1170
28	1270	2560	2200	2200	2400	1900	12700	4630	3600	1180	1340	1000
29	1510	2910	2200	2100	---	1900	11300	3940	2900	1440	2540	1040
30	1990	2660	2200	2100	---	2000	10300	4450	2450	1450	2840	1020
31	2660	---	2100	2100	---	1900	---	4140	---	1460	1720	---
TOTAL	56210	93950	74780	67600	59800	68100	181020	209730	115650	53680	40800	62640
MEAN	1813	3132	2412	2181	2136	2197	6034	6765	3855	1732	1316	2088
MAX	2660	4400	2780	2500	2400	2700	16400	11000	5790	2310	2840	4700
MIN	1270	1970	2100	1900	1800	1600	1390	3940	2390	1120	990	1000

CAL YR 1974 TOTAL 998920 MEAN 2737 MAX 7030 MIN 1270
WTR YR 1975 TOTAL 1083960 MEAN 2970 MAX 16400 MIN 990

04067000 Menominee River below Koss, Mich.

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).

DRAINAGE AREA.--3,790 mi^2 (9,820 km^2), approximately.

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

GAGE.--Headwater and tailwater gages and generation data entered hourly in daily log sheet by company employees. Prior to June 1913, chain gage on railroad bridge 4 mi (6.4 km) upstream.

AVERAGE DISCHARGE.--63 years (1907-8, 1913-75), 3,154 ft^3/s (89.32 m^3/s).

EXTREMES.--Current year: Maximum daily discharge, 16,500 ft^3/s (467 m^3/s) Apr. 27; minimum daily, 1,080 ft^3/s (30.6 m^3/s) Aug. 11. Period of record: Maximum daily discharge, 33,000 ft^3/s (935 m^3/s) May 10, 1960; minimum daily, 162 ft^3/s (4.59 m^3/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 hm^3), and Peavy Pond, capacity, 33,860 acre-ft (41.7 hm^3) on Michigamme River, and by many smaller reservoirs above station.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1980	2760	3000	2400	2350	2500	1800	12000	3720	2520	1590	1730
2	2090	4420	2490	2300	2320	2590	2180	11600	3240	2450	1680	1990
3	2300	4510	3300	2210	2240	2500	2470	10400	3300	2220	1180	2000
4	2260	4340	3120	2300	1940	2300	2240	9870	3240	2160	1220	2350
5	2210	4790	3000	2300	2350	2640	2110	9920	3000	1940	1340	2540
6	1980	3070	2760	2440	2400	2690	2020	10300	2760	1730	1440	1740
7	2090	3140	3050	2300	2300	2640	2130	11300	2860	1840	1420	2280
8	2240	2660	2730	2350	2320	2640	1870	11900	2870	2140	1360	2160
9	2010	2260	2350	2730	2300	2640	2440	10600	2940	2180	1330	1910
10	2210	2190	2300	2800	2280	2500	2360	10200	3000	2040	1320	1980
11	2540	3200	2700	2710	2300	2500	2560	8380	2880	1660	1080	2060
12	2180	3760	2880	2400	2300	2600	2470	6370	3170	1990	1120	2500
13	2120	4440	2880	2640	2280	2580	3020	4870	4160	1940	1460	2300
14	1800	5480	2900	2350	2300	2500	3390	4400	4370	1940	1460	5320
15	1850	6110	2710	2210	2280	2360	3480	4820	4030	2070	1340	5010
16	1980	4970	2290	2680	2160	2020	4200	5100	4970	2100	1490	2210
17	2280	4540	2810	2550	2180	1750	5530	5420	5690	2660	1590	2210
18	2510	4800	2760	2400	2340	1980	7530	4390	5940	2350	1090	2400
19	2230	4560	2470	2280	2400	1880	9110	4160	6310	2150	1340	2210
20	1730	3340	2640	2460	2440	2120	10700	5030	5840	2160	1320	2110
21	1780	1880	2880	2400	2420	2380	11400	5710	6180	1800	1290	2210
22	2020	3760	2810	2150	2500	2640	10400	6700	5800	1870	1340	2400
23	2260	4070	2690	2220	2300	2830	9480	7730	5560	1760	1340	2300
24	1920	4270	2700	2080	2300	3060	12000	8970	5100	1730	1280	2160
25	1870	4210	2300	2280	2380	2600	14600	7760	4840	1520	1300	2300
26	1800	3300	2250	2280	2460	2300	16200	7140	4220	1560	1490	1600
27	1770	3120	2400	2540	2500	2520	16500	6110	3360	1530	1700	1440
28	1980	3240	2380	2340	2640	2080	15500	5090	3840	1540	1950	1280
29	1730	2380	2450	2380	---	2050	13500	4520	3120	1490	1970	1120
30	1730	2860	2400	2300	---	2250	11300	3840	2800	1350	2470	1100
31	2840	---	2260	2300	---	2160	---	4150	---	1620	2150	---
TOTAL	64290	112430	82660	74080	65280	74800	204490	228750	123110	60010	45450	66920
MEAN	2074	3748	2666	2390	2331	2413	6816	7379	4104	1936	1466	2231
MAX	2840	6110	3300	2800	2640	3060	16500	12000	6310	2660	2470	5320
MIN	1730	1880	2250	2080	1940	1750	1800	3840	2760	1350	1080	1100

CAL YR 1974 TOTAL 1101950 MEAN 3019 MAX 7800 MIN 1600
WTR YR 1975 TOTAL 1202270 MEAN 3294 MAX 16500 MIN 1080

04096272 Beebe Creek near Hillsdale, Mich.

LOCATION.--Lat 41°57'15", long 84°38'20", in NW¼ NE¼ sec.15, T.6 S., R.3 W., Hillsdale County, on right bank 20 ft (6 m) upstream from bridge on Moore Road, 1.0 mi (1.6 km) upstream from mouth, and 1.2 mi (1.9 km) northwest of Hillsdale.

DRAINAGE AREA.--42.4 mi^2 (109.8 km^2).

PERIOD OF RECORD.--May 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1070 ft (326 m) from topographic map (nearest 10 ft).

EXTREMES.--May to September 1974: Maximum discharge during period, 117 ft^3/s (3.31 m^3/s) May 17, 18, gage height, 5.10 ft (1.554 m); minimum, 4.6 ft^3/s (0.13 m^3/s) Sept. 1, 2; minimum gage height, 3.76 ft (1.146 m) July 28, 29.
Water year 1975: Maximum discharge, 296 ft^3/s (8.38 m^3/s) Feb. 24, gage height, 6.08 ft (1.853 m); minimum, 4.9 ft^3/s (0.14 m^3/s) Jan. 5, gage height, 3.78 ft (1.152 m).

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by Lake Belair about 5.0 mi (8.0 km) above station. Records of water quality for 1974 are published in Part 2 of the 1974 report, Water Resources Data for Michigan. Water-quality records for the current year are published in Section 2 of this report.
Discharge measurement (in cubic feet per second) made prior to period of record is as follows:

Date	Discharge
July 7, 1971	7.19

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								46	37	21	5.5	4.9
2								44	33	18	6.2	5.5
3								41	30	16	7.7	8.8
4								38	14	18	7.7	7.7
5								37	12	19	7.4	6.6
6								35	12	16	7.0	6.2
7								35	12	14	6.2	6.2
8								40	22	12	5.5	5.9
9								54	26	12	7.4	5.9
10								58	27	12	6.6	5.9
11								60	28	13	6.6	5.9
12								72	27	12	6.6	20
13								86	24	11	5.9	19
14								88	23	10	5.9	14
15								95	23	9.7	5.9	11
16								105	26	8.8	6.6	8.8
17								116	24	8.8	11	8.1
18								115	26	8.5	10	7.7
19								101	44	8.5	8.8	7.4
20								83	52	8.5	8.1	6.6
21								68	57	11	7.4	6.2
22								58	52	12	6.6	5.9
23								52	43	11	6.6	5.5
24								46	36	10	6.6	5.5
25								40	32	7.4	6.2	5.5
26								37	37	12	5.9	5.2
27								34	40	7.4	5.5	5.5
28								33	36	5.2	5.9	7.4
29								44	31	8.8	5.9	8.5
30								46	26	7.0	5.5	8.5
31								42	---	5.9	5.2	---
TOTAL								1849	912	354.5	209.9	235.8
MEAN								59.6	30.4	11.4	6.77	7.86
MAX								116	57	21	11	20
MIN								33	12	5.2	5.2	4.9
CFSM								1.41	.72	.27	.16	.19
IN.								1.62	.80	.31	.18	.21

04096272 Beebe Creek near Hillsdale, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	13	10	18	53	81	58	83	61	39	8.1	46
2	7.0	11	12	9.7	44	66	55	74	59	32	8.8	35
3	6.6	12	11	8.1	37	55	57	66	54	27	11	28
4	7.0	18	11	8.5	34	48	63	60	50	29	8.8	22
5	7.0	23	10	8.1	30	43	67	56	58	28	8.8	19
6	6.6	20	9.7	9.7	26	41	66	95	64	24	10	19
7	7.4	16	11	11	24	51	67	127	77	21	8.5	16
8	7.4	13	17	19	22	64	73	112	69	13	7.7	13
9	7.4	12	16	50	20	58	78	93	48	8.8	7.4	12
10	7.4	11	14	86	19	54	77	76	34	9.7	7.4	12
11	7.0	11	12	160	17	48	72	64	24	9.7	7.7	12
12	7.0	11	13	192	16	46	67	66	35	12	7.7	13
13	7.4	11	13	130	16	52	60	66	27	12	7.4	12
14	8.8	12	14	100	16	53	55	59	33	13	7.4	12
15	17	12	16	68	16	47	52	54	44	12	9.7	11
16	20	11	19	50	16	46	48	48	60	12	11	11
17	14	13	19	40	21	45	46	44	55	12	8.8	11
18	11	15	17	34	34	48	50	40	46	12	8.5	12
19	9.7	14	16	33	36	55	110	24	40	12	8.5	12
20	12	14	15	31	34	61	149	19	38	12	8.1	15
21	12	14	16	29	33	63	136	30	37	11	12	13
22	9.2	14	16	26	45	66	115	54	40	11	39	12
23	8.8	13	15	24	139	66	95	63	35	10	32	12
24	8.5	13	16	23	268	72	89	57	42	14	25	12
25	8.1	13	17	28	264	82	85	46	74	12	30	11
26	8.1	12	16	31	194	74	77	43	91	12	19	11
27	7.7	11	15	29	136	64	69	39	68	11	16	11
28	7.7	11	15	18	102	56	71	33	50	12	12	10
29	16	11	14	41	---	62	85	29	42	10	19	10
30	21	11	16	64	---	66	85	37	43	9.2	26	12
31	16	---	17	60	---	61	---	65	---	8.5	47	---
TOTAL	308.5	396	448.7	1439.1	1712	1794	2277	1822	1498	470.9	448.3	457
MEAN	9.95	13.2	14.5	46.4	61.1	57.9	75.9	58.8	49.9	15.2	14.5	15.2
MAX	21	23	19	192	268	82	149	127	91	39	47	46
MIN	6.6	11	9.7	8.1	16	41	46	19	24	8.5	7.4	10
CFSM	.23	.31	.34	1.09	1.44	1.37	1.79	1.39	1.18	.36	.34	.36
IN.	.27	.35	.39	1.26	1.50	1.57	2.00	1.60	1.31	.41	.39	.40

WTR YR 1975 TOTAL 13071.5 MEAN 35.8 MAX 268 MIN 6.6 CFSM .84 IN 11.47

04096312 Sand Creek at Litchfield, Mich.

LOCATION.--Lat 42°01'45", long 84°46'47", in NE¼ NW¼ sec.21, T.5 S., R.4 W., Hillsdale County, on right bank 20 ft (6 m) upstream from bridge on Herring Road, 1.0 mi (1.6 km) southwest of Litchfield, and 3.0 mi (4.8 km) upstream from mouth.

DRAINAGE AREA.--20.6 mi^2 (53.4 km^2).

PERIOD OF RECORD.--June 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft (305 m) from topographic map (nearest 10 ft).

EXTREMES.--June to Sept 1974: Maximum discharge during period, 44 ft^3/s (1.25 m^3/s) June 19, gage height, 2.66 ft (0.811 m); minimum, 7.5 ft^3/s (0.21 m^3/s) Aug. 31; minimum gage height, 1.08 ft (0.329 m) Sept. 9.
Water year 1975: Maximum discharge, 125 ft^3/s (3.54 m^3/s) Aug. 31, gage height, 4.71 ft (1.436 m); minimum, 8.5 ft^3/s (0.24 m^3/s) Oct. 6, 7, gage height, 1.12 ft (0.341 m).

REMARKS.--Records good. Records of water quality for 1974 are published in Part 2 of the 1974 report, Water Resources Data for Michigan. Water-quality records for the current year are published in Section 2 of this report.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									34	24	12	8.9
2									33	23	13	8.7
3									31	23	12	11
4									29	23	12	9.9
5									28	23	12	9.7
6									27	22	11	9.8
7									25	21	11	9.8
8									29	21	11	9.9
9									28	20	12	8.8
10									28	20	11	8.6
11									27	19	12	8.5
12									26	18	12	13
13									25	18	11	13
14									27	17	11	12
15									28	16	10	11
16									28	16	10	11
17									28	15	12	11
18									28	15	12	10
19									35	14	11	9.8
20									34	13	9.7	9.5
21									35	14	10	9.4
22									32	13	9.6	9.1
23									31	14	9.4	8.9
24									29	14	9.5	8.9
25									28	13	9.7	8.7
26									28	13	9.0	8.5
27									28	12	8.9	8.4
28									27	12	8.8	9.1
29									26	14	9.3	9.3
30									25	13	8.6	9.2
31									---	13	9.2	---
TOTAL									867	526	329.7	293.4
MEAN									28.9	17.0	10.6	9.78
MAX									35	24	13	13
MIN									25	12	8.6	8.4
CFSM									1.40	.83	.51	.47
IN.									1.57	.95	.60	.53

04096312 Sand Creek at Litchfield, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	9.8	12	14	19	29	28	43	50	33	15	65
2	8.9	9.7	12	13	18	27	28	37	48	31	19	51
3	8.9	11	11	13	17	26	31	36	45	33	20	46
4	8.9	14	11	12	17	25	29	35	45	38	19	42
5	8.8	17	11	12	17	24	29	34	51	33	18	41
6	8.7	16	11	12	16	24	29	63	47	31	19	41
7	8.7	14	12	12	16	29	31	47	41	30	16	36
8	8.8	13	14	18	15	28	34	41	39	34	15	33
9	9.1	12	14	28	14	26	35	39	37	29	14	31
10	8.9	12	13	27	14	25	33	36	35	27	14	29
11	8.9	12	13	34	14	24	32	35	47	26	15	29
12	8.8	12	13	26	13	26	31	40	54	26	14	29
13	9.0	12	13	24	13	27	30	38	44	25	14	27
14	9.7	13	14	23	13	25	28	36	39	25	13	26
15	9.8	12	15	21	13	23	28	34	44	24	16	25
16	9.5	12	17	20	13	23	27	32	45	24	17	24
17	9.3	13	17	19	16	23	27	31	38	25	16	24
18	9.1	12	15	19	19	23	31	30	36	24	15	24
19	9.1	13	15	18	17	25	78	29	34	25	15	24
20	9.2	13	14	17	16	24	46	28	34	24	14	25
21	9.0	13	14	17	17	24	40	29	33	22	26	23
22	9.2	13	14	16	24	29	38	34	31	21	71	23
23	9.0	13	14	16	65	28	38	34	31	21	39	22
24	9.1	13	14	16	58	33	41	32	41	24	35	22
25	9.1	13	14	17	39	30	38	33	61	21	35	21
26	8.9	12	13	17	34	28	36	42	43	20	33	21
27	9.0	12	13	16	32	26	34	35	38	19	31	21
28	8.9	12	13	15	31	26	41	32	39	19	28	20
29	9.2	12	13	26	---	34	44	31	44	17	33	20
30	10	11	13	21	---	30	39	48	35	17	37	22
31	9.9	---	14	20	---	28	---	68	---	16	106	---
TOTAL	282.5	376.5	416	579	610	822	1054	1162	1249	784	792	887
MEAN	9.11	12.6	13.4	18.7	21.8	26.5	35.1	37.5	41.6	25.3	25.5	29.6
MAX	10	17	17	34	65	34	78	68	61	38	106	65
MIN	8.7	9.7	11	12	13	23	27	28	31	16	13	20
CFSM	.44	.61	.65	.91	1.06	1.29	1.70	1.82	2.02	1.23	1.24	1.44
IN.	.51	.68	.75	1.05	1.10	1.48	1.90	2.10	2.26	1.42	1.43	1.60

WTR YR 1975 TOTAL 9014.0 MEAN 24.7 MAX 106 MIN 8.7 CFSM 1.20 IN 16.28

04096325 Soap Creek near Litchfield, Mich.

LOCATION.--Lat 42°02'38", long 84°50'10", in SE¼ SW¼ sec.12, T.5 S., R.5 W., Branch County, on left bank 10 ft (3 m) downstream from bridge on Litchfield Road, 2.3 mi (3.7 km) upstream from mouth, and 3.5 mi (5.6 km) west of Litchfield.

DRAINAGE AREA.--10.9 mi^2 (28.2 km^2).

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--Water-stage recorder. Dec. 1, 1974, to Jan. 1, 1975, nonrecording gage at same site and datum. Altitude of gage is 990 ft (302 m) from topographic map, (nearest 10 ft).

EXTREMES.--Current year: Maximum discharge, 111 ft^3/s (3.14 m^3/s) Apr. 19, gage height, 3.60 ft (1.097 m); minimum not determined; minimum daily, 2.9 ft^3/s (0.082 m^3/s) Oct. 1-7, 11-15, 24-28; minimum gage height observed, 0.64 ft (0.195 m) Nov. 26, from discharge measurement.

REMARKS.--Records good except those for period of no gage-height record, which are fair. Records of water quality for the current year are published in Section 2 of this report.

Discharge measurements (in cubic feet per second) made prior to period of record are as follows:

Date	Discharge	Date	Discharge
June 5, 1974	14.4	Aug 15, 1974	5.13
July 17, 1974	7.17	Aug 28, 1974	4.07
Aug 5, 1974	5.47	Sep 6, 1974	4.23

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	3.2	3.4	4.3	10	20	18	28	33	18	6.6	56
2	2.9	3.2	3.4	4.4	9.7	18	18	25	30	16	7.4	41
3	2.9	3.7	3.4	4.5	9.1	17	19	23	27	17	7.4	32
4	2.9	4.5	3.4	4.4	8.8	16	17	23	25	22	6.8	27
5	2.9	5.6	3.4	4.3	8.8	15	17	22	27	19	6.8	25
6	2.9	4.3	3.4	4.1	8.5	14	18	48	25	17	6.8	25
7	2.9	3.8	3.6	4.2	8.1	18	21	37	22	16	6.4	22
8	3.0	3.7	3.9	6.5	7.8	18	25	31	21	15	6.0	20
9	3.0	3.6	3.9	14	7.4	16	26	28	19	14	6.0	18
10	3.0	3.5	3.9	14	6.9	15	24	26	18	13	5.8	18
11	2.9	3.5	3.6	19	7.1	14	22	24	23	13	6.0	17
12	2.9	3.5	3.6	15	7.1	16	21	28	28	12	5.6	17
13	2.9	3.5	3.5	13	6.9	17	20	27	24	12	5.6	15
14	2.9	3.8	3.8	12	6.7	16	19	25	21	12	5.6	15
15	2.9	3.6	4.6	10	6.8	15	19	24	24	11	5.8	14
16	3.0	3.6	5.0	11	6.6	15	18	22	26	11	5.8	14
17	3.0	3.9	4.7	9.8	7.9	14	18	21	22	10	5.6	13
18	3.0	3.6	4.7	9.7	10	15	20	20	20	10	5.4	13
19	3.0	3.8	4.4	9.4	9.4	16	65	19	18	10	5.4	13
20	3.0	3.8	4.3	9.0	8.7	15	40	19	18	9.8	5.3	12
21	3.0	3.8	4.6	8.7	8.5	15	33	19	17	9.3	7.4	12
22	3.0	3.9	4.3	8.5	14	22	29	21	15	9.1	45	12
23	3.0	3.9	4.0	8.3	53	21	28	20	15	8.8	27	11
24	2.9	3.9	4.1	8.3	54	23	28	18	19	9.8	20	11
25	2.9	3.8	4.1	8.7	38	21	26	18	34	8.6	18	11
26	2.9	3.5	4.1	8.6	31	19	24	20	25	8.1	16	11
27	2.9	3.6	3.9	8.0	28	18	23	18	22	7.9	14	10
28	2.9	3.6	4.0	7.8	24	18	29	17	20	7.4	13	9.8
29	3.0	3.5	4.0	14	---	23	29	16	22	7.2	13	9.6
30	3.2	3.4	4.0	13	---	21	26	29	19	7.0	16	9.8
31	3.2	---	4.4	11	---	19	---	42	---	6.8	77	---
TOTAL	91.7	112.6	123.4	287.5	412.8	540	740	758	679	367.8	388.5	534.2
MEAN	2.96	3.75	3.98	9.27	14.7	17.4	24.7	24.5	22.6	11.9	12.5	17.8
MAX	3.2	5.6	5.0	19	54	23	65	48	34	22	77	56
MIN	2.9	3.2	3.4	4.1	6.6	14	17	16	15	6.8	5.3	9.6
CFSM	.27	.34	.37	.85	1.35	1.60	2.27	2.25	2.07	1.09	1.15	1.63
IN.	.31	.38	.42	.98	1.41	1.84	2.53	2.59	2.32	1.26	1.33	1.82

WTR YR 1975 TOTAL 5035.5 MEAN 13.8 MAX 77 MIN 2.9 CFSM 1.27 IN 17.18

NOTE.--No gage-height record Oct. 1 to Nov. 30.

04096340 St. Joseph River at Clarendon, Mich.

LOCATION.--Lat 42°07'51", long 84°51'56", in SW¼ SW¼ sec.11, T.4 S., R.5 W., Calhoun County, on left bank 5 ft (2 m) upstream from bridge on 22 Mile Road at Clarendon, 0.4 mi (0.6 km) upstream from Andrus drain, and at mile 171 (275 km).

DRAINAGE AREA.--144 mi^2 (373 km^2).

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 960 ft (293 m) from topographic map (nearest 10 ft).

EXTREMES.--July to September 1974: Maximum daily discharge during period, 120 ft^3/s (3.40 m^3/s) July 1; minimum discharge, 36 ft^3/s (1.02 m^3/s) Sept. 1, 2, 11; minimum gage height, 3.90 ft (1.189 m) Sept. 2.
Water year 1975: Maximum discharge, 435 ft^3/s (12.3 m^3/s) Feb. 28, gage height, 6.84 ft (2.085 m); minimum, 34 ft^3/s (0.96 m^3/s) Oct. 7, 8, 9, 10, 11, 12, 13, 14; minimum gage height, 3.98 ft (1.213 m) Oct. 6, 7, 8.

REMARKS.--Records good except those for the winter period, which are fair. Records of water quality for 1974 are published in Part 2 of the 1974 report, Water Resources Data for Michigan. Water-quality records for the current year are published in Section 2 of this report.
Discharge measurements (in cubic feet per second) made prior to period of record are as follows:

Date	Discharge
July 9, 1963	19.3
June 4, 1974	171

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										120	52	37
2										110	56	37
3										105	55	40
4										102	53	42
5										106	55	41
6										104	52	40
7										100	49	39
8										95	48	38
9										89	48	38
10										84	48	37
11										81	50	37
12										78	52	42
13										76	49	56
14										73	47	61
15										70	45	54
16										66	45	48
17										63	53	45
18										62	54	43
19										60	52	42
20										59	48	41
21										58	45	40
22										56	43	39
23										58	42	39
24										60	42	38
25										58	41	38
26										56	40	37
27										54	40	37
28										53	39	39
29										55	39	41
30										56	39	42
31										55	38	---
TOTAL										2322	1459	1248
MEAN										74.9	47.1	41.6
MAX										120	56	61
MIN										53	38	37
CFSM										.52	.33	.29
IN.										.60	.38	.32

NOTE.--No gage-height record July 1, 2.

04096340 St. Joseph River at Clarendon, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	52	51	78	156	401	208	247	211	186	49	273
2	40	50	51	73	148	369	202	249	234	163	54	289
3	39	50	50	77	135	331	201	247	231	153	64	275
4	38	61	51	71	121	266	204	242	229	157	64	244
5	37	77	52	64	114	216	201	236	228	161	60	215
6	35	84	54	68	109	193	198	251	221	151	59	201
7	35	78	56	68	103	191	197	259	215	137	58	184
8	34	70	61	76	88	191	199	276	210	134	53	164
9	34	65	64	116	95	192	203	283	202	128	50	143
10	34	62	64	146	94	183	208	285	196	116	48	129
11	34	60	64	180	92	179	209	277	193	104	49	120
12	35	58	63	184	88	175	207	275	198	98	49	117
13	34	57	64	161	86	172	204	268	204	94	47	112
14	36	59	65	150	86	169	195	255	200	97	46	104
15	38	58	68	140	85	168	188	241	192	95	46	95
16	39	57	77	130	86	171	178	225	193	82	53	90
17	42	59	80	120	91	172	166	209	193	75	55	88
18	45	61	77	115	112	175	163	194	193	73	51	86
19	44	62	74	110	120	181	196	179	186	75	50	86
20	43	62	70	110	113	183	228	167	180	75	49	88
21	41	61	70	110	110	182	252	174	171	70	64	90
22	42	59	73	110	117	191	266	182	161	65	204	89
23	42	59	74	110	181	201	277	183	150	61	221	86
24	42	60	75	115	277	217	284	190	144	71	210	82
25	41	58	77	120	308	225	281	191	151	73	186	79
26	40	55	76	125	357	226	270	192	179	70	170	78
27	40	53	75	120	403	221	254	191	199	63	147	77
28	39	53	74	113	417	217	245	182	204	58	122	75
29	40	51	73	126	---	220	243	162	205	55	111	74
30	43	51	74	144	---	218	243	157	204	53	139	76
31	50	---	76	154	---	214	---	179	---	51	227	---
TOTAL	1218	1802	2073	3584	4292	6610	6570	6848	5877	3044	2855	3909
MEAN	39.3	60.1	66.9	116	153	213	219	221	196	98.2	92.1	130
MAX	50	84	80	184	417	401	284	285	234	186	227	289
MIN	34	50	50	64	85	168	163	157	144	51	46	74
CFSM	.27	.42	.46	.81	1.06	1.48	1.52	1.53	1.36	.68	.64	.90
IN.	.31	.47	.54	.93	1.11	1.71	1.70	1.77	1.52	.79	.74	1.01

WTR YR 1975 TOTAL 48682 MEAN 133 MAX 417 MIN 34 CFSM .92 IN 12.58

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 mi^2 (521 km^2).

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.--13 years, 157 ft^3/s (4.446 m^3/s), 10.61 in/yr (269 mm/yr).

EXTREMES.--Current year: Maximum discharge, 507 ft^3/s (14.4 m^3/s) Mar. 1, gage height, 4.26 ft (1.298 m); minimum, 47 ft^3/s (1.33 m^3/s) Oct. 5, 6; minimum gage height, 1.63 ft (0.497 m) Oct. 6.
Period of record: Maximum discharge, 1,000 ft^3/s (28.3 m^3/s) Feb. 5, 1968, gage height, 5.51 ft (1.679 m); minimum, 8.0 ft^3/s (0.23 m^3/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, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	63	68	108	207	468	266	312	258	216	72	480
2	52	63	67	105	201	456	259	304	279	196	85	476
3	51	65	66	103	190	444	256	298	286	182	103	430
4	52	73	67	104	176	399	253	295	284	200	98	397
5	49	94	67	96	166	349	254	285	290	184	95	365
6	48	100	71	90	159	311	256	335	281	177	92	348
7	49	95	73	97	155	288	260	340	264	165	86	311
8	49	87	79	114	142	279	267	322	255	154	81	274
9	49	79	83	189	129	259	268	325	246	151	74	244
10	50	77	83	222	125	258	267	326	236	142	71	219
11	50	75	81	269	125	248	266	324	238	130	70	202
12	50	72	89	260	125	244	264	337	244	119	70	192
13	51	71	84	220	120	245	259	336	237	114	69	180
14	56	72	85	210	120	238	254	320	237	118	67	169
15	55	72	92	200	120	228	248	304	244	115	68	160
16	55	72	106	190	118	229	242	284	250	109	71	148
17	55	75	113	180	126	232	233	263	239	104	74	141
18	56	77	111	170	149	235	232	246	241	106	73	138
19	57	77	107	160	162	245	301	229	232	105	70	135
20	57	78	100	160	165	249	314	220	225	109	69	136
21	57	78	100	150	160	246	313	264	213	101	76	134
22	56	76	98	150	171	255	329	274	201	95	241	134
23	56	75	100	150	303	265	344	259	190	89	283	129
24	57	78	102	157	430	279	363	245	186	107	273	124
25	57	78	104	166	479	295	367	257	200	106	271	120
26	56	75	105	172	432	284	355	307	217	102	266	117
27	56	73	102	166	415	275	340	271	219	95	236	114
28	56	71	102	157	453	270	334	251	227	86	200	111
29	56	69	99	186	------	283	333	232	226	81	185	108
30	58	68	102	207	------	283	316	227	222	78	213	108
31	59	------	107	206	------	272	------	261	------	76	343	------
TOTAL	1,669	2,278	2,813	5,114	5,823	8,911	8,613	8,853	7,167	3,912	4,145	6,344
MEAN	53.8	75.9	90.7	165	208	287	287	286	239	126	134	211
MAX	59	100	113	269	479	468	367	340	290	216	343	480
MIN	48	63	66	90	118	228	232	220	186	76	67	108
CFSM	.27	.38	.45	.82	1.03	1.43	1.43	1.42	1.19	.63	.67	1.05
IN.	.31	.42	.52	.95	1.08	1.65	1.59	1.64	1.33	.72	.77	1.17

CAL YR 1974 TOTAL 75,696 MEAN 207 MAX 890 MIN 48 CFSM 1.03 IN 14.01
WTR YR 1975 TOTAL 65,642 MEAN 180 MAX 480 MIN 48 CFSM .90 IN 12.15

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 mi^2 (126.1 km^2).

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.--6 years, 40.7 ft^3/s (1.153 m^3/s), 11.35 in/yr (288 mm/yr).

EXTREMES.--Current year: Maximum discharge, 210 ft^3/s (5.95 m^3/s) Feb. 26, gage height, 4.58 ft (1.396 m); minimum, 3.8 ft^3/s (0.11 m^3/s) Oct. 25, gage height, 1.41 ft (0.430 m).
Period of record: Maximum discharge, 240 ft^3/s (6.80 m^3/s) Mar. 10, 1974, gage height, 4.86 ft (1.481 m); maximum gage height, 5.73 ft (1.747 m) Feb. 20, 1971 (backwater from ice); minimum discharge, 1.2 ft^3/s (0.034 m^3/s) Aug. 20, 21, 1971, gage height, 1.35 ft (0.411 m).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND , WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	6.9	10	21	45	125	66	108	142	58	9.9	129
2	6.4	6.9	10	21	41	104	62	100	147	51	13	137
3	6.4	9.3	10	20	35	90	66	88	134	46	18	124
4	6.4	15	10	20	32	74	84	79	120	63	16	104
5	6.2	17	10	20	29	62	91	72	116	72	15	86
6	5.9	15	10	19	29	54	91	98	113	64	17	74
7	5.9	13	10	18	30	57	92	127	107	50	15	64
8	5.7	12	16	26	30	68	95	131	95	41	13	54
9	5.7	11	15	56	30	68	97	119	81	34	12	45
10	5.7	10	14	72	29	62	95	104	68	29	11	38
11	5.4	10	14	90	30	55	87	91	68	25	12	34
12	5.2	11	13	100	28	51	78	88	90	23	11	32
13	5.4	11	14	90	26	53	70	88	96	22	11	30
14	6.4	12	15	70	27	52	63	83	86	23	10	26
15	7.2	11	17	64	29	48	58	75	79	23	12	24
16	6.4	11	23	57	31	46	53	67	83	21	14	23
17	6.2	13	23	51	35	44	49	58	84	19	13	23
18	5.7	14	20	50	41	44	53	52	77	18	12	22
19	5.7	13	20	47	34	48	98	46	68	19	11	22
20	5.9	13	19	44	33	52	135	41	60	18	10	23
21	5.7	13	19	45	31	53	140	40	53	17	14	23
22	5.7	12	18	39	39	59	127	50	47	16	64	22
23	5.4	12	18	34	97	69	114	57	46	15	92	21
24	5.9	12	19	34	162	73	108	53	65	15	89	20
25	5.9	12	21	38	198	80	104	48	97	15	76	19
26	5.7	11	20	41	198	80	99	49	110	13	69	19
27	5.7	11	20	36	168	72	91	53	99	13	64	19
28	5.7	10	18	30	141	64	91	49	82	12	54	18
29	6.2	9.9	18	44	---	68	102	43	70	11	53	17
30	8.0	9.9	20	62	---	73	106	58	65	11	60	19
31	7.5	---	21	52	---	71	---	112	---	10	97	---
TOTAL	188.1	347.9	505	1411	1678	2019	2665	2327	2648	867	987.9	1311
MEAN	6.07	11.6	16.3	45.5	59.9	65.1	88.8	75.1	88.3	28.0	31.9	43.7
MAX	8.0	17	23	100	198	125	140	131	147	72	97	137
MIN	5.2	6.9	10	18	26	44	49	40	46	10	9.9	17
CFSM	.12	.24	.33	.93	1.23	1.34	1.82	1.54	1.81	.57	.66	.90
IN.	.14	.27	.39	1.08	1.28	1.54	2.04	1.78	2.02	.66	.75	1.00

CAL YR 1974 TOTAL 16602.0 MEAN 45.5 MAX 237 MIN 4.0 CFSM .93 IN 12.68
WTR YR 1975 TOTAL 16954.9 MEAN 46.5 MAX 198 MIN 5.2 CFSM .95 IN 12.95

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 downstream 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 mi^2 (759 km^2).

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.--13 years, 226 ft^3/s (6.400 m^3/s), 10.47 in/yr (266 mm/yr).

EXTREMES.--Current year: Maximum discharge, 900 ft^3/s (25.5 m^3/s) Feb. 26, gage height, 5.82 ft (1.774 m); minimum, 14 ft^3/s (0.40 m^3/s) Jan. 12, gage height, 2.46 ft (0.750 m), result of freezeup.
Period of record: Maximum discharge, 2,230 ft^3/s (63.2 m^3/s) Mar. 8, 9, 1974, gage height, 7.69 ft (2.344 m); minimum, 6.2 ft^3/s (0.18 m^3/s) Sept. 26, 1964; minimum gage height, 2.28 ft (0.695 m) Oct. 4-14, 1964.

REMARKS.--Records good. Diurnal fluctuation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	102	102	127	260	672	398	624	455	411	70	548
2	51	100	100	117	243	570	388	602	488	367	82	672
3	50	106	96	125	226	470	379	580	495	335	100	632
4	48	117	92	125	216	400	379	548	504	370	96	555
5	47	138	94	115	211	350	388	524	508	398	90	508
6	47	146	94	113	207	290	408	624	504	367	94	473
7	45	138	98	125	197	300	430	760	498	327	88	435
8	44	127	104	142	186	340	446	825	470	291	82	393
9	44	117	106	203	170	350	467	760	444	249	77	359
10	44	113	96	283	160	320	470	708	408	207	75	335
11	44	111	100	318	160	280	455	632	388	192	80	316
12	44	108	104	308	160	260	435	559	396	182	78	302
13	43	111	102	250	160	270	416	570	446	174	75	289
14	47	113	104	220	150	270	396	562	449	178	73	274
15	47	111	111	200	150	250	376	528	464	167	75	262
16	47	108	123	180	159	240	361	495	495	144	82	247
17	45	113	129	170	170	230	350	464	517	88	80	234
18	44	121	127	170	190	230	354	435	488	84	75	222
19	44	132	123	160	199	250	476	406	449	86	72	213
20	44	132	115	160	199	270	745	381	424	86	70	203
21	56	129	119	150	201	280	850	384	438	84	90	195
22	96	127	119	160	220	310	750	372	416	80	346	186
23	94	125	119	180	352	350	704	367	393	78	470	159
24	94	123	119	192	588	380	668	356	381	98	482	129
25	92	121	121	199	745	400	632	350	419	96	479	127
26	90	117	119	203	785	441	602	396	555	88	482	125
27	92	113	117	201	790	421	570	379	609	82	441	125
28	94	108	123	192	750	403	577	356	545	78	396	123
29	96	106	119	220	---	401	620	339	492	77	388	121
30	102	104	121	264	---	414	652	335	464	73	386	123
31	100	---	125	268	---	416	---	384	---	72	441	---
TOTAL	1926	3537	3441	5840	8204	10828	15142	15605	14002	5609	6015	8885
MEAN	62.1	118	111	188	293	349	505	503	467	181	194	296
MAX	102	146	129	318	790	672	850	825	609	411	482	672
MIN	43	100	92	113	150	230	350	335	381	72	70	121
CFSM	.21	.40	.38	.64	1.00	1.19	1.72	1.72	1.59	.62	.66	1.01
IN.	.24	.45	.44	.74	1.04	1.37	1.92	1.98	1.78	.71	.76	1.13

CAL YR 1974 TOTAL 110280 MEAN 302 MAX 2150 MIN 43 CFSM 1.03 IN 14.00
WTR YR 1975 TOTAL 99034 MEAN 271 MAX 850 MIN 43 CFSM .92 IN 12.57

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 mi^2 (420 km^2).

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.--9 years, 145 ft^3/s (4.106 m^3/s) 12.15 in/yr (309 mm/yr).

EXTREMES.--Current year: Maximum discharge, 418 ft^3/s (11.8 m^3/s) Feb. 26; maximum gage height, 3.55 ft (1.082 m) Feb. 26, Sept. 3; minimum discharge, 45 ft^3/s (1.27 m^3/s) Oct. 6, 7, 13; minimum gage height, 0.70 ft (0.213 m) Oct. 13.
Period of record: Maximum discharge, 596 ft^3/s (16.9 m^3/s) Mar. 10, 1974, gage height, 4.57 ft (1.393 m); maximum gage height 4.66 ft (1.420 m) Feb. 3, 1968; minimum daily discharge, 28 ft^3/s (0.79 m^3/s) Aug. 24, 25, 1971; minimum gage height, 0.37 ft (0.113 m) Oct. 16, 18, 20, 21, Nov. 8, 1971.

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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	77	76	100	172	253	191	212	223	160	56	264
2	50	76	76	93	159	211	181	211	223	142	65	320
3	48	80	78	94	139	177	166	206	220	129	83	332
4	47	86	78	95	123	161	168	196	213	132	89	314
5	47	90	76	89	120	152	180	186	203	124	91	284
6	47	100	74	86	116	150	186	243	190	116	92	264
7	46	100	74	88	115	162	190	258	170	112	92	240
8	46	100	76	109	110	179	192	246	157	108	92	210
9	47	95	80	181	110	178	192	224	145	102	88	185
10	47	90	85	235	105	174	187	199	133	97	84	162
11	47	88	85	250	100	163	177	176	135	92	83	147
12	47	88	90	260	100	153	166	169	140	89	83	139
13	46	88	90	230	101	154	156	185	135	90	83	135
14	54	86	95	200	97	156	146	195	129	90	83	127
15	56	86	95	190	98	155	141	180	136	90	87	120
16	59	86	100	170	97	154	137	165	150	88	89	115
17	60	88	100	160	97	160	133	152	150	85	88	111
18	57	90	105	150	99	168	152	143	142	82	87	108
19	56	95	113	140	100	187	259	134	138	82	85	106
20	56	95	125	130	100	207	310	129	134	81	84	108
21	56	90	104	120	104	214	321	177	140	79	94	108
22	55	90	99	120	120	218	305	245	129	76	209	106
23	56	88	96	120	212	225	272	298	123	73	233	104
24	58	86	99	122	308	232	247	305	122	70	256	101
25	58	84	100	124	358	243	228	274	146	67	272	97
26	58	82	95	131	384	239	212	243	195	63	245	96
27	58	80	94	126	351	222	194	230	219	62	208	96
28	58	78	93	121	294	203	191	219	211	59	170	94
29	63	76	93	142	------	197	199	204	199	58	146	92
30	71	76	95	178	------	203	206	198	180	55	150	92
31	74	------	99	177	------	198	------	216	------	54	198	------
TOTAL	1,679	2,614	2,838	4,531	4,389	5,848	5,985	6,418	4,930	2,807	3,865	4,777
MEAN	54.2	87.1	91.5	146	157	189	200	207	164	90.5	125	159
MAX	74	100	125	260	384	253	321	305	223	160	272	332
MIN	46	76	74	86	97	150	133	129	122	54	56	92
CFSM	.33	.54	.56	.90	.97	1.17	1.23	1.28	1.01	.56	.77	.98
IN.	.39	.60	.65	1.04	1.01	1.34	1.37	1.47	1.13	.64	.89	1.10

CAL YR 1974 TOTAL 65,535 MEAN 180 MAX 592 MIN 44 CFSM 1.11 IN 15.05
WTR YR 1975 TOTAL 50,681 MEAN 139 MAX 384 MIN 46 CFSM .86 IN 11.64

NOTE.--No gage-height record Nov. 5 to Dec. 17.

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 mi^2 (176.6 km^2).

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.--16 years, 61.7 ft^3/s (1.747 m^3/s), 12.29 in/yr (312 mm/yr).

EXTREMES.--Current year: Maximum discharge, 148 ft^3/s (4.19 m^3/s) Sept. 4, 5, gage height, 4.98 ft (1.518 m); minimum, 24 ft^3/s (0.68 m^3/s) Oct. 3-13.
Period of record: Maximum discharge, 356 ft^3/s (10.1 m^3/s) Apr. 7, 1947, gage height, 5.66 ft (1.725 m); minimum, 10 ft^3/s (0.28 m^3/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 good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	31	39	47	73	99	80	115	67	70	31	136
2	25	31	39	48	71	94	79	110	65	66	34	143
3	25	34	38	46	69	89	80	104	63	62	39	145
4	24	37	39	46	66	84	84	102	62	62	38	147
5	24	40	37	45	65	79	83	99	62	59	38	146
6	24	41	36	45	64	77	83	139	60	57	40	143
7	25	41	36	45	60	85	85	145	59	54	38	132
8	24	40	39	51	60	89	88	127	57	52	37	124
9	24	40	38	66	55	83	87	117	55	50	36	115
10	24	40	37	73	55	82	87	109	53	49	35	107
11	24	40	38	90	55	79	86	103	55	46	35	102
12	24	41	39	77	55	77	84	101	57	45	35	98
13	25	40	40	75	54	79	81	97	55	44	34	92
14	27	40	40	75	52	77	78	92	55	44	33	87
15	27	39	42	75	50	74	77	89	57	42	33	82
16	27	40	46	70	50	74	75	87	62	42	33	79
17	27	40	48	70	52	73	72	81	59	42	32	76
18	27	41	48	65	55	75	75	78	58	41	31	73
19	27	41	45	64	55	81	112	75	57	41	31	71
20	27	42	50	60	55	85	122	72	55	41	30	70
21	26	43	48	60	55	85	124	76	54	39	32	69
22	26	41	47	57	58	89	127	80	51	39	84	68
23	26	40	47	57	85	90	125	78	50	38	93	66
24	27	42	47	54	109	88	127	75	49	37	77	64
25	26	42	48	57	108	89	124	72	65	36	71	65
26	26	40	50	61	106	89	118	79	90	35	68	64
27	26	39	46	61	107	84	111	79	86	34	65	62
28	26	39	45	60	103	81	114	69	82	33	61	60
29	27	39	45	69	------	86	120	64	79	33	61	60
30	30	38	46	75	------	85	115	64	75	32	71	61
31	30	------	47	75	------	81	------	72	------	31	105	------
TOTAL	802	1,182	1,330	1,919	1,902	2,582	2,903	2,850	1,854	1,396	1,481	2,807
MEAN	25.9	39.4	42.9	61.9	67.9	83.3	96.8	91.9	61.8	45.0	47.8	93.6
MAX	30	43	50	90	109	99	127	145	90	70	105	147
MIN	24	31	36	45	50	73	72	64	49	31	30	60
CFSM	.38	.58	.63	.91	1.00	1.22	1.42	1.35	.91	.66	.70	1.37
IN.	.44	.64	.73	1.05	1.04	1.41	1.58	1.55	1.01	.76	.81	1.53

CAL YR 1974 TOTAL 27,351 MEAN 74.9 MAX 249 MIN 21 CFSM 1.10 IN 14.92
WTR YR 1975 TOTAL 23,008 MEAN 63.0 MAX 147 MIN 24 CFSM .92 IN 12.55

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 mi^2 (3,496 km^2).

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.--22 years, 1,078 ft^3/s (30.53 m^3/s), 10.84 in/yr (275 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,830 ft^3/s (80.1 m^3/s) Feb. 27, gage height, 6.23 ft (1.899 m); minimum 346 ft^3/s (9.80 m^3/s) July 10, gage height, 2.49 ft (0.759 m); minimum daily discharge, 439 ft^3/s (12.4 m^3/s) Oct. 6, 29.
Period of record: Maximum discharge, 5,570 ft^3/s (158 m^3/s) Mar. 11, 1974, gage height, 8.91 ft (2.716 m); minimum daily, 78 ft^3/s (2.21 m^3/s) Sept. 12, 1964.
Maximum discharge since at least 1918, 8,260 ft^3/s (234 m^3/s) Apr. 27, 1950, gage height, 10.6 ft (3.23 m).

REMARKS.--Records good. Flow regulated by powerplant upstream from station.

REVISIONS.--WSP 1911: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	530	635	635	802	1,450	2,550	1,760	2,240	1,810	1,610	493	1,990
2	498	535	615	808	1,430	2,390	1,780	2,230	1,800	1,480	571	2,230
3	488	550	615	808	1,390	2,240	1,750	2,230	1,790	1,380	748	2,320
4	511	635	650	797	1,310	2,180	1,750	2,180	1,800	1,300	709	2,380
5	480	884	770	808	1,300	2,000	1,760	2,100	1,780	1,270	738	2,470
6	439	872	775	802	1,270	1,840	1,750	2,330	1,820	1,240	725	2,410
7	493	911	570	792	1,150	1,900	1,800	2,590	1,780	1,240	788	2,260
8	506	918	670	847	1,110	1,950	1,800	2,710	1,720	1,220	738	2,110
9	480	802	625	947	1,060	1,980	1,850	2,690	1,650	1,120	592	1,930
10	448	848	605	1,220	913	1,950	1,890	2,590	1,630	810	574	1,730
11	444	860	695	1,650	895	1,890	1,880	2,460	1,630	824	650	1,500
12	470	780	792	2,070	955	1,840	1,850	2,340	1,550	886	652	1,560
13	444	764	742	1,490	986	1,780	1,700	2,320	1,500	920	587	1,490
14	498	764	736	1,530	891	1,710	1,710	2,230	1,490	916	528	1,340
15	511	764	819	1,590	878	1,700	1,640	2,140	1,560	825	550	1,190
16	498	753	998	1,430	878	1,700	1,600	2,060	1,700	801	676	1,190
17	511	792	954	1,360	955	1,680	1,600	1,930	1,710	816	595	1,190
18	630	808	931	1,360	942	1,650	1,620	1,860	1,800	806	553	1,190
19	580	780	1,050	1,340	940	1,600	1,820	1,850	1,730	739	550	1,160
20	555	758	1,000	1,290	1,070	1,650	2,180	1,680	1,660	691	546	1,050
21	506	775	861	1,160	1,160	1,750	2,410	1,650	1,620	598	616	1,040
22	470	814	899	999	1,110	1,750	2,470	1,730	1,560	609	872	1,040
23	462	802	906	1,110	1,330	1,790	2,480	1,870	1,610	716	1,580	1,020
24	520	808	870	1,140	1,930	1,840	2,570	2,020	1,520	610	1,710	1,000
25	600	695	850	1,180	2,370	1,820	2,580	2,000	1,400	605	1,890	975
26	625	680	856	1,230	2,650	1,910	2,390	1,860	1,380	592	2,020	876
27	660	695	836	1,250	2,760	1,880	2,420	1,900	1,470	502	2,030	856
28	484	742	797	1,270	2,670	1,860	2,280	1,840	1,630	538	1,910	889
29	439	758	828	1,280	------	1,850	2,270	1,700	1,670	574	1,780	815
30	520	720	850	1,340	------	1,850	2,290	1,700	1,690	510	1,760	729
31	680	------	839	1,480	------	1,800	------	1,800	------	531	1,810	------
TOTAL	15,980	22,902	24,639	37,180	37,753	58,280	59,650	64,830	49,460	27,279	30,541	43,930
MEAN	515	763	795	1,199	1,348	1,880	1,988	2,091	1,649	880	985	1,464
MAX	680	918	1,050	2,070	2,760	2,550	2,580	2,710	1,820	1,610	2,030	2,470
MIN	439	535	570	792	878	1,600	1,600	1,650	1,380	502	493	729
CFSM	.38	.57	.59	.89	1.00	1.39	1.47	1.55	1.22	.65	.73	1.08
IN.	.44	.63	.68	1.02	1.04	1.61	1.64	1.79	1.36	.75	.84	1.21

CAL YR 1974 TOTAL 566,393 MEAN 1,552 MAX 5,530 MIN 367 CFSM 1.15 IN 15.61
WTR YR 1975 TOTAL 472,424 MEAN 1,294 MAX 2,760 MIN 439 CFSM .96 IN 13.02

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 mi^2 (275 km^2).

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.--13 years, 86.1 ft^3/s (2.438 m^3/s), 11.03 in/yr (280 mm/yr).

EXTREMES.--Current year: Maximum discharge, 318 ft^3/s (9.01 m^3/s) Aug. 26, gage height, 5.03 ft (1.533 m); minimum, 30 ft^3/s (0.85 m^3/s) Oct. 7-13; minimum gage height, 2.37 ft (0.722 m) Aug. 1.
Period of record: Maximum discharge, 467 ft^3/s (13.2 m^3/s) Feb. 4, 1968, gage height, 5.49 ft (1.673 m); minimum, 11 ft^3/s (0.31 m^3/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, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	43	49	74	116	200	131	171	120	99	36	186
2	32	43	50	73	109	180	129	165	134	90	40	188
3	32	45	50	73	103	160	133	154	149	83	46	194
4	32	51	50	72	97	145	133	146	156	81	50	191
5	31	63	49	70	94	130	136	139	154	76	54	182
6	31	68	48	68	93	118	141	168	147	74	56	171
7	30	68	48	67	96	126	145	186	139	73	56	157
8	30	65	51	77	82	133	146	210	136	70	53	144
9	30	61	53	103	81	136	145	218	129	67	50	134
10	30	58	55	126	80	137	141	209	120	63	48	124
11	30	57	55	146	78	133	135	189	116	59	47	116
12	30	56	57	170	76	127	128	180	118	57	49	110
13	31	56	58	150	74	124	122	169	121	58	50	104
14	34	58	59	138	72	122	116	163	133	57	49	100
15	35	56	64	128	70	119	112	161	149	55	53	95
16	35	55	72	118	70	115	108	154	153	53	56	90
17	35	57	78	110	72	112	104	146	153	50	57	87
18	34	59	79	105	77	110	108	136	159	49	57	84
19	35	60	78	100	80	111	153	125	156	50	55	83
20	35	60	74	96	82	113	188	118	145	50	51	84
21	36	59	73	92	85	114	215	126	132	49	55	82
22	36	58	71	90	90	116	218	130	120	48	94	81
23	36	56	69	87	100	120	207	124	112	46	141	78
24	37	55	70	83	120	128	198	121	108	46	238	76
25	38	54	71	88	170	132	186	123	104	44	292	73
26	38	53	71	92	200	133	177	130	101	43	315	73
27	38	51	70	92	215	130	169	128	107	42	302	72
28	38	50	69	89	212	126	172	121	119	40	264	70
29	39	49	68	101	------	129	171	114	116	38	230	70
30	43	49	69	115	------	131	171	112	108	38	212	73
31	43	------	71	120	------	133	------	119	------	37	197	------
TOTAL	1,067	1,673	1,949	3,113	2,894	4,043	4,538	4,655	3,914	1,785	3,353	3,372
MEAN	34.4	55.8	62.9	100	103	130	151	150	130	57.6	108	112
MAX	43	68	79	170	215	200	218	218	159	99	315	194
MIN	30	43	48	67	70	110	104	112	101	37	36	70
CFSM	.32	.53	.59	.94	.97	1.23	1.42	1.42	1.23	.54	1.02	1.06
IN.	.37	.59	.68	1.09	1.02	1.42	1.59	1.63	1.37	.63	1.18	1.18

CAL YR 1974 TOTAL 37,220 MEAN 102 MAX 313 MIN 30 CFSM .96 IN 13.06
WTR YR 1975 TOTAL 36,356 MEAN 99.6 MAX 315 MIN 30 CFSM .94 IN 12.76

04097970 Lime Lake Outlet at Panama, Ind.

LOCATION.--Lat 41°42'46", long 85°07'10", in NW¼ NW¼ 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 mi^2 (45.3 km^2), of which 3.68 mi^2 (9.53 km^2) 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.--6 years,6.95 ft^3/s (0.197 m^3/s), 5.39 in/yr (137 mm/yr).

EXTREMES.--Current year: Maximum discharge, 24 ft^3/s (0.68 m^3/s) Apr. 3, gage height, 4.44 ft (1.353 m); minimum daily discharge, 0.14 ft^3/s (0.004 m^3/s) Oct. 10.
Period of record: Maximum discharge 29 ft^3/s (0.82 m^3/s) Apr. 3, 1974, gage height, 4.54 ft (1.384 m); no flow at times most years.

REMARKS.--Records good. Occasional regulation by control structure for Lime Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.32	2.0	1.4	2.4	6.4	9.3	17	17	20	14	.77	6.3
2	.28	2.0	1.5	2.4	6.2	9.1	19	17	18	13	1.4	6.2
3	.26	2.9	1.4	2.5	6.0	8.9	23	17	16	13	2.3	6.3
4	.28	3.5	1.4	2.4	5.9	8.7	23	16	15	12	2.5	6.3
5	.27	4.0	1.3	2.4	6.1	8.6	22	16	15	12	2.9	6.9
6	.23	4.0	1.3	2.4	6.4	8.4	22	22	14	10	3.8	6.7
7	.18	3.8	1.4	2.4	6.3	9.5	21	22	13	9.8	5.1	6.9
8	.18	3.7	1.8	2.8	6.2	9.8	21	21	13	9.3	6.0	6.3
9	.15	3.6	1.7	3.4	6.1	9.5	19	21	13	8.4	4.7	6.2
10	.14	3.5	1.7	4.2	5.9	9.7	17	20	13	7.4	1.3	6.2
11	.16	3.7	1.7	6.0	5.8	9.5	16	19	16	6.9	1.4	6.5
12	.19	3.5	1.9	5.6	5.7	9.5	15	21	18	6.5	1.5	6.5
13	.31	3.6	1.9	5.3	5.5	9.3	14	21	18	6.0	1.4	5.8
14	.45	4.1	1.9	5.1	5.3	9.0	13	21	19	5.8	1.4	5.5
15	.39	3.9	2.3	4.9	5.5	8.8	12	20	21	5.5	1.8	5.4
16	.41	3.8	2.5	5.0	5.8	8.6	12	19	22	4.0	2.1	6.0
17	.36	3.8	2.5	4.9	6.4	8.4	12	19	21	.46	2.0	6.0
18	.32	2.8	2.3	5.2	6.6	8.4	13	18	20	.41	1.9	5.8
19	.32	1.8	2.3	5.4	6.5	8.7	16	18	19	.34	1.9	6.2
20	.30	1.8	2.2	5.3	6.3	8.6	16	17	18	.36	1.8	6.3
21	.30	1.6	2.6	5.2	6.2	8.8	15	17	18	.34	2.5	5.8
22	.32	1.8	2.7	5.0	6.5	9.1	15	20	18	.36	8.4	5.4
23	.30	1.9	2.4	4.9	8.4	9.4	16	20	18	.36	8.4	5.1
24	.36	1.8	2.4	4.9	9.6	10	17	20	17	.34	8.4	4.5
25	.45	1.7	2.4	5.3	9.9	9.6	16	19	18	.34	8.4	4.1
26	.48	1.8	2.4	5.3	9.8	9.1	16	18	18	.34	7.6	4.0
27	.54	1.6	2.2	5.2	9.5	8.9	16	17	17	.34	6.9	3.9
28	.52	1.4	2.2	5.1	9.4	8.9	17	16	16	.36	6.0	3.9
29	.83	1.3	2.1	6.4	---	9.1	17	15	16	.39	5.4	3.9
30	1.3	1.3	2.1	6.6	---	15	18	20	15	.46	5.4	4.1
31	1.6	---	2.3	6.5	---	18	---	22	---	.54	6.9	---
TOTAL	12.50	82.0	62.2	140.4	190.2	296.2	506	586	513	149.34	122.27	169.0
MEAN	.40	2.73	2.01	4.53	6.79	9.55	16.9	18.9	17.1	4.82	3.94	5.63
MAX	1.6	4.1	2.7	6.6	9.9	18	23	22	22	14	8.4	6.9
MIN	.14	1.3	1.3	2.4	5.3	8.4	12	15	13	.34	.77	3.9
CFSM	.02	.16	.11	.26	.39	.55	.97	1.08	.98	.28	.23	.32
IN.	.03	.17	.13	.30	.40	.63	1.08	1.25	1.09	.32	.26	.36

CAL YR 1974 TOTAL 3163.10 MEAN 8.67 MAX 28 MIN .04 CFSM .50 IN 6.72
WTR YR 1975 TOTAL 2829.11 MEAN 7.75 MAX 23 MIN .14 CFSM .44 IN 6.01

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 mi^2 (497 km^2).

PERIOD OF RECORD.--July 1903 to July 1904 (gage heights and discharge measurements only), October 1957 to September 1975 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

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

AVERAGE DISCHARGE.--18 years, 159 ft^3/s (4.503 m^3/s), 11.25 in/yr (286 mm/yr).

EXTREMES.--Current year: Maximum discharge, 358 ft^3/s (10.1 m^3/s) May 9, 10, gage height, 3.95 ft (1.204 m); minimum, 77 ft^3/s (2.18 m^3/s) Oct. 23, gage height, 2.28 ft (0.695 m).
Period of record: Maximum daily discharge, 600 ft^3/s (17.0 m^3/s) Jan. 30, 1969; minimum discharge, 26 ft^3/s (0.74 m^3/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 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	106	93	156	200	280	227	310	227	294	91	272
2	106	116	123	142	197	268	227	307	222	291	100	264
3	96	128	128	138	192	259	222	304	225	278	113	254
4	117	132	104	160	187	254	231	298	231	268	117	250
5	88	140	109	146	183	248	231	291	239	241	123	250
6	99	144	107	118	184	243	218	313	240	214	122	254
7	91	137	109	153	176	252	235	323	244	204	121	250
8	107	146	113	159	159	255	240	348	244	201	128	242
9	88	143	112	191	155	249	240	356	242	196	130	233
10	99	133	124	195	139	246	237	355	235	188	130	226
11	87	127	133	221	145	247	235	348	237	183	134	221
12	105	136	113	232	140	246	232	344	237	177	129	208
13	84	136	132	189	140	239	230	335	237	169	122	196
14	93	133	150	180	135	235	228	326	240	159	114	189
15	104	130	122	180	135	229	225	318	262	161	119	184
16	112	137	145	190	135	222	223	308	272	160	121	179
17	84	132	163	190	140	205	222	300	287	153	122	177
18	100	138	142	200	145	222	219	290	291	147	118	174
19	89	148	141	200	150	201	282	282	277	151	114	174
20	104	122	160	195	155	208	305	273	266	141	112	173
21	94	131	139	188	164	227	312	272	259	142	117	171
22	104	135	154	197	172	216	319	268	252	141	139	167
23	81	134	149	191	206	205	321	262	248	132	146	161
24	108	124	152	191	241	207	325	252	248	127	167	149
25	104	115	154	195	264	216	321	244	241	116	192	146
26	100	119	143	190	272	231	319	240	246	114	225	148
27	97	121	128	186	283	225	310	252	244	117	254	149
28	95	126	147	182	289	222	309	258	250	112	262	148
29	90	98	163	191	------	207	308	246	272	105	264	152
30	101	125	153	202	------	214	309	240	290	103	272	148
31	105	------	138	202	------	229	------	235	------	95	278	------
TOTAL	3,022	3,892	4,143	5,650	5,083	7,207	7,862	9,098	7,505	5,280	4,696	5,909
MEAN	97.5	130	134	182	182	232	262	293	250	170	151	197
MAX	117	148	163	232	289	280	325	356	291	294	278	272
MIN	81	98	93	118	135	201	218	235	222	95	91	146
CFSM	.51	.68	.70	.95	.95	1.21	1.36	1.53	1.30	.89	.79	1.03
IN.	.59	.75	.80	1.09	.98	1.40	1.52	1.76	1.45	1.02	.91	1.14

CAL YR 1974 TOTAL 69,849 MEAN 191 MAX 402 MIN 63 CFSM .99 IN 13.53
WTR YR 1975 TOTAL 69,347 MEAN 190 MAX 356 MIN 81 CFSM .99 IN 13.44

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 mi^2 (4,833 km^2).

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.--52 years, 1,527 ft^3/s (43.24 m^3/s), 11.11 in/yr (282 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,970 ft^3/s (141 m^3/s) Sept. 22, gage height, 6.61 ft (2.015 m); minimum, 132 ft^3/s (3.74 m^3/s) Sept. 22, gage height, 1.09 ft (0.332 m); minimum daily, 570 ft^3/s (16.1 m^3/s) Oct. 6.
Period of record: Maximum discharge, 10,700 ft^3/s (303 m^3/s) Apr. 27, 1950, gage height, 6.56 ft (1.999 m), site and datum then in use; minimum daily, 39 ft^3/s (1.10 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	960	1,200	815	1,020	1,980	3,250	2,360	3,010	2,450	2,230	796	2,650
2	846	817	1,130	1,480	1,960	3,100	2,370	2,880	2,440	2,050	652	2,880
3	844	847	1,070	1,390	1,930	2,940	2,380	2,900	2,470	1,950	824	3,000
4	1,110	1,120	944	943	1,860	2,900	2,370	3,000	2,390	2,030	1,180	3,080
5	576	1,150	979	993	1,790	2,670	2,350	2,870	2,480	1,710	1,270	2,950
6	570	1,370	1,280	1,600	1,790	2,550	2,380	3,020	2,430	1,690	1,400	3,100
7	969	1,320	945	1,010	1,740	2,540	2,320	3,370	2,420	1,700	1,040	2,960
8	886	1,510	857	1,400	1,580	2,590	2,410	3,500	2,380	1,870	970	2,840
9	766	1,060	1,190	1,410	1,500	2,610	2,410	3,550	2,370	1,630	824	2,660
10	954	1,100	1,130	1,610	1,440	2,590	2,440	3,460	2,250	1,460	816	2,420
11	940	1,590	920	1,870	1,320	2,540	2,480	3,360	2,330	974	1,150	2,290
12	572	1,310	1,150	2,490	1,440	2,490	2,450	3,060	2,280	997	1,300	2,080
13	710	1,140	1,280	2,150	1,520	2,460	2,380	3,160	2,160	1,240	1,140	2,000
14	602	1,150	1,020	2,020	1,500	2,410	2,250	3,120	2,090	1,590	940	1,970
15	879	1,270	895	1,920	1,390	2,230	2,220	2,980	2,160	1,550	980	1,980
16	768	945	1,640	2,020	1,340	2,180	2,180	2,860	2,370	1,370	589	1,760
17	802	1,060	1,480	1,930	1,450	2,330	2,150	2,760	2,330	1,050	1,020	1,700
18	886	1,430	1,360	1,850	1,470	2,230	2,190	2,640	2,350	1,230	1,190	1,250
19	780	1,210	1,360	1,840	1,500	2,200	2,230	2,550	2,580	1,200	995	2,060
20	640	1,280	1,590	1,840	1,500	2,180	2,670	2,390	2,470	828	738	1,990
21	784	1,100	1,460	1,770	1,580	2,250	2,960	2,280	2,320	1,370	611	1,810
22	804	1,340	1,030	1,650	1,620	2,280	3,130	2,400	2,320	1,010	2,140	1,440
23	798	962	1,580	1,580	1,780	2,300	3,170	2,470	2,140	872	1,480	1,360
24	771	1,130	1,320	1,610	2,290	2,330	3,310	2,560	2,230	1,020	2,060	1,410
25	1,010	1,400	1,280	1,690	2,780	2,430	3,260	2,680	2,060	1,070	2,290	1,350
26	687	1,050	1,290	1,720	3,110	2,430	3,270	2,580	2,100	753	1,930	1,410
27	794	1,010	1,470	1,760	3,400	2,490	3,050	2,560	2,000	769	2,600	1,200
28	860	974	767	1,780	3,240	2,480	3,170	2,470	2,030	1,030	2,590	1,200
29	810	1,410	1,120	1,830	------	2,450	2,970	2,400	2,220	859	2,530	1,420
30	827	1,100	1,600	1,860	------	2,380	3,010	2,390	2,240	827	2,530	1,040
31	841	------	1,450	1,970	------	2,470	------	2,460	------	836	2,590	------
TOTAL	25,046	35,355	37,402	52,006	51,800	77,280	78,290	87,690	68,860	40,765	43,165	61,260
MEAN	808	1,179	1,207	1,678	1,850	2,493	2,610	2,829	2,295	1,315	1,392	2,042
MAX	1,110	1,590	1,640	2,490	3,400	3,250	3,310	3,550	2,580	2,230	2,600	3,100
MIN	570	817	767	943	1,320	2,180	2,150	2,280	2,000	753	589	1,040
CFSM	.43	.63	.65	.90	.99	1.34	1.40	1.52	1.23	.70	.75	1.09
IN.	.50	.70	.75	1.04	1.03	1.54	1.56	1.75	1.37	.81	.86	1.22

CAL YR 1974 TOTAL 785,932 MEAN 2,153 MAX 6,480 MIN 438 CFSM 1.15 IN 15.67
WTR YR 1975 TOTAL 658,919 MEAN 1,805 MAX 3,550 MIN 570 CFSM .97 IN 13.14

04099750 Pigeon River near Scott, Ind.

LOCATION.--Lat 41°44'56", long 85°34'35", in SE¼ NW¼ 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 mi^2 (935 km^2), of which 53.9 mi^2 (139.6 km^2) 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.--7 years, 333 ft^3/s (9.43 m^3/s), 12.53 in/yr (318 mm/yr).

EXTREMES.--Current year: Maximum discharge, 785 ft^3/s (22.2 m^3/s) May 7, gage height, 4.84 ft (1.475 m); minimum daily, 101 ft^3/s (2.86 m^3/s) Oct. 25.
Period of record: Maximum discharge, 1,450 ft^3/s (41.1 m^3/s) Feb. 1, 1969, gage height, 6.34 ft (1.932 m); minimum daily, 42 ft^3/s (1.19 m^3/s) Oct. 21, 1971.

REMARKS.--Records good.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	140	148	228	425	573	381	642	464	509	169	347
2	122	135	149	222	405	573	377	591	454	481	192	323
3	119	143	149	220	385	562	412	561	462	462	270	302
4	120	181	147	218	370	547	454	544	504	473	272	292
5	117	217	143	213	350	529	469	530	612	461	237	294
6	115	215	140	208	335	510	470	633	693	436	296	306
7	112	194	141	207	320	523	465	731	685	406	287	295
8	110	178	158	231	300	552	462	763	642	383	243	277
9	110	169	174	308	290	538	459	678	610	363	218	264
10	110	164	167	363	300	497	454	635	587	344	211	255
11	110	168	163	400	285	474	448	625	613	326	202	248
12	114	168	166	430	270	460	437	644	689	314	196	248
13	110	165	175	440	255	451	424	663	728	310	190	241
14	112	172	177	440	245	440	412	664	690	307	186	226
15	118	172	187	430	235	421	400	619	703	294	208	218
16	117	163	221	400	245	407	387	572	719	281	249	220
17	114	169	233	370	249	396	375	532	740	268	236	224
18	113	181	215	360	256	387	407	495	698	259	215	221
19	112	183	207	330	266	385	584	463	646	259	202	218
20	114	178	201	315	257	394	691	432	604	270	192	219
21	115	174	202	300	257	387	650	411	590	267	194	221
22	114	167	204	290	301	388	572	419	649	251	291	213
23	113	163	202	280	424	392	564	428	632	240	407	208
24	115	161	206	270	558	397	598	398	585	236	367	202
25	101	162	219	260	613	400	636	383	552	228	343	198
26	123	156	220	284	586	389	645	427	546	216	345	199
27	125	152	212	270	553	373	619	422	578	206	327	198
28	121	150	208	251	563	368	640	391	581	197	311	194
29	124	149	206	300	---	395	686	375	575	188	312	191
30	137	148	211	420	---	415	687	385	552	161	335	199
31	143	---	222	460	---	398	---	419	---	152	353	---
TOTAL	3628	5037	5773	9718	9898	13921	15265	16475	18383	9548	8056	7261
MEAN	117	168	186	313	354	449	509	531	613	308	260	242
MAX	143	217	233	460	613	573	691	763	740	509	407	347
MIN	101	135	140	207	235	368	375	375	454	152	169	191
CFSM	.32	.47	.52	.87	.98	1.24	1.41	1.47	1.70	.85	.72	.67
IN.	.37	.52	.59	1.00	1.02	1.43	1.57	1.70	1.89	.98	.83	.75

CAL YR 1974 TOTAL 132014 MEAN 362 MAX 1080 MIN 101 CFSM 1.00 IN 13.60
WTR YR 1975 TOTAL 122963 MEAN 337 MAX 763 MIN 101 CFSM .93 IN 12.67

04100222 North Branch Elkhart River at Cosperville, Ind.

LOCATION.--Lat 41°28'54", long 85°28'32", in NE¼ NW¼ 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.

DRAINAGE AREA.--142 mi^2 (368 km^2).

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.

GAGE.--Water-stage recorder. Datum of gage is 880.12 ft (268.261 m) (revised) above mean sea level (levels by State of Indiana, Department of Natural Resources).

EXTREMES.--Current year: Maximum discharge, 321 ft^3/s (9.09 m^3/s) Apr. 30, gage height, 5.81 ft (1.771 m); minimum daily, 13 ft^3/s (0.37 m^3/s) Oct. 22, 23.
Period of record: Maximum discharge, 569 ft^3/s (16.1 m^3/s) Mar. 10, 1974, gage height, 6.84 ft (2.085 m); minimum daily, 2.4 ft^3/s (0.068 m^3/s) Nov. 21, 1971.

REMARKS.--Records good. Flow regulated at times by dam at Waldron Lake.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	23	47	83	178	236	149	317	128	184	17	29
2	23	21	44	84	167	227	142	309	140	170	23	28
3	22	29	40	83	157	218	162	298	152	158	40	27
4	21	53	39	79	149	210	184	286	165	160	42	26
5	18	57	38	74	141	202	188	275	175	159	64	29
6	18	52	37	72	137	196	184	265	186	152	71	32
7	19	46	39	71	130	207	174	255	187	142	52	30
8	18	41	48	88	120	214	164	242	184	131	38	27
9	17	38	51	135	117	212	153	227	177	122	30	25
10	16	38	49	162	112	208	143	211	168	112	26	22
11	16	39	47	184	107	201	131	198	166	104	25	24
12	15	39	49	188	100	196	117	190	170	93	23	28
13	17	37	51	184	94	192	109	179	169	91	22	26
14	19	46	54	169	93	188	104	168	172	85	22	24
15	21	40	63	154	88	178	104	157	192	77	31	22
16	18	41	82	144	91	172	104	148	209	70	36	23
17	15	43	83	135	95	165	106	138	212	65	34	23
18	15	47	74	124	121	160	127	127	209	61	32	24
19	14	49	68	118	129	162	184	116	202	60	30	25
20	17	48	64	115	121	167	220	105	195	57	27	32
21	15	43	65	105	123	168	232	97	249	52	24	29
22	13	49	63	99	142	163	240	106	252	47	26	27
23	13	46	60	96	202	166	246	109	241	42	28	26
24	16	46	70	94	244	164	264	104	234	37	26	25
25	15	47	80	103	253	161	277	98	267	33	24	22
26	15	46	79	107	251	160	278	100	253	30	27	21
27	15	44	74	105	248	156	277	96	241	25	28	20
28	15	41	71	99	243	152	302	88	227	23	27	20
29	18	42	69	141	---	156	318	81	212	22	25	20
30	26	45	71	188	---	157	321	82	199	20	27	21
31	25	---	79	190	---	156	---	104	---	18	29	---
TOTAL	551	1276	1848	3773	4153	5670	5704	5276	5933	2602	976	757
MEAN	17.8	42.5	59.6	122	148	183	190	170	198	83.9	31.5	25.2
MAX	26	57	83	190	253	236	321	317	267	184	71	32
MIN	13	21	37	71	88	152	104	81	128	18	17	20
CFSM	.13	.30	.42	.86	1.04	1.29	1.34	1.20	1.39	.59	.22	.18
IN.	.14	.33	.48	.99	1.09	1.49	1.49	1.38	1.55	.68	.26	.20

CAL YR 1974 TOTAL 49150 MEAN 135 MAX 569 MIN 12 CFSM .95 IN 12.88
WTR YR 1975 TOTAL 38519 MEAN 106 MAX 321 MIN 13 CFSM .75 IN 10.09

04100500 Elkhart River at Goshen, Ind.

LOCATION.--Lat 41°35'36", long 85°50'55", in NE¼ NE¼ sec.8, T.36 N., R.6 E., Elkhart County, on right bank 20 ft (6 m) downstream from River Avenue bridge at Goshen, 0.4 mile (0.6 km) (revised) upstream from Rock Run, and at mile 16.1 (25.9 km).

DRAINAGE AREA.--594 mi^2 (1.538 km^2).

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.--44 years, 502 ft^3/s (14.2 m^3/s), 11.48 in/yr (292 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,890 ft^3/s (53.5 m^3/s) June 16, gage height, 5.58 ft (1.701 m); minimum daily, 120 ft^3/s (3.40 m^3/s) Oct. 26.
Period of record: Maximum discharge, 5,440 ft^3/s (154 m^3/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 ft^3/s (0.20 m^3/s) Aug. 11, 1964, result of extreme regulation.

REMARKS.--Records good.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	147	211	362	652	929	626	1340	693	698	179	222
2	148	145	216	372	627	880	623	1240	674	664	249	215
3	144	162	217	361	602	840	731	1170	890	633	447	205
4	139	205	211	361	579	784	857	1110	1040	597	369	204
5	134	251	203	353	571	745	863	1050	991	568	302	216
6	129	277	197	341	560	740	832	995	964	540	283	227
7	132	260	208	338	489	814	810	936	907	515	302	217
8	130	242	225	374	436	1110	794	883	853	490	271	209
9	128	229	237	516	462	1020	769	836	818	461	246	199
10	127	218	206	655	473	850	738	793	793	430	232	196
11	127	222	212	856	415	779	703	759	911	408	237	193
12	122	219	219	1030	471	750	667	763	1390	396	219	202
13	123	215	222	818	412	765	623	729	1360	399	212	200
14	130	222	227	568	382	730	588	683	1070	385	212	195
15	131	215	245	539	394	689	565	645	1430	363	262	190
16	132	213	286	597	400	655	541	616	1860	339	267	192
17	136	225	314	626	416	635	526	584	1660	321	246	193
18	127	242	311	576	577	621	624	552	1290	314	227	193
19	124	251	297	551	633	630	1140	527	1060	317	215	194
20	127	253	290	575	564	670	1330	506	946	301	208	195
21	124	248	283	447	578	650	997	497	876	285	203	193
22	121	238	284	475	721	640	940	517	817	269	200	192
23	125	230	279	449	1100	630	1100	501	806	254	201	191
24	126	233	291	434	1480	621	1150	492	860	249	195	185
25	121	230	322	462	1430	626	1230	512	935	239	190	183
26	120	223	326	496	1180	607	1160	719	937	226	193	188
27	121	221	313	450	1020	588	1120	646	869	218	192	190
28	121	219	316	425	906	592	1410	526	789	213	182	171
29	131	211	312	540	---	652	1740	503	773	205	193	174
30	145	208	319	831	---	724	1510	609	736	200	204	172
31	146	---	343	743	---	669	---	719	---	187	229	---
TOTAL	4044	6674	8142	16521	18530	22635	27307	22958	29998	11684	7367	5896
MEAN	130	222	263	533	662	730	910	741	1000	377	238	197
MAX	153	277	343	1030	1480	1110	1740	1340	1860	698	447	227
MIN	120	145	197	338	382	588	526	492	674	187	179	171
CFSM	.22	.37	.44	.90	1.11	1.23	1.53	1.25	1.68	.63	.40	.33
IN.	.25	.42	.51	1.03	1.16	1.42	1.71	1.44	1.88	.73	.46	.37

CAL YR 1974 TOTAL 208883 MEAN 572 MAX 2500 MIN 117 CFSM .96 IN 13.08
WTR YR 1975 TOTAL 181756 MEAN 498 MAX 1860 MIN 120 CFSM .84 IN 11.38

PEAK DISCHARGE (BASE, 1,800 FT^3/S).--June 16 (1500) 1,890 ft^3/s (5.58 ft).

04101000 St. Joseph River at Elkhart, Ind.

LOCATION.--Lat 41°41'30", long 85°58'30", in SE¼ NE¼ sec.5, T.37 N., R.5 E., Elkart 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 mi^2 (8,728 km^2).

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.--28 years, 3,069 ft^3/s (86.9 m^3/s), 12.37 in/yr (314 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,890 ft^3/s (195 m^3/s) Apr. 30, gage height, 21.81 ft (6.648 m); minimum daily, 1,040 ft^3/s (29.5 m^3/s) Oct. 6.
Period of record: Maximum discharge, 18,400 ft^3/s (521 m^3/s) Apr. 5, 1950, gage height, 27.82 ft (8.480 m); minimum daily, 336 ft^3/s (9.52 m^3/s) Aug. 5, 1964.

REMARKS.--Records good. The flow is regulated by Elkhart Hydroelectric Plant.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1620	1670	1600	2200	3780	5580	4190	6080	4410	4050	1470	3830
2	1660	1520	1930	2540	3660	5310	4090	5790	4310	3860	1480	3940
3	1490	1500	1840	2410	3590	5200	4310	5640	4530	3690	2140	4070
4	1300	1760	1670	2160	3480	4930	4460	5720	4740	3690	2410	4100
5	1240	1750	1700	2050	3380	4760	4480	5530	4810	3490	2160	4070
6	1040	2130	1880	2390	3370	4580	4480	5560	4880	3120	2400	4170
7	1650	2240	1770	2760	3260	4750	4380	5850	4750	3220	2150	4050
8	1380	2180	1630	1920	2990	5130	4340	5920	4550	3260	1840	3930
9	1510	2100	2020	2860	2750	5100	4360	6030	4510	2980	1690	3720
10	1480	1870	1920	3340	2660	4880	4330	5850	4290	2850	1720	3490
11	1530	2230	1720	4020	2720	4650	4340	5640	4450	2240	2090	3200
12	1110	2110	1960	4720	2970	4600	4270	5450	5160	1990	2040	3100
13	1210	2040	1990	4020	2860	4510	4180	5320	4970	2480	2050	2790
14	1190	1630	1990	3540	2760	4390	3980	5270	4650	2770	1800	2920
15	1400	1890	1740	3980	2740	4240	3860	5110	5350	2710	2030	2850
16	1320	1760	2470	3920	2580	3880	3830	4900	6050	2470	1650	2620
17	1320	1900	2520	3570	2740	3640	3690	4720	5810	2200	1870	2560
18	1400	2180	2450	3780	2990	3980	3920	4500	5200	2070	2240	2300
19	1320	2000	2350	3520	3150	3970	5440	4320	5130	2260	1850	2490
20	1320	2020	2890	3360	3010	3970	5920	4170	4790	1920	1520	2970
21	1190	2020	2860	3160	3080	3990	5660	3910	4580	2240	1450	2520
22	1340	2060	1850	3290	3500	4070	5720	4040	4370	2660	2730	2510
23	1340	1880	2510	3090	4240	4050	5840	4040	4230	1240	2440	2230
24	1300	1990	2360	3020	5330	4070	5990	4150	4260	1820	2970	2230
25	1390	2120	2310	3170	5650	4170	6080	4320	4360	1930	3280	2170
26	1310	1930	2270	3260	5800	4150	5950	4640	4170	1590	3050	2230
27	1360	1770	2400	3210	5830	4150	5790	4440	4040	1560	3280	1980
28	1500	1770	2020	3140	5610	4150	6310	4170	3740	1780	3610	1960
29	1390	2050	1910	3550	---	4300	6510	4000	4030	1640	3580	2300
30	1410	1950	2560	3870	---	4280	6360	4120	4130	1490	3760	1980
31	1540	---	2460	3880	---	4330	---	4410	---	1480	3830	---
TOTAL	42560	58020	65550	99700	100480	137760	147060	153610	139250	76750	72580	89280
MEAN	1373	1934	2115	3216	3589	4444	4902	4955	4642	2476	2341	2976
MAX	1660	2240	2890	4720	5830	5580	6510	6080	6050	4050	3830	4170
MIN	1040	1500	1600	1920	2580	3640	3690	3910	3740	1240	1450	1960
CFSM	.41	.57	.63	.95	1.07	1.32	1.45	1.47	1.38	.73	.69	.88
IN.	.47	.64	.72	1.10	1.11	1.52	1.62	1.70	1.54	.85	.80	.99

CAL YR 1974 TOTAL 1383537 MEAN 3791 MAX 11100 MIN 799 CFSM 1.12 IN 15.27
WTR YR 1975 TOTAL 1182600 MEAN 3240 MAX 6510 MIN 1040 CFSM .96 IN 13.05

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 mi^2 (9,495 km^2).

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.--45 years, 3,143 ft^3/s (89.01 m^3/s), 11.64 in/yr (296 mm/yr).

EXTREMES.--Current year: Maximum discharge, 8,590 ft^3/s (243 m^3/s) Apr. 19, gage height, 9.12 ft (2.780 m); minimum daily, 1,100 ft^3/s (31.2 m^3/s) Oct. 6.
Period of record: Maximum discharge, 20,200 ft^3/s (572 m^3/s) Apr. 5, 1950, gage height, 15.10 ft (4.602 m), present datum; minimum daily, 420 ft^3/s (11.9 m^3/s) Aug. 30, 1931.

REMARKS.--Records good. 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,940	1,670	2,130	2,560	3,810	5,440	4,300	6,480	4,530	3,970	2,070	3,810
2	1,670	2,070	1,800	2,400	3,640	5,280	4,210	5,960	4,410	4,120	1,810	4,220
3	1,850	2,000	1,960	2,450	3,600	4,890	4,380	5,480	4,490	3,810	2,120	3,840
4	2,000	2,000	2,300	2,590	3,450	4,960	4,410	5,530	4,900	3,800	2,470	4,130
5	1,650	2,530	1,750	2,190	3,450	4,540	4,500	5,500	5,010	3,740	2,550	4,160
6	1,100	2,040	1,830	2,240	3,290	4,660	4,550	5,400	5,250	3,350	2,480	4,280
7	1,470	2,390	2,190	2,760	3,390	4,890	4,400	5,600	4,760	3,500	2,640	3,950
8	1,770	2,360	1,900	2,810	3,040	5,050	4,310	5,690	4,500	3,310	2,110	3,930
9	1,800	2,680	1,870	2,450	2,870	5,120	4,350	5,820	4,320	3,780	2,080	3,830
10	1,920	2,090	2,100	3,580	2,930	4,990	4,320	5,710	4,300	2,730	2,010	3,640
11	1,350	2,230	2,170	4,370	2,800	4,550	4,270	5,480	4,370	2,810	2,620	3,500
12	1,740	2,500	2,020	5,420	2,970	4,610	4,230	5,350	5,000	2,760	2,240	3,140
13	1,410	2,310	2,040	4,830	2,930	4,460	4,190	5,050	5,070	2,630	2,480	3,150
14	2,010	2,360	2,360	3,650	2,800	4,460	4,060	5,290	5,030	2,670	2,370	3,090
15	1,240	2,150	2,110	3,370	2,940	4,140	3,880	4,950	5,280	3,150	2,290	2,810
16	1,760	2,170	2,160	3,790	2,720	4,060	3,670	4,880	6,720	2,850	2,170	2,950
17	1,460	2,040	2,660	3,280	2,980	3,620	3,690	4,800	6,550	2,750	1,900	2,950
18	1,530	2,320	2,640	3,630	3,060	3,910	3,760	4,460	5,370	2,430	2,350	2,590
19	1,660	2,250	2,540	3,550	3,300	3,910	6,140	4,360	5,200	2,900	2,190	2,480
20	1,810	2,130	2,700	3,260	3,110	3,930	7,090	4,290	4,940	2,660	2,030	3,310
21	1,350	2,300	3,080	3,190	3,130	4,040	5,630	3,990	4,880	2,040	1,930	2,680
22	1,830	2,170	2,280	3,690	3,570	4,060	5,730	4,060	4,510	2,870	2,460	2,510
23	1,500	2,420	2,190	2,960	4,520	4,110	5,800	4,080	4,280	2,540	3,290	2,510
24	1,780	2,050	2,640	3,080	5,910	4,100	6,080	4,210	4,480	2,090	2,410	2,470
25	1,660	2,140	2,450	3,120	5,660	3,980	5,970	4,200	5,050	1,770	3,350	2,440
26	1,760	2,260	2,420	3,280	5,740	4,280	5,860	4,700	4,660	2,210	3,620	2,290
27	1,560	1,970	2,420	3,280	5,750	4,170	5,760	4,490	4,620	1,790	2,860	2,390
28	1,540	1,900	2,550	3,130	5,350	4,230	6,600	4,450	4,230	1,950	3,880	2,180
29	1,940	2,050	2,140	3,560	------	4,250	7,140	3,900	4,330	2,110	3,780	2,090
30	1,800	2,370	2,180	4,110	------	4,430	6,730	4,270	3,520	1,850	3,760	2,430
31	1,720	------	2,640	3,870	------	4,210	------	4,580	------	1,850	4,240	------
TOTAL	51,580	65,920	70,220	102,450	102,710	137,330	150,010	153,010	144,560	86,790	80,560	93,750
MEAN	1,664	2,197	2,265	3,305	3,668	4,430	5,000	4,936	4,819	2,800	2,599	3,125
MAX	2,010	2,680	3,080	5,420	5,910	5,440	7,140	6,480	6,720	4,120	4,240	4,280
MIN	1,100	1,670	1,750	2,190	2,720	3,620	3,670	3,900	3,520	1,770	1,810	2,090
CFSM	.45	.60	.62	.90	1.00	1.21	1.36	1.35	1.31	.76	.71	.85
IN.	.52	.67	.71	1.04	1.04	1.39	1.52	1.55	1.47	.88	.82	.95

CAL YR 1974 TOTAL 1,500,870 MEAN 4,112 MAX 11,700 MIN 1,100 CFSM 1.12 IN 15.23
WTR YR 1975 TOTAL 1,238,890 MEAN 3,394 MAX 7,140 MIN 1,100 CFSM .93 IN 12.57

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 mi^2 (660 km^2).

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.--15 years, 271 ft^3/s (7.675 m^3/s), 14.43 in/yr (367 mm/yr).

EXTREMES.--Current year: Maximum discharge, 777 ft^3/s (22.0 m^3/s) May 6, gage height, 6.51 ft (1.984 m); minimum, 156 ft^3/s (4.42 m^3/s) Aug. 1, 2, gage height, 3.26 ft (0.994 m).
Period of record: Maximum discharge, 1,280 ft^3/s (36.2 m^3/s) June 26, 1968, gage height, 8.78 ft (2.676 m); minimum, 86 ft^3/s (2.44 m^3/s) Sept. 10, 1964; minimum gage height, 2.57 ft (0.783 m) Aug. 8, 9, 1964.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	202	249	247	297	411	399	387	497	429	238	157	361
2	204	240	249	284	383	377	379	447	371	228	171	307
3	200	247	247	278	357	367	385	411	351	222	231	273
4	197	303	242	274	337	355	397	405	345	280	214	256
5	197	333	240	264	333	349	403	389	351	265	205	255
6	186	341	238	260	337	359	423	685	327	255	238	273
7	183	308	238	256	324	465	439	715	303	249	216	251
8	180	286	274	322	318	511	445	575	293	237	199	237
9	183	271	286	497	305	463	429	485	284	224	187	229
10	180	260	278	573	278	429	401	433	273	219	178	219
11	177	274	273	727	301	405	377	403	282	210	177	219
12	175	280	295	637	289	399	357	399	297	216	172	228
13	175	291	320	479	282	407	343	385	274	246	168	210
14	195	297	327	405	274	391	333	365	282	238	161	200
15	204	293	347	369	280	375	327	355	353	235	167	197
16	197	288	389	355	288	371	320	345	427	222	171	197
17	192	327	365	343	306	375	318	333	377	217	167	195
18	187	341	335	339	347	379	353	318	427	216	164	192
19	187	316	318	335	341	389	675	310	443	244	160	193
20	190	303	303	318	331	393	643	299	383	253	159	214
21	187	286	295	316	331	385	519	349	343	237	161	209
22	186	276	289	308	381	439	463	399	312	224	224	216
23	186	271	284	305	557	459	437	369	297	216	240	214
24	190	282	289	303	675	433	479	337	289	210	209	204
25	193	278	295	373	637	417	457	335	305	199	226	199
26	190	269	282	429	531	393	417	383	345	189	212	200
27	197	262	273	391	459	381	403	395	305	186	193	197
28	195	256	267	367	425	381	491	347	282	181	186	192
29	202	249	265	459	---	441	491	322	267	174	207	189
30	265	247	282	515	---	431	455	361	251	165	235	197
31	260	---	295	453	---	399	---	509	---	161	381	---
TOTAL	6042	8524	8927	11831	10418	12517	12746	12660	9868	6856	6136	6723
MEAN	195	284	288	382	372	404	425	408	329	221	198	224
MAX	265	341	389	727	675	511	675	715	443	280	381	361
MIN	175	240	238	256	274	349	318	299	251	161	157	189
CFSM	.76	1.11	1.13	1.50	1.46	1.58	1.67	1.60	1.29	.87	.78	.88
IN.	.88	1.24	1.30	1.73	1.52	1.83	1.86	1.85	1.44	1.00	.90	.98

CAL YR 1974 TOTAL 117395 MEAN 322 MAX 947 MIN 146 CFSM 1.26 IN 17.13
WTR YR 1975 TOTAL 113248 MEAN 310 MAX 727 MIN 157 CFSM 1.22 IN 16.52

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 mi^2 (1,010 km^2).

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.--24 years, 423 ft^3/s (11.98 m^3/s), 14.73 in/yr (374 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,070 ft^3/s (58.6 m^3/s) Apr. 23, gage height, 9.49 ft (2.893 m); minimum, 292 ft^3/s (8.27 m^3/s) Oct. 9, 10, 11, 12, minimum gage height, 4.57 ft (1.393 m), Aug. 20.
Period of record: Maximum discharge, 2,140 ft^3/s (60.6 m^3/s) Feb. 6, 1968, gage height, 9.32 ft (2.841 m); maximum gage height, 9.49 ft (2.893 m) Apr. 23, 1975; minimum discharge, 99 ft^3/s (2.80 m^3/s) July 5, 1964, gage height, 2.66 ft (0.811 m).

REMARKS.--Records good. Diurnal fluctuation, principally during low flow, caused by paper mill above station.

DISCHARGE, IN CUBIC FEET PER SECOND , WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	309	352	374	427	691	870	652	940	802	526	308	930
2	310	357	367	420	670	882	646	910	697	483	318	950
3	314	362	363	418	640	830	664	895	640	441	345	990
4	311	381	362	421	610	754	667	895	616	439	350	985
5	299	407	360	413	580	700	667	886	622	430	372	980
6	295	408	357	405	560	658	667	1030	637	402	397	975
7	296	397	355	401	540	664	679	1150	634	385	383	915
8	294	392	367	426	520	712	700	1030	608	371	366	826
9	292	396	377	480	500	724	721	990	588	360	348	734
10	292	395	371	568	480	697	721	995	568	352	334	673
11	292	399	367	688	470	682	715	995	538	343	323	616
12	292	399	381	826	460	679	715	965	504	349	315	570
13	293	398	398	770	450	691	712	866	483	349	311	506
14	311	403	404	730	436	685	706	826	478	365	312	454
15	317	402	415	700	453	652	688	766	514	387	311	424
16	319	401	448	660	439	625	658	712	586	399	311	401
17	322	414	469	630	429	610	608	673	625	401	310	379
18	321	426	472	600	442	604	646	640	631	401	307	360
19	320	429	472	580	453	600	1230	604	685	426	303	358
20	320	427	475	560	456	598	1350	584	682	445	300	371
21	318	426	475	540	460	596	1270	634	682	447	300	366
22	316	423	472	520	484	596	1870	661	694	445	327	374
23	315	418	465	500	564	598	2030	688	700	442	375	377
24	316	423	462	520	706	598	1730	658	661	436	396	372
25	321	429	462	542	810	600	1440	649	625	401	407	369
26	319	420	450	588	794	602	1200	673	602	364	427	366
27	317	411	436	602	794	602	1060	709	600	352	450	362
28	316	408	427	580	830	610	1030	676	592	342	436	358
29	320	401	420	604	---	649	1000	625	578	331	448	361
30	340	387	420	679	---	682	970	596	556	322	560	377
31	347	---	426	709	---	676	---	646	---	315	712	---
TOTAL	9664	12091	12869	17507	15721	20726	28412	24567	18428	12251	11462	17079
MEAN	312	403	415	565	561	669	947	792	614	395	370	569
MAX	347	429	475	826	830	882	2030	1150	802	526	712	990
MIN	292	352	355	401	429	596	608	584	478	315	300	358
CFSM	.80	1.03	1.06	1.45	1.44	1.72	2.43	2.03	1.57	1.01	.95	1.46
IN.	.92	1.15	1.23	1.67	1.50	1.98	2.71	2.34	1.76	1.17	1.09	1.63

CAL YR 1974 TOTAL 193240 MEAN 529 MAX 1600 MIN 236 CFSM 1.36 IN 18.43
WTR YR 1975 TOTAL 200777 MEAN 550 MAX 2030 MIN 292 CFSM 1.41 IN 19.15

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 mi^2 (216.5 km^2).

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

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

AVERAGE DISCHARGE.--9 years, 102 ft^3/s (2.889 m^3/s), 16.57 in/yr (421 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,320 ft^3/s (37.4 m^3/s) Apr. 19, gage height, 13.16 ft (4.011 m); minimum discharge, 29 ft^3/s (0.82 m^3/s) Oct. 12, 13; minimum gage height, 2.20 ft (0.671 m) Oct. 4, 5, 6, 12, 13, Aug. 20.
Period of record: Maximum discharge, 1,320 ft^3/s (37.4 m^3/s) Apr. 19, 1975, gage height, 13.16 ft (4.011 m); minimum, 20 ft^3/s (0.57 m^3/s) Sept. 28, 1966, gage height, 1.83 ft (0.558 m).

REMARKS.--Records good. Occasional regulation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	44	48	77	235	191	177	307	237	67	42	271
2	35	41	48	78	199	158	166	276	183	60	48	211
3	32	40	47	75	168	135	152	234	151	56	65	163
4	31	49	46	69	142	119	158	207	137	60	57	131
5	31	55	45	67	122	108	167	187	173	54	59	108
6	31	53	44	64	114	106	176	404	197	51	74	105
7	31	49	45	60	107	177	200	493	153	49	59	94
8	32	45	51	73	100	261	242	358	116	46	50	79
9	31	43	57	159	96	224	265	271	96	45	46	70
10	31	42	55	216	94	187	243	208	84	42	43	63
11	30	47	54	415	91	159	222	162	77	44	42	58
12	29	50	57	330	89	149	194	141	79	46	41	55
13	29	51	67	270	87	159	167	132	72	68	40	51
14	39	55	75	220	85	148	149	122	68	226	40	47
15	42	56	85	180	83	133	134	115	107	401	39	46
16	39	56	110	150	82	128	121	107	188	226	38	45
17	35	67	98	120	83	130	110	99	171	134	38	44
18	32	75	91	100	102	134	200	92	243	97	37	44
19	32	69	84	86	113	144	1190	85	229	126	37	45
20	32	64	78	82	113	153	898	78	179	204	36	56
21	32	60	74	77	113	153	717	117	144	146	39	55
22	32	58	71	75	132	162	609	161	121	105	76	54
23	31	55	70	73	241	156	532	198	101	84	95	53
24	32	60	74	77	392	145	481	176	85	79	91	49
25	33	60	77	170	446	140	417	148	105	71	87	46
26	33	57	71	150	344	132	352	156	215	62	80	46
27	33	53	66	100	277	128	304	122	164	56	63	45
28	33	51	69	157	230	125	319	115	121	52	53	42
29	34	50	72	284	---	190	403	93	94	48	95	41
30	47	49	75	377	---	218	339	96	77	45	149	44
31	46	---	76	283	---	189	---	189	---	43	242	---
TOTAL	1048	1604	2080	4714	4480	4841	9804	5649	4167	2893	2001	2261
MEAN	33.8	53.5	67.1	152	160	156	327	182	139	93.3	64.5	75.4
MAX	47	75	110	415	446	261	1190	493	243	401	242	271
MIN	29	40	44	60	82	106	110	78	68	42	36	41
CFSM	.40	.64	.80	1.82	1.91	1.87	3.91	2.18	1.66	1.12	.77	.90
IN.	.47	.71	.93	2.10	1.99	2.15	4.36	2.51	1.85	1.29	.89	1.01

CAL YR 1974 TOTAL 38181 MEAN 105 MAX 700 MIN 26 CFSM 1.26 IN 16.99
WTR YR 1975 TOTAL 45542 MEAN 125 MAX 1190 MIN 29 CFSM 1.50 IN 20.27

PEAK DISCHARGE (BASE, 400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	unknown	7.77	447	04-29	1000	7.49	418
01-30	0500	7.37	406	05-07	0300	8.49	533
02-25	0400	7.96	469	07-15	0400	7.67	436
04-19	1100	13.16	1,320				

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 mi^2 (378 km^2).

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, 370 ft^3/s (10.5 m^3/s) Sept. 2; minimum daily discharge, 61 ft^3/s (1.73 m^3/s) Oct. 9.
Period of record: Maximum daily discharge, 420 ft^3/s (11.9 m^3/s) Mar. 10, 1974; maximum gage height, 4.61 ft (1.405 m) Feb. 6, 1974 (backwater from ice); minimum daily discharge, 36 ft^3/s (1.02 m^3/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 periods of no gage-height record, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	75	87	120	175	210	173	175	150	141	64	360
2	66	73	85	118	170	185	168	175	160	134	75	370
3	66	75	85	118	160	170	162	173	165	131	85	360
4	66	92	87	118	150	160	162	169	165	133	83	350
5	66	113	83	118	140	150	164	162	160	134	85	330
6	64	122	92	115	130	150	162	182	160	131	85	300
7	62	117	83	117	125	145	164	199	155	125	82	260
8	62	108	96	134	110	145	173	197	150	122	78	230
9	61	98	99	194	105	140	182	182	140	118	74	210
10	62	92	96	223	100	140	182	162	140	113	70	180
11	62	90	94	245	100	140	180	150	140	110	70	170
12	62	89	92	230	98	135	170	157	145	106	70	160
13	64	87	98	210	97	135	170	164	145	105	70	150
14	68	87	103	190	96	135	165	160	145	108	70	145
15	68	87	112	170	96	135	160	152	150	108	71	140
16	68	85	120	160	94	140	160	143	150	103	75	130
17	69	90	125	155	99	140	150	134	150	101	73	125
18	70	96	122	145	115	145	150	127	145	96	73	120
19	70	98	117	135	120	145	180	122	140	103	71	117
20	71	96	113	130	117	150	210	120	140	105	71	120
21	70	94	112	130	115	160	225	134	135	103	99	122
22	68	90	110	130	129	165	230	150	130	96	170	122
23	68	89	108	130	232	175	220	140	130	83	210	120
24	70	92	110	140	341	185	200	135	127	101	220	120
25	70	92	113	145	335	190	190	155	136	96	220	115
26	68	90	113	145	285	195	190	165	155	89	210	115
27	68	87	110	140	257	190	180	150	162	82	210	117
28	68	87	112	140	235	185	180	140	162	76	205	117
29	70	85	112	160	---	187	175	130	157	73	205	115
30	71	87	115	170	---	190	175	130	150	68	240	117
31	73	---	118	175	---	183	---	150	---	66	290	---
TOTAL	2079	2763	3222	4750	4326	5000	5352	4784	4439	3260	3774	5507
MEAN	67.1	92.1	104	153	155	161	178	154	148	105	122	184
MAX	73	122	125	245	341	210	230	199	165	141	290	370
MIN	61	73	83	115	94	135	150	120	127	66	64	115
CFSM	.46	.63	.71	1.05	1.06	1.10	1.22	1.05	1.01	.72	.84	1.26
IN.	.53	.70	.82	1.21	1.10	1.27	1.36	1.22	1.13	.83	.96	1.40

CAL YR 1974 TOTAL 51497 MEAN 141 MAX 420 MIN 55 CFSM .97 IN 13.12
WTR YR 1975 TOTAL 49256 MEAN 135 MAX 370 MIN 61 CFSM .92 IN 12.55

NOTE.--No gage-height record Jan. 13 to Feb. 14, May 22 to June 23.

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 mi^2 (1,163 km^2).

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.--27 years, 309 ft^3/s (8.751 m^3/s), 9.35 in/yr (237 mm/yr).

EXTREMES.--Current year: Maximum discharge, 954 ft^3/s (27.0 m^3/s) Sept. 1, gage height, 6.23 ft (1.899 m); minimum, 57 ft^3/s (1.61 m^3/s) Aug. 1, 2, gage height, 3.44 ft (1.049 m); minimum daily, 63 ft^3/s (1.78 m^3/s) July 28.
Period of record: Maximum discharge, 2,130 ft^3/s (60.3 m^3/s) Mar. 29, 1950, gage height, 8.20 ft (2.499 m); minimum, 12 ft^3/s (0.34 m^3/s) Aug. 2, 1967; minimum gage height, 3.00 ft (0.914 m) May 16, 1963; minimum daily discharge, 31 ft^3/s (0.88 m^3/s) Aug. 16, 1964.

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

DISCHARGE, IN CUBIC FEET PER SECOND , WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	253	206	200	276	423	608	481	540	561	487	299	937
2	351	332	250	261	371	553	520	535	581	334	98	918
3	185	222	240	346	355	392	512	531	554	408	424	857
4	277	382	230	303	352	489	449	499	524	223	316	790
5	310	457	220	297	265	467	458	346	505	514	257	724
6	292	486	200	273	295	397	438	522	496	236	243	659
7	149	391	240	303	324	396	326	517	486	403	231	590
8	238	417	240	407	311	347	536	428	337	335	279	544
9	322	336	230	427	260	450	529	518	425	351	271	413
10	297	321	260	568	234	430	524	499	356	380	239	435
11	238	318	290	674	294	419	452	328	317	253	278	403
12	234	297	310	610	288	355	521	499	437	376	163	339
13	282	300	240	579	256	422	508	407	402	327	326	456
14	201	300	270	544	322	423	313	475	399	285	195	321
15	309	303	280	359	266	350	497	499	509	295	316	310
16	293	300	290	447	254	339	489	422	507	286	224	353
17	280	303	349	400	305	458	297	335	438	346	174	357
18	335	340	434	332	279	382	474	373	407	240	195	319
19	135	309	327	431	338	470	589	400	475	300	302	348
20	236	368	372	241	377	478	679	314	451	476	172	318
21	255	282	318	267	265	526	702	414	352	173	417	306
22	266	349	315	360	411	531	695	538	322	275	532	324
23	258	300	315	276	561	551	660	530	339	262	569	299
24	268	300	315	301	844	607	624	508	499	348	578	251
25	230	290	340	312	911	620	588	405	474	350	544	370
26	280	260	343	324	883	640	560	527	388	341	529	224
27	288	260	309	389	795	598	542	521	480	327	525	340
28	269	250	381	265	688	547	535	498	443	63	501	277
29	300	240	303	395	---	539	450	352	362	355	524	256
30	308	280	137	398	---	471	540	484	379	247	626	299
31	188	---	437	426	---	535	---	444	---	186	873	---
TOTAL	8127	9499	8985	11791	11527	14790	15488	14208	13205	9782	11220	13337
MEAN	262	317	290	380	412	477	516	458	440	316	362	445
MAX	351	486	437	674	911	640	702	540	581	514	873	937
MIN	135	206	137	241	234	339	297	314	317	63	98	224
CFSM	.58	.71	.65	.85	.92	1.06	1.15	1.02	.98	.70	.81	.99
IN.	.67	.79	.74	.98	.96	1.23	1.28	1.18	1.09	.81	.93	1.10

CAL YR 1974 TOTAL 168701 MEAN 462 MAX 1250 MIN 111 CFSM 1.03 IN 13.98
WTR YR 1975 TOTAL 141959 MEAN 389 MAX 937 MIN 63 CFSM .87 IN 11.76

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 mi^2 (624 km^2).

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.--42 years (1930-31, 1934-75) 197 ft^3/s (5.579 m^3/s), 11.10 in/yr (282 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,590 ft^3/s (102 m^3/s) Apr. 21, gage height, 4.44 ft (1.353 m); minimum, 66 ft^3/s (1.87 m^3/s) July 31, gage height, 0.64 ft (0.195 m).
Period of record: Maximum discharge, 3,640 ft^3/s (103 m^3/s) Apr. 7, 1947, gage height, 4.48 ft (1.366 m), from floodmark; minimum, 22 ft^3/s (0.62 m^3/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. Occasional slight regulation prior to November 1943.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	111	122	160	409	688	377	836	305	129	69	357
2	91	111	122	160	411	530	367	733	306	119	87	383
3	85	115	122	160	372	483	334	639	315	110	107	400
4	79	126	115	160	350	445	337	561	318	107	112	401
5	76	150	130	160	325	363	324	504	313	103	114	388
6	78	162	111	155	264	355	322	490	298	100	117	369
7	75	167	126	150	197	326	330	468	287	96	109	342
8	75	162	126	165	201	298	339	446	273	93	102	311
9	78	154	130	250	190	276	348	425	253	90	96	285
10	78	142	126	390	166	269	365	396	231	90	89	266
11	75	134	142	450	166	252	392	366	221	88	90	249
12	75	130	139	495	157	238	415	353	219	87	91	217
13	72	134	147	485	152	233	433	342	208	88	86	206
14	81	134	153	470	145	237	443	340	199	91	84	193
15	87	134	166	450	137	255	436	344	201	91	89	181
16	91	142	181	416	131	285	413	344	214	89	91	171
17	87	142	193	358	138	308	379	333	224	86	89	164
18	87	146	199	328	147	334	398	313	228	83	87	159
19	84	154	198	296	155	371	1040	289	230	86	84	133
20	84	167	193	247	166	405	2940	265	215	90	83	127
21	81	150	187	226	180	444	3470	271	203	89	93	128
22	84	138	177	203	200	489	2860	307	199	89	154	129
23	84	134	169	186	258	528	2140	331	192	84	156	129
24	84	134	168	179	350	579	1650	381	187	81	149	125
25	87	138	164	196	540	620	1400	462	184	81	145	118
26	84	142	162	213	892	620	1190	466	170	80	137	114
27	84	138	159	217	1000	588	990	423	156	77	127	112
28	84	130	158	223	895	536	860	385	154	76	120	112
29	87	126	164	246	---	486	806	345	150	73	131	113
30	101	122	160	288	---	442	844	317	139	70	209	108
31	108	---	160	338	---	405	---	310	---	70	307	---
TOTAL	2600	4169	4769	8420	8694	12688	26942	12785	6792	2786	3604	6490
MEAN	83.9	139	154	272	311	409	898	412	226	89.9	116	216
MAX	108	167	199	495	1000	688	3470	836	318	129	307	401
MIN	72	111	111	150	131	233	322	265	139	70	69	108
CFSM	.35	.58	.64	1.13	1.29	1.70	3.73	1.71	.94	.37	.48	.90
IN.	.40	.64	.74	1.30	1.34	1.96	4.16	1.97	1.05	.43	.56	1.00

CAL YR 1974 TOTAL 109491 MEAN 300 MAX 1830 MIN 65 CFSM 1.24 IN 16.90
WTR YR 1975 TOTAL 100739 MEAN 276 MAX 3470 MIN 69 CFSM 1.15 IN 15.55

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 mi^2 (2,134 km^2).

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.--38 years, 646 ft^3/s (18.29 m^3/s), 10.65 in/yr (271 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,670 ft^3/s (132 m^3/s) Apr. 21, gage height, 7.36 ft (2.243 m); minimum, 200 ft^3/s (5.66 m^3/s) July 29, gage height, 3.09 ft (0.942 m); minimum daily, 227 ft^3/s (6.43 m^3/s) July 29.
Period of record: Maximum discharge, 7,290 ft^3/s (206 m^3/s) Apr. 7, 1947, gage height, 9.13 ft (2.783 m), site and datum then in use; minimum, 50 ft^3/s (1.42 m^3/s) Sept. 22, 1939, site then in use; minimum daily, 86 ft^3/s (2.44 m^3/s) Aug. 5, 1964.

REMARKS.--Records fair. Diurnal fluctuation, below 1,500 ft^3/s (42 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	333	353	359	602	892	1550	1110	1520	883	485	284	1910
2	470	448	463	470	919	1300	1060	1450	946	546	478	1810
3	478	508	448	562	811	1160	1050	1340	955	333	385	1670
4	320	562	427	570	733	1010	1020	1280	955	455	493	1550
5	470	724	406	530	741	993	946	1060	937	320	500	1460
6	448	758	359	470	650	901	901	1110	865	448	500	1350
7	366	741	455	554	602	901	946	1200	820	320	372	1170
8	320	626	441	634	546	802	910	1130	733	441	346	1080
9	420	658	420	856	578	784	1110	1000	602	448	392	984
10	478	578	485	1030	463	829	1120	1050	666	366	366	820
11	448	578	500	1270	500	793	1070	874	586	379	308	856
12	284	578	586	1320	530	793	1130	937	626	314	420	793
13	406	578	427	1290	493	741	1150	1020	733	406	249	741
14	392	554	485	1270	493	793	1060	838	594	385	427	741
15	406	523	508	1020	493	802	946	965	775	353	302	515
16	455	515	515	919	448	758	1100	919	829	413	392	634
17	427	523	594	865	508	847	1030	741	750	320	327	578
18	413	538	699	758	570	946	1190	750	775	434	278	554
19	441	578	707	741	538	1030	1970	666	682	296	340	580
20	296	562	642	699	618	1110	3710	733	733	434	340	600
21	366	538	658	530	618	1190	4590	707	682	508	578	580
22	420	578	594	562	699	1300	4110	1070	554	302	1390	560
23	420	538	586	570	1070	1330	3350	1150	538	420	946	590
24	406	523	586	530	1470	1430	2730	1080	784	327	856	500
25	353	538	586	578	1730	1530	2360	1030	1050	399	793	500
26	359	478	594	594	1950	1470	2040	1080	829	413	758	515
27	420	470	578	618	2050	1460	1720	1120	674	406	733	420
28	372	470	562	634	1850	1340	1590	1000	724	333	699	578
29	427	427	618	699	---	1300	1490	838	554	227	811	500
30	493	530	470	847	---	1220	1450	811	515	427	1470	508
31	485	---	500	847	---	1120	---	901	---	284	1810	---
TOTAL	12592	16573	16258	23439	23563	33533	49959	31370	22349	11942	18343	25647
MEAN	406	552	524	756	842	1082	1665	1012	745	385	592	855
MAX	493	758	707	1320	2050	1550	4590	1520	1050	546	1810	1910
MIN	284	353	359	470	448	741	901	666	515	227	249	420
CFSM	.49	.67	.64	.92	1.02	1.31	2.02	1.23	.90	.47	.72	1.04
IN.	.57	.75	.73	1.06	1.06	1.51	2.26	1.42	1.01	.54	.83	1.16

CAL YR 1974 TOTAL 353560 MEAN 969 MAX 3200 MIN 284 CFSM 1.18 IN 15.96
WTR YR 1975 TOTAL 285568 MEAN 782 MAX 4590 MIN 227 CFSM .95 IN 12.89

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 mi^2 (100.8 km^2).

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.--11 years, 42.0 ft^3/s (1.189 m^3/s), 14.66 in/yr (372 mm/yr).

EXTREMES.--Current year: Maximum discharge, 308 ft^3/s (8.72 m^3/s) Apr. 19, gage height, 3.06 ft (0.933 m); minimum, 25 ft^3/s (0.71 m^3/s) Feb. 14, gage height, 0.77 ft (0.235 m), result of freezeup.
Period of record: Maximum discharge, 308 ft^3/s (8.72 m^3/s) Apr. 19, 1975, gage height, 3.06 ft (0.933 m); minimum, 9.5 ft^3/s (0.27 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	49	47	50	65	59	63	91	71	41	29	135
2	42	46	47	46	60	55	62	89	65	37	39	116
3	40	49	47	49	56	55	57	84	63	36	46	90
4	39	54	45	48	54	53	67	80	65	35	43	72
5	39	63	45	47	53	52	64	77	79	34	45	68
6	38	65	43	47	53	53	64	84	72	33	46	67
7	39	61	45	47	50	57	66	82	65	35	41	61
8	38	56	50	60	51	59	69	73	61	37	42	54
9	37	52	50	77	47	56	69	67	58	37	41	56
10	37	49	48	90	36	55	66	66	55	36	38	53
11	37	51	46	112	42	53	63	64	59	35	36	51
12	36	52	49	109	40	53	60	69	63	33	35	51
13	37	53	51	89	33	54	58	72	59	34	36	49
14	44	53	52	73	33	54	56	68	57	37	36	47
15	46	52	55	60	34	53	55	65	66	37	36	45
16	44	52	60	54	34	56	54	62	76	35	35	41
17	42	56	59	52	37	59	53	60	73	34	35	39
18	40	60	56	53	42	64	75	58	67	34	35	39
19	39	58	54	55	44	70	249	56	67	40	36	42
20	39	56	52	48	47	74	254	55	61	42	31	44
21	39	54	51	51	49	77	155	98	58	39	47	45
22	39	52	50	50	54	84	114	128	54	38	92	47
23	39	51	49	49	72	84	96	183	52	36	74	46
24	39	54	50	49	85	83	92	149	53	36	64	44
25	39	54	50	57	83	81	95	107	54	35	61	43
26	40	51	49	62	73	76	90	88	53	34	60	42
27	39	49	48	60	65	70	81	81	51	33	54	41
28	39	48	48	57	61	65	84	73	49	31	49	41
29	41	47	48	73	---	68	89	67	47	31	58	40
30	49	47	50	80	---	66	88	66	45	30	91	42
31	51	---	50	72	---	63	---	75	---	30	127	---
TOTAL	1251	1594	1544	1926	1453	1961	2608	2537	1818	1095	1538	1651
MEAN	40.4	53.1	49.8	62.1	51.9	63.3	86.9	81.8	60.6	35.3	49.6	55.0
MAX	51	65	60	112	85	84	254	183	79	42	127	135
MIN	36	46	43	46	33	52	53	55	45	30	29	39
CFSM	1.04	1.37	1.28	1.60	1.33	1.63	2.23	2.10	1.56	.91	1.28	1.41
IN.	1.20	1.52	1.48	1.84	1.39	1.88	2.49	2.43	1.74	1.05	1.47	1.58

CAL YR 1974 TOTAL 19958 MEAN 54.7 MAX 118 MIN 29 CFSM 1.41 IN 19.09
WTR YR 1975 TOTAL 20976 MEAN 57.5 MAX 254 MIN 29 CFSM 1.48 IN 20.06

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 mi^2 (2,620 km^2), 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.--43 years (1932-75), 839 ft^3/s (23.76 m^3/s), 11.28 in/yr (287 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,150 ft^3/s (146 m^3/s) Apr. 22, gage height, 7.04 ft (2.146 m); minimum, 238 ft^3/s (6.74 m^3/s) July 31, Aug. 14; minimum gage height, 0.98 ft (0.299 m) July 31.
Period of record: Maximum discharge, 6,910 ft^3/s (196 m^3/s) Apr. 8, 1947, gage height, 7.94 ft (2.420 m); minimum, 119 ft^3/s (3.37 m^3/s) May 29, 1958, gage height, 0.09 ft (0.027 m); minimum daily, 185 ft^3/s (5.24 m^3/s) Aug. 7, 1934.

REMARKS.--Records good. Flow regulated by powerplants above station. Records of water temperature for the current year are published in Section 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	868	814	760	796	1240	2120	1440	1990	1370	813	427	2380
2	724	670	697	841	1260	1880	1410	2010	1400	836	391	2450
3	742	742	742	769	1340	1630	1390	1950	1390	868	821	2170
4	832	841	742	805	1230	1480	1390	1780	1320	657	824	2080
5	760	895	724	814	1080	1340	1350	1770	1470	695	786	1990
6	688	1050	697	769	1060	1320	1330	1690	1440	677	774	1850
7	724	1090	670	697	976	1310	1270	1660	1320	786	666	1700
8	661	1040	751	778	913	1280	1290	1640	1270	680	621	1500
9	553	976	769	1070	751	1150	1320	1570	1210	691	543	1270
10	616	940	769	1380	562	1100	1410	1510	1030	710	517	1190
11	670	886	805	1510	679	1140	1420	1460	1070	651	499	1100
12	670	877	841	1700	841	1140	1400	1380	1070	651	481	1080
13	580	850	877	1620	832	1120	1400	1420	1050	638	427	977
14	643	850	805	1220	769	1090	1420	1420	1030	684	382	966
15	760	832	850	1290	823	1100	1330	1290	1080	697	409	912
16	715	832	1020	1340	796	1110	1220	1360	1270	733	427	630
17	697	841	1080	1350	787	1100	1330	1290	1300	702	499	784
18	742	868	1020	1340	832	1180	1430	1180	1270	499	562	819
19	643	877	1030	1290	895	1300	1990	1130	1230	616	391	798
20	643	877	1010	1210	913	1420	2510	1060	1170	687	463	798
21	580	886	967	940	931	1480	3750	1180	1060	739	463	821
22	598	886	922	931	958	1500	4960	1370	1130	735	1270	849
23	652	868	877	994	1140	1670	4360	1640	930	594	1810	777
24	679	868	859	967	1470	1640	3950	1770	961	592	1460	809
25	778	850	859	967	1770	1710	3270	1630	1470	546	1150	816
26	652	841	877	967	1920	1770	2710	1520	1570	556	1100	640
27	580	787	859	1000	2020	1750	2460	1480	1290	575	1030	699
28	607	751	832	985	2190	1680	2470	1460	1110	623	982	687
29	625	733	832	1080	---	1660	2130	1420	959	535	1020	794
30	697	715	850	1180	---	1610	2020	1340	978	409	1710	767
31	787	---	760	1230	---	1540	---	1340	---	409	2270	---
TOTAL	21166	25833	26153	33830	30978	44320	61130	46710	36218	20284	25175	35103
MEAN	683	861	844	1091	1106	1430	2038	1507	1207	654	812	1170
MAX	868	1090	1080	1700	2190	2120	4960	2010	1570	868	2270	2450
MIN	553	670	670	697	562	1090	1220	1060	930	409	382	630
CFSM	.68	.85	.84	1.08	1.10	1.42	2.02	1.49	1.20	.65	.80	1.16
IN.	.78	.95	.96	1.25	1.14	1.63	2.25	1.72	1.33	.75	.93	1.29

CAL YR 1974 TOTAL 470857 MEAN 1290 MAX 3790 MIN 506 CFSM 1.28 IN 17.34
WTR YR 1975 TOTAL 406900 MEAN 1115 MAX 4960 MIN 382 CFSM 1.10 IN 14.99

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 mi^2 (58.0 km^2).

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.--11 years, 40.7 ft^3/s (1.153 m^3/s), 24.67 in/yr (627 mm/yr).

EXTREMES.--Current year: Maximum discharge, 206 ft^3/s (5.83 m^3/s) Apr. 18, gage height, 3.81 ft (1.161 m); minimum, 28 ft^3/s (0.79 m^3/s) Oct. 9, 10, gage height, 1.64 ft (0.500 m).
Period of record: Maximum discharge, 206 ft^3/s (5.83 m^3/s) Apr. 18, 1975, gage height, 3.81 ft (1.161 m); minimum, 8.0 ft^3/s (0.23 m^3/s) Jan. 19, 1965, gage height, 0.88 ft (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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	38	32	32	34	42	44	45	45	41	39	79
2	31	36	34	34	33	40	42	44	44	38	43	58
3	30	43	34	34	34	41	40	42	43	39	42	50
4	30	40	34	33	34	42	38	41	47	41	38	48
5	30	54	34	32	36	42	36	43	48	38	41	54
6	30	41	33	34	38	43	38	79	44	37	38	47
7	30	39	35	34	38	55	40	56	40	40	38	41
8	30	37	36	59	38	44	40	48	37	40	37	41
9	30	36	34	56	35	40	40	46	40	40	36	40
10	30	34	34	75	37	42	38	42	39	40	36	40
11	32	38	34	68	38	42	36	40	48	38	37	41
12	33	37	37	44	38	45	35	47	45	37	37	38
13	30	38	36	39	37	44	33	42	42	40	41	34
14	41	38	36	36	36	43	35	41	41	41	39	33
15	34	36	40	36	38	42	35	41	58	42	40	36
16	33	37	42	38	38	41	36	40	51	41	36	38
17	31	39	39	39	46	44	36	40	46	40	35	37
18	30	39	36	40	44	48	78	38	44	40	36	38
19	30	39	35	37	43	52	103	39	44	45	37	39
20	30	39	35	38	42	49	54	41	42	39	35	37
21	32	37	34	39	42	51	47	58	41	40	56	36
22	34	35	32	38	51	52	45	49	39	38	125	40
23	34	36	34	39	60	46	53	45	40	37	50	39
24	35	35	34	39	66	48	48	41	44	39	41	38
25	35	35	32	48	54	45	42	47	61	38	40	39
26	33	34	33	40	47	42	40	47	54	36	40	39
27	32	34	33	40	44	42	40	43	47	35	37	36
28	34	34	32	37	44	44	57	41	53	37	36	35
29	38	32	32	56	---	46	49	41	45	40	56	38
30	43	33	34	40	---	42	46	48	42	39	138	39
31	38	---	34	36	---	42	---	53	---	38	112	---
TOTAL	1015	1123	1074	1290	1165	1381	1344	1408	1354	1214	1492	1248
MEAN	32.7	37.4	34.6	41.6	41.6	44.5	44.8	45.4	45.1	39.2	48.1	41.6
MAX	43	54	42	75	66	55	103	79	61	45	138	79
MIN	30	32	32	32	33	40	33	38	37	35	35	33
CFSM	1.46	1.67	1.54	1.86	1.86	1.99	2.00	2.03	2.01	1.75	2.15	1.86
IN.	1.69	1.86	1.78	2.14	1.93	2.29	2.23	2.34	2.25	2.02	2.48	2.07

CAL YR 1974 TOTAL 16121 MEAN 44.2 MAX 102 MIN 30 CFSM 1.97 IN 26.77
WTR YR 1975 TOTAL 15108 MEAN 41.4 MAX 138 MIN 30 CFSM 1.85 IN 25.09

PEAK DISCHARGE (BASE, 85 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-08	1900	2.76	94	06-25	1800	2.68	88
01-10	1300	2.86	102	08-22	0500	3.68	190
04-18	2100	3.81	206	08-30	0700	3.62	182
05-06	0400	2.79	96	08-31	1200	3.15	130

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 mi^2 (33.7 km^2).

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, 26 ft^3/s (0.74 m^3/s) Aug. 31, gage height, 2.15 ft (0.655 m); minimum, 7.3 ft^3/s (0.21 m^3/s) Jan. 21, 22, 23, gage height, 1.40 ft (0.427 m).
Period of record: Maximum discharge, 26 ft^3/s (0.74 m^3/s) Aug. 31, 1975, gage height, 2.15 ft (0.655 m); minimum, 4.6 ft^3/s (0.13 m^3/s) July 20, 21, 1974, gage height, 1.25 ft (0.381 m).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	9.5	8.6	8.0	9.5	10	9.8	12	9.5	8.2	7.7	24
2	8.2	8.9	8.7	7.8	9.1	10	9.6	12	9.3	8.0	8.0	20
3	8.0	9.1	8.6	8.0	8.6	9.8	10	12	9.3	8.0	9.3	16
4	7.8	10	8.4	8.0	8.4	9.8	10	12	9.5	8.0	9.6	14
5	7.8	11	8.2	7.8	8.4	9.8	10	12	9.6	8.2	9.5	14
6	7.8	12	7.8	7.7	8.4	9.8	10	14	9.3	8.7	9.3	14
7	7.8	11	7.8	7.7	8.2	11	10	14	9.1	8.6	9.1	13
8	7.8	11	8.6	8.7	8.2	11	10	14	8.9	8.2	8.9	13
9	7.8	10	8.6	11	8.0	10	9.6	13	8.7	8.0	8.7	12
10	7.7	9.6	8.4	12	8.2	9.8	9.6	12	8.6	8.0	8.7	12
11	7.7	10	8.2	14	8.2	9.6	9.5	12	9.3	7.7	8.6	12
12	7.7	10	8.4	12	8.2	9.6	9.3	13	10	7.7	8.6	12
13	7.7	10	8.4	12	8.2	9.6	9.1	13	9.6	7.8	8.7	11
14	8.7	10	8.4	12	8.2	9.5	8.7	12	9.1	8.6	8.7	11
15	9.1	10	8.6	11	8.4	9.5	8.7	12	9.8	8.9	8.9	11
16	9.1	9.8	9.1	11	8.6	9.6	8.7	11	10	9.1	8.9	11
17	8.9	10	9.1	9.8	9.1	9.8	8.6	11	10	8.9	9.1	11
18	8.6	11	8.9	8.4	10	10	10	10	10	8.9	9.3	11
19	8.6	10	8.9	7.8	10	10	18	10	10	8.9	9.3	11
20	8.6	10	8.6	7.7	10	10	17	10	9.8	9.3	9.3	12
21	8.6	10	8.4	7.5	9.6	10	15	11	9.5	8.9	11	12
22	8.6	9.8	8.2	7.3	10	11	14	13	9.1	8.6	22	12
23	8.4	9.5	8.0	7.3	11	11	13	12	8.7	9.3	22	12
24	8.4	9.6	8.0	7.7	13	11	13	11	8.6	8.9	19	12
25	8.4	9.5	8.0	9.1	13	11	12	11	8.9	8.6	16	11
26	8.4	9.1	8.0	9.6	12	10	12	10	8.9	8.4	14	11
27	8.2	8.6	7.8	9.6	11	10	11	9.8	8.7	8.2	13	11
28	8.2	8.6	7.7	9.6	11	10	12	9.1	8.7	8.0	12	11
29	8.6	8.4	7.7	11	---	11	13	8.6	8.6	7.8	14	11
30	9.8	8.4	7.8	11	---	11	12	8.7	8.6	7.8	21	11
31	10	---	8.0	10	---	10	---	9.6	---	7.8	25	---
TOTAL	259.6	294.4	257.9	292.1	264.5	314.2	333.2	354.8	277.7	260.0	367.2	379
MEAN	8.37	9.81	8.32	9.42	9.45	10.1	11.1	11.4	9.26	8.39	11.8	12.6
MAX	10	12	9.1	14	13	11	18	14	10	9.3	25	24
MIN	7.7	8.4	7.7	7.3	8.0	9.5	8.6	8.6	8.6	7.7	7.7	11
CFSM	.64	.75	.64	.72	.73	.78	.85	.88	.71	.65	.91	.97
IN.	.74	.84	.74	.84	.76	.90	.95	1.02	.79	.74	1.05	1.08

CAL YR 1974 TOTAL 3013.8 MEAN 8.26 MAX 13 MIN 4.8 CFSM .64 IN 8.62
WTR YR 1975 TOTAL 3654.6 MEAN 10.0 MAX 25 MIN 7.3 CFSM .77 IN 10.46

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 mi^2 (48.4 km^2).

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.--16 years, 9.94 ft^3/s (0.282 m^3/s), 7.22 in/yr (183 mm/yr). 15 years, 9.67 ft^3/s (0.274 m^3/s); figure published in Water Resources Data for Michigan, 1974, in error.

EXTREMES.--Current year: Maximum discharge, 41 ft^3/s (1.16 m^3/s) Apr. 19, gage height, 3.32 ft (1.012 m); minimum, 8.4 ft^3/s (0.24 m^3/s) Aug. 1, 2, gage height, 2.46 ft (0.750 m).
Period of record: Maximum discharge, 41 ft^3/s (1.16 m^3/s) Apr. 19, 1975, gage height, 3.32 ft (1.012 m); minimum, 1.0 ft^3/s (0.028 m^3/s) Aug. 9, 1964; minimum gage height, 0.88 ft (0.268 m) July 30, 1963, caused by construction.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND , WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	13	12	11	15	16	14	17	13	10	8.6	34
2	15	12	13	11	14	14	14	16	13	10	8.7	32
3	15	14	13	12	13	14	16	15	13	10	10	29
4	14	15	13	11	13	14	16	16	13	10	11	24
5	13	17	12	11	13	14	16	16	13	10	11	23
6	11	17	12	11	13	14	15	20	13	10	11	23
7	10	16	11	11	13	16	15	19	13	10	11	22
8	10	15	12	13	13	16	15	19	12	9.9	11	20
9	10	14	12	15	12	15	15	17	11	9.7	11	19
10	9.9	14	12	18	12	14	15	15	11	9.7	10	18
11	9.7	14	12	20	13	14	15	15	12	9.6	10	17
12	9.8	14	12	18	13	14	14	16	13	9.2	10	17
13	10	14	12	17	13	14	14	16	14	9.4	10	16
14	12	14	12	17	13	14	14	16	13	9.7	11	16
15	12	14	12	16	13	14	15	15	13	10	11	16
16	12	14	13	16	14	14	15	14	14	10	11	16
17	11	14	14	15	14	14	15	14	14	10	11	16
18	11	14	14	13	15	15	19	13	13	10	11	15
19	11	14	13	12	15	15	37	13	13	11	11	15
20	11	15	13	11	16	15	31	13	13	12	11	16
21	11	15	13	11	15	15	28	14	12	12	12	16
22	11	14	12	11	16	17	26	16	11	12	26	17
23	10	14	12	11	19	16	24	16	11	12	25	17
24	11	14	12	11	19	17	22	16	11	11	22	17
25	11	14	12	13	19	17	20	16	12	11	18	16
26	10	16	12	14	19	16	18	15	12	10	16	16
27	10	15	11	14	18	15	17	14	12	9.9	15	16
28	11	12	11	13	17	14	17	13	11	9.4	14	15
29	11	12	11	17	---	15	17	12	11	9.2	19	15
30	13	12	11	18	---	15	17	12	10	9.2	22	15
31	13	---	11	17	---	15	---	13	---	8.9	32	---
TOTAL	354.4	426	377	429	412	462	546	472	370	314.8	431.3	564
MEAN	11.4	14.2	12.2	13.8	14.7	14.9	18.2	15.2	12.3	10.2	13.9	18.8
MAX	15	17	14	20	19	17	37	20	14	12	32	34
MIN	9.7	12	11	11	12	14	14	12	10	8.9	8.6	15
CFSM	.61	.76	.65	.74	.79	.80	.97	.81	.66	.55	.74	1.01
IN.	.71	.85	.75	.85	.82	.92	1.09	.94	.74	.63	.86	1.12

CAL YR 1974 TOTAL 4654.4 MEAN 12.8 MAX 23 MIN 8.0 CFSM .68 IN 9.26
WTR YR 1975 TOTAL 5158.5 MEAN 14.1 MAX 37 MIN 8.6 CFSM .75 IN 10.26

04106500 Portage Creek at Kalamazoo, Mich.

LOCATION.--Lat 42°16'27", long 85°34'35", in NW¼ NE¼ sec.27, T.2 S., R.11 W., Kalamazoo County, on left bank 50 ft (15 m) upstream from bridge on Reed Avenue, in Kalamazoo, 1.5 miles (2.4 km) upstream from mouth.

DRAINAGE AREA.--46.8 mi^2 (121.2 km^2).

PERIOD OF RECORD.--October 1947 to September 1958, June to September 1975. Monthly discharge only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 761.50 ft (232.105 m) above mean sea level (levels by Michigan Department of Natural Resources). Dec. 15, 1947 to Dec. 7, 1955, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--11 years (1947-58), 56.5 ft^3/s (1,600 m^3/s), 16.39 in/yr (416 mm/yr).

EXTREMES.--Maximum discharge during period June to September 1975, 412 ft^3/s (11.7 m^3/s) Aug. 22, gage height, 4.85 ft (1.478 m); minimum, 12 ft^3/s (0.34 m^3/s) Sept. 14, gage height, 1.92 ft (0.585 m); minimum daily, 37 ft^3/s (1.05 m^3/s) Aug. 12.
Period of record: Maximum discharge, 580 ft^3/s (16.4 m^3/s) sometime in July 1954 from rating curve extended above 165 ft^3/s (4.67 m^3/s) by logarithimic plotting, gage height, 5.25 ft (1.600 m) caused by momentary gate opening of millpond; minimum, 2.0 ft^3/s (0.057 m^3/s) May 8, 1956, gage height, 1.50 ft (0.457 m).

REMARKS.--Records good. Some regulation by mill ponds upstream from station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									70	53	40	131
2									70	51	51	92
3									75	50	53	77
4									80	58	42	73
5									73	51	47	83
6									68	50	44	75
7									64	51	40	63
8									61	50	39	60
9									61	48	38	59
10									60	46	38	57
11									72	45	39	57
12									70	45	37	56
13									64	50	44	50
14									66	51	44	38
15									87	48	44	62
16									81	49	41	51
17									66	47	40	52
18									65	47	40	51
19									63	63	40	55
20									61	52	39	57
21									60	47	99	56
22									60	44	234	57
23									56	39	72	54
24									68	47	57	53
25									97	43	53	52
26									75	41	54	52
27									63	40	49	49
28									65	39	47	49
29									63	40	83	50
30									55	40	231	53
31									---	40	181	---
TOTAL									2039	1465	2000	1824
MEAN									68.0	47.3	64.5	60.8
MAX									97	63	234	131
MIN									55	39	37	38
CFSM									1.37	.95	1.30	1.22
IN.									1.52	1.09	1.49	1.36

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 mi^2 (4,144 km^2), 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.--45 years, 1,374 ft^3/s (38.91 m^3/s), 11.66 in/yr (296 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,800 ft^3/s (221 m^3/s) Apr. 20, 21, gage height, 13.36 ft (4.072 m); minimum daily, 362 ft^3/s (10.3 m^3/s) Sept. 24.
Period of record: Maximum discharge, 17,500 ft^3/s (496 m^3/s) Apr. 11, 1947, gage height, 606.76 ft (184.940 m), site and datum then in use; minimum daily, 73 ft^3/s (2.07 m^3/s) Aug. 31, 1941.

REMARKS.--Records good. Flow regulated at low and medium stages by powerplants upstream from station and since June 1936, by Calkins Dam and powerplant, 4.0 mi (6.4 km) upstream from 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,300	1,180	1,150	1,190	1,920	3,020	2,710	4,300	2,190	1,260	1,140	3,620
2	1,130	1,530	1,440	1,410	2,170	3,370	2,370	2,910	2,180	1,440	739	3,570
3	1,440	1,270	1,600	1,600	2,180	3,440	2,350	2,750	2,180	1,250	667	3,490
4	1,480	1,330	1,560	1,510	2,170	2,410	2,330	3,210	2,190	1,200	981	3,180
5	1,120	1,780	1,410	1,380	1,940	1,560	2,320	3,210	2,170	1,260	1,510	2,720
6	1,130	1,570	1,540	1,400	2,100	2,440	2,320	2,900	2,180	1,250	1,510	2,440
7	1,130	1,530	1,180	1,600	2,360	2,190	2,320	2,890	2,180	1,240	1,560	3,000
8	1,300	1,610	1,150	1,620	1,540	2,380	2,310	2,720	2,170	1,170	1,320	2,400
9	1,290	1,510	1,370	1,820	1,510	2,380	2,310	2,530	1,890	1,170	1,090	2,120
10	1,130	1,780	1,500	2,250	1,490	2,240	2,320	2,680	1,420	1,170	1,090	2,370
11	806	1,460	1,410	2,980	1,220	1,880	2,320	2,570	1,700	1,190	1,080	2,210
12	814	1,890	1,480	3,790	1,480	1,840	2,320	2,380	2,020	1,220	1,080	2,270
13	1,120	1,680	1,500	2,500	1,480	1,980	2,320	2,280	1,810	1,390	812	2,910
14	1,150	1,620	1,020	2,380	1,600	2,140	2,320	2,170	1,790	1,560	1,080	2,640
15	1,150	1,620	1,580	2,380	1,250	1,710	2,250	2,170	1,840	1,390	1,070	2,570
16	1,140	1,690	2,140	2,370	1,480	1,950	2,110	2,160	2,010	1,210	565	1,940
17	1,440	1,510	2,090	2,280	1,760	1,790	2,090	2,080	2,300	1,180	865	1,480
18	1,210	1,500	1,640	2,180	2,040	2,130	2,030	1,900	2,450	1,180	876	1,330
19	1,160	1,600	1,610	2,170	1,490	1,830	3,330	1,940	2,510	829	1,300	1,400
20	1,150	1,700	1,650	2,120	1,480	1,860	7,110	1,930	2,330	1,220	1,460	1,590
21	1,150	1,700	1,520	1,820	1,730	2,190	6,980	1,930	2,250	1,200	867	1,620
22	1,150	1,700	1,770	2,090	1,850	2,310	5,240	2,060	1,920	1,510	1,480	1,380
23	1,150	1,600	2,090	1,610	1,770	2,580	5,240	2,280	1,820	1,510	1,860	510
24	1,140	1,600	1,550	1,600	2,220	2,530	6,440	2,300	1,800	1,350	2,280	362
25	1,040	1,670	1,480	1,920	2,830	2,560	6,680	2,450	1,240	1,160	2,500	960
26	1,130	1,640	1,560	1,900	3,010	2,350	5,660	2,740	1,670	1,150	1,890	1,520
27	1,260	1,650	1,580	2,230	2,990	2,720	4,730	2,570	2,270	1,140	1,740	1,490
28	1,140	1,510	1,190	2,090	3,010	2,990	4,430	2,330	2,260	852	1,440	1,500
29	1,130	1,310	1,310	1,730	------	2,300	3,860	2,300	2,050	1,140	1,480	1,470
30	1,460	1,150	1,640	2,860	------	2,320	4,370	2,300	1,810	1,140	1,940	1,400
31	1,310	------	1,890	2,920	------	2,530	------	2,260	------	838	2,720	------
TOTAL	36,650	46,890	47,600	63,700	54,070	71,920	105,490	77,200	60,600	37,769	41,992	61,462
MEAN	1,182	1,563	1,535	2,055	1,931	2,320	3,516	2,490	2,020	1,218	1,355	2,049
MAX	1,480	1,890	2,140	3,790	3,010	3,440	7,110	4,300	2,510	1,560	2,720	3,620
MIN	806	1,150	1,020	1,190	1,220	1,560	2,030	1,900	1,240	829	565	362
CFSM	.74	.98	.96	1.28	1.21	1.45	2.20	1.56	1.26	.76	.85	1.28
IN.	.85	1.09	1.11	1.48	1.26	1.67	2.45	1.79	1.41	.88	.98	1.43

CAL YR 1974 TOTAL 755,114 MEAN 2,069 MAX 5,150 MIN 700 CFSM 1.29 IN 17.56
WTR YR 1975 TOTAL 705,343 MEAN 1,932 MAX 7,110 MIN 362 CFSM 1.21 IN 16.40

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 mi^2 (184.9 km^2).

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.--10 years, 56.0 ft^3/s (1.586 m^3/s), 10.65 in/yr (271 mm/yr).

EXTREMES.--Current year: Maximum discharge, 694 ft^3/s (19.7 m^3/s) Apr. 19, gage height, 8.18 ft (2.493 m); minimum, 17 ft^3/s (0.48 m^3/s) Aug. 18, 19, 20, 21; minimum gage height, 2.32 ft (0.707 m) Aug. 20.
Period of record: Maximum discharge, 694 ft^3/s (19.7 m^3/s) Apr. 19, 1975; maximum gage height, 8.66 ft (2.640 m) Dec. 31, 1972; minimum discharge not determined; minimum daily, 9.2 ft^3/s (0.26 m^3/s) Aug. 27, 28, 1970, Sept. 18, 1971; minimum gage height, 1.93 ft (0.588 m) Sept. 20, 26, 27, 1966.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	43	38	50	93	83	103	147	46	30	19	61
2	29	38	38	42	77	72	88	120	43	29	22	51
3	27	35	37	46	66	68	62	100	42	27	33	41
4	26	40	35	45	61	64	83	95	42	26	35	36
5	26	42	37	40	62	62	95	91	54	25	29	34
6	26	51	35	40	59	64	96	108	55	25	31	43
7	28	49	36	43	56	82	98	95	47	25	27	39
8	27	43	43	114	69	95	125	82	43	24	24	34
9	27	40	42	180	64	74	148	76	41	22	22	31
10	26	37	41	287	62	69	133	70	39	22	21	29
11	25	41	39	447	56	62	144	66	42	22	20	28
12	25	45	45	327	58	68	130	67	55	22	19	28
13	27	46	52	188	52	75	108	67	47	26	19	27
14	38	48	53	100	51	74	92	62	44	29	20	25
15	43	48	55	75	53	72	82	61	74	30	20	24
16	39	49	79	65	54	91	76	60	114	26	20	23
17	35	62	77	65	58	104	71	58	85	24	18	22
18	31	65	64	65	73	126	114	56	94	24	17	22
19	28	59	56	66	67	201	567	53	74	31	17	24
20	26	55	52	60	67	182	351	50	61	41	17	36
21	26	56	50	57	68	164	231	58	63	33	18	38
22	26	50	48	55	84	204	148	69	55	29	22	43
23	26	47	48	54	161	181	126	69	48	27	25	39
24	26	57	51	54	306	149	163	60	45	29	27	34
25	27	54	52	152	296	136	140	54	43	27	29	31
26	27	47	46	184	183	109	110	57	41	25	26	30
27	27	43	43	125	116	90	94	53	38	24	24	28
28	26	42	44	90	99	80	153	47	36	23	22	26
29	27	40	43	184	---	103	248	44	34	22	30	25
30	47	39	53	187	---	98	189	44	32	20	39	26
31	49	---	52	126	---	87	---	49	---	19	56	---
TOTAL	924	1411	1484	3613	2571	3189	4368	2188	1577	808	768	978
MEAN	29.8	47.0	47.9	117	91.8	103	146	70.6	52.6	26.1	24.8	32.6
MAX	49	65	79	447	306	204	567	147	114	41	56	61
MIN	25	35	35	40	51	62	62	44	32	19	17	22
CFSM	.42	.66	.67	1.64	1.29	1.44	2.04	.99	.74	.37	.35	.46
IN.	.48	.74	.77	1.88	1.34	1.66	2.28	1.14	.82	.42	.40	.51

CAL YR 1974 TOTAL 26712 MEAN 73.2 MAX 585 MIN 21 CFSM 1.03 IN 13.92
WTR YR 1975 TOTAL 23879 MEAN 65.4 MAX 567 MIN 17 CFSM .92 IN 12.44

PEAK DISCHARGE (BASE, 300 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-10	2300	7.70	500
02-24	1800	7.13	337
04-19	0400	8.18	694

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 mi^2 (170.4 km^2).

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

GAGE.--Water-stage recorder. Altitude of gage is 590 ft (180 m) (from topographic map).

AVERAGE DISCHARGE.--15 years, 59.6 ft^3/s (1.688 m^3/s), 12.30 in/yr (312 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,660 ft^3/s (47.0 m^3/s) Jan. 11, gage height, 11.06 ft (3.371 m); minimum, 2.4 ft^3/s (0.068 m^3/s) Oct. 5; minimum gage height, 1.97 ft (0.600 m) July 29, 30, 31, Aug. 1, 2, 16, 17, 18, 19, 20.
Period of record: Maximum discharge, 3,710 ft^3/s (105 m^3/s) Dec. 30, 1972, gage height, 13.20 ft (4.023 m); minimum, 0.9 ft^3/s (0.025 m^3/s) Aug. 24, 1962; minimum gage height, 1.79 ft (0.546 m) Sept. 30, Oct. 3, 1969.

REMARKS.--Record good except those for the winter period, which are fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	6.2	19	55	45	74	107	308	11	6.2	2.9	683
2	2.9	6.2	18	42	35	56	59	84	9.2	5.5	3.9	186
3	2.8	6.5	17	36	31	43	39	52	9.2	5.5	148	59
4	2.8	7.0	19	40	28	38	37	63	12	5.5	28	36
5	2.6	8.8	15	38	27	40	52	48	77	5.5	15	30
6	2.9	21	21	34	27	47	92	94	21	5.5	19	45
7	3.6	16	15	31	27	110	206	46	14	5.2	15	32
8	3.1	11	21	364	28	134	391	33	11	4.9	8.3	21
9	3.1	9.7	27	431	27	85	314	28	9.7	4.3	5.9	16
10	3.1	8.8	42	712	26	56	135	25	8.8	4.3	4.9	14
11	3.1	20	33	1440	25	43	128	23	13	4.3	4.3	15
12	4.3	25	43	558	24	56	83	24	16	4.6	3.9	18
13	5.9	35	99	162	23	99	53	22	11	5.5	3.6	13
14	54	36	117	74	23	84	42	21	8.8	9.7	3.3	11
15	32	33	134	50	21	83	36	22	334	8.3	3.1	9.7
16	16	32	338	40	24	174	33	21	208	6.5	2.9	9.2
17	9.7	124	235	36	24	308	29	19	96	5.5	2.9	8.8
18	7.4	81	113	34	41	485	68	18	222	5.5	2.8	8.3
19	6.5	41	66	31	56	409	733	18	57	16	2.8	8.8
20	6.5	37	48	28	62	241	152	17	33	11	2.8	8.8
21	5.9	52	46	26	68	311	59	20	25	8.8	3.1	9.7
22	5.5	33	46	24	158	403	47	18	19	6.2	3.6	10
23	5.9	35	55	24	428	179	58	16	20	5.2	5.5	9.2
24	5.9	171	121	27	918	196	190	15	15	7.4	6.5	7.9
25	5.9	72	102	150	806	157	92	13	13	4.9	18	6.5
26	5.5	36	48	200	250	107	48	13	11	3.9	12	6.5
27	5.5	26	32	100	126	55	36	11	9.7	3.6	6.5	6.5
28	5.5	23	30	70	92	44	382	9.7	9.7	3.1	5.2	6.2
29	5.9	21	37	210	---	170	509	9.2	7.9	2.9	152	6.2
30	7.4	20	116	240	---	95	132	11	7.0	2.9	140	6.5
31	6.5	---	76	100	---	60	---	13	---	2.9	502	---
TOTAL	241.3	1054.2	2149	5407	3470	4442	4342	1134.9	1319.0	181.1	1137.7	1307.8
MEAN	7.78	35.1	69.3	174	124	143	145	36.6	44.0	5.84	36.7	43.6
MAX	54	171	338	1440	918	485	733	308	334	16	502	683
MIN	2.6	6.2	15	24	21	38	29	9.2	7.0	2.9	2.8	6.2
CFSM	.12	.53	1.05	2.64	1.88	2.17	2.20	.56	.67	.09	.56	.66
IN.	.14	.60	1.21	3.06	1.96	2.51	2.45	.64	.75	.10	.64	.74

CAL YR 1974 TOTAL 30126.0 MEAN 82.5 MAX 1880 MIN 2.2 CFSM 1.25 IN 17.03
WTR YR 1975 TOTAL 26186.0 MEAN 71.7 MAX 1440 MIN 2.6 CFSM 1.09 IN 14.80

PEAK DISCHARGE (BASE, 900 FT^3/s)

DATE	TIME	G.H.	DISCHARGE
01-11	0200	11.06	1660
02-24	2000	10.36	1170

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 mi^2 (451 km^2).

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.--40 years, 118 ft^3/s (3.342 m^3/s), 9.21 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 788 ft^3/s (22.3 m^3/s) Aug. 30, gage height, 13.29 ft (4.051 m); minimum, 30 ft^3/s (0.85 m^3/s) Oct. 13, gage height, 8.34 ft (2.542 m).
Period of record: Maximum discharge, 1,070 ft^3/s (30.3 m^3/s) June 25, 1937, gage height, 13.50 ft (4.115 m); maximum gage height, 15.44 ft (4.706 m) June 25, 1968; minimum discharge, 9.2 ft^3/s (0.26 m^3/s) Aug. 22, 1936.

REMARKS.--Records good. Slight regulation by mills above station. Flow includes about 17 ft^3/s (0.48 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	102	44	134	163	320	222	245	153	72	49	380
2	44	81	74	130	160	302	219	248	161	70	64	400
3	46	99	126	140	155	292	217	216	112	62	47	412
4	90	142	122	120	102	254	246	222	112	152	51	412
5	41	123	69	65	99	217	227	209	121	137	76	433
6	35	106	62	72	106	200	204	161	149	116	63	431
7	43	114	84	85	142	198	212	147	91	75	109	399
8	43	87	138	184	135	203	216	142	80	113	94	389
9	43	85	123	192	116	174	221	138	87	63	41	348
10	45	78	77	232	73	174	251	129	83	58	35	309
11	46	87	78	254	78	169	256	135	124	54	44	270
12	40	87	87	228	73	171	251	206	169	50	44	231
13	34	85	85	198	67	123	243	196	169	55	45	189
14	62	92	101	206	69	112	248	190	153	66	45	116
15	96	81	168	204	62	106	240	186	132	76	51	123
16	51	73	158	228	65	108	166	177	129	122	41	163
17	49	70	150	190	129	132	156	166	172	123	34	158
18	48	77	148	208	193	212	232	158	177	67	42	155
19	43	78	138	169	192	230	299	149	149	68	42	154
20	37	98	88	136	158	204	275	108	193	111	42	139
21	47	136	80	99	160	195	251	153	144	102	95	81
22	48	136	81	94	196	227	253	142	183	57	73	89
23	49	135	138	83	184	240	294	175	147	55	57	87
24	49	117	138	84	227	281	317	166	129	93	127	84
25	65	83	122	87	299	276	310	167	119	74	84	95
26	130	78	74	88	320	272	298	158	156	100	106	140
27	129	78	73	142	323	267	280	153	153	47	140	134
28	129	117	70	146	332	267	307	101	94	53	123	127
29	106	101	70	192	---	276	293	92	73	52	135	123
30	106	54	78	172	---	232	285	144	76	51	400	78
31	103	---	134	166	---	221	---	130	---	50	419	---
TOTAL	1942	2880	3178	4728	4378	6655	7489	5109	3990	2444	2818	6649
MEAN	62.6	96.0	103	153	156	215	250	165	133	78.8	90.9	222
MAX	130	142	168	254	332	320	317	248	193	152	419	433
MIN	34	54	44	65	62	106	156	92	73	47	34	78
CFSM	.36	.55	.59	.88	.90	1.24	1.44	.95	.76	.45	.52	1.28
IN.	.42	.62	.68	1.01	.94	1.42	1.60	1.09	.85	.52	.60	1.42

CAL YR 1974 TOTAL 65703 MEAN 180 MAX 660 MIN 30 CFSM 1.03 IN 14.05
WTR YR 1975 TOTAL 52260 MEAN 143 MAX 433 MIN 34 CFSM .82 IN 11.17

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 mi^2 (1,712 km^2).

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.--25 years, 454 ft^3/s (12.86 m^3/s), 9.33 in/yr (237 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,220 ft^3/s (91.2 m^3/s) Apr. 19, gage height, 7.96 ft (2.426 m); minimum, 27 ft^3/s (0.76 m^3/s) Oct. 13, gage height, 0.88 ft (0.268 m); minimum daily, 63 ft^3/s (1.78 m^3/s) Oct. 13.
Period of record: Maximum discharge, 3,500 ft^3/s (99.1 m^3/s) Feb. 21, 1971; maximum gage height, 8.19 ft (2.496 m) June 28, 1968; minimum discharge, 14 ft^3/s (0.40 m^3/s) Dec.20, 1962, Oct. 14, 1966; minimum gage height, 0.67 ft (0.204 m) Dec. 20, 1962; minimum daily discharge, 21 ft^3/s (0.59 m^3/s) Oct. 12, 1964.
Flood of Apr. 4, 1950 reached a stage of 8.15 ft (2.484 m), discharge, 3,860 ft^3/s (109 m^3/s).

REMARKS.--Records good. Diurnal fluctuation caused by powerplant at Smithville and mills at Eaton Rapids. Records of water temperature for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1707: 1951 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	170	231	285	362	646	1190	945	1320	637	275	140	1160
2	165	225	272	403	624	1100	925	1270	696	272	147	1360
3	120	222	311	376	601	1060	885	1190	678	288	84	1520
4	157	262	225	376	556	970	876	1100	673	234	162	1500
5	106	321	243	395	498	995	853	1040	660	249	207	1400
6	157	411	336	388	511	862	844	1020	610	304	152	1360
7	165	358	311	311	459	844	862	990	480	340	155	1280
8	167	347	249	376	376	768	885	935	475	308	152	1200
9	124	328	314	578	384	758	905	876	392	249	184	1110
10	157	301	403	696	399	678	930	835	431	258	187	1040
11	147	295	336	822	395	570	965	772	399	228	198	960
12	170	298	369	876	395	632	975	813	439	192	131	930
13	63	288	354	790	369	642	955	826	467	145	133	858
14	153	285	373	786	347	646	925	813	463	216	129	812
15	178	295	388	840	291	624	880	804	459	210	131	740
16	178	275	423	858	288	624	853	781	502	210	131	700
17	204	225	459	822	291	619	826	736	506	162	81	632
18	219	281	471	718	308	632	1020	700	511	240	127	592
19	165	301	488	696	443	668	3090	678	504	222	129	570
20	131	295	463	650	534	722	2770	588	484	216	129	520
21	160	295	447	600	511	799	2380	624	524	219	135	459
22	181	288	384	556	506	885	1910	633	506	201	228	475
23	142	318	380	632	930	965	1650	651	467	213	265	480
24	112	332	373	511	1460	1080	1440	651	480	216	285	354
25	145	380	391	423	1680	1180	1380	660	484	162	298	347
26	104	347	431	423	1660	1220	1320	700	463	207	278	347
27	167	314	358	455	1450	1180	1240	696	463	189	278	332
28	246	262	362	395	1360	1100	1290	660	411	204	268	308
29	228	249	340	524	---	1040	1400	633	407	201	303	332
30	237	281	340	642	---	1020	1360	543	435	150	523	336
31	234	---	351	624	---	1000	---	588	---	147	915	---
TOTAL	5052	8910	11230	17904	18272	27073	37539	25126	15106	6927	6665	24014
MEAN	163	297	362	578	653	873	1251	811	504	223	215	800
MAX	246	411	488	876	1680	1220	3090	1320	696	340	915	1520
MIN	63	222	225	311	288	570	826	543	392	145	81	308
CFSM	.25	.45	.55	.87	.99	1.32	1.89	1.23	.76	.34	.33	1.21
IN.	.28	.50	.63	1.01	1.03	1.52	2.11	1.41	.85	.39	.38	1.35

CAL YR 1974 TOTAL 262467 MEAN 719 MAX 2930 MIN 46 CFSM 1.09 IN 14.77
WTR YR 1975 TOTAL 203818 MEAN 558 MAX 3090 MIN 63 CFSM .84 IN 11.47

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 mi^2 (42.2 km^2).

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.--21 years, 10.5 ft^3/s (0.297 m^3/s), 8.75 in/yr (222 mm/yr).

EXTREMES.--Current year: Maximum discharge, 962 ft^3/s (27.2 m^3/s) Apr. 19, gage height, 12.18 ft (3.712 m), from flood mark, rating curve extended above 610 ft^3/s (17.3 m^3/s); minimum, 0.45 ft^3/s (0.013 m^3/s) Aug. 10, 11; minimum gage height, 2.71 ft (0.826 m) Oct. 12, Aug. 10, 11.
Period of record: Maximum discharge, 962 ft^3/s (27.2 m^3/s) Apr. 19, 1975, gage height, 12.18 ft (3.712 m), from flood mark, rating curve extended above 610 ft^3/s (17.3 m^3/s); minimum, 0.06 ft^3/s (0.002 m^3/s) Jan. 10, 1970, result of freezeup.

REMARKS.--Records good.

REVISIONS (WATER YEARS).--WSP 1727: 1954 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.91	.91	1.2	5.2	12	15	15	41	15	3.6	.58	84
2	.82	.91	2.0	4.1	10	13	14	27	11	3.2	.74	30
3	.91	1.0	1.9	4.6	9.2	10	10	22	8.6	2.8	1.1	17
4	.82	1.6	1.7	4.4	7.9	8.3	15	23	7.6	2.6	1.0	15
5	.82	2.8	1.7	3.9	6.9	7.9	15	22	8.6	2.2	1.0	15
6	.74	3.6	1.6	3.9	6.2	7.2	15	21	7.2	2.0	1.1	27
7	.82	2.6	1.9	3.9	4.8	7.6	16	18	6.2	2.0	.82	18
8	.91	2.0	3.9	11	4.5	6.9	20	15	5.5	2.0	.66	12
9	.91	1.7	4.4	47	4.4	6.6	25	14	4.9	2.0	.66	8.6
10	.91	1.7	3.6	38	4.2	6.9	28	12	4.4	1.7	.51	6.6
11	.91	1.6	3.4	62	4.1	6.2	41	11	5.2	1.7	.51	6.2
12	.82	1.6	3.9	28	3.9	8.6	43	17	7.6	1.6	1.0	6.5
13	.82	1.6	4.6	16	3.2	15	35	19	5.5	1.6	.91	5.5
14	1.0	1.7	5.2	11	3.0	13	28	15	4.4	1.9	.91	5.0
15	1.1	1.6	5.5	8.6	3.0	10	24	14	6.9	1.7	.66	4.5
16	.82	1.6	6.6	7.6	3.2	12	22	11	11	1.4	.91	4.0
17	.82	2.2	7.2	6.6	4.9	12	20	10	6.9	1.3	.66	3.6
18	.74	2.6	6.2	6.6	14	15	110	9.2	6.2	1.2	.58	3.6
19	.74	2.2	5.2	5.9	12	20	720	7.9	17	1.4	.51	4.5
20	.74	2.2	4.6	5.2	10	20	301	7.2	12	1.4	.51	7.0
21	.74	2.0	4.4	4.9	11	23	113	8.6	7.6	1.2	1.0	5.2
22	.74	2.0	4.1	4.6	44	63	63	13	5.9	1.1	14	4.9
23	.74	1.9	3.9	4.6	149	46	45	11	4.6	1.0	7.9	4.5
24	.82	2.6	4.1	4.6	149	67	38	8.6	11	1.7	6.6	4.1
25	.82	2.8	4.4	6.2	70	48	31	8.6	35	1.2	5.2	3.8
26	.74	2.4	4.1	5.9	32	29	26	23	15	1.0	5.2	3.6
27	.74	2.2	4.1	4.9	23	22	23	16	9.2	.91	3.4	3.4
28	.74	2.0	4.1	4.6	19	18	28	10	7.2	.82	2.4	3.0
29	.82	1.9	3.9	49	---	19	34	7.6	5.5	.74	2.6	2.9
30	1.0	1.7	4.9	27	---	18	27	9.7	4.4	.66	9.7	2.9
31	.91	---	5.5	16	---	15	---	22	---	.66	67	---
TOTAL	25.89	59.22	123.8	415.8	628.4	589.2	1945	474.4	267.1	50.29	140.33	321.9
MEAN	.84	1.97	3.99	13.4	22.4	19.0	64.8	15.3	8.90	1.62	4.53	10.7
MAX	1.1	3.6	7.2	62	149	67	720	41	35	3.6	67	84
MIN	.74	.91	1.2	3.9	3.0	6.2	10	7.2	4.4	.66	.51	2.9
CFSM	.05	.12	.24	.82	1.37	1.17	3.98	.94	.55	.10	.28	.66
IN.	.06	.14	.28	.95	1.43	1.34	4.44	1.08	.61	.11	.32	.73

CAL YR 1974 TOTAL 5840.06 MEAN 16.0 MAX 205 MIN .39 CFSM .98 IN 13.33
WTR YR 1975 TOTAL 5041.33 MEAN 13.8 MAX 720 MIN .51 CFSM .85 IN 11.51

PEAK DISCHARGE (BASE, 100 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-24	0900	5.35	168
04-19	0500	12.18	962
08-31	2300	4.60	118

04112000 Sloan Creek near Williamston, Mich.

LOCATION.--Lat 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 mi^2 (24.19 km^2).

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.--21 years, 5.68 ft^3/s (0.161 m^3/s), 8.26 in/yr (210 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,290 ft^3/s (36.5 m^3/s) Apr. 18, gage height, 9.99 ft (3.045 m), from rating curve extended as explained below; minimum, 0.11 ft^3/s (0.003 m^3/s) Oct. 5, gage height, 1.36 ft (0.415 m).
Period of record: Maximum discharge, 1,290 ft^3/s (36.5 m^3/s) Apr. 18, 1975, gage height, 9.99 ft (3.045 m), from rating curve extended above 660 ft^3/s (18.7 m^3/s) on basis of computation of peak flow through culvert and over-road embankment; minimum, 0.01 ft^3/s (<0.001 m^3/s) Sept. 11, 1954, Jan. 18, 1957, gage height, 1.10 ft (0.335 m), caused by unusual regulation; minimum natural discharge, 0.02 ft^3/s (0.001 m^3/s) July 27, 1965, gage height, 1.18 ft (0.360 m).

REMARKS.--Records good except those for period of no gage-height record, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.20	.42	2.4	6.8	12	8.8	19	5.5	2.7	.32	37
2	.14	.20	.46	1.8	5.5	10	8.1	14	4.9	2.3	.38	18
3	.13	.25	.43	1.8	4.6	9.0	6.3	9.9	3.9	1.9	.46	13
4	.13	.33	.40	1.7	4.0	6.5	8.2	8.9	3.4	1.6	.42	9.0
5	.12	.99	.39	1.5	3.9	6.1	8.2	8.5	7.5	1.4	.39	8.9
6	.14	.84	.37	1.4	3.5	5.6	7.5	7.7	5.5	1.3	.46	21
7	.15	.51	.46	1.5	2.1	5.9	8.0	6.7	4.4	1.3	.35	10
8	.16	.40	1.3	11	2.0	5.4	12	5.7	2.8	1.2	.28	6.1
9	.16	.36	1.0	36	1.9	5.2	17	5.0	2.4	1.2	.26	4.7
10	.15	.34	.82	30	1.8	5.4	23	4.5	2.0	1.0	.24	4.0
11	.15	.33	.74	37	1.7	4.8	40	4.2	2.4	.88	.30	3.3
12	.13	.32	1.0	17	1.6	7.0	45	5.7	2.9	.78	.34	3.4
13	.14	.33	1.4	8.7	1.5	11	42	6.3	2.3	.77	.44	2.9
14	.21	.35	1.6	6.2	1.3	9.5	34	5.3	1.9	.79	.36	2.3
15	.21	.34	1.8	4.9	1.3	7.6	25	4.7	3.6	.75	.32	2.0
16	.19	.35	2.7	4.1	1.5	9.2	20	4.0	4.7	.64	.32	1.8
17	.17	.51	3.3	3.4	2.2	9.7	16	3.6	3.5	.57	.27	1.6
18	.15	.52	2.6	3.4	8.0	11	207	3.3	3.8	.60	.24	1.6
19	.17	.46	2.1	2.9	7.0	18	536	3.0	24	.75	.24	1.9
20	.18	.44	1.6	2.3	6.0	16	104	3.0	10	.66	.22	3.1
21	.18	.42	1.5	2.1	6.5	24	51	3.6	5.8	.56	11	2.3
22	.17	.40	1.4	1.9	30	80	35	6.8	3.9	.50	16	2.2
23	.17	.40	1.3	1.8	120	48	26	4.6	3.0	.47	11	2.0
24	.17	.58	1.4	1.9	120	57	21	3.8	39	1.0	6.1	1.8
25	.18	.56	1.5	3.3	55	39	17	3.7	39	.63	4.5	1.7
26	.23	.48	1.4	2.9	32	24	13	4.7	16	.51	4.8	1.6
27	.17	.45	1.4	2.0	19	16	11	3.6	8.9	.47	2.6	1.5
28	.17	.44	1.4	2.0	15	11	23	2.9	5.7	.43	1.7	1.3
29	.19	.42	1.4	41	---	11	27	2.4	4.1	.39	4.9	1.3
30	.22	.39	2.3	19	---	10	16	3.5	3.3	.36	6.7	1.3
31	.22	---	2.7	9.5	---	8.7	---	9.3	---	.32	62	---
TOTAL	5.21	12.91	42.59	266.4	465.7	503.6	1416.1	181.9	230.1	28.73	137.91	172.6
MEAN	.17	.43	1.37	8.59	16.6	16.2	47.2	5.87	7.67	.93	4.45	5.75
MAX	.23	.99	3.3	41	120	80	536	19	39	2.7	62	37
MIN	.12	.20	.37	1.4	1.3	4.8	6.3	2.4	1.9	.32	.22	1.3
CFSM	.02	.05	.15	.92	1.78	1.73	5.05	.63	.82	.10	.48	.62
IN.	.02	.05	.17	1.06	1.85	2.01	5.64	.72	.92	.11	.55	.69

CAL YR 1974 TOTAL 2935.20 MEAN 8.04 MAX 152 MIN .06 CFSM .86 IN 11.69
WTR YR 1975 TOTAL 3463.75 MEAN 9.49 MAX 536 MIN .12 CFSM 1.02 IN 13.80

PEAK DISCHARGE (BASE, 120 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-24	unknown	unknown	about 135
03-22	1200	3.85	126
04-18	2400	9.99	1,290
08-31	1300	3.97	141

NOTE.--No gage-height record Feb. 7 to Mar. 18.

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 mi^2 (919 km^2).

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.--45 years, 206 ft^3/s (5.834 m^3/s), 7.88 in/yr (200 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,940 ft^3/s (168 m^3/s) Apr. 20, gage height, 11.95 ft (3.642 m); minimum, 34 ft^3/s (0.96 m^3/s) Oct. 5-11, Aug. 1, 2, gage height, 3.20 ft (0.975 m).
Period of record: Maximum discharge, 5,940 ft^3/s (168 m^3/s) Apr. 20, 1975, gage height, 11.95 ft (3.642 m); minimum, 3 ft^3/s (0.08 m^3/s) July 31, 1931.
Flood of Mar. 24, 1904, reached a stage of 13.4 ft (4.08 m), discharge, 8,000 ft^3/s (277 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	51	72	120	419	720	448	745	287	117	34	730
2	40	49	67	111	347	580	419	810	272	102	40	765
3	38	53	65	105	303	471	363	740	230	89	49	615
4	36	57	65	114	250	403	339	575	194	82	49	545
5	34	92	77	100	219	331	355	510	216	74	47	485
6	34	114	74	97	194	279	359	466	268	72	49	505
7	34	105	72	100	135	258	359	423	254	69	47	545
8	34	92	87	132	126	240	379	383	216	69	44	466
9	34	84	100	331	126	205	423	343	177	74	42	391
10	34	74	102	485	120	198	458	303	135	72	40	335
11	34	72	105	620	117	194	530	272	117	72	60	295
12	36	67	108	670	105	191	665	272	132	72	49	268
13	36	67	108	565	97	240	770	303	146	72	77	236
14	44	67	108	403	95	287	805	307	138	67	67	202
15	47	69	111	331	97	272	805	307	129	69	55	174
16	47	67	117	323	87	311	735	287	180	67	49	152
17	47	67	129	307	102	335	685	258	244	62	47	138
18	47	72	135	261	132	343	740	226	240	72	42	129
19	42	74	142	236	177	363	3,580	208	212	97	40	129
20	40	74	135	177	188	387	5,720	191	244	92	38	142
21	40	77	125	146	191	391	5,500	180	219	84	87	142
22	40	77	115	152	233	635	4,380	205	166	77	327	142
23	40	77	111	138	620	975	3,060	250	129	69	351	138
24	42	79	108	132	1,170	1,050	2,180	268	114	67	261	132
25	42	84	111	135	1,500	1,030	1,650	236	435	72	254	123
26	40	89	111	152	1,350	1,000	1,300	233	505	57	226	117
27	40	84	105	149	1,040	845	1,030	311	399	51	174	117
28	42	82	100	142	865	695	855	279	283	49	138	111
29	47	82	102	355	------	625	845	233	202	44	149	108
30	57	82	105	595	------	570	795	205	149	40	170	105
31	55	------	114	545	------	505	------	244	------	36	387	------
TOTAL	1,267	2,280	3,186	8,229	10,405	14,929	40,532	10,573	6,632	2,208	3,489	8,482
MEAN	40.9	76.0	103	265	372	482	1,351	341	221	71.2	113	283
MAX	57	114	142	670	1,500	1,050	5,720	810	505	117	387	765
MIN	34	49	65	97	87	191	339	180	114	36	34	105
CFSM	.12	.21	.29	.75	1.05	1.36	3.81	.96	.62	.20	.32	.80
IN.	.13	.24	.33	.86	1.09	1.56	4.25	1.11	.69	.23	.37	.89

CAL YR 1974 TOTAL 119,895 MEAN 328 MAX 2,090 MIN 26 CFSM .92 IN 12.56
WTR YR 1975 TOTAL 112,212 MEAN 307 MAX 5,720 MIN 34 CFSM .86 IN 11.76

04112850 Sycamore Creek near Holt, Mich.

LOCATION.--Lat 42°38'25", long 84°28'58", in SW¼ SW¼ sec.18, T.3 N., R.1 W., Ingham County, on left bank 15 ft (5 m) downstream from bridge on Holt Road, and 1.5 mi (2.4 km) east of Holt.

DRAINAGE AREA.--80.6 mi^2 (208.8 km^2).

PERIOD OF RECORD.--April to September 1975.

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

EXTREMES.--Maximum discharge during period, 2,110 ft^3/s (59.8 m^3/s) Apr. 19, gage height, 10.00 ft (3.048 m); minimum, 10 ft^3/s (0.28 m^3/s) Aug. 19, 20; minimum gage height, 2.04 ft (0.622 m) Aug. 20.

REMARKS.--Records good.
Discharge measurements (in cubic feet per second) made prior to period of record are as follows:

Date	Discharge
Mar. 14, 1975	72.2
Mar. 26, 1975	204

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1							84	183	95	24	12	203
2							84	154	72	23	13	173
3							83	126	57	22	16	109
4							83	120	52	21	14	84
5							79	123	56	20	14	68
6							76	118	52	18	15	99
7							78	110	43	22	13	96
8							105	94	40	20	12	66
9							130	86	36	19	12	51
10							160	77	33	18	11	41
11							280	70	33	16	17	36
12							300	86	54	16	15	41
13							240	115	43	16	14	34
14							190	96	34	18	14	30
15							150	84	34	16	12	28
16							120	74	41	16	12	26
17							105	66	36	15	11	25
18							227	61	39	17	11	24
19							1990	56	55	20	10	25
20							1410	49	72	18	10	32
21							795	57	45	15	21	28
22							552	86	36	15	86	26
23							433	84	30	14	64	25
24							376	66	44	17	49	22
25							334	57	92	16	41	21
26							296	86	64	15	40	21
27							261	92	43	14	30	21
28							239	72	35	13	23	20
29							231	55	30	13	30	19
30							221	50	26	13	64	20
31							---	94	---	13	124	---
TOTAL							9712	2747	1422	533	830	1514
MEAN							324	88.6	47.4	17.2	26.8	50.5
MAX							1990	183	95	24	124	203
MIN							76	49	26	13	10	19
CFSM							4.02	1.10	.59	.21	.33	.63
IN.							4.48	1.27	.66	.25	.38	.70

04112904 Mud Lake Drain at Lansing, Mich.

LOCATION.--Lat 42°40'09", long 84°32'05", in SE¼ SW¼ sec.3, T.3 N., R.2 W., Ingham County, on right bank 5 ft (2 m) downstream from culvert on Miller Road in Lansing.

DRAINAGE AREA.--4.28 mi^2 (11.09 km^2).

PERIOD OF RECORD.--January to September 1975.

GAGE.--Water-stage recorder. Altitude of gage is 860 ft (262 m) from topographic map (nearest 10 ft).

EXTREMES.--Maximum discharge during period, 485 ft^3/s (13.7 m^3/s) Apr. 18, gage height, 7.03 ft (2.143 m); no flow part of each day July 2-6, 9-21.

REMARKS.--Records poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				.05	.94	1.1	1.2	9.4	3.3	.04	.07	13
2				.03	.54	.76	1.0	7.9	2.3	.02	1.2	5.0
3				.04	.34	.56	.90	6.5	1.9	.04	1.1	2.1
4				.03	.18	.44	.84	8.2	3.3	.03	.19	.90
5				.02	.12	.37	.78	5.7	6.3	.01	.56	4.2
6				.02	.08	.33	.74	5.3	2.0	8.0	.20	1.3
7				.44	.05	.30	.94	4.2	1.4	1.5	.11	.54
8				8.2	.04	.27	1.8	3.9	1.1	.26	.09	.35
9				2.1	.04	.25	3.7	3.2	1.0	.09	.08	.28
10				6.3	.03	.23	5.0	2.8	.67	.01	.07	.26
11				3.5	.03	.22	5.5	2.2	6.1	.03	.08	1.4
12				1.8	.03	.80	4.5	9.7	2.0	.02	.07	.24
13				.94	.02	3.5	3.9	3.9	.70	.54	2.7	.24
14				.50	.02	2.5	3.0	3.4	.73	.43	.70	.16
15				.30	.02	1.5	2.5	3.0	2.7	.01	.16	.39
16				.17	.03	1.0	2.2	3.0	.41	.01	.13	.24
17				.11	1.2	.60	1.9	2.3	6.3	.01	.11	.21
18				.08	2.0	1.2	105	1.8	1.8	.56	.09	.16
19				.07	1.3	.87	102	1.4	.49	2.8	.09	3.1
20				.06	.70	.45	54	1.5	.43	.02	.08	.35
21				.05	2.3	5.0	32	14	.18	.01	11	.35
22				.04	6.4	10	20	7.2	.07	.03	15	.29
23				.04	20	3.9	17	5.4	.03	.03	8.1	.24
24				.06	19	8.8	15	4.2	8.8	5.1	4.5	.17
25				2.5	10	4.8	14	5.8	1.4	.06	2.3	.16
26				1.0	5.0	3.2	12	3.9	.49	.05	1.3	.16
27				1.1	3.0	2.2	11	3.2	.25	.15	.86	.11
28				.30	1.8	2.2	16	2.6	.20	.09	.56	.10
29				7.0	---	3.0	12	2.1	.12	.12	4.2	.66
30				4.0	---	1.9	11	9.3	.06	.16	2.7	.25
31				2.0	---	2.8	---	4.2	---	.10	14	---
TOTAL				42.85	75.21	65.05	461.50	151.2	56.53	20.33	72.40	37.91
MEAN				1.38	2.69	2.10	15.4	4.88	1.88	.66	2.34	1.26
MAX				8.2	20	10	105	14	8.8	8.0	15	13
MIN				.02	.02	.22	.74	1.4	.03	.01	.07	.10
CFSM				.32	.63	.49	3.62	1.15	.44	.16	.55	.30
IN.				.37	.66	.57	4.04	1.32	.49	.18	.63	.33

NOTE.--No gage-height record Jan. 17 to Mar. 18, July 31 to Sept. 4.

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 mi^2 (3,180 km^2), 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.--46 years, 829 ft^3/s (23.48 m^3/s), 9.15 in/yr (232 mm/yr).

EXTREMES.--Current year: Maximum discharge, 11,200 ft^3/s (317 m^3/s) Apr. 20, gage height, 15.43 ft (4.703 m); minimum, 66 ft^3/s (1.87 m^3/s) Oct. 6; minimum gage height, 1.60 ft (0.488 m) Aug. 16; minimum daily discharge, 180 ft^3/s (5.10 m^3/s) Aug. 19.
Period of record: Maximum discharge, 24,500 ft^3/s (694 m^3/s) Mar. 26, 1904, gage height, 18.60 ft (5.669 m), datum then in use, from rating curve, extended above 15,000 ft^3/s (425 m^3/s) by logarithmic plotting; minimum, 2.8 ft^3/s (0.079 m^3/s) Sept. 9, 1963, gage height, 0.85 ft (0.259 m); minimum daily, 20 ft^3/s (0.57 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	231	344	448	601	1360	2370	1720	2480	1210	550	251	2420
2	350	314	385	538	1220	1960	1590	2490	1160	538	350	2290
3	198	408	385	606	1090	1760	1650	2220	1160	442	314	2400
4	260	344	363	583	980	1630	1450	2030	1100	462	208	2300
5	219	628	363	538	957	1530	1500	1850	1200	399	358	2180
6	219	601	372	565	835	1450	1460	1780	1100	553	309	2120
7	235	583	502	570	692	1390	1500	1690	961	579	260	2060
8	278	493	516	674	592	1200	1570	1630	735	515	314	1850
9	256	485	399	1260	493	1150	1740	1480	728	502	251	1760
10	212	458	476	1540	507	1110	1800	1390	636	355	309	1530
11	224	416	592	1900	520	916	2040	1290	769	442	372	1490
12	224	426	538	1930	520	998	2260	1420	761	351	286	1320
13	300	421	534	1550	516	1050	2300	1430	794	325	512	1260
14	251	412	633	1150	511	1200	2260	1380	757	373	208	1120
15	212	426	601	1090	493	1120	2110	1340	811	380	296	1120
16	231	412	727	1050	435	1180	1910	1230	809	364	219	984
17	269	408	714	1000	565	1180	1780	1200	993	332	268	862
18	264	322	782	980	583	1240	2300	1100	919	413	208	840
19	322	439	750	960	665	1280	9020	1050	930	471	180	768
20	256	448	701	898	876	1410	11000	989	1030	358	208	818
21	227	430	660	831	912	1590	9600	1040	931	342	872	759
22	243	403	674	889	1090	2170	8690	1230	873	400	894	678
23	287	476	570	773	2150	2400	6700	1190	750	291	880	723
24	235	507	579	777	3580	2660	5160	1170	767	405	728	620
25	224	471	588	800	4280	2790	4040	1100	1180	306	674	552
26	227	552	597	763	3890	2730	3390	1240	1170	347	660	566
27	227	458	597	615	3350	2530	2960	1290	1000	323	520	516
28	227	435	570	696	2750	2220	2820	1210	811	330	498	462
29	372	363	507	1490	---	2080	2740	1080	729	291	606	538
30	462	349	538	1600	---	1900	2730	1100	681	304	723	534
31	344	---	543	1530	---	1830	---	1080	---	249	1820	---
TOTAL	8086	13232	17204	30747	36412	52024	101790	44199	27455	12292	14556	37440
MEAN	261	441	555	992	1300	1678	3393	1426	915	397	470	1248
MAX	462	628	782	1930	4280	2790	11000	2490	1210	579	1820	2420
MIN	198	314	363	538	435	916	1450	989	636	249	180	462
CFSM	.21	.36	.45	.81	1.06	1.36	2.76	1.16	.74	.32	.38	1.01
IN.	.24	.40	.52	.93	1.10	1.57	3.08	1.34	.83	.37	.44	1.13

CAL YR 1974 TOTAL 465944 MEAN 1277 MAX 7160 MIN 84 CFSM 1.04 IN 14.09
WTR YR 1975 TOTAL 395437 MEAN 1083 MAX 11000 MIN 180 CFSM .88 IN 11.96

04113097 Carrier Creek near Lansing, Mich.

LOCATION.--Lat 42°45'20", long 84°39'10", in SE¼ SW¼ sec.3, T.4 N., R.3 W., Eaton County, on left bank 15 ft (5 m) downstream from bridge on Willow Hwy., 0.4 mi (0.6 km) upstream from mouth, and 2.6 mi (4.2 km) west of Lansing.

DRAINAGE AREA.--12.1 mi^2 (31.3 km^2).

PERIOD OF RECORD.--January to September 1975.

GAGE.--Water-stage recorder. Altitude of gage is 805 ft (245 m) from topographic map (nearest 5 ft).

EXTREMES.--Maximum discharge during period, 532 ft^3/s (15.1 m^3/s) Apr. 19, gage height, 6.76 ft (2.06 m); minimum, 0.16 ft^3/s (0.005 m^3/s) Aug. 1, gage height, 0.97 ft (0.296 m).

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				4.0	12	11	12	16	6.4	.94	.18	37
2				3.2	10	9.0	10	14	6.1	.82	3.5	16
3				3.5	8.0	6.0	8.5	13	4.7	.73	3.1	16
4				3.3	6.0	5.4	11	13	5.5	.66	.53	12
5				3.0	5.1	5.2	11	12	12	.57	1.6	13
6				2.8	4.4	5.0	11	11	6.3	.60	.56	13
7				3.0	3.5	4.6	11	9.1	4.3	.99	.31	7.0
8				26	2.7	4.2	15	8.3	3.6	.53	.25	4.8
9				53	2.2	3.9	19	9.1	2.9	.47	.22	3.5
10				47	2.0	3.6	23	7.2	2.5	.44	.20	2.8
11				62	1.6	3.4	40	6.0	6.0	.42	.24	3.3
12				29	1.4	5.6	43	15	5.3	.43	.20	3.6
13				17	1.2	14	35	11	3.4	1.1	7.6	2.6
14				11	1.1	12	27	8.5	2.6	2.3	1.4	2.1
15				8.0	.95	11	21	7.3	11	.69	.47	1.9
16				6.0	1.1	12	19	6.2	9.0	.50	.38	1.7
17				5.2	5.9	10	17	5.4	5.5	.41	.30	1.6
18				4.8	7.6	12	66	4.8	4.5	2.0	.26	1.5
19				4.6	5.1	16	345	4.2	3.3	2.4	.24	1.6
20				3.5	3.8	15	170	3.5	2.7	.75	.23	2.4
21				3.0	7.7	21	80	12	2.6	.44	31	1.7
22				2.8	33	70	43	16	2.2	.39	42	1.9
23				2.6	73	51	30	10	1.8	.34	24	1.5
24				3.2	85	53	26	7.5	9.5	.50	13	1.2
25				11	48	41	21	6.4	6.2	.31	6.5	1.1
26				6.9	26	24	19	7.0	2.8	.26	3.6	1.1
27				7.6	18	17	16	4.9	2.1	.25	2.2	1.1
28				4.4	13	13	26	3.8	1.7	.22	1.6	.95
29				66	---	19	25	3.2	1.4	.21	12	1.1
30				39	---	15	18	8.6	1.1	.21	7.6	2.1
31				19	---	13	---	13	---	.19	42	---
TOTAL				465.4	389.35	505.9	1218.5	277.0	139.0	21.07	207.27	161.15
MEAN				15.0	13.9	16.3	40.6	8.94	4.63	.68	6.69	5.37
MAX				66	85	70	345	16	12	2.4	42	37
MIN				2.6	.95	3.4	8.5	3.2	1.1	.19	.18	.95
CFSM				1.24	1.15	1.35	3.36	.74	.38	.06	.55	.44
IN.				1.43	1.20	1.56	3.75	.85	.43	.06	.64	.50

PEAK DISCHARGE (BASE, 80 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-29	1000	3.68	110
02-24	0600	3.53	98
03-22	1400	3.41	91
04-19	0100	6.76	532
08-21	2100	3.65	108

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 mi^2 (3,587 km^2).

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.--23 years, 905 ft^3/s (25.63 m^3/s), 8.87 in/yr (225 mm/yr).

EXTREMES.--Current year: Maximum discharge, 12,400 ft^3/s (351 m^3/s) Apr. 21, gage height, 12.98 ft (3.956 m); minimum, 136 ft^3/s (3.85 m^3/s) Oct. 1, gage height, 4.25 ft (1.295 m); minimum daily, 196 ft^3/s (5.55 m^3/s) Aug. 6.
Period of record: Maximum discharge, 12,400 ft^3/s (351 m^3/s) Apr. 21, 1975, gage height, 12.98 ft (3.956 m); minimum, 38 ft^3/s (1.08 m^3/s) Oct. 10, 1963; minimum daily, 58 ft^3/s (1.64 m^3/s) Oct. 9, 1963.

REMARKS.--Records good except 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	438	450	660	1640	2780	2010	3240	1170	703	330	2830
2	325	400	530	691	1440	2310	1910	2990	1280	603	320	2630
3	353	387	478	646	1300	2030	1890	2810	1220	554	430	2570
4	273	494	493	702	1180	1840	1750	2600	1180	492	390	2640
5	274	513	478	683	1060	1690	1680	2350	1270	490	260	2460
6	298	821	449	625	1020	1670	1740	2140	1240	430	440	2410
7	227	695	456	660	927	1580	1680	2080	1110	580	380	2330
8	309	642	624	758	798	1510	1780	1940	972	620	299	2180
9	292	573	609	1410	720	1310	1930	1810	771	580	317	1940
10	314	557	499	1910	600	1260	2080	1650	738	550	264	1820
11	271	540	593	2600	580	1180	2350	1540	697	400	332	1700
12	267	512	687	2440	600	990	2700	1520	864	480	407	1620
13	272	517	657	2160	620	1230	2810	1680	817	400	356	1390
14	379	523	650	1830	620	1280	2710	1630	814	360	561	1390
15	354	518	735	1490	600	1360	2560	1520	930	400	301	1170
16	276	520	763	1440	580	1410	2370	1450	1020	410	326	1190
17	282	513	873	1400	520	1450	2130	1320	937	400	254	1070
18	322	503	847	1290	620	1470	2040	1290	1120	370	282	921
19	317	434	895	1300	680	1570	8200	1180	980	440	265	915
20	376	536	842	1250	750	1650	11600	1130	1010	520	196	856
21	287	541	790	1200	1010	1760	12200	1120	1080	420	383	892
22	297	529	751	1150	1120	2650	10500	1260	969	400	1390	823
23	289	495	736	1050	2230	3050	8050	1310	868	450	1160	749
24	322	592	675	840	3730	3230	6350	1270	806	350	1040	782
25	314	600	682	972	4660	3300	5100	1210	1040	450	818	679
26	280	568	675	966	4460	3210	4200	1210	1290	380	747	630
27	275	628	680	875	3840	2970	3660	1340	1170	400	701	633
28	276	538	669	716	3200	2630	3380	1310	1010	390	577	594
29	280	510	656	1310	---	2480	3440	1210	833	380	614	534
30	501	442	615	2020	---	2270	3290	1140	738	350	767	632
31	538	---	650	1880	---	2100	---	1230	---	350	1200	---
TOTAL	9674	16119	20187	38924	41105	61220	118090	51480	29944	14102	16107	42980
MEAN	312	537	651	1256	1468	1975	3936	1661	998	455	520	1433
MAX	538	821	895	2600	4660	3300	12200	3240	1290	703	1390	2830
MIN	227	387	449	625	520	990	1680	1120	697	350	196	534
CFSM	.23	.39	.47	.91	1.06	1.43	2.84	1.20	.72	.33	.38	1.03
IN.	.26	.43	.54	1.05	1.10	1.64	3.17	1.38	.80	.38	.43	1.15

CAL YR 1974 TOTAL 553748 MEAN 1517 MAX 7320 MIN 165 CFSM 1.10 IN 14.87
WTR YR 1975 TOTAL 459932 MEAN 1260 MAX 12200 MIN 196 CFSM .91 IN 12.35

NOTE.--No gage-height record July 7 to Aug. 7.

04114500 Looking Glass 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 mi^2 (728 km^2).

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.--31 years, 173 ft^3/s (4.899 m^3/s), 8.36 in/yr (212 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,640 ft^3/s (46.4 m^3/s) Apr. 19, gage height, 5.96 ft (1.817 m); minimum, 41 ft^3/s (1.16 m^3/s) Oct. 22, Aug. 12, 13; minimum gage height, 1.48 ft (0.451 m) Aug. 12, 13.
Period of record: Maximum discharge, 2,860 ft^3/s (81.0 m^3/s) Apr. 5, 1947, gage height, 7.70 ft (2.347 m), from graph based on gage readings, from rating curve extended above 1,900 ft^3/s (53.8 m^3/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 ft^3/s (0.28 m^3/s) July 28, 1965, gage height, 1.01 ft (0.308 m).

REMARKS.--Records good except those for the winter period and those for period of no gage-height record, which are poor. Small intermittent diversion at times into Lake Geneva when discharge is above 50 ft^3/s (1.42 m^3/s).

REVISIONS (WATER YEARS).--WSP 1387: 1946-47.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	57	78	101	216	441	678	1010	130	105	48	783
2	50	56	74	104	224	500	646	898	133	100	54	604
3	51	58	82	105	254	511	611	797	132	85	66	566
4	48	62	112	98	270	487	559	724	134	80	66	641
5	47	85	97	106	246	463	517	654	153	78	61	641
6	46	101	87	112	210	450	484	587	146	80	58	705
7	44	96	78	91	170	421	455	527	138	90	54	707
8	44	94	81	134	140	365	441	479	133	85	51	708
9	43	94	83	288	130	318	437	438	128	75	48	714
10	44	87	90	318	120	301	437	400	121	70	47	720
11	44	84	95	412	115	257	480	380	114	68	46	743
12	43	80	98	346	110	246	487	350	116	66	43	772
13	44	77	103	293	105	239	471	320	109	65	46	739
14	51	76	108	275	100	237	457	300	105	64	53	707
15	51	74	115	313	100	244	450	280	149	64	61	672
16	48	74	128	335	95	301	449	260	135	64	71	632
17	44	79	136	318	100	303	449	240	120	66	77	586
18	45	79	133	300	110	317	544	220	109	69	70	539
19	45	79	132	250	130	354	1380	210	170	73	62	497
20	46	81	130	210	150	376	989	200	146	82	54	458
21	43	81	119	180	193	409	950	190	109	78	207	417
22	42	79	114	160	349	647	955	180	120	70	523	382
23	43	79	107	150	672	651	981	170	135	62	465	345
24	47	89	106	140	692	713	1030	160	160	58	425	312
25	47	87	105	135	538	701	1120	155	190	56	382	284
26	48	87	104	135	439	662	1170	150	210	54	356	263
27	46	86	100	135	407	647	1180	150	200	52	340	240
28	47	86	95	260	432	659	1200	145	170	50	335	215
29	49	82	94	289	---	713	1210	140	130	48	371	195
30	74	79	97	264	---	725	1110	135	115	46	491	185
31	59	---	99	230	---	703	---	130	---	44	683	---
TOTAL	1470	2408	3180	6587	6817	14361	22327	10979	4160	2147	5714	15972
MEAN	47.4	80.3	103	212	243	463	744	354	139	69.3	184	532
MAX	74	101	136	412	692	725	1380	1010	210	105	683	783
MIN	42	56	74	91	95	237	437	130	105	44	43	185
CFSM	.17	.29	.37	.75	.86	1.65	2.65	1.26	.49	.25	.65	1.89
IN.	.19	.32	.42	.87	.90	1.90	2.96	1.45	.55	.28	.76	2.11

CAL YR 1974 TOTAL 103840 MEAN 284 MAX 1370 MIN 37 CFSM 1.01 IN 13.75
WTR YR 1975 TOTAL 96122 MEAN 263 MAX 1380 MIN 42 CFSM .94 IN 12.73

NOTE.--No gage-height record June 22 to Aug. 11.

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 mi^2 (1,124 km^2).

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.--31 years, 249 ft^3/s (7.052 m^3/s), 7.79 in/yr (198 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,720 ft^3/s (77.0 m^3/s) Sept. 1, gage height, 9.24 ft (2.816 m); minimum 25 ft^3/s (0.71 m^3/s) Aug. 20, gage height, 2.82 ft (0.860 m).
Period of record: Maximum daily discharge, 6,500 ft^3/s (184 m^3/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 ft^3/s (0.12 m^3/s) Aug. 13, 1965, gage height, 1.62 ft (0.494 m).
Flood in March 1904 reached a stage of 13.8 ft (4.21 m), from information by local resident.

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

REVISIONS.--(WATER YEAR).--WSP 1707: 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	48	109	159	496	980	804	536	141	220	46	2510
2	34	50	105	160	494	860	733	556	135	217	44	2060
3	33	52	102	159	474	760	670	560	129	213	43	1860
4	33	52	99	159	447	680	599	548	125	210	42	2330
5	32	59	102	156	422	610	545	514	123	200	40	2310
6	32	71	120	152	398	538	520	477	121	190	39	2470
7	32	77	122	151	350	500	500	456	123	180	41	2310
8	31	82	123	162	280	481	491	435	133	170	38	2070
9	31	86	121	245	230	455	502	415	152	160	35	1870
10	30	88	128	375	200	412	528	391	175	150	34	1690
11	30	89	142	684	180	385	603	370	192	140	32	1510
12	30	90	144	1000	170	350	788	360	198	130	31	1370
13	30	91	145	950	160	337	941	340	196	120	31	1210
14	33	91	145	880	150	326	995	330	190	115	31	1070
15	37	89	147	750	140	318	986	310	204	110	30	928
16	39	91	152	630	140	329	941	300	252	105	29	794
17	40	91	159	530	140	370	880	280	274	100	28	679
18	41	93	167	460	140	453	796	270	281	93	28	601
19	40	96	172	400	150	566	941	260	282	87	27	533
20	40	97	173	360	150	719	1120	240	276	83	26	494
21	39	99	176	310	152	837	1170	230	262	78	50	459
22	38	99	177	260	168	986	1130	220	248	74	158	432
23	39	100	176	220	268	1220	1100	210	230	70	215	407
24	39	107	174	200	459	1410	1070	200	222	67	375	387
25	39	114	171	200	888	1560	1000	190	221	64	505	365
26	38	116	166	210	1210	1550	901	180	219	61	622	346
27	39	117	161	210	1200	1450	771	175	220	58	698	327
28	39	116	158	250	1100	1270	693	165	220	55	741	311
29	39	114	156	390	---	1120	635	160	220	52	876	293
30	43	111	156	451	---	1000	560	153	220	50	1120	278
31	45	---	157	477	---	905	---	148	---	48	1340	---
TOTAL	1117	2676	4505	11700	10756	23737	23913	9979	5984	3670	7395	34274
MEAN	36.0	89.2	145	377	384	766	797	322	199	118	239	1142
MAX	45	117	177	1000	1210	1560	1170	560	282	220	1340	2510
MIN	30	48	99	151	140	318	491	148	121	48	26	278
CFSM	.08	.21	.33	.87	.88	1.77	1.84	.74	.46	.27	.55	2.63
IN.	.10	.23	.39	1.00	.92	2.03	2.05	.86	.51	.31	.63	2.94

CAL YR 1974 TOTAL 135797 MEAN 372 MAX 2540 MIN 24 CFSM .86 IN 11.64
WTR YR 1975 TOTAL 139706 MEAN 383 MAX 2510 MIN 26 CFSM .88 IN 11.97

NOTE.--No gage-height record June 26 to Aug. 5.

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 mi^2 (7,360 km^2), 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.--24 years (1951-75), 1,866 ft^3/s (52.85 m^3/s), 8.92 in/yr (227 mm/yr).

EXTREMES.--Current year: Maximum discharge, 16,600 ft^3/s (470 m^3/s) Apr. 22, gage height, 21.03 ft (6.410 m); minimum, 279 ft^3/s (7.90 m^3/s) Aug. 20, gage height, 6.96 ft (2.121 m); minimum daily, 431 ft^3/s (12.2 m^3/s) Dec. 7.
Period of record: Maximum discharge, 21,500 ft^3/s (609 m^3/s) Apr. 1, 1960, gage height, 23.43 ft (7.141 m); minimum, 40 ft^3/s (1.13 m^3/s) May 13, 1968, gage height, 5.61 ft (1.710 m); minimum daily, 115 ft^3/s (3.26 m^3/s) Aug. 27, 1953.

REMARKS.--Records good. Diurnal fluctuation below about 5,000 ft^3/s (142 m^3/s) caused by powerplants above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	756	873	919	1250	3250	5820	4700	6530	1930	1400	532	7260
2	634	780	929	1200	2980	5100	4470	6240	1770	1350	587	8960
3	593	756	908	1200	2570	4500	4210	5800	1820	1190	684	9370
4	630	765	648	1270	2400	4000	4140	5310	1800	942	888	9450
5	565	944	464	1220	2260	3590	3700	4850	2040	899	821	9140
6	565	1300	460	1180	2190	3290	3520	4330	2180	898	683	8860
7	588	1340	431	1130	2100	3500	3600	4090	1930	942	563	8370
8	570	1230	616	1270	1940	3080	3550	3800	1840	1180	617	7780
9	570	1170	770	2590	1850	2750	3780	3370	1310	974	630	6920
10	561	1070	995	3680	1770	2370	3990	3220	1560	918	567	6080
11	557	1050	908	5140	1700	2460	4380	2920	1180	885	585	5440
12	535	1050	980	5890	1700	2280	5020	2700	1440	589	527	5070
13	548	1010	1280	5790	1650	2160	5310	2910	1450	882	638	4580
14	653	1020	1170	4960	1620	2280	5380	2760	1330	791	627	4040
15	685	1040	1260	4040	1610	2440	5220	2650	1760	768	776	3730
16	727	1000	1330	3700	1640	2860	4980	2570	2070	764	550	3340
17	675	1010	1510	3400	1530	3220	4660	2450	2350	851	506	3190
18	625	1070	1620	3100	1550	3090	4300	2150	1960	702	501	2710
19	602	1020	1480	2880	1770	3360	6450	2120	2270	892	473	2550
20	588	1000	1540	2730	1770	3790	11400	2050	1920	906	491	2530
21	553	1050	1420	2470	1820	3940	15700	2000	1850	1080	959	2420
22	593	1020	1450	2250	2050	4940	16400	2100	2070	906	3230	2400
23	620	1000	1270	2350	3560	6470	14200	2310	1730	830	4060	2140
24	570	1060	1370	2230	5580	7200	11200	2190	1620	716	4220	2010
25	602	1190	1240	2230	7130	7930	9470	2000	2550	707	4170	1960
26	565	1150	1170	2400	7780	8100	8100	2020	2870	676	3620	1790
27	570	1120	1230	2190	7490	7620	7110	2020	2680	700	3060	1680
28	570	1130	1190	2020	6660	6870	6520	2090	2370	629	2590	1600
29	579	1030	1230	2330	---	6130	6440	2000	1750	606	2650	1550
30	736	965	1120	3870	---	5710	6360	1820	1530	610	3750	1480
31	924	---	1210	3570	---	5190	---	1870	---	567	5030	---
TOTAL	19209	31213	34118	85530	81920	136040	198260	95240	56930	26750	49585	138400
MEAN	620	1040	1101	2759	2926	4388	6609	3072	1898	863	1600	4613
MAX	924	1340	1620	5890	7780	8100	16400	6530	2870	1400	5030	9450
MIN	535	756	431	1130	1530	2160	3520	1820	1180	567	473	1480
CFSM	.22	.37	.39	.97	1.03	1.55	2.33	1.08	.67	.30	.56	1.62
IN.	.25	.41	.45	1.12	1.07	1.78	2.60	1.25	.75	.35	.65	1.81

CAL YR 1974 TOTAL 1095862 MEAN 3002 MAX 14600 MIN 342 CFSM 1.06 IN 14.35
WTR YR 1975 TOTAL 953195 MEAN 2611 MAX 16400 MIN 431 CFSM .92 IN 12.49

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 mi^2 (1,368 km^2).

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.--25 years, 429 ft^3/s (12.15 m^3/s), 11.03 in/yr (280 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,270 ft^3/s (64.3 m^3/s) Sept. 3, gage height, 6.62 ft (2.018 m); maximum gage height, 6.92 ft (2.109 m) Feb. 10 (backwater from ice); minimum discharge, 61 ft^3/s (1.73 m^3/s) Aug. 1, gage height, 2.86 ft (0.872 m).
Period of record: Maximum discharge, 3,100 ft^3/s (87.8 m^3/s) Apr. 22, 1967, gage height, 7.27 ft (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 ft^3/s (0.21 m^3/s) Sept. 9, 1953; minimum daily, 70 ft^3/s (1.98 m^3/s) Sept. 6, 1964.

REMARKS.--Records good except 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	363	350	432	411	681	780	853	913	420	379	198	1750
2	432	450	430	399	637	750	836	909	405	351	246	1950
3	375	430	427	410	584	690	739	882	399	328	296	2050
4	401	400	408	403	552	640	817	865	381	310	328	1980
5	338	460	411	399	545	600	797	841	400	292	331	1870
6	346	520	393	399	522	580	780	809	449	288	292	1800
7	418	560	385	419	462	550	774	764	440	293	273	1660
8	350	590	388	412	430	520	782	723	418	250	257	1510
9	401	600	381	474	440	500	788	642	402	261	242	1360
10	318	520	362	745	450	480	795	619	385	263	229	1220
11	354	500	340	993	450	460	807	581	383	261	222	1100
12	306	480	388	853	450	450	809	554	422	265	220	1000
13	310	500	392	902	440	450	806	535	425	271	226	862
14	427	520	389	951	430	460	803	515	391	303	204	814
15	486	500	383	1140	420	470	803	500	574	315	232	767
16	418	480	401	1030	410	480	782	491	664	297	203	721
17	494	470	390	877	410	500	767	476	708	279	216	683
18	414	450	519	798	420	540	764	461	670	270	203	644
19	350	440	452	742	430	590	878	448	636	309	199	645
20	418	450	433	667	440	765	916	415	607	326	199	677
21	423	420	433	649	460	886	954	561	563	314	344	695
22	302	430	424	605	500	1050	928	691	510	304	551	695
23	354	440	418	573	560	1110	911	677	468	292	678	675
24	350	470	417	553	640	1230	912	631	517	285	806	641
25	338	490	340	633	740	1270	885	577	591	294	765	612
26	330	530	332	677	840	1260	851	559	557	285	689	599
27	322	526	492	665	840	1180	808	531	515	268	592	571
28	334	449	395	663	810	1090	815	492	479	258	517	544
29	367	446	397	719	---	1050	836	454	459	248	889	526
30	384	439	401	722	---	976	846	443	419	243	1030	512
31	445	---	389	719	---	867	---	426	---	253	1480	---
TOTAL	11668	14310	12542	20602	14993	23224	24842	18985	14657	8955	13157	31133
MEAN	376	477	405	665	535	749	828	612	489	289	424	1038
MAX	494	600	519	1140	840	1270	954	913	708	379	1480	2050
MIN	302	350	332	399	410	450	739	415	381	243	198	512
CFSM	.71	.90	.77	1.26	1.01	1.42	1.57	1.16	.93	.55	.80	1.97
IN.	.82	1.01	.88	1.45	1.06	1.64	1.75	1.34	1.03	.63	.93	2.19

CAL YR 1974 TOTAL 223856 MEAN 613 MAX 2000 MIN 219 CFSM 1.16 IN 15.77
WTR YR 1975 TOTAL 209068 MEAN 573 MAX 2050 MIN 198 CFSM 1.09 IN 14.73

NOTE.--No gage-height record Feb. 13 to Mar. 20.

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 mi^2 (19.68 km^2).

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.--21 years, 6.49 ft^3/s (0.184 m^3/s), 11.60 in/yr (295 mm/yr).

EXTREMES.--Current year: Maximum discharge, 470 ft^3/s (13.3 m^3/s) Apr. 19, gage height, 9.45 ft (2.880 m); minimum, 2.2 ft^3/s (0.062 m^3/s) Apr. 2, gage height, 1.69 ft (0.515 m).
Period of record: Maximum discharge, 470 ft^3/s (13.3 m^3/s) Apr. 19, 1975, gage height, 9.45 ft (2.880 m); minimum, 0.44 ft^3/s (0.012 m^3/s) Nov. 3, 1966, gage height, 1.40 ft (0.427 m), result of snow dam.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	5.9	6.5	6.7	8.5	7.8	9.4	20	9.6	4.1	3.5	16
2	4.6	5.1	5.9	5.4	7.1	6.9	7.8	15	8.5	4.1	6.7	6.5
3	4.3	7.4	5.7	6.1	6.1	6.7	6.7	12	7.4	4.2	7.8	5.2
4	4.2	11	5.2	6.1	5.9	6.5	11	14	8.8	4.2	4.6	5.0
5	4.1	14	5.4	5.6	6.1	6.3	9.8	12	13	3.9	4.9	5.6
6	4.0	14	5.1	5.6	6.3	7.1	10	17	8.4	3.9	5.2	6.6
7	4.2	8.5	5.6	5.9	5.2	9.4	11	13	7.0	4.1	3.9	4.8
8	4.1	6.7	9.1	14	5.6	8.4	12	10	6.7	4.0	3.6	4.2
9	4.1	5.9	6.9	31	4.7	6.7	14	9.2	6.3	3.7	3.3	4.0
10	4.0	5.7	5.9	29	4.2	6.7	12	8.5	5.8	3.7	3.2	4.0
11	4.0	6.9	5.7	43	4.7	6.1	15	8.0	7.5	3.7	3.3	4.6
12	4.1	7.1	8.5	19	4.5	8.4	14	17	9.5	3.8	3.7	5.5
13	4.1	6.9	9.2	8.5	4.3	12	12	16	6.7	3.8	5.5	4.2
14	6.9	7.4	8.5	6.3	4.1	10	10	10	6.1	4.3	4.6	3.9
15	6.5	6.7	9.2	5.7	4.3	9.0	9.0	9.5	17	4.2	4.2	3.9
16	5.1	6.7	12	5.7	4.9	14	8.7	8.8	19	3.7	4.2	3.9
17	4.6	12	10	5.6	5.7	15	8.1	8.2	10	3.4	3.9	3.9
18	4.2	12	7.8	5.7	6.7	16	85	7.8	12	3.3	3.8	4.0
19	4.2	8.1	7.1	5.7	6.5	18	211	7.3	7.7	4.5	3.8	4.1
20	4.2	7.1	6.7	5.0	6.3	17	38	7.5	6.8	4.4	3.7	4.7
21	4.1	6.9	6.7	5.2	6.7	16	18	50	6.2	3.7	5.8	4.5
22	4.2	6.3	6.5	5.1	14	23	18	38	5.5	3.5	11	4.7
23	4.2	6.3	6.7	5.1	40	18	17	17	5.2	3.3	7.5	4.3
24	4.2	9.6	7.1	5.4	47	18	24	11	5.2	3.5	7.6	4.0
25	4.3	8.1	6.9	13	27	16	18	9.1	5.6	3.2	6.0	4.0
26	4.2	6.1	6.3	11	14	12	14	12	5.3	3.1	5.0	4.2
27	4.1	5.6	5.9	6.9	9.8	9.0	12	8.4	4.8	3.0	4.2	4.2
28	4.2	5.7	6.1	6.5	8.7	8.4	29	7.1	4.7	2.9	4.0	3.9
29	4.7	5.6	6.3	43	---	12	29	6.7	4.4	2.9	8.4	4.0
30	10	6.3	7.6	24	---	10	17	8.2	4.2	2.8	11	5.3
31	7.8	---	7.1	12	---	9.0	---	16	---	3.0	27	---
TOTAL	146.9	231.6	218.2	362.8	278.9	349.4	710.5	414.3	234.9	113.9	184.9	147.7
MEAN	4.74	7.72	7.04	11.7	9.96	11.3	23.7	13.4	7.83	3.67	5.96	4.92
MAX	10	14	12	43	47	23	211	50	19	4.5	27	16
MIN	4.0	5.1	5.1	5.0	4.1	6.1	6.7	6.7	4.2	2.8	3.2	3.9
CFSM	.62	1.02	.93	1.54	1.31	1.49	3.12	1.76	1.03	.48	.78	.65
IN.	.72	1.13	1.07	1.78	1.37	1.71	3.48	2.03	1.15	.56	.91	.72

CAL YR 1974 TOTAL 3789.8 MEAN 10.4 MAX 103 MIN 2.7 CFSM 1.37 IN 18.55
WTR YR 1975 TOTAL 3394.0 MEAN 9.30 MAX 211 MIN 2.8 CFSM 1.22 IN 16.61

PEAK DISCHARGE (BASE, 50 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	0300	2.93	57	04-19	0030	9.45	470
01-29	1200	3.33	82	04-28	1900	2.97	60
02-24	1300	2.90	55	05-21	1300	3.05	65

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 mi^2 (997 km^2).

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.--31 years, 309 ft^3/s (8.751 m^3/s), 10.90 in/yr (277 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,040 ft^3/s (143 m^3/s) Apr. 21, gage height, 9.72 ft (2.963 m); minimum, 96 ft^3/s (2.72 m^3/s) July 31, Aug. 1, 2, gage height, 2.98 ft (0.908 m).
Period of record: Maximum discharge, 6,810 ft^3/s (193 m^3/s) Apr. 7, 1947, gage height, 10.20 ft (3.109 m), from graph based on gage readings; minimum, 33 ft^3/s (0.93 m^3/s) Aug. 10, 1964, gage height, 2.71 ft (0.826 m).

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	210	194	257	896	1110	650	1200	386	194	96	305
2	161	200	191	249	845	902	620	1170	395	178	102	359
3	149	191	188	245	770	735	570	1070	390	170	144	369
4	141	210	184	242	660	590	540	938	366	164	162	341
5	136	249	178	235	535	480	540	825	364	158	162	304
6	136	293	178	228	442	415	540	755	370	151	162	281
7	136	309	175	224	375	397	535	695	368	146	152	263
8	133	297	191	245	321	406	545	635	350	143	137	242
9	133	265	207	375	285	402	565	585	317	140	124	219
10	131	238	214	600	249	375	600	530	279	136	121	200
11	131	228	207	872	249	343	650	480	264	132	117	187
12	131	224	214	1090	242	325	725	465	273	128	112	182
13	131	224	228	1060	224	339	795	480	280	128	110	180
14	144	224	245	962	210	393	840	490	275	128	113	175
15	164	224	265	855	214	438	855	480	317	128	114	162
16	169	224	293	770	210	480	840	460	425	128	113	158
17	164	231	317	650	217	550	805	424	516	126	111	155
18	155	261	334	540	231	635	795	388	543	124	109	147
19	149	281	325	465	245	710	2190	361	507	126	106	146
20	144	269	309	384	253	770	4340	334	439	133	102	147
21	141	257	289	334	253	810	4970	411	383	133	102	153
22	139	245	273	317	269	890	4460	625	344	132	126	157
23	141	231	257	293	402	1050	3500	755	307	128	160	158
24	141	235	253	273	695	1140	2690	755	277	119	185	156
25	141	242	249	297	1030	1160	2140	705	276	117	188	152
26	141	238	249	370	1240	1150	1720	645	294	115	177	147
27	141	224	242	406	1320	1090	1390	565	290	110	159	140
28	141	214	235	393	1270	980	1220	507	261	107	145	139
29	144	207	231	475	---	872	1170	443	233	103	146	139
30	175	204	238	695	---	785	1180	390	211	98	175	141
31	207	---	249	855	---	710	---	380	---	96	237	---
TOTAL	4559	7149	7402	15256	14152	21432	42980	18946	10300	4119	4269	6004
MEAN	147	238	239	492	505	691	1433	611	343	133	138	200
MAX	207	309	334	1090	1320	1160	4970	1200	543	194	237	369
MIN	131	191	175	224	210	325	535	334	211	96	96	139
CFSM	.38	.62	.62	1.28	1.31	1.79	3.72	1.59	.89	.35	.36	.52
IN.	.44	.69	.72	1.47	1.37	2.07	4.15	1.83	1.00	.40	.41	.58

CAL YR 1974 TOTAL 176539 MEAN 484 MAX 2900 MIN 93 CFSM 1.26 IN 17.06
WTR YR 1975 TOTAL 156568 MEAN 429 MAX 4970 MIN 96 CFSM 1.11 IN 15.13

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 mi^2 (2,002 km^2).

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.--32 years, 560 ft^3/s (15.86 m^3/s), 9.84 in/yr (250 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,140 ft^3/s (174 m^3/s) Apr. 22, gage height, 10.96 ft (3.341 m); minimum, 148 ft^3/s (4.19 m^3/s) Oct. 25, gage height, 2.78 ft (0.847 m).
Period of record: Maximum discharge, 6,290 ft^3/s (178 m^3/s) May 10, 1956, gage height, 10.79 ft (3.289 m); maximum gage height, 10.96 ft (3.341 m) Apr. 22, 1975; minimum discharge, 1.0 ft^3/s (0.028 m^3/s) May 28, 1968, gage height, 1.40 ft (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. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	423	549	485	565	1470	2000	1280	2290	778	595	284	854
2	408	497	480	545	1430	1700	1190	2330	682	527	302	848
3	388	457	475	555	1310	1380	1130	2090	699	464	377	811
4	366	480	456	550	1200	1170	1070	2060	667	464	426	764
5	352	482	418	525	1090	990	1070	1710	795	451	426	737
6	352	583	451	520	954	905	1080	1530	753	390	428	721
7	350	649	456	515	834	883	1070	1390	722	389	419	658
8	342	677	466	600	784	828	1100	1250	674	404	402	624
9	328	647	456	932	707	778	1160	1160	611	403	355	535
10	339	578	480	1310	615	778	1180	1050	592	380	328	573
11	331	640	480	2110	685	740	1230	970	543	368	325	472
12	333	580	495	2360	674	685	1300	910	588	325	321	476
13	329	523	520	2240	625	663	1360	961	575	349	324	434
14	419	584	545	2070	590	712	1390	885	547	394	304	427
15	424	564	575	1820	515	768	1400	876	752	380	310	423
16	408	525	641	1590	520	894	1380	876	1110	357	313	421
17	407	582	690	1340	525	1000	1350	833	1120	356	308	414
18	384	656	702	1240	550	1160	1330	732	1220	314	304	384
19	372	639	690	1040	565	1380	2630	743	1150	370	298	410
20	362	639	668	872	585	1600	3910	653	1030	434	288	432
21	350	643	646	916	555	1750	5030	697	919	452	304	437
22	345	596	620	768	636	2050	5820	964	799	327	342	458
23	355	556	595	685	978	2280	5530	1090	698	343	409	458
24	369	604	590	636	1480	2370	4980	1140	717	371	438	437
25	281	592	560	834	2000	2430	4240	1110	1050	301	462	415
26	278	558	565	927	2090	2330	3630	1060	980	332	453	412
27	340	560	555	910	2120	2140	2870	984	931	321	421	405
28	401	546	545	888	2120	1980	2270	885	839	311	399	396
29	404	490	535	1030	---	1860	2290	807	703	287	417	365
30	418	500	540	1290	---	1620	2050	732	649	292	497	389
31	522	---	540	1400	---	1380	---	777	---	280	664	---
TOTAL	11480	17176	16920	33583	28207	43204	67320	35545	23893	11731	11648	15590
MEAN	370	573	546	1083	1007	1394	2244	1147	796	378	376	520
MAX	522	677	702	2360	2120	2430	5820	2330	1220	595	664	854
MIN	278	457	418	515	515	663	1070	653	543	280	284	365
CFSM	.48	.74	.71	1.40	1.30	1.80	2.90	1.48	1.03	.49	.49	.67
IN.	.55	.83	.81	1.62	1.36	2.08	3.24	1.71	1.15	.56	.56	.75

CAL YR 1974 TOTAL 357741 MEAN 980 MAX 4800 MIN 278 CFSM 1.27 IN 17.22
WTR YR 1975 TOTAL 316297 MEAN 867 MAX 5820 MIN 278 CFSM 1.12 IN 15.22

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 mi^2 (606 km^2).

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.--23 years, 224 ft^3/s (6.344 m^3/s), 13.00 in/yr (330 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,120 ft^3/s (60.0 m^3/s) Sept. 1, gage height, 8.40 ft (2.560 m); minimum, 93 ft^3/s (2.63 m^3/s) Aug. 19, gage height, 3.87 ft (1.180 m).
Period of record: Maximum discharge, 2,640 ft^3/s (74.8 m^3/s) Mar. 31, 1960, gage height, 8.59 ft (2.618 m); minimum, 28 ft^3/s (0.79 m^3/s) Jan. 22, 1967, gage height, 3.41 ft (1.039 m); minimum daily, 49 ft^3/s (1.39 m^3/s) Aug. 27, 1955.

REMARKS.--Records good. Some diurnal fluctuation caused by mills above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	217	189	198	211	362	403	372	408	187	184	109	1970
2	214	188	190	201	336	343	367	391	194	161	110	2010
3	186	184	184	200	303	321	337	364	195	149	166	1660
4	172	183	176	196	270	302	352	346	191	148	147	1240
5	166	195	172	193	254	287	373	327	219	140	142	954
6	170	200	167	188	245	277	361	308	215	138	125	775
7	183	194	170	186	223	276	366	290	220	138	114	630
8	185	188	177	220	228	267	386	274	211	140	107	559
9	186	181	174	251	226	254	418	259	184	135	104	496
10	176	175	173	434	220	250	445	245	165	126	101	441
11	168	203	166	692	237	235	438	234	177	127	101	408
12	163	209	174	893	253	234	410	225	193	132	100	391
13	159	214	177	845	227	227	378	216	193	138	103	368
14	240	220	184	701	225	223	347	209	185	159	105	362
15	225	216	191	582	190	221	326	214	296	175	103	344
16	230	208	206	460	193	231	307	208	313	174	100	321
17	236	227	214	427	209	262	293	211	323	157	97	303
18	229	240	217	382	222	330	301	206	364	139	95	283
19	214	240	216	324	220	412	397	195	374	148	94	269
20	196	245	210	310	228	497	447	187	457	157	100	279
21	181	245	210	290	242	646	431	214	475	156	185	291
22	174	240	204	268	272	845	404	274	385	149	218	301
23	170	250	199	242	335	932	385	248	346	139	330	290
24	169	260	200	240	555	840	379	243	298	137	348	285
25	170	265	198	325	570	749	360	230	273	140	320	269
26	168	260	193	336	604	676	350	244	255	137	288	259
27	166	255	189	372	573	585	344	204	252	130	278	247
28	163	249	188	373	496	486	369	184	261	127	285	233
29	168	229	191	439	---	459	376	174	232	121	847	226
30	184	210	199	414	---	414	387	172	203	120	948	221
31	185	---	205	398	---	369	---	182	---	114	1640	---
TOTAL	5813	6562	5912	11593	8518	12853	11206	7686	7836	4435	7910	16685
MEAN	188	219	191	374	304	415	374	248	261	143	255	556
MAX	240	265	217	893	604	932	447	408	475	184	1640	2010
MIN	159	175	166	186	190	221	293	172	165	114	94	221
CFSM	.80	.94	.82	1.60	1.30	1.77	1.60	1.06	1.12	.61	1.09	2.38
IN.	.92	1.04	.94	1.84	1.35	2.04	1.78	1.22	1.25	.71	1.26	2.65

CAL YR 1974 TOTAL 113523 MEAN 311 MAX 2000 MIN 113 CFSM 1.33 IN 18.05
WTR YR 1975 TOTAL 107009 MEAN 293 MAX 2010 MIN 94 CFSM 1.25 IN 17.01

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 mi^2 (12,700 km^2), 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.--49 years, 3,534 ft^3/s (100.1 m^3/s), 9.79 in/yr (249 mm/yr).

EXTREMES.--Current year: Maximum discharge, 23,500 ft^3/s (666 m^3/s) Apr. 24, gage height, 16.82 ft (5.127 m); minimum, 1,200 ft^3/s (34.0 m^3/s) Aug. 20, gage height, 2.87 ft (0.875 m).
Period of record: Maximum discharge, 54,000 ft^3/s (1,530 m^3/s) Mar. 28, 1904, gage height, 19.5 ft (5.94 m), from graph based on gage readings, site then in use; minimum daily, 381 ft^3/s (10.8 m^3/s) Aug. 9, 17, 1936.
Maximum discharge since at least 1901, that of March 28, 1904.

REMARKS.--Records good. Moderate diurnal fluctuation at low and medium flow caused by powerplants above station.

REVISION (WATER YEARS).--WSP 924: 1938 (M). WSP 1387: 1901-5, 1940.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2200	2470	2600	3000	6880	10900	9200	11100	3850	3200	1360	10600
2	2220	2390	2470	2900	6500	10000	8510	11000	3760	3010	1420	11300
3	2050	2280	2470	2850	6050	8860	7990	10700	3640	2830	2140	12200
4	1910	2220	2390	2900	5620	7750	7480	10200	3720	2500	1910	13100
5	1850	2340	2110	2920	5180	6960	7220	9540	4220	2220	2140	13500
6	1850	2730	1880	2830	4950	6380	6820	8800	4190	2080	2080	13500
7	1790	3230	1820	2790	4400	6140	6700	8070	4110	2050	1820	12900
8	1940	3120	1940	3010	3560	6050	6590	7350	3860	2110	1650	12300
9	1650	3020	2020	3740	3460	5580	6950	6750	3660	2360	1650	11500
10	1850	2570	2220	6020	3400	5180	7110	6230	3100	2140	1560	10600
11	1970	2790	2390	8620	3350	4790	7300	5700	3330	1970	1450	9730
12	1880	2600	2450	9600	3300	4750	7630	4630	3060	2000	1390	8700
13	1730	2690	2600	9890	3250	4560	8050	4970	3180	1730	1450	7820
14	2200	2810	2850	9590	3200	4400	8330	5140	3180	2170	1560	7070
15	2170	2810	2830	8840	3250	4530	8460	5030	4100	2050	1530	6390
16	2110	2770	3070	8140	3150	4830	8390	4860	4900	1940	1680	5930
17	2170	2790	3320	7300	3250	5410	8150	4700	5200	1910	1420	5540
18	2110	2890	3400	7260	3300	6040	7870	4510	5450	1970	1310	5250
19	2050	2920	3520	7110	3300	6420	8510	4120	5130	1970	1280	4830
20	1970	2850	3420	6160	3460	6970	9920	3990	5100	2170	1310	4860
21	1910	2790	3430	5480	3570	7690	12800	4120	4730	2200	1620	4870
22	1910	2830	3380	5530	4080	8900	17400	4420	4440	2280	2650	4780
23	1880	2790	3100	5480	5170	9820	21800	4700	4260	2080	4980	4610
24	1850	2940	3200	5420	7480	10700	23300	4920	3930	2000	6260	4300
25	1820	2900	3000	5930	9290	11600	21700	4850	4280	1820	6300	4070
26	1650	2940	2800	6050	10200	12200	18800	4680	4990	1710	6070	3910
27	1710	2920	2900	5610	10900	12600	15800	4460	5160	1680	5470	3700
28	1680	2890	2900	5240	11300	12400	13800	4270	4910	1680	4910	3530
29	1790	2870	2900	5460	---	11900	12500	4160	4410	1590	6680	3360
30	1970	2710	2700	6160	---	11000	11400	3970	3660	1480	6670	3250
31	2140	---	2900	7090	---	10000	---	3770	---	1450	9060	---
TOTAL	59980	82870	84980	178920	144710	245310	326480	185710	125510	64350	92780	228000
MEAN	1935	2762	2741	5772	5168	7913	10880	5991	4184	2076	2993	7600
MAX	2220	3230	3520	9890	11300	12600	23300	11100	5450	3200	9060	13500
MIN	1650	2220	1820	2790	3150	4400	6590	3770	3060	1450	1280	3250
CFSM	.39	.56	.56	1.18	1.05	1.61	2.22	1.22	.85	.42	.61	1.55
IN.	.46	.63	.65	1.36	1.10	1.86	2.48	1.41	.95	.49	.70	1.73

CAL YR 1974 TOTAL 2036290 MEAN 5579 MAX 24300 MIN 1170 CFSM 1.14 IN 15.46
WTR YR 1975 TOTAL 1819600 MEAN 4985 MAX 23300 MIN 1280 CFSM 1.02 IN 13.81

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 mi^2 (629 km^2).

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.--9 years, 128 ft^3/s (3.625 m^3/s), 7.15 in/yr (182 mm/yr).

EXTREMES.--Current year: Maximum discharge, 405 ft^3/s (11.5 m^3/s) Sept. 2, gage height, 4.58 ft (1.396 m); minimum, 46 ft^3/s (1.30 m^3/s) Dec. 4, result of freezeup.
Period of record: Maximum discharge, 1,150 ft^3/s (32.6 m^3/s) Apr. 13, 1971, gage height, 6.33 ft (1.929 m); minimum, 29 ft^3/s (0.82 m^3/s) Nov. 3, 1969, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation during low flows from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	95	77	68	76	86	129	214	159	111	71	295
2	95	92	74	67	73	85	120	230	148	107	71	387
3	91	90	73	73	71	84	116	217	136	102	74	397
4	89	88	66	75	73	84	117	223	134	93	72	365
5	86	89	76	72	74	84	113	241	165	90	72	335
6	91	89	72	72	70	84	113	234	171	87	70	314
7	99	88	77	72	68	82	112	215	158	85	68	290
8	102	87	77	73	68	80	121	198	140	84	67	269
9	95	85	65	74	68	77	138	183	132	83	66	254
10	91	85	80	85	68	80	159	173	123	91	65	249
11	87	94	76	154	69	82	182	166	119	100	66	243
12	86	106	77	111	70	84	200	161	117	105	64	232
13	84	100	76	110	70	84	208	158	119	105	67	225
14	92	92	75	105	70	86	223	153	116	113	66	220
15	99	85	76	100	70	85	243	158	125	118	66	216
16	95	82	78	90	71	86	264	161	141	117	64	212
17	92	82	79	85	75	84	274	158	156	109	61	207
18	89	84	76	80	77	88	286	153	188	100	59	203
19	89	84	70	80	79	110	355	158	219	108	58	202
20	87	83	74	78	79	143	380	163	223	111	58	202
21	87	82	76	76	80	150	315	164	200	118	98	200
22	89	81	76	74	84	160	254	163	167	112	112	200
23	87	82	75	74	85	170	226	158	143	101	141	198
24	87	97	74	76	102	188	231	149	134	109	155	195
25	89	101	73	81	109	194	234	162	132	123	170	185
26	90	85	69	87	102	174	219	180	130	109	174	180
27	88	80	76	89	93	173	202	169	127	95	147	180
28	89	79	76	83	90	162	190	152	122	85	112	172
29	88	75	74	82	------	148	187	141	117	79	113	178
30	92	74	74	78	------	139	190	139	115	75	132	180
31	97	------	68	74	------	125	------	151	------	72	197	------
TOTAL	2,823	2,616	2,305	2,598	2,184	3,541	6,101	5,445	4,376	3,097	2,866	7,185
MEAN	91.1	87.2	74.4	83.8	78.0	114	203	176	146	99.9	92.5	240
MAX	102	106	80	154	109	194	380	241	223	123	197	397
MIN	84	74	65	67	68	77	112	139	115	72	58	172
CFSM	.37	.36	.31	.34	.32	.47	.84	.72	.60	.41	.38	.99
IN.	.43	.40	.35	.40	.33	.54	.93	.83	.67	.47	.44	1.10

CAL YR 1974 TOTAL 47,202 MEAN 129 MAX 626 MIN 63 CFSM .53 IN 7.23
WTR YR 1975 TOTAL 45,137 MEAN 124 MAX 397 MIN 58 CFSM .51 IN 6.91

PEAK DISCHARGE (BASE, 350 FT^3/S).--Apr. 20 (0500) 390 ft^3/s (4.30 ft); Sept. 2 (1,900) 405 ft^3/s (4.58 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 in Evart, 0.4 mi (0.6 km) upstream from Twin Creek, and at mile 123.9 (199.4 km).

DRAINAGE AREA.--1,450 mi^2 (3,760 km^2) 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.--43 years, 986 ft^3/s (27.92 m^3/s), 9.23 in/yr (234 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,870 ft^3/s (138 m^3/s) Sept. 4, gage height, 11.67 ft (3.557 m); minimum, 480 ft^3/s (13.6 m^3/s) Aug. 20.
Period of record: Maximum discharge, 7,750 ft^3/s (219 m^3/s) Apr. 9, 1959, gage height, 14.42 ft (4.395 m); minimum observed, 164 ft^3/s (4.64 m^3/s) Dec. 20, 1947, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation during low flows from dams above station. Records of water temperature for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1437: 1934, 1947 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	684	760	700	678	809	886	1,460	2,040	949	1,030	672	3,860
2	704	753	700	660	802	865	1,450	2,140	942	935	654	3,970
3	690	746	700	640	770	850	1,370	2,120	935	858	648	4,470
4	672	732	690	640	740	840	1,310	2,150	942	809	624	4,810
5	660	725	690	650	700	800	1,270	2,180	1,120	760	600	4,520
6	672	732	700	660	670	780	1,250	2,190	1,190	725	582	4,300
7	704	739	700	660	660	770	1,250	2,130	1,180	704	565	3,900
8	711	739	690	678	660	760	1,290	2,020	1,140	660	550	3,470
9	718	739	684	678	650	750	1,390	1,890	1,080	636	540	3,030
10	711	732	648	781	640	760	1,490	1,780	1,020	660	530	2,690
11	704	774	711	1,360	700	750	1,620	1,680	986	690	530	2,450
12	684	830	725	1,300	700	740	1,750	1,580	956	718	525	2,230
13	666	830	746	1,200	700	740	1,840	1,470	928	718	520	2,000
14	746	823	718	1,050	700	720	1,910	1,370	900	781	525	1,800
15	788	816	704	950	700	711	2,000	1,310	949	830	520	1,650
16	774	795	718	880	700	725	2,130	1,230	1,130	781	515	1,550
17	774	781	718	840	710	767	2,210	1,150	1,260	732	515	1,480
18	767	795	725	850	710	865	2,320	1,080	1,810	684	500	1,390
19	732	795	711	840	720	1,010	2,600	1,060	2,020	781	490	1,310
20	704	795	697	830	720	1,350	2,690	1,070	2,150	963	485	1,290
21	690	781	704	800	718	1,690	2,810	1,070	2,070	1,060	698	1,290
22	678	774	704	780	739	1,700	2,890	1,070	1,950	1,070	986	1,290
23	666	781	739	780	767	1,680	2,830	1,110	1,860	1,060	994	1,280
24	654	816	725	800	956	1,900	2,850	1,070	1,860	1,270	1,770	1,230
25	648	830	690	800	1,120	2,180	2,740	1,080	1,870	1,220	2,420	1,180
26	660	816	648	921	1,120	2,080	2,600	1,070	1,810	1,110	2,060	1,160
27	672	809	697	907	1,010	1,910	2,410	1,090	1,640	1,000	1,770	1,150
28	672	802	711	896	994	1,770	2,240	1,030	1,460	900	1,410	1,120
29	672	788	718	879	------	1,730	2,070	978	1,270	816	1,380	1,110
30	732	725	718	858	------	1,670	1,920	963	1,140	760	1,630	1,090
31	767	------	666	837	------	1,550	------	963	------	718	2,410	------
TOTAL	21,776	23,353	21,795	26,073	21,585	36,299	59,960	45,134	40,517	26,439	28,618	68,070
MEAN	702	778	703	841	771	1,171	1,999	1,456	1,351	853	923	2,269
MAX	788	830	746	1,360	1,120	2,180	2,890	2,190	2,150	1,270	2,420	4,810
MIN	648	725	648	640	640	711	1,250	963	900	636	485	1,090
CFSM	.48	.54	.48	.58	.53	.81	1.38	1.00	.93	.59	.64	1.56
IN.	.56	.60	.56	.67	.55	.93	1.54	1.16	1.04	.68	.73	1.75

CAL YR 1974 TOTAL 450,362 MEAN 1,234 MAX 4,670 MIN 515 CFSM .85 IN 11.55
WTR YR 1975 TOTAL 419,619 MEAN 1,150 MAX 4,810 MIN 485 CFSM .79 IN 10.77

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 mi^2 (357 km^2).

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.--9 years, 124 ft^3/s (3.512 m^3/s), 12.20 in/yr (310 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1010 ft^3/s (28.6 m^3/s) Aug. 31, gage height, 5.92 ft (1.804 m); minimum, 42 ft^3/s (1.19 m^3/s) July 3.
Period of record: Maximum discharge, 1010 ft^3/s (28.6 m^3/s) Aug. 31, 1975, gage height, 5.92 ft (1.804 m); minimum, 31 ft^3/s (0.88 m^3/s) June 3, 1972, gage height, 1.59 ft (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 Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	109	90	89	80	140	157	247	105	96	67	852
2	112	103	90	89	78	135	157	239	83	92	74	670
3	105	99	87	89	76	130	133	207	81	81	94	548
4	103	103	80	89	76	125	135	215	108	83	90	542
5	92	112	74	89	76	124	139	211	374	80	87	528
6	114	120	71	87	76	124	139	191	333	78	83	510
7	122	116	72	87	76	122	147	163	230	76	80	405
8	122	114	76	92	74	118	161	155	145	76	78	347
9	114	109	74	133	72	116	169	155	122	74	76	295
10	112	105	78	188	70	112	171	143	109	112	74	255
11	111	132	78	394	72	109	175	130	105	122	72	235
12	105	137	78	300	74	111	173	126	124	96	72	225
13	103	126	80	250	74	107	167	124	111	87	78	200
14	154	116	80	200	76	107	169	118	98	89	74	190
15	163	112	80	170	76	103	171	124	173	89	71	180
16	141	107	85	150	76	111	173	122	235	85	69	170
17	124	111	87	135	77	128	175	114	250	80	65	160
18	114	114	87	120	78	163	183	109	467	76	64	150
19	112	111	85	110	81	185	269	94	448	112	67	150
20	107	111	85	96	101	219	273	92	392	111	64	150
21	105	111	85	90	80	229	229	96	274	90	85	150
22	103	105	85	86	120	227	185	120	195	81	124	155
23	101	107	85	86	147	219	181	109	163	78	116	150
24	99	135	85	86	233	249	217	99	155	99	193	145
25	98	132	85	88	315	261	225	96	173	98	217	135
26	96	111	85	90	233	225	187	94	225	85	203	135
27	94	101	85	92	175	193	177	94	187	80	157	130
28	94	99	85	90	150	173	201	89	124	76	118	130
29	96	98	87	86	------	171	213	85	112	72	186	130
30	105	94	90	84	------	167	191	87	101	71	295	125
31	111	------	89	80	------	149	------	124	------	69	674	------
TOTAL	3,452	3,360	2,563	3,915	2,992	4,852	5,442	4,172	5,802	2,694	3,867	8,147
MEAN	111	112	82.7	126	107	157	181	135	193	86.9	125	272
MAX	163	137	90	394	315	261	273	247	467	122	674	852
MIN	92	94	71	80	70	103	133	85	81	69	64	125
CFSM	.80	.81	.60	.91	.78	1.14	1.31	.98	1.40	.63	.91	1.97
IN.	.93	.91	.69	1.06	.81	1.31	1.47	1.12	1.56	.73	1.04	2.20

CAL YR 1974 TOTAL 54,881 MEAN 150 MAX 762 MIN 64 CFSM 1.09 IN 14.79
WTR YR 1975 TOTAL 51,258 MEAN 140 MAX 852 MIN 64 CFSM 1.01 IN 13.82

PEAK DISCHARGE (BASE, 400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1030	3.67	437
06-05	1530	3.72	448
06-18	0900	4.00	515
08-31	2230	5.92	1,010

04122000 Muskegon River at Newaygo, Mich.

LOCATION.--Lat 43°25'20", long 85°48'04", in NE¼ NE¼ sec.24, T.12 N., R.13 W., Newaygo County, on left bank near nonoperative powerplant at Newaygo, 600 ft (183 m) downstream from Penoyer Creek and at mile 39.1 (62.9 km).

DRAINAGE AREA.--2,350 mi^2 (6,090 km^2), approximately.

PERIOD OF RECORD.--July to December 1908, July 1909 to July 1915, January 1916 to December 1919, October 1930 to current year. Monthly discharge only for some periods, published in WSP 1307. Records for June 1901 to December 1906, published in WSP 129, 170, and 206, have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 625.83 ft (190.753 m) above mean sea level. October 1930 to January 1939, nonrecording gage, and Jan. 31, 1939 to Sept. 30, 1963, water-stage recorder at present site at datum 40.0 ft (12.192 m) lower.

AVERAGE DISCHARGE.--53 years (1909-14, 1916-19, 1930-75), 1,947 ft^3/s (55.14 m^3/s), 11.25 in/yr (286 mm/yr).

EXTREMES.--Current year: Maximum discharge, 9,800 ft^3/s (278 m^3/s) Sept. 2, gage height, 12.75 ft (3.886 m); minimum, 446 ft^3/s (12.6 m^3/s) Dec. 17.
Period of record: Maximum daily discharge, 14,950 ft^3/s (423 m^3/s) Mar. 25, 1913; minimum, 52 ft^3/s (1.47 m^3/s) Oct. 2, 1965 gage height, 5.31 ft (1.618 m), result of regulation during pipeline repair; minimum daily, 330 ft^3/s (9.35 m^3/s) Feb. 15, 1914.

REMARKS.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by powerplants above station, the largest of which are at Croton Dam, Hardy Dam (since 1931), and Rogers Dam. Since Dec. 27, 1965, powerplant at Newaygo nonoperative, and in January 1969, dam at Newaygo was removed.

REVISIONS (WATER YEARS).--WSP 974: 1933, 1935, 1937-38. WSP 1307: 1940 (M). See also PERIOD OF RECORD.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,810	1,830	1,510	1,860	2,450	2,250	2,580	2,580	1,550	2,100	1,300	7,940
2	1,810	1,600	1,440	2,050	1,840	1,880	2,920	2,560	1,400	1,800	1,200	9,670
3	2,380	1,340	1,590	2,090	1,850	2,050	3,290	2,550	2,100	1,560	1,600	9,170
4	2,730	1,820	1,590	1,880	1,870	2,280	2,930	2,540	2,000	1,400	1,500	9,600
5	2,180	1,880	1,590	1,810	1,870	2,280	2,270	2,780	2,200	1,400	1,300	9,520
6	1,850	1,880	1,590	1,600	2,060	2,610	2,080	3,030	3,200	1,500	1,200	6,650
7	1,570	1,790	1,590	1,850	2,290	3,480	2,320	3,030	2,500	1,700	1,100	6,120
8	1,220	1,770	1,650	2,070	2,140	2,860	2,790	2,770	2,300	1,850	1,050	5,910
9	1,210	1,450	1,720	2,260	1,700	1,750	2,940	2,410	2,300	1,700	1,100	5,380
10	1,210	1,340	1,580	2,660	1,580	1,500	2,670	2,060	2,200	1,400	1,200	4,810
11	1,200	2,110	1,490	3,470	1,860	1,880	2,660	1,840	2,100	1,900	1,300	4,260
12	1,210	1,900	1,520	3,800	1,860	2,020	2,790	2,020	2,000	1,700	1,320	4,360
13	1,210	1,690	1,520	3,800	1,860	2,830	3,140	1,540	2,000	1,400	1,310	3,710
14	1,650	1,900	1,520	3,710	1,860	2,450	3,480	1,840	2,000	1,300	1,310	3,690
15	2,250	2,290	1,570	3,350	1,870	2,270	3,470	1,710	2,000	1,900	1,300	3,530
16	2,250	1,830	1,590	3,090	1,650	2,270	3,610	1,360	2,200	1,500	1,290	3,100
17	1,930	1,640	1,850	2,850	1,600	2,280	3,770	1,240	2,500	1,600	1,290	2,710
18	2,030	1,770	1,920	2,580	2,030	2,290	3,800	1,090	3,300	1,900	1,660	3,390
19	1,710	1,700	1,810	2,220	2,270	2,690	3,790	1,430	3,400	1,900	1,200	3,150
20	1,330	1,900	1,700	1,800	2,660	3,560	3,790	2,030	3,300	1,700	1,050	2,390
21	1,570	1,880	1,620	2,080	3,040	4,270	3,780	2,270	3,400	1,450	1,150	1,830
22	1,810	1,880	1,640	2,290	2,810	4,810	3,660	2,270	3,500	2,300	1,900	2,010
23	1,700	1,470	1,600	2,300	2,270	3,970	3,490	2,260	3,000	2,100	3,030	2,940
24	1,320	1,590	1,830	2,290	2,670	3,520	3,490	2,250	3,100	1,900	3,100	3,560
25	1,320	2,150	1,600	2,320	3,510	3,740	3,490	2,140	3,100	2,100	3,640	2,980
26	1,320	1,710	1,570	2,310	3,510	3,930	3,470	1,620	3,400	2,200	4,350	2,190
27	1,320	2,070	1,840	2,660	3,270	3,770	3,470	1,550	3,000	2,000	3,920	1,810
28	1,550	1,680	1,620	3,060	2,570	3,640	3,280	2,020	2,600	1,850	3,030	2,000
29	1,820	1,860	1,260	3,090	------	3,500	2,550	2,290	2,200	1,600	2,880	2,700
30	1,830	1,850	1,470	3,070	------	3,120	2,570	1,860	2,100	1,350	3,890	3,150
31	1,830	------	1,860	2,970	------	2,550	------	1,750	------	1,300	4,790	------
TOTAL	52,130	53,570	50,250	79,240	62,820	88,300	94,340	64,690	75,950	53,360	61,260	134,230
MEAN	1,682	1,786	1,621	2,556	2,244	2,848	3,145	2,087	2,532	1,721	1,976	4,474
MAX	2,730	2,290	1,920	3,800	3,510	4,810	3,800	3,030	3,500	2,300	4,790	9,670
MIN	1,200	1,340	1,260	1,600	1,580	1,500	2,080	1,090	1,400	1,300	1,050	1,810
CFSM	.72	.76	.69	1.09	.95	1.21	1.34	.89	1.08	.73	.84	1.90
IN.	.83	.85	.80	1.25	.99	1.40	1.49	1.02	1.20	.84	.97	2.12

CAL YR 1974 TOTAL 920,280 MEAN 2,521 MAX 6,970 MIN 1,060 CFSM 1.07 IN 14.57
WTR YR 1975 TOTAL 870,140 MEAN 2,384 MAX 9,670 MIN 1,050 CFSM 1.01 IN 13.77

NOTE.--No gage height record May 31 to Aug. 11.

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 mi^2 (38.3 km^2).

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.--10 years, 15.0 ft^3/s (0.425 m^3/s), 13.76 in/yr (350 mm/yr).

EXTREMES.--Current year: Maximum discharge, 428 ft^3/s (12.1 m^3/s) Aug. 31, gage height, 9.46 ft (2.883 m); minimum, 2.6 ft^3/s (0.074 m^3/s) Aug. 20, 21.
Period of record: Maximum discharge, 500 ft^3/s (14.2 m^3/s) May 17, 1974, gage height, 9.58 ft (2.920 m); minimum, 1.0 ft^3/s (0.28 m^3/s) Aug. 5, 17, 22, 1971.

REMARKS.--Records good except those for the winter period, which are fair. Some regulation during low flows, from dams and irrigation above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	8.0	9.2	16	12	21	24	29	10	7.7	3.8	186
2	5.0	7.2	9.4	14	12	20	22	22	8.5	7.2	5.7	73
3	4.6	7.0	8.7	13	11	18	21	19	7.5	6.8	7.7	31
4	5.0	7.0	8.2	13	11	17	22	23	8.5	6.1	5.4	26
5	4.6	7.0	8.2	13	11	17	22	20	18	5.6	6.0	23
6	13	7.2	7.8	12	12	17	25	18	14	5.7	4.7	27
7	9.7	6.5	8.7	12	11	18	28	15	11	5.5	4.1	21
8	6.8	6.3	9.7	17	11	17	27	14	9.4	5.1	3.9	21
9	6.2	6.2	9.0	23	11	16	23	13	8.2	4.4	4.3	18
10	5.8	6.3	8.7	44	11	15	20	12	7.5	6.4	4.3	17
11	5.6	13	8.2	112	11	14	19	12	8.5	5.9	4.1	17
12	6.0	11	8.7	50	11	14	17	12	10	5.4	3.7	16
13	6.0	9.6	9.7	27	11	14	16	11	9.0	5.3	3.9	14
14	19	9.2	10	21	11	14	16	9.9	7.5	9.5	3.5	13
15	13	9.0	11	18	11	14	15	14	23	8.1	3.6	13
16	9.7	8.9	12	16	11	15	15	13	25	6.6	3.5	12
17	8.9	12	13	15	11	20	14	11	25	5.4	3.6	12
18	8.2	11	13	15	12	31	16	11	83	4.9	3.3	12
19	8.5	9.6	12	14	12	41	24	9.2	32	6.9	3.2	11
20	9.6	9.4	12	14	12	43	19	8.9	19	6.5	4.1	12
21	8.7	9.0	11	13	15	58	16	11	16	5.5	9.0	13
22	8.2	8.2	13	13	21	94	15	12	13	4.5	12	13
23	8.0	11	13	13	25	62	18	11	13	4.7	12	12
24	7.5	19	13	13	56	50	27	9.2	14	12	15	10
25	7.3	14	13	13	56	50	21	8.2	51	7.9	12	9.8
26	7.0	11	12	14	29	33	17	7.8	30	6.1	9.2	9.9
27	6.8	10	12	14	23	28	16	7.2	16	5.6	7.5	9.4
28	6.8	10	12	13	22	25	24	6.3	13	4.8	6.6	8.6
29	7.3	9.9	15	13	------	30	33	6.5	11	4.5	33	8.6
30	9.2	9.6	19	12	------	27	26	12	9.4	4.2	26	8.8
31	8.9	------	16	12	------	23	------	13	------	3.9	258	------
TOTAL	245.5	283.1	346.2	622	473	876	618	401.2	531.0	188.7	486.7	678.1
MEAN	7.92	9.44	11.2	20.1	16.9	28.3	20.6	12.9	17.7	6.09	15.7	22.6
MAX	19	19	19	112	56	94	33	29	83	12	258	186
MIN	4.6	6.2	7.8	12	11	14	14	6.3	7.5	3.9	3.2	8.6
CFSM	.54	.64	.76	1.36	1.14	1.91	1.39	.87	1.20	.41	1.06	1.53
IN.	.62	.71	.87	1.56	1.19	2.20	1.55	1.01	1.33	.47	1.22	1.70

CAL YR 1974 TOTAL 7,270.1 MEAN 19.9 MAX 376 MIN 2.9 CFSM 1.34 IN 18.27
WTR YR 1975 TOTAL 5,749.5 MEAN 15.8 MAX 258 MIN 3.2 CFSM 1.07 IN 14.45

PEAK DISCHARGE (BASE, 100 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	0300	7.12	131
03-21	2400	6.86	111
06-18	0900	6.87	110
08-31	1700	9.46	428

04122200 White River near Whitehall, Mich.

LOCATION.--Lat 43°27'51", long 86°13'57", in SE¼ NW¼ 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.

DRAINAGE AREA.--380 mi^2 (980 km^2), approximately.

PERIOD OF RECORD.--August 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 594.1 ft (181.1 m) above mean sea level, unadjusted. Nov. 18, 1957, to Oct. 22, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--18 years, 410 ft^3/s (11.61 m^3/s), 14.65 in/yr (372 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,400 ft^3/s (153 m^3/s) Sept. 1, gage height, 7.46 ft (2.274 m); minimum, 253 ft^3/s (7.16 m^3/s) Aug. 20.
Period of record: Maximum discharge, 5,400 ft^3/s (153 m^3/s) Sept. 1, 1975, gage height, 7.46 ft (2.274 m); minimum, 163 ft^3/s (4.62 m^3/s) Aug. 18, 19, 1958.

REMARKS.--Records good except those for the winter period, which are fair. Some regulation during low flows from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	368	460	398	390	460	605	662	707	405	416	279	4,650
2	380	448	390	390	450	563	653	725	388	388	290	3,410
3	382	445	382	390	440	533	656	701	366	364	331	2,570
4	376	432	374	400	440	522	638	650	370	349	329	1,990
5	370	425	368	400	450	498	623	629	462	333	298	1,590
6	400	422	368	400	440	490	614	608	623	321	282	1,330
7	460	418	376	390	440	492	623	572	743	316	277	1,170
8	512	408	392	390	430	488	641	542	668	313	273	1,000
9	486	398	395	400	420	468	668	508	623	298	269	881
10	446	392	390	450	430	435	674	480	557	304	269	812
11	418	430	380	650	440	450	656	455	445	307	267	763
12	398	490	380	1,100	440	442	632	440	415	313	267	728
13	388	528	380	900	450	438	611	428	415	317	271	680
14	442	502	380	800	450	420	596	408	408	365	278	636
15	510	478	380	750	450	422	581	408	442	428	275	600
16	587	458	380	670	450	425	563	420	536	409	271	566
17	566	448	380	630	450	438	548	408	680	356	267	546
18	525	452	380	580	450	475	539	395	764	332	260	534
19	490	452	390	540	460	551	539	390	1,220	354	259	520
20	460	445	390	520	460	674	560	382	1,030	371	259	507
21	445	440	390	490	470	854	581	380	821	353	307	509
22	432	438	390	480	472	1,090	578	398	767	330	442	523
23	422	438	400	480	495	1,260	575	445	689	314	508	535
24	412	465	400	490	554	1,160	569	448	584	362	519	523
25	405	515	400	520	698	1,160	605	418	566	421	559	501
26	395	510	400	520	809	1,090	596	382	725	374	552	483
27	390	478	390	530	740	928	569	370	674	341	534	465
28	385	448	390	510	650	842	560	354	578	315	469	451
29	385	425	390	500	------	791	599	342	508	301	411	443
30	412	408	390	490	------	746	701	352	470	292	457	441
31	438	------	390	470	------	704	------	390	------	281	773	------
TOTAL	13,489	13,496	11,983	16,620	13,788	20,454	18,210	14,535	17,942	10,638	11,102	30,357
MEAN	435	450	387	536	492	660	607	469	598	343	358	1,012
MAX	587	528	400	1,100	809	1,260	701	725	1,220	428	773	4,650
MIN	368	392	368	390	420	420	539	342	366	281	259	441
CFSM	1.14	1.18	1.02	1.41	1.29	1.74	1.60	1.23	1.57	.90	.94	2.66
IN.	1.32	1.32	1.17	1.63	1.35	2.00	1.78	1.42	1.76	1.04	1.09	2.97

CAL YR 1974 TOTAL 218,435 MEAN 598 MAX 2,800 MIN 299 CFSM 1.57 IN 21.38
WTR YR 1975 TOTAL 192,614 MEAN 528 MAX 4,650 MIN 259 CFSM 1.39 IN 18.86

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 mi^2 (1,836 km^2).

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.--36 years, 645 ft^3/s (18.27 m^3/s), 12.35 in/yr (314 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,920 ft^3/s (82.7 m^3/s) Sept. 4, gage height, 6.16 ft (1.878 m); minimum, 381 ft^3/s (10.8 m^3/s) Aug. 20.
Period of record: Maximum discharge, 2,970 ft^3/s (84.1 m^3/s) July 1, 1969, gage height, 6.26 ft (1.908 m); minimum, 209 ft^3/s (5.92 m^3/s) Dec. 11, 1962, (discharge measurement); minimum daily, 310 ft^3/s (8.78 m^3/s) Aug. 9, 10, 1941.

REMARKS.--Records good except those for the winter periods, which are fair. Some regulation above station during low flow. Records of water temperature for the current year are published in Section 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	668	675	703	700	720	878	1120	1020	710	644	460	1610
2	696	682	689	686	720	847	1060	1040	706	605	474	1980
3	720	664	682	682	720	801	1030	1060	658	570	553	2620
4	682	647	672	672	720	780	1010	1060	654	546	529	2810
5	650	633	661	664	730	773	968	1030	766	528	498	2420
6	692	626	647	661	734	762	936	1020	839	513	467	2150
7	766	622	678	658	731	752	932	981	900	509	447	2050
8	784	616	696	658	740	745	940	932	851	509	436	1820
9	798	608	700	686	720	724	954	868	748	498	427	1570
10	762	605	692	798	710	696	968	815	686	505	428	1380
11	717	654	678	1040	700	686	981	773	647	524	429	1250
12	689	689	675	1290	690	700	981	742	640	551	423	1160
13	672	734	675	1540	680	692	981	717	640	531	432	1080
14	706	752	678	1650	680	682	968	696	633	574	420	1010
15	748	742	686	1200	680	668	950	686	668	604	417	941
16	804	724	717	1100	680	668	936	682	714	606	408	878
17	839	717	742	920	690	675	922	686	815	566	402	833
18	808	717	759	880	690	703	918	675	968	526	390	796
19	766	734	759	800	700	766	918	689	1120	520	384	775
20	731	748	748	780	700	873	914	678	1180	537	384	764
21	706	745	731	760	710	1040	940	682	1180	547	468	772
22	692	745	720	760	717	1450	936	689	1100	527	598	796
23	675	748	717	760	734	1650	886	714	981	502	672	833
24	658	773	703	760	801	1680	855	734	873	536	827	856
25	647	798	696	780	891	1720	864	686	808	584	976	834
26	633	823	682	800	950	1670	896	647	801	633	1230	788
27	622	808	672	800	972	1590	886	630	827	576	1400	762
28	616	773	661	780	927	1430	878	616	766	535	1440	746
29	605	742	675	760	---	1330	896	598	717	512	1290	725
30	633	717	692	740	---	1240	963	602	682	488	1170	728
31	664	---	703	740	---	1180	---	668	---	468	1290	---
TOTAL	21849	21261	21589	26505	20837	30851	28387	24116	24278	16874	20169	37737
MEAN	705	709	696	855	744	995	946	778	809	544	651	1258
MAX	839	823	759	1650	972	1720	1120	1060	1180	644	1440	2810
MIN	605	605	647	658	680	668	855	598	633	468	384	725
CFSM	.99	1.00	.98	1.21	1.05	1.40	1.33	1.10	1.14	.77	.92	1.77
IN.	1.15	1.12	1.13	1.39	1.09	1.62	1.49	1.27	1.27	.89	1.06	1.98

CAL YR 1974 TOTAL 322045 MEAN 882 MAX 2390 MIN 549 CFSM 1.24 IN 16.90
WTR YR 1975 TOTAL 294453 MEAN 807 MAX 2810 MIN 384 CFSM 1.14 IN 15.45

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 mi^2 (2331 km^2).

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.--55 years (1903-15, 1930-31, 1933-75), 1,057 ft^3/s (29.93 m^3/s) 15.95 in/yr (405 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,330 ft^3/s (66.0 m^3/s) Sept. 3, gage height, 14.23 ft (4.337 m); minimum, 805 ft^3/s (22.8 m^3/s) Aug. 21.
Period of record: Maximum discharge, 3,570 ft^3/s (101 m^3/s) Mar. 25, 1913, gage height, 7.1 ft (2.16 m), from graph based on gage readings, datum then in use; minimum daily, 540 ft^3/s (15.3 m^3/s) Feb. 21-23, 1936.

REMARKS.--Records good.

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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	925	892	865	874	910	907	1,080	1,620	1,230	940	886	2,120
2	934	886	856	874	910	907	1,080	1,620	1,200	931	871	2,300
3	925	880	859	865	895	904	1,060	1,660	1,160	925	880	2,320
4	892	880	865	868	874	901	1,030	1,720	1,150	910	892	2,290
5	898	874	865	868	889	901	1,010	1,670	1,310	898	886	2,200
6	934	871	865	865	889	898	1,000	1,640	1,370	901	874	2,100
7	970	865	865	865	880	892	1,000	1,570	1,380	895	859	1,940
8	982	865	871	865	883	886	1,020	1,450	1,290	880	856	1,510
9	991	859	880	871	860	868	1,050	1,380	1,200	889	850	1,320
10	955	862	892	886	860	856	1,100	1,310	1,120	907	859	1,250
11	925	901	895	895	860	865	1,160	1,240	1,060	925	874	1,220
12	901	910	886	898	840	877	1,210	1,190	1,040	943	874	1,190
13	889	919	886	1,070	840	889	1,200	1,150	1,040	952	877	1,140
14	925	919	886	1,890	840	868	1,270	1,100	1,020	1,020	871	1,140
15	931	904	895	1,800	840	871	1,350	1,100	1,080	1,010	838	1,120
16	928	889	904	1,550	860	880	1,450	1,090	1,170	955	832	1,110
17	925	901	901	1,450	880	895	1,540	1,090	1,270	946	823	1,090
18	910	907	895	1,250	900	907	1,760	1,090	1,420	946	811	1,070
19	901	904	886	1,150	900	931	2,030	1,090	1,620	943	808	1,050
20	895	904	883	1,050	880	1,000	2,150	1,100	1,600	997	808	1,040
21	895	910	880	980	880	1,060	2,210	1,120	1,460	1,040	820	1,100
22	895	919	874	960	900	1,130	2,250	1,160	1,330	1,030	952	1,130
23	874	931	868	940	916	1,220	2,140	1,160	1,200	985	1,140	1,140
24	868	940	862	940	931	1,450	1,980	1,150	1,130	961	1,420	1,080
25	865	934	862	990	931	1,480	1,790	1,190	1,090	982	1,580	1,060
26	865	928	859	1,000	946	1,460	1,720	1,230	1,060	1,020	1,330	1,040
27	865	925	853	1,000	931	1,250	1,560	1,300	1,030	1,040	1,120	1,030
28	871	916	862	960	916	1,180	1,500	1,230	1,000	1,010	1,090	1,030
29	871	901	862	940	------	1,170	1,470	1,170	991	949	1,180	1,020
30	883	874	862	900	------	1,130	1,450	1,220	973	916	1,260	1,000
31	892	------	862	904	------	1,110	------	1,240	------	898	1,530	------
TOTAL	28,180	26,970	27,106	32,208	24,841	31,543	43,620	40,050	35,994	29,544	30,551	41,150
MEAN	909	899	874	1,039	887	1,018	1,454	1,292	1,200	953	986	1,372
MAX	991	940	904	1,890	946	1,480	2,250	1,720	1,620	1,040	1,580	2,320
MIN	865	859	853	865	840	856	1,000	1,090	973	880	808	1,000
CFSM	1.01	1.00	.97	1.15	.99	1.13	1.62	1.44	1.33	1.06	1.10	1.52
IN.	1.16	1.11	1.12	1.33	1.03	1.30	1.80	1.66	1.49	1.22	1.26	1.70

CAL YR 1974 TOTAL 384,548 MEAN 1,054 MAX 2,590 MIN 750 CFSM 1.17 IN 15.89
WTR YR 1975 TOTAL 391,757 MEAN 1,073 MAX 2,320 MIN 808 CFSM 1.19 IN 16.19

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 mi^2 (650 km^2).

PERIOD OF RECORD.--July 1952 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 775 ft (236 m) by barometer.

AVERAGE DISCHARGE.--23 years, 284 ft^3/s (8.04 m^3/s), 15.37 in/yr (390 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,920 ft^3/s (54.4 m^3/s) Sept. 2, gage height, 6.78 ft (2.067 m); minimum, 214 ft^3/s (6.06 m^3/s) Feb. 9.
Period of record: Maximum discharge, 2,440 ft^3/s (69.1 m^3/s) Aug. 6, 1956, gage height, 6.82 ft (2.079 m), from rating curve extended above 1,100 ft^3/s (31.2 m^3/s); minimum, 161 ft^3/s (4.56 m^3/s) Feb. 2, 1961.

REMARKS.--Records good. Some regulation during low flows from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	266	249	240	254	265	279	303	426	344	260	239	1,150
2	261	242	237	254	260	271	305	438	304	254	245	1,730
3	246	237	237	254	254	272	301	397	280	250	253	1,150
4	242	235	233	256	258	268	291	405	281	245	249	993
5	242	233	229	254	256	266	289	450	362	243	241	948
6	266	233	233	251	258	265	287	405	399	243	236	781
7	302	235	235	251	255	267	291	366	339	246	233	563
8	302	233	242	256	251	263	305	341	306	240	232	478
9	271	233	240	260	229	252	326	324	283	236	231	426
10	258	233	237	314	254	256	343	309	270	246	232	396
11	246	256	240	522	259	261	371	298	266	257	232	392
12	242	289	237	565	249	260	394	292	268	258	230	370
13	235	281	237	406	251	257	395	282	272	255	236	354
14	254	263	237	374	246	254	416	279	271	289	238	344
15	286	258	240	356	250	252	438	281	293	308	233	335
16	276	251	244	324	249	254	470	291	353	292	245	324
17	261	254	249	282	255	260	492	285	420	270	241	316
18	251	268	244	304	265	272	513	278	483	261	236	310
19	249	276	244	289	267	290	628	295	603	332	235	305
20	246	268	242	279	263	339	697	324	605	323	236	300
21	246	266	249	277	260	415	594	333	466	284	265	317
22	249	261	249	272	263	522	486	413	375	264	326	366
23	244	261	251	263	267	440	430	362	331	254	329	359
24	244	284	256	263	285	430	452	318	321	272	429	336
25	240	307	254	284	307	432	449	295	336	292	642	313
26	237	276	251	312	305	396	404	295	326	270	610	303
27	233	256	251	309	290	358	376	285	297	257	436	294
28	231	254	251	292	285	344	364	275	281	253	395	288
29	231	249	254	284	------	333	361	267	275	249	521	281
30	237	242	256	277	------	326	374	272	267	244	612	283
31	251	------	254	270	------	308	------	316	------	241	746	------
TOTAL	7,845	7,683	7,553	9,408	7,356	9,662	12,145	10,197	10,277	8,188	10,064	15,105
MEAN	253	256	244	303	263	312	405	329	343	264	325	504
MAX	302	307	256	565	307	522	697	450	605	332	746	1,730
MIN	231	233	229	251	229	252	287	267	266	236	230	281
CFSM	1.01	1.02	.97	1.21	1.05	1.24	1.61	1.31	1.37	1.05	1.29	2.01
IN.	1.16	1.14	1.12	1.39	1.09	1.43	1.80	1.51	1.52	1.21	1.49	2.24

CAL YR 1974 TOTAL 113,433 MEAN 312 MAX 1,150 MIN 218 CFSM 1.24 IN 16.89
WTR YR 1975 TOTAL 115,483 MEAN 316 MAX 1,730 MIN 229 CFSM 1.26 IN 17.12

PEAK DISCHARGE (BASE, 650 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
04-20	0700	4.13	723
08-25	2300	4.04	690
09-02	1000	6.78	1,920

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) northeast of Manistee, 7.8 mi (12.6 km) upstream from Manistee Lake, and at mile 10.8 (17.4 km).

DRAINAGE AREA.--1,780 mi^2 (4,610 km^2), 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.--24 years, 1,987 ft^3/s (56.27 m^3/s), 15.16 in/yr (385 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,810 ft^3/s (165 m^3/s) Sept. 5, gage height, 8.70 ft (2.652 m); minimum, 1,140 ft^3/s (32.3 m^3/s) Aug. 18.
Period of record: Maximum discharge, 6,980 ft^3/s (198 m^3/s) Apr. 15, 1971, gage height, 8.22 ft (2.505 m); maximum gage height, 9.15 ft (2.789 m) Feb. 12, 1955 (backwater from ice); minimum daily discharge, 992 ft^3/s (28.1 m^3/s) Oct. 10, 1966.

REMARKS.--Records good. Flow regulated at all stages by Tippy hydroelectric powerplant 21 mi (34 km) above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,650	1,820	1,570	1,690	1,770	1,920	2,490	3,060	2,260	1,970	1,820	2,590
2	2,190	1,720	1,630	1,900	1,590	1,610	2,330	3,300	2,120	1,870	1,900	2,730
3	1,800	1,600	1,800	1,790	1,700	1,710	2,330	3,350	2,340	1,890	1,580	3,030
4	1,960	1,570	1,780	1,670	1,920	2,000	2,590	3,010	2,510	1,800	1,630	4,500
5	1,860	1,850	1,790	1,660	1,800	1,810	2,250	2,860	2,470	1,730	1,850	5,500
6	1,630	1,690	1,790	1,600	1,910	1,960	1,730	3,140	2,720	1,620	1,680	4,260
7	1,960	1,800	1,680	1,720	1,960	2,030	1,980	3,260	2,810	1,320	1,630	3,040
8	2,340	1,740	1,640	1,770	1,670	1,670	2,100	3,140	2,490	1,890	1,580	2,340
9	2,280	1,710	2,010	1,880	1,650	1,660	2,200	2,930	2,110	1,730	1,470	2,190
10	1,920	1,510	1,810	1,670	1,600	1,990	2,090	2,640	2,280	1,680	1,340	2,250
11	1,930	1,790	1,780	2,630	1,600	1,830	2,090	2,080	2,130	2,220	1,490	2,350
12	1,820	2,010	1,810	2,750	1,700	1,830	2,420	1,980	2,100	1,830	1,760	2,470
13	1,460	1,960	1,840	3,020	1,900	1,870	2,470	2,230	2,100	1,580	1,720	2,230
14	1,560	1,950	1,810	2,720	2,000	1,880	2,410	2,150	2,060	1,820	1,840	1,860
15	2,240	2,070	1,630	2,070	1,800	1,590	2,360	2,110	2,110	2,440	1,670	1,630
16	1,970	1,860	1,640	2,020	1,600	1,580	2,730	2,190	1,980	2,140	1,490	1,920
17	1,970	1,500	2,010	2,620	1,800	1,820	3,050	1,960	2,450	2,040	1,460	1,830
18	1,840	1,750	1,950	2,030	2,280	1,850	3,050	1,830	2,730	1,930	1,470	2,050
19	1,710	1,890	1,940	1,810	2,160	1,950	3,130	2,130	3,140	1,920	1,560	1,890
20	1,580	1,910	1,920	1,920	2,170	2,130	3,440	2,210	3,400	2,070	1,530	1,950
21	1,740	2,070	1,830	2,570	1,950	2,420	3,680	2,380	3,480	1,360	1,750	1,510
22	1,890	2,080	1,540	2,320	2,000	3,340	3,810	2,370	3,010	1,930	1,880	1,810
23	1,880	1,780	1,610	2,400	1,840	3,830	3,810	2,750	2,640	2,000	2,060	1,980
24	1,740	1,660	1,770	2,050	1,980	4,660	3,710	2,360	2,760	2,050	1,680	2,170
25	1,770	1,910	1,900	2,000	2,120	4,240	3,660	2,130	2,410	2,050	2,660	2,180
26	1,620	1,960	1,770	1,860	2,120	3,930	3,460	2,400	2,080	1,730	3,150	2,030
27	1,430	2,020	1,760	2,050	1,990	3,340	3,110	2,260	2,010	1,780	2,930	1,830
28	1,720	1,850	1,860	2,170	2,010	3,000	3,000	2,410	1,770	1,620	2,180	1,520
29	1,790	1,770	1,440	2,060	------	2,410	3,020	2,380	1,700	1,940	2,650	1,490
30	1,850	1,770	1,670	1,980	------	2,130	3,050	2,320	1,680	1,830	2,830	2,110
31	1,810	------	1,820	2,080	------	2,120	------	2,550	------	1,730	2,480	------
TOTAL	56,910	54,570	54,800	64,680	52,590	72,150	83,550	77,870	71,850	57,510	58,720	71,240
MEAN	1,836	1,819	1,768	2,086	1,878	2,327	2,785	2,512	2,395	1,855	1,894	2,375
MAX	2,340	2,080	2,010	3,020	2,280	4,660	3,810	3,350	3,480	2,440	3,150	5,500
MIN	1,430	1,500	1,440	1,600	1,590	1,580	1,730	1,830	1,680	1,320	1,340	1,490
CFSM	1.03	1.02	.99	1.17	1.06	1.31	1.56	1.41	1.35	1.04	1.06	1.33
IN.	1.19	1.14	1.15	1.35	1.10	1.51	1.75	1.63	1.50	1.20	1.23	1.49

CAL YR 1974 TOTAL 742,740 MEAN 2,035 MAX 4,610 MIN 1,240 CFSM 1.14 IN 15.52
WTR YR 1975 TOTAL 776,440 MEAN 2,127 MAX 5,500 MIN 1,320 CFSM 1.19 IN 16.23

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 mi^2 (518 km^2).

PERIOD OF RECORD.--October 1956 to September 30, 1975 (discontinued as a continuous-record station, converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Altitude of gage is 610 ft (186 m) from survey line in vicinity.

AVERAGE DISCHARGE.--19 years, 175 ft^3/s (4.956 m^3/s), 11.88 in/yr (302 mm/yr).

EXTREMES.--Current year: Maximum discharge, 482 ft^3/s (13.7 m^3/s) Sept. 7, gage height, 3.43 ft (1.045 m); minimum, 127 ft^3/s (3.60 m^3/s) Feb. 9.
Period of record: Maximum discharge, 575 ft^3/s (16.3 m^3/s) Apr. 6, 1959, gage height, 3.70 ft (1.128 m); minimum, 71 ft^3/s (2.01 m^3/s) Feb. 11, 1958, result of freezeup.

REMARKS.--Records good. Some regulation during low flows from dams above station. Records of water temperature for current year published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	167	159	156	170	174	206	238	202	172	148	379
2	167	166	159	153	166	170	207	244	193	169	154	375
3	158	161	158	153	164	169	206	241	180	168	174	403
4	154	159	156	154	162	166	202	242	178	164	166	451
5	150	158	154	153	162	164	199	238	194	161	156	401
6	166	158	154	151	164	166	196	231	209	159	146	435
7	188	156	164	151	162	166	198	217	201	161	145	443
8	191	156	172	154	158	164	201	206	183	159	143	345
9	180	154	167	156	146	159	207	198	177	156	142	289
10	170	158	164	178	151	158	214	193	172	166	142	270
11	167	177	161	234	161	159	215	190	169	166	142	280
12	166	180	164	239	159	159	220	186	172	169	140	274
13	164	178	162	215	158	158	220	183	172	167	145	260
14	174	172	161	209	153	156	217	180	170	188	145	246
15	180	169	161	201	161	156	218	183	188	190	143	238
16	182	166	169	193	159	156	218	182	206	183	138	231
17	174	166	170	174	162	159	218	180	223	169	138	226
18	167	166	167	190	167	166	222	178	250	162	140	222
19	166	169	166	191	169	174	231	193	297	167	138	217
20	164	169	164	180	166	188	234	199	301	180	140	215
21	162	169	161	175	164	214	234	207	284	190	154	223
22	162	167	159	170	164	274	217	201	273	172	177	234
23	162	169	159	169	167	299	210	201	230	164	198	241
24	161	178	158	169	177	311	214	191	228	172	220	238
25	161	180	156	182	185	303	217	182	242	170	252	225
26	159	175	153	190	190	280	209	178	220	167	280	215
27	158	169	153	194	182	255	206	180	202	161	299	209
28	158	166	153	185	178	239	210	174	190	158	271	207
29	159	164	154	180	------	230	215	170	183	154	299	212
30	162	161	156	177	------	220	230	180	178	153	301	218
31	166	------	156	174	------	212	------	198	------	150	323	------
TOTAL	5,162	5,003	4,970	5,550	4,627	6,124	6,411	6,164	6,267	5,187	5,699	8,422
MEAN	167	167	160	179	165	198	214	199	209	167	184	281
MAX	191	180	172	239	190	311	234	244	301	190	323	451
MIN	150	154	153	151	146	156	196	170	169	150	138	207
CFSM	.84	.84	.80	.90	.83	.99	1.07	1.00	1.05	.84	.92	1.41
IN.	.96	.93	.92	1.03	.86	1.14	1.19	1.15	1.17	.96	1.06	1.57

CAL YR 1974 TOTAL 68,851 MEAN 189 MAX 418 MIN 119 CFSM .95 IN 12.81
WTR YR 1975 TOTAL 69,586 MEAN 191 MAX 451 MIN 138 CFSM .96 IN 12.94

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 mi^2 (578 km^2)

GAGE.--Water-stage recorder. Altitude of gage is 760 ft (230 m) by barometer.

PERIOD OF RECORD.--June 1952 to current year.

AVERAGE DISCHARGE.--23 years, 192 ft^3/s (5.437 m^3/s), 11.69 in/yr (297 mm/yr).

EXTREMES.--Current year: Maximum discharge, 692 ft^3/s (19.6 m^3/s) Apr. 19, gage height, 5.49 ft (1.673 m); minimum, 53 ft^3/s (1.50 m^3/s) May 21, gage height, 2.66 ft (0.811 m); minimum daily, 109 ft^3/s (3.09 m^3/s) Nov. 5.
Period of record: Maximum discharge, 1,220 ft^3/s (34.6 m^3/s) Sept. 14, 1961, gage height, 6.90 ft (2.103 m); minimum, 30 ft^3/s (0.85 m^3/s) Jan. 15, 1965, gage height, 2.53 ft (0.771 m); minimum daily, 47 ft^3/s (1.33 m^3/s) Nov. 2, 3, 1963.

REMARKS.--Records good. Flow regulated by hydroelectric powerplant 0.9 mi (1.4 km) above station. Records of water temperature for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	171	160	153	163	154	200	475	244	175	156	360
2	196	170	159	177	161	155	200	335	249	144	157	334
3	196	169	159	176	153	166	184	301	225	151	160	386
4	192	148	158	156	152	182	168	376	231	204	157	372
5	190	109	158	131	139	179	169	412	285	180	156	285
6	202	112	159	138	134	146	192	373	247	149	159	209
7	196	148	161	146	141	117	240	311	288	137	159	245
8	178	160	167	146	145	117	210	305	261	140	153	277
9	184	138	167	150	143	153	188	294	185	148	146	231
10	168	150	168	189	147	176	181	250	208	196	144	197
11	172	165	168	274	146	175	171	223	218	166	154	242
12	184	177	154	220	146	152	164	206	198	158	157	255
13	182	171	145	214	146	133	200	250	221	199	161	234
14	190	165	145	207	152	127	243	274	219	185	158	227
15	188	177	145	194	155	122	248	211	228	172	157	207
16	185	170	161	178	155	123	259	182	225	156	149	192
17	183	140	185	165	156	136	253	211	220	172	144	192
18	169	141	183	166	154	156	395	225	260	172	144	193
19	151	132	182	166	147	164	592	233	274	180	143	193
20	152	119	180	166	146	186	511	249	254	182	143	194
21	152	175	179	170	144	193	477	198	210	202	146	201
22	150	208	165	168	145	309	391	236	206	195	149	210
23	150	203	152	163	146	286	397	236	206	174	157	215
24	150	191	144	151	154	355	388	249	204	185	270	238
25	152	177	136	165	161	325	351	256	204	182	296	233
26	154	174	136	167	158	239	297	221	189	186	222	187
27	152	161	146	175	156	196	283	246	129	185	206	161
28	152	123	162	189	156	194	295	247	152	184	259	163
29	151	140	155	179	------	196	295	242	211	180	307	163
30	154	159	145	165	------	233	285	249	189	162	307	164
31	155	------	144	164	------	242	------	245	------	152	331	------
TOTAL	5,322	4,743	4,928	5,368	4,201	5,787	8,427	8,321	6,640	5,353	5,707	6,960
MEAN	172	158	159	173	150	187	281	268	221	173	184	232
MAX	202	208	185	274	163	355	592	475	288	204	331	386
MIN	150	109	136	131	134	117	164	182	129	137	143	161
CFSM	.77	.71	.71	.78	.67	.84	1.26	1.20	.99	.78	.83	1.04
IN.	.89	.79	.82	.90	.70	.97	1.41	1.39	1.11	.89	.95	1.16

CAL YR 1974 TOTAL 68,259 MEAN 187 MAX 483 MIN 109 CFSM .84 IN 11.39
WTR YR 1975 TOTAL 71,757 MEAN 197 MAX 592 MIN 109 CFSM .88 IN 11.97

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 mi^2 (175 km^2).

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.--9 years, 185 ft^3/s (5.239 m^3/s), 37.16 in/yr (944 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,360 ft^3/s (38.5 m^3/s) July 19, gage height, 6.51 ft (1.984 m); minimum, 117 ft^3/s (3.31 m^3/s) Jan. 22.
Period of record: Maximum discharge, 1,360 ft^3/s (38.5 m^3/s) July 19, 1975, gage height, 6.51 ft (1.984 m); minimum, 109 ft^3/s (3.09 m^3/s) Mar. 1, 8, 1967, result of freezeup.

REMARKS.--Records good. Some regulation during low flows from fish hatchery above station. Records of water temperature for the current year are published in Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	209	169	167	166	167	173	180	385	185	154	164	223
2	178	166	167	164	165	171	178	247	175	154	169	187
3	170	165	166	165	165	171	177	224	172	154	217	204
4	167	164	162	166	165	170	174	273	175	152	176	203
5	166	164	165	163	166	170	173	229	184	152	167	216
6	196	163	165	163	167	172	174	212	185	155	165	316
7	204	162	183	164	167	170	175	200	183	162	164	216
8	178	162	187	167	172	167	179	192	173	154	163	209
9	172	162	175	170	164	167	182	187	170	152	163	190
10	169	163	171	201	165	166	184	184	167	181	191	188
11	166	186	171	259	170	164	191	183	166	178	181	220
12	165	181	171	190	170	169	191	181	171	186	168	206
13	164	179	170	190	170	167	200	180	187	167	167	250
14	206	180	167	190	168	165	220	179	174	213	164	208
15	187	182	167	180	167	165	248	193	190	218	163	185
16	174	179	175	175	167	169	276	188	201	170	163	181
17	171	185	180	175	171	177	301	180	196	161	162	177
18	167	206	174	173	175	183	451	177	202	162	161	174
19	166	208	171	172	172	190	483	177	222	825	162	174
20	165	224	168	172	169	196	337	173	179	349	164	179
21	166	244	168	169	169	200	254	190	169	205	252	217
22	166	194	167	152	178	252	234	204	166	193	199	256
23	166	184	167	160	176	235	266	180	173	197	179	219
24	165	214	165	170	184	214	267	183	166	451	208	189
25	165	185	166	180	185	204	227	202	162	229	216	180
26	164	168	166	180	179	188	213	191	160	191	183	202
27	164	168	165	178	175	185	205	192	158	182	173	183
28	164	174	165	173	175	184	199	176	160	175	213	176
29	167	168	168	175	------	192	198	172	158	170	344	174
30	180	164	170	171	------	188	312	209	155	167	209	177
31	173	------	164	169	------	183	------	234	------	165	204	------
TOTAL	5,380	5,413	5,253	5,442	4,783	5,667	7,049	6,277	5,284	6,524	5,774	6,079
MEAN	174	180	169	176	171	183	235	202	176	210	186	203
MAX	209	244	187	259	185	252	483	385	222	825	344	316
MIN	164	162	162	152	164	164	173	172	155	152	161	174
CFSM	2.57	2.66	2.50	2.60	2.53	2.71	3.48	2.99	2.60	3.11	2.75	3.00
IN.	2.96	2.98	2.89	2.99	2.63	3.12	3.88	3.45	2.91	3.59	3.18	3.35

CAL YR 1974 TOTAL 66,956 MEAN 183 MAX 413 MIN 148 CFSM 2.71 IN 36.85
WTR YR 1975 TOTAL 68,925 MEAN 189 MAX 825 MIN 152 CFSM 2.80 IN 37.93

PEAK DISCHARGE (BASE, 400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
04-19	1000	4.97	518
05-01	1200	4.75	444
07-19	1500	6.51	1,360
07-24	0900	4.98	522
08-24	0500	4.77	450

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 mi^2 (477 km^2).

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, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum discharge, 4,190 ft^3/s (119 m^3/s) June 18, gage height, 17.62 ft (5.371 m); minimum daily, 64 ft^3/s (1.81 m^3/s) Aug. 20.
Period of record: Maximum discharge, 4,190 ft^3/s (119 m^3/s) June 18, 1975, gage height, 17.62 ft (5.371 m); minimum, 62 ft^3/s (1.76 m^3/s) July 24-26, 1973, gage height, 1.97 ft (0.600 m).
A discharge of 50.3 ft^3/s (1.42 m^3/s) was measured Aug. 6, 1963.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	1460	220	125	140	140	120	2470	417	120	77	94
2	162	876	220	125	135	140	120	1710	293	115	75	90
3	162	551	210	120	135	135	120	1070	229	110	74	90
4	155	380	210	120	130	135	120	1200	200	100	74	90
5	153	296	210	120	130	135	120	873	182	92	71	100
6	183	252	210	120	125	130	120	669	197	88	70	130
7	268	224	210	120	125	130	120	499	197	86	70	200
8	235	206	210	132	125	125	125	382	173	84	69	360
9	240	194	210	138	120	125	130	313	157	82	68	310
10	222	186	200	157	120	125	140	266	148	82	68	350
11	223	768	200	320	120	120	150	236	135	81	68	420
12	224	863	190	330	120	120	160	213	132	94	67	340
13	195	506	190	330	120	120	180	193	152	99	68	280
14	239	344	180	320	120	120	230	176	159	92	71	240
15	266	278	170	290	120	120	300	202	163	89	69	200
16	229	247	170	260	120	120	400	244	282	87	67	170
17	255	231	160	240	120	125	600	220	1240	82	67	158
18	233	218	160	220	120	130	1560	196	3240	79	67	145
19	203	207	150	210	120	140	2400	179	1330	87	65	136
20	186	233	150	200	120	150	2620	182	600	99	64	133
21	173	347	145	190	120	160	2600	190	373	89	94	131
22	170	288	145	180	120	160	2630	174	296	87	88	143
23	214	263	140	170	125	155	2660	156	280	86	84	136
24	201	500	140	160	130	155	2390	148	240	91	82	128
25	188	350	140	155	140	150	1950	157	210	101	90	120
26	176	310	140	155	145	145	1620	187	180	93	84	111
27	166	330	135	150	145	140	1310	178	160	88	80	111
28	158	239	130	150	140	140	1040	162	150	92	90	107
29	155	240	130	150	---	135	832	144	140	86	110	108
30	182	230	125	145	---	130	939	180	130	82	100	105
31	324	---	125	140	---	125	---	477	---	78	96	---
TOTAL	6303	11617	5325	5742	3550	4180	27806	13646	11785	2821	2387	5236
MEAN	203	387	172	185	127	135	927	440	393	91.0	77.0	175
MAX	324	1460	220	330	145	160	2660	2470	3240	120	110	420
MIN	153	186	125	120	120	120	120	144	130	78	64	90
CFSM	1.10	2.10	.93	1.01	.69	.73	5.04	2.39	2.14	.49	.42	.95
IN.	1.27	2.35	1.08	1.16	.72	.85	5.62	2.76	2.38	.57	.48	1.06

CAL YR 1974 TOTAL 90781 MEAN 249 MAX 2860 MIN 72 CFSM 1.35 IN 18.35
WTR YR 1975 TOTAL 100398 MEAN 275 MAX 3240 MIN 64 CFSM 1.49 IN 20.30

PEAK DISCHARGE (BASE, 1,200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
11-01	0700	8.88	1,720
11-11	1800	7.72	1,420
04-22	2400	14.14	3,140
05-01	1200	13.41	2,920
06-18	0200	17.62	4,190

NOTE.--No gage-height record Dec. 4 to Jan. 7.

04128000 Sturgeon River near Wolverine, Mich.

LOCATION.--Lat 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 mi^2 (440 km^2), 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.--33 years, 216 ft^3/s (6.117 m^3/s), 17.25 in/yr (438 mm/yr).

EXTREMES.--Current year: Maximum discharge, 838 ft^3/s (23.7 m^3/s) Apr. 19, gage height, 3.23 ft (0.985 m); minimum, 139 ft^3/s (3.94 m^3/s) Mar. 9, result of freezeup.
Period of record: Maximum discharge, 1,290 ft^3/s (36.5 m^3/s) Sept. 29, 1972, gage height, 3.72 ft (1.134 m); minimum, 94 ft^3/s (2.66 m^3/s) Jan. 19, 1971, result of freezeup; minimum daily, 113 ft^3/s (3.20 m^3/s) Aug. 6, 1958.

REMARKS.--Records good except those for the winter periods, which are fair. Prior to July 1975 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 Section 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	320	224	227	208	205	214	211	610	272	186	189	389
2	286	214	224	205	205	211	205	535	248	189	189	312
3	248	218	214	205	200	214	205	402	237	186	251	272
4	230	221	211	205	200	208	199	448	234	181	218	276
5	218	214	208	202	200	205	199	380	248	178	199	254
6	240	211	205	202	200	208	202	348	258	178	196	368
7	293	208	221	202	205	205	205	340	251	183	191	304
8	265	205	227	205	200	202	208	304	244	178	189	296
9	251	210	221	211	190	191	208	286	237	173	186	251
10	227	210	218	237	200	200	208	272	230	176	191	244
11	224	240	214	395	200	200	211	268	227	205	221	254
12	214	240	214	308	200	200	214	262	230	251	196	254
13	210	230	211	250	200	202	224	254	234	205	189	336
14	270	230	208	225	200	194	248	251	227	227	183	304
15	250	234	205	220	208	190	286	282	240	276	181	248
16	235	227	211	220	199	199	316	276	300	218	178	234
17	225	237	214	220	199	205	368	258	279	194	176	230
18	220	262	211	220	205	211	580	254	352	186	176	227
19	210	262	208	210	205	218	790	244	348	556	173	221
20	210	272	205	210	202	230	785	237	300	581	176	230
21	210	328	202	210	202	237	595	254	244	296	251	258
22	210	282	202	200	208	248	490	290	224	244	258	332
23	214	258	202	195	208	240	510	254	218	227	211	308
24	211	300	205	200	211	237	550	248	214	456	268	262
25	208	282	205	224	227	230	470	336	208	416	248	248
26	208	240	205	234	227	221	438	279	199	268	221	286
27	205	240	205	220	221	221	398	290	199	230	205	258
28	205	240	208	214	218	214	364	251	202	214	224	240
29	208	234	205	214	------	221	356	237	199	208	505	234
30	230	230	211	214	------	221	470	284	191	196	407	230
31	227	------	205	208	------	214	------	350	------	194	304	------
TOTAL	7,182	7,203	6,532	6,893	5,745	6,611	10,713	9,584	7,294	7,656	6,950	8,160
MEAN	232	240	211	222	205	213	357	309	243	247	224	272
MAX	320	328	227	395	227	248	790	610	352	581	505	389
MIN	205	205	202	195	190	190	199	237	191	173	173	221
CFSM	1.36	1.41	1.24	1.31	1.21	1.25	2.10	1.82	1.43	1.45	1.32	1.60
IN.	1.57	1.58	1.43	1.51	1.26	1.45	2.34	2.10	1.60	1.68	1.52	1.79

CAL YR 1974 TOTAL 88,207 MEAN 242 MAX 764 MIN 173 CFSM 1.42 IN 19.30
WTR YR 1975 TOTAL 90,523 MEAN 248 MAX 790 MIN 173 CFSM 1.46 IN 19.81

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 in Indian River, 500 ft (152 m) downstream from Burt Lake, and 2.3 mi (3.7 km) upstream from Mullett Lake.

DRAINAGE AREA.--583 mi^2 (1,510 km^2).

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. Auxiliary water-stage recorder 14.3 mi (23.0 km) downstream from base gage, near Cheboygan, datum of gage is 591.21 ft (180.201 m) above mean sea level.

AVERAGE DISCHARGE.--33 years, 565 ft^3/s (16.00 m^3/s), 13.16 in/yr (334 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,090 ft^3/s (30.9 m^3/s) May 15; maximum daily gage height, 5.10 ft (1.554 m) May 7, 8, 9; minimum daily discharge, 432 ft^3/s (12.2 m^3/s) Aug. 21; minimum daily gage height, 3.67 ft (1.119 m) Apr. 13, 14, 15. Period of record: Maximum daily discharge, 1220 ft^3/s (34.6 m^3/s) May 7, 1972; maximum daily gage height, 5.58 ft (1.701 m) May 13, 14, 1960; minimum daily discharge, 212 ft^3/s (6.00 m^3/s) Sept. 2, 1970; minimum daily gage height, 3.34 ft (1.018 m) Oct. 21, 1957.

REMARKS.--Records good. Flow regulated by dam at Cheboygan.

REVISIONS (WATER YEARS).--WSP 1437: 1942 (M), 1945 (M), 1947.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	550	576	764	630	580	672	690	972	954	661	714	542
2	529	569	766	610	580	672	700	994	936	653	696	558
3	508	578	773	610	580	671	704	1,010	919	668	707	551
4	504	567	737	620	600	666	707	1,030	914	632	690	550
5	504	572	732	620	600	660	709	1,050	898	611	707	550
6	525	567	732	615	600	660	707	1,050	901	593	698	566
7	533	557	744	595	600	660	713	1,070	900	599	675	578
8	518	563	768	600	620	660	716	1,070	883	588	640	600
9	526	564	744	590	620	659	719	1,070	865	572	637	593
10	506	570	702	605	620	653	715	1,080	865	578	600	570
11	506	578	696	504	620	658	717	1,080	853	566	620	602
12	561	594	696	566	630	653	721	1,080	796	580	560	599
13	561	603	690	654	640	658	715	1,060	802	580	540	606
14	574	600	679	640	640	657	715	1,060	796	580	520	594
15	570	630	673	620	650	656	715	1,090	779	580	500	589
16	572	652	667	610	650	650	721	1,080	774	580	480	595
17	600	653	679	610	650	654	717	1,080	790	577	470	595
18	586	667	656	610	650	649	709	1,060	783	566	470	585
19	589	673	656	620	650	648	699	1,070	799	635	447	599
20	592	683	656	620	650	648	713	1,040	785	672	434	588
21	565	721	655	610	640	648	710	983	785	672	432	616
22	566	689	650	600	640	658	747	961	774	672	446	628
23	583	702	644	580	650	654	787	954	760	672	437	645
24	584	740	643	580	690	660	806	943	750	687	450	652
25	585	733	649	620	678	660	824	968	734	729	439	649
26	575	716	626	640	685	655	845	957	719	703	448	647
27	581	717	631	640	678	645	853	957	708	719	452	647
28	576	743	620	620	678	660	871	950	698	738	471	635
29	582	750	624	600	------	671	878	915	687	727	507	637
30	596	757	629	580	------	676	928	943	677	716	528	625
31	595	------	615	580	------	686	------	961	------	712	539	------
TOTAL	17,302	19,284	21,196	18,799	17,769	20,437	22,470	31,588	24,284	19,818	16,954	17,991
MEAN	558	643	684	606	635	659	749	1,019	809	639	547	600
MAX	600	757	773	654	690	686	928	1,090	954	738	714	652
MIN	504	557	615	504	580	645	690	915	677	566	432	542
CFSM	.96	1.10	1.17	1.04	1.09	1.13	1.28	1.75	1.39	1.10	.94	1.03
IN.	1.10	1.23	1.35	1.20	1.13	1.30	1.43	2.02	1.55	1.26	1.08	1.15

CAL YR 1974 TOTAL 244,755 MEAN 671 MAX 1,160 MIN 452 CFSM 1.15 IN 15.62
WTR YR 1975 TOTAL 247,892 MEAN 679 MAX 1,090 MIN 432 CFSM 1.16 IN 15.82

04129000 Pigeon River near Vanderbilt, Mich.

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 mi^2 (160 km^2), 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.--25 years, 77.4 ft^3/s (2.192 m^3/s), 16.68 in/yr (424 mm/yr).

EXTREMES.--Current year: Maximum discharge, 454 ft^3/s (12.9 m^3/s) July 20, gage height, 5.12 ft (1.561 m); minimum, 44 ft^3/s (1.25 m^3/s) June 14, 28.
Period of record: Maximum discharge, 1,500 ft^3/s (42.5 m^3/s) May 15, 1957, gage height, 6.80 ft (2.073 m), from floodmark, from rating curve extended above 500 ft^3/s (14.2 m^3/s), result of failure of Lansing Club Dam; minimum, 13 ft^3/s (0.37 m^3/s) Jan. 8, 1957.

REMARKS.--Records good. Prior to May 16, 1957, and since Apr. 22, 1958, occasional regulation by Lansing Club Dam 3.5 mi (5.6 km) above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	106	81	72	76	70	72	68	306	91	60	66	235
2	97	80	83	72	74	73	73	246	79	59	59	127
3	85	75	72	71	70	72	72	163	73	55	74	98
4	82	100	75	68	69	72	70	180	78	53	66	97
5	80	101	66	70	69	72	71	136	88	54	62	90
6	87	69	67	72	70	73	75	137	81	60	62	137
7	116	74	78	71	72	74	68	136	81	68	58	105
8	91	74	86	72	70	72	75	107	72	60	62	99
9	84	63	68	71	68	72	71	95	75	57	59	85
10	86	51	75	80	68	72	76	89	72	66	64	85
11	76	50	79	150	68	72	73	88	67	78	64	83
12	76	92	76	112	70	56	73	87	76	79	62	85
13	80	79	67	88	68	68	81	86	71	68	61	114
14	88	68	94	78	68	72	82	84	69	87	57	105
15	97	68	62	76	70	73	99	98	82	122	56	95
16	91	74	68	76	72	80	114	100	129	80	59	79
17	81	77	74	75	68	68	129	82	96	65	59	87
18	79	88	76	74	72	76	201	86	108	66	57	73
19	81	96	73	73	75	76	302	79	134	219	57	78
20	74	90	70	72	74	83	304	79	92	271	58	81
21	74	104	72	72	70	84	196	87	77	102	80	90
22	76	92	75	70	71	104	161	98	72	84	85	117
23	76	87	76	68	73	96	178	88	72	78	70	103
24	76	104	74	68	74	86	205	88	63	202	87	89
25	76	103	64	70	80	84	163	97	67	200	81	82
26	72	75	64	74	76	78	164	85	64	99	74	94
27	75	76	72	74	76	81	146	100	58	84	74	95
28	71	72	82	76	75	73	124	82	66	73	75	84
29	72	76	56	76	------	79	127	76	53	68	214	78
30	82	73	72	76	------	73	175	86	60	68	149	78
31	82	------	69	73	------	81	------	115	------	60	109	------
TOTAL	2,569	2,412	2,257	2,394	2,000	2,367	3,816	3,466	2,366	2,845	2,320	2,948
MEAN	82.9	80.4	72.8	77.2	71.4	76.4	127	112	78.9	91.8	74.8	98.3
MAX	116	104	94	150	80	104	304	306	134	271	214	235
MIN	71	50	56	68	68	56	68	76	53	53	56	73
CFSM	1.32	1.28	1.16	1.23	1.13	1.21	2.02	1.78	1.25	1.46	1.19	1.56
IN.	1.52	1.42	1.33	1.41	1.18	1.40	2.25	2.05	1.40	1.68	1.37	1.74

CAL YR 1974 TOTAL 31,150 MEAN 85.3 MAX 371 MIN 50 CFSM 1.35 IN 18.39
WTR YR 1975 TOTAL 31,760 MEAN 87.0 MAX 306 MIN 50 CFSM 1.38 IN 18.75

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 mi^2 (412 km^2).

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 present datum.

AVERAGE DISCHARGE.--33 years, 140 ft^3/s (3.965 m^3/s), 11.96 in/yr (304 mm/yr).

EXTREMES.--Current year: Maximum discharge, 940 ft^3/s (26.6 m^3/s) Apr. 19, gage height, 6.60 ft (2.012 m); minimum, 89 ft^3/s (2.52 m^3/s) July 5, Aug. 19.
Period of record: Maximum discharge, 1,170 ft^3/s (33.1 m^3/s) Apr. 17, 1960, gage height, 6.80 ft (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 ft^3/s (1.39 m^3/s) Aug. 8 ,1958.

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 22 mi (35 km) above station.

REVISIONS (WATER YEARS).--WSP 1437: 1945-46, 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	191	140	137	118	120	130	133	610	251	112	118	235
2	184	135	135	122	120	130	126	706	208	97	126	288
3	160	129	151	122	120	130	122	495	174	97	131	224
4	142	133	131	118	115	130	124	442	153	95	129	184
5	140	149	146	99	115	125	126	422	160	91	112	165
6	137	146	137	116	120	130	131	348	162	95	105	186
7	162	122	129	120	120	130	135	310	158	112	107	227
8	174	126	144	120	120	125	130	285	149	107	107	206
9	151	118	126	122	115	125	125	254	140	105	105	177
10	140	112	137	133	115	125	125	211	140	99	105	162
11	133	107	140	214	115	125	125	191	133	126	118	158
12	122	122	133	137	120	125	125	181	135	133	107	160
13	118	156	126	130	120	120	130	179	140	126	97	179
14	133	137	124	125	120	120	149	179	135	135	97	198
15	151	133	144	120	120	120	204	189	146	162	95	186
16	149	131	126	120	120	120	243	198	204	179	97	160
17	144	137	126	120	120	125	300	191	219	144	95	140
18	133	151	133	120	120	130	555	177	216	140	91	144
19	126	167	133	120	120	137	882	167	224	256	89	135
20	126	172	131	120	120	144	908	162	227	459	91	135
21	124	196	118	120	125	149	768	156	186	382	107	142
22	122	198	122	115	120	129	550	198	156	235	137	169
23	125	172	124	115	120	147	504	204	144	186	126	196
24	125	179	126	115	125	165	550	179	135	230	149	181
25	125	191	129	120	135	156	513	230	120	370	162	153
26	120	160	116	130	140	162	430	251	114	365	146	156
27	120	153	120	130	140	150	378	246	105	270	126	160
28	120	144	129	125	135	150	326	219	124	162	135	151
29	116	137	129	120	------	145	310	186	109	137	198	144
30	135	135	126	120	------	150	344	196	101	133	303	140
31	144	------	122	120	------	140	------	248	------	124	259	------
TOTAL	4,292	4,388	4,050	3,846	3,415	4,209	9,571	8,210	4,768	5,464	3,970	5,241
MEAN	138	146	131	124	122	136	319	265	159	176	128	175
MAX	191	198	151	214	140	167	908	706	251	459	303	288
MIN	116	107	116	99	115	120	122	156	101	91	89	135
CFSM	.87	.92	.82	.78	.77	.86	2.01	1.67	1.00	1.11	.81	1.10
IN.	1.00	1.03	.95	.90	.80	.98	2.24	1.92	1.12	1.28	.93	1.23

CAL YR 1974 TOTAL 63,020 MEAN 173 MAX 816 MIN 89 CFSM 1.09 IN 14.74
WTR YR 1975 TOTAL 61,424 MEAN 168 MAX 908 MIN 89 CFSM 1.06 IN 14.37

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 mi^2 (2,240 km^2).

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.--33 years, 813 ft^3/s (23.02 m^3/s), 12.76 in/yr (324 mm/yr).

EXTREMES.--Current year: Maximum daily discharge, 1,330 ft^3/s (37.7 m^3/s) May 16; maximum daily gage height, 2.87 ft (0.875 m) May 6, 7; minimum daily discharge, 554 ft^3/s (15.7 m^3/s) Aug. 20; minimum daily gage height, 1.05 ft (0.320 m) Apr. 13, 14, 15. Period of record: Maximum daily discharge, 1,640 ft^3/s (46.4 m^3/s) May 8, 1959; maximum daily gage height, 3.27 ft (0.997 m) May 13, 14, 1960; minimum daily discharge, 90 ft^3/s (2.55 m^3/s) Mar. 29, 30, 1958; minimum daily gage height, 1.05 ft (0.320 m) Apr. 13, 14, 15, 1975.

REMARKS.--Records good except those for the winter periods, which are 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	649	578	1200	1000	950	980	980	1160	1110	858	915	815
2	618	590	1210	1000	940	980	970	1160	1120	880	887	813
3	614	630	1180	1000	940	980	960	1170	1120	852	878	800
4	653	664	1120	990	940	980	960	1170	1130	737	887	800
5	614	716	1100	980	940	980	960	1170	1120	737	922	775
6	616	834	1090	960	950	970	960	1170	1130	737	974	811
7	672	849	1090	967	940	960	960	1170	1150	750	992	908
8	725	883	1100	937	930	960	970	1190	1130	802	806	910
9	619	889	1030	928	900	960	980	1190	1150	819	695	912
10	693	922	778	899	920	960	990	1220	1160	832	704	920
11	781	943	778	756	950	960	1000	1230	1080	840	687	894
12	1110	935	918	1170	960	960	1040	1280	871	848	630	906
13	1130	950	932	1200	960	960	1080	1270	840	861	646	919
14	1050	982	939	1100	960	960	1120	1290	851	848	620	916
15	931	993	946	1000	960	970	1150	1300	857	853	600	905
16	920	1140	926	970	960	980	1150	1330	845	861	600	919
17	920	1140	933	950	960	980	1120	1290	890	845	580	888
18	924	1130	910	950	970	990	1060	1290	881	723	570	896
19	927	1140	900	950	970	990	842	1300	893	640	560	900
20	935	1140	947	950	980	970	839	1160	900	673	554	888
21	907	1140	946	930	1000	990	940	847	893	702	623	892
22	866	1140	954	910	1020	1000	1160	915	893	776	722	860
23	898	1140	936	920	1020	1010	1260	966	864	766	657	816
24	897	1140	952	940	1010	1000	1220	976	816	722	628	835
25	906	1160	949	1000	1000	990	1220	942	809	979	652	725
26	906	1220	920	1080	1000	990	1220	944	799	1020	713	691
27	900	1220	935	1080	990	1000	1210	968	799	1030	751	684
28	899	1220	959	1050	980	1010	1210	1050	818	1040	782	684
29	898	1220	945	1000	---	1020	1210	1070	808	1020	774	714
30	895	1210	958	960	---	1020	1200	1070	834	926	827	710
31	818	---	1160	960	---	1010	---	1100	---	922	827	---
TOTAL	25891	29858	30641	30487	27000	30470	31941	35358	28561	25899	22663	25106
MEAN	835	995	988	983	964	983	1065	1141	952	835	731	837
MAX	1130	1220	1210	1200	1020	1020	1260	1330	1160	1040	992	920
MIN	614	578	778	756	900	960	839	847	799	640	554	684
CFSM	.97	1.15	1.14	1.14	1.11	1.14	1.23	1.32	1.10	.97	.85	.97
IN.	1.11	1.28	1.32	1.31	1.16	1.31	1.37	1.52	1.23	1.11	.97	1.08

CAL YR 1974 TOTAL 345318 MEAN 946 MAX 1460 MIN 360 CFSM 1.09 IN 14.85
WTR YR 1975 TOTAL 343875 MEAN 942 MAX 1330 MIN 554 CFSM 1.09 IN 14.79

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 mi^2 (811 km^2).

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.--33 years, 267 ft^3/s (7.561 m^3/s), 11.58 in/yr (294 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,380 ft^3/s (39.1 m^3/s) Apr. 19, gage height, 5.47 ft (1.667 m); minimum, 10 ft^3/s (0.28 m^3/s) Dec. 20; minimum daily, 138 ft^3/s (3.91 m^3/s) Aug. 16.
Period of record: Maximum discharge, 2,340 ft^3/s (66.3 m^3/s) Apr. 17, 1960, gage height, 7.13 ft (2.173 m); minimum, 0.60 ft^3/s (0.017 m^3/s) Mar. 11, 1950; minimum daily, 4.0 ft^3/s (0.11 m^3/s) Nov. 27, 1949.

REMARKS.--Records good. Flow regulated by hydroelectric powerplant 400 ft (122 m) above station.

DISCHARGE, IN CUBIC FEET PER SECOND , WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	295	260	250	237	220	225	242	941	494	178	210	589
2	317	260	250	237	220	250	228	928	303	236	234	576
3	247	201	250	201	174	225	218	995	362	168	236	539
4	247	252	188	243	220	225	307	995	324	150	236	506
5	283	275	171	189	194	225	236	900	317	187	239	494
6	283	262	321	195	174	225	236	770	259	244	239	483
7	289	261	289	233	223	225	236	710	239	187	181	482
8	265	238	252	250	176	225	236	674	231	178	196	362
9	293	232	210	249	174	181	236	606	228	152	166	300
10	293	229	191	248	201	147	236	506	231	156	187	469
11	283	227	236	309	172	189	320	486	234	156	170	248
12	195	255	286	420	203	228	253	384	236	194	170	235
13	244	263	254	302	201	297	236	277	247	187	170	422
14	314	255	252	185	225	203	310	401	244	239	170	276
15	265	287	252	206	225	210	422	412	244	334	168	405
16	262	285	252	330	225	228	510	310	422	331	138	349
17	335	273	252	307	198	231	510	429	510	231	141	293
18	232	227	252	141	185	271	1000	280	426	239	210	209
19	229	291	252	220	187	228	1340	412	494	440	181	305
20	253	323	240	213	187	265	1200	231	622	558	148	308
21	227	323	187	210	225	271	1300	268	678	658	147	318
22	226	257	241	176	225	328	1300	307	642	658	173	308
23	222	307	252	170	185	359	1120	415	370	606	278	417
24	219	328	252	189	225	362	1140	494	274	482	278	296
25	297	405	252	223	280	362	975	440	297	310	307	427
26	194	343	250	223	277	277	941	443	262	566	230	247
27	224	287	227	223	247	262	928	494	239	650	278	222
28	222	276	181	223	225	274	754	490	242	666	266	356
29	255	217	208	223	---	297	698	274	242	494	403	322
30	225	219	265	223	---	297	698	320	242	242	384	250
31	302	---	232	189	---	284	---	418	---	231	392	---
TOTAL	8037	8118	7447	7187	5873	7876	18366	16010	10155	10308	6926	11013
MEAN	259	271	240	232	210	254	612	516	339	333	223	367
MAX	335	405	321	420	280	362	1340	995	678	666	403	589
MIN	194	201	171	141	172	147	218	231	228	150	138	209
CFSM	.83	.87	.77	.74	.67	.81	1.96	1.65	1.08	1.06	.71	1.17
IN.	.96	.96	.89	.85	.70	.94	2.18	1.90	1.21	1.23	.82	1.31

CAL YR 1974 TOTAL 119505 MEAN 327 MAX 1340 MIN 153 CFSM 1.04 IN 14.20
WTR YR 1975 TOTAL 117316 MEAN 321 MAX 1340 MIN 138 CFSM 1.03 IN 13.94

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 mi^2 (220 km^2), 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.--23 years, 42.0 ft^3/s (1.189 m^3/s), 6.71 in/yr (170 mm/yr).

EXTREMES.--Current year: Maximum discharge, 658 ft^3/s (18.6 m^3/s) Apr. 19, gage height, 5.63 ft (1.716 m); minimum, 4.8 ft^3/s (0.14 m^3/s) Aug. 17.
Period of record: Maximum discharge, 946 ft^3/s (26.8 m^3/s) Apr. 18, 1960, gage height, 6.33 ft (1.929 m), from floodmark; minimum, 0.4 ft^3/s (0.011 m^3/s) Sept. 7, 1955.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	15	20	15	12	15	35	294	65	19	41	59
2	15	14	23	14	12	15	40	324	57	17	37	55
3	15	14	22	13	12	15	47	262	50	14	36	52
4	13	14	20	12	11	15	55	240	42	12	34	52
5	12	12	19	13	11	15	54	228	38	10	30	55
6	12	11	18	13	11	15	50	204	35	9.1	24	64
7	13	9.9	17	12	11	15	53	182	32	8.6	22	70
8	14	9.1	18	12	12	15	54	154	29	8.2	20	67
9	15	9.1	18	12	12	15	55	138	25	6.8	18	62
10	14	9.1	19	18	12	15	50	122	21	5.5	15	59
11	13	13	18	62	12	15	58	106	19	6.2	13	59
12	12	16	18	45	12	16	67	95	18	9.5	11	60
13	11	17	18	35	12	16	71	86	17	9.1	9.1	56
14	12	16	17	30	12	17	77	78	15	17	7.5	50
15	16	15	16	26	12	17	87	75	17	42	6.2	47
16	15	15	16	23	13	18	112	71	24	49	5.5	43
17	15	16	17	21	13	18	165	65	22	46	5.8	40
18	15	17	17	19	13	20	387	57	55	34	14	35
19	13	18	17	18	14	22	622	50	88	50	18	34
20	12	21	17	17	14	31	588	45	100	61	18	37
21	11	28	17	16	14	36	488	49	96	65	22	40
22	11	32	16	16	15	59	404	66	89	59	23	39
23	13	31	15	15	15	48	344	60	80	51	28	46
24	12	37	17	15	15	34	356	52	69	75	37	43
25	13	36	15	14	15	33	338	50	56	98	30	42
26	12	37	15	14	15	32	306	51	46	104	24	67
27	10	31	14	13	15	31	270	55	37	88	20	57
28	9.9	23	13	13	15	29	224	50	31	70	20	37
29	11	22	14	12	------	28	197	43	28	57	54	31
30	13	21	15	12	------	31	206	40	23	51	53	27
31	16	------	15	12	------	32	------	61	------	44	54	------
TOTAL	400.9	579.2	531	582	362	733	5,860	3,453	1,324	1,196.0	750.1	1,485
MEAN	12.9	19.3	17.1	18.8	12.9	23.6	195	111	44.1	38.6	24.2	49.5
MAX	16	37	23	62	15	59	622	324	100	104	54	70
MIN	9.9	9.1	13	12	11	15	35	40	15	5.5	5.5	27
CFSM	.15	.23	.20	.22	.15	.28	2.29	1.31	.52	.45	.28	.58
IN.	.18	.25	.23	.25	.16	.32	2.56	1.51	.58	.52	.33	.65

CAL YR 1974 TOTAL 18,018.7 MEAN 49.4 MAX 604 MIN 2.1 CFSM .58 IN 7.89
WTR YR 1975 TOTAL 17,256.2 MEAN 47.3 MAX 622 MIN 5.5 CFSM .56 IN 7.55

04133500 Thunder Bay River near Bolton, Mich.

LOCATION.--Lat 45°07'40", long 83°38'30", in NE¼ sec.36, T.32 N., R.6 E., 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.

DRAINAGE AREA.--588 mi^2 (1,520 km^2).

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.--30 years, 467 ft^3/s (13.23 m^3/s).

EXTREMES.--Current year: Maximum discharge, 2,420 ft^3/s (68.5 m^3/s) Apr. 20, gage height, 8.03 ft (2.448 m); minimum, 147 ft^3/s (4.16 m^3/s) July 4.
Period of record: Maximum discharge, 4,070 ft^3/s (115 m^3/s) Apr. 13, 1965, gage height, 9.99 ft (3.045 m); minimum, 92 ft^3/s (2.61 m^3/s) Sept. 28, 29, 1955.

REMARKS.--Records good except those for winter periods, which are fair. Regulation by Fletcher Pond on the Upper South Branch Thunder Bay River (usable capacity, 40,170 acre-ft or 49.5 hm^3).

REVISIONS (WATER YEARS).--WSP 1437: 1946. WSP 1727: 1947 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	480	405	342	335	325	380	516	863	634	406	335	816
2	462	401	339	300	320	380	516	989	637	384	355	983
3	432	400	325	310	320	370	510	1,050	530	415	361	1,060
4	421	392	320	320	335	370	501	1,070	458	200	361	849
5	407	420	320	290	350	370	498	1,080	487	262	353	692
6	413	365	320	310	350	370	498	1,090	517	211	341	598
7	440	381	320	325	340	360	507	1,030	530	226	222	565
8	466	380	310	325	330	360	537	934	504	248	298	515
9	453	345	300	332	330	350	586	802	473	265	295	484
10	433	317	320	352	320	350	561	688	446	292	289	456
11	414	323	350	465	320	350	589	606	425	286	306	446
12	409	332	340	470	320	350	658	545	423	272	324	442
13	370	340	343	420	325	360	734	510	425	276	324	437
14	414	336	340	370	330	360	878	487	418	317	312	436
15	403	332	339	360	330	360	1,100	474	418	308	309	435
16	416	326	341	340	340	370	1,220	473	435	284	304	420
17	411	325	349	340	340	400	1,360	474	557	324	303	405
18	401	326	355	340	350	432	1,560	454	961	316	297	393
19	393	325	356	330	350	447	1,990	430	1,080	410	295	390
20	385	329	354	330	350	471	2,360	401	1,150	546	295	456
21	384	348	337	330	350	528	2,140	435	1,030	649	309	531
22	381	366	330	330	350	554	1,660	662	825	600	329	582
23	382	367	320	320	350	610	1,270	785	627	492	358	537
24	377	373	310	320	360	634	1,160	704	535	629	375	504
25	376	396	320	340	370	626	1,130	560	478	748	437	480
26	376	396	325	360	380	596	1,070	516	435	823	409	471
27	376	368	330	360	390	572	947	499	412	769	375	483
28	390	357	336	350	390	554	838	484	393	604	351	474
29	377	340	333	350	------	547	714	430	383	490	436	450
30	382	330	334	340	------	537	759	395	371	413	559	465
31	395	------	320	330	------	528	------	497	------	373	618	------
TOTAL	12,619	10,741	10,278	10,694	9,615	13,846	29,367	20,417	16,997	12,838	10,835	16,255
MEAN	407	358	332	345	343	447	979	659	567	414	350	542
MAX	480	420	356	470	390	634	2,360	1,090	1,150	823	618	1,060
MIN	370	317	300	290	320	350	498	395	371	200	222	390

CAL YR 1974 TOTAL 217,158 MEAN 595 MAX 3,100 MIN 300
WTR YR 1975 TOTAL 174,502 MEAN 478 MAX 2,360 MIN 200

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 mi^2 (477 km^2).

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.--30 years, 118 ft^3/s (3.342 m^3/s), 8.71 in/yr (221 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,220 ft^3/s (62.9 m^3/s) Apr. 20, gage height 6.77 ft (2.063 m); minimum, 14 ft^3/s (0.40 m^3/s) Aug. 21.
Period of record: Maximum discharge, 2,920 ft^3/s (82.7 m^3/s) Apr. 13, 1965, gage height, 7.85 ft (2.393 m); maximum gage height, 7.98 ft (2.432 m) Mar. 31, 1950 (backwater from ice); minimum discharge, 0.40 ft^3/s (0.011 m^3/s) Oct. 14, 1955.

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation during low flow from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	33	50	34	41	46	110	408	161	49	142	181
2	25	33	48	31	40	46	115	451	173	43	120	193
3	28	36	46	31	38	46	120	507	160	38	106	223
4	31	37	42	32	38	45	120	549	126	33	84	248
5	31	34	39	30	40	45	120	552	104	29	70	224
6	31	32	37	31	41	44	125	565	97	27	62	188
7	36	31	37	27	41	43	125	519	89	26	52	156
8	36	29	37	31	39	43	130	438	79	24	45	137
9	34	28	38	32	39	43	130	369	72	24	39	132
10	36	28	40	36	39	43	132	308	64	23	35	122
11	34	29	38	65	40	43	136	261	57	23	33	108
12	33	31	39	95	40	43	159	220	54	24	31	94
13	32	32	43	75	40	43	191	181	52	27	29	90
14	31	33	42	64	39	43	221	155	50	28	26	86
15	31	35	36	57	39	44	282	137	53	29	24	84
16	32	35	39	50	40	45	346	127	63	36	22	86
17	36	36	37	47	40	47	515	118	80	42	21	84
18	38	39	37	43	41	52	1,070	108	261	37	19	76
19	40	38	35	41	41	55	1,790	101	326	63	17	71
20	59	37	36	39	41	60	2,170	93	520	99	16	92
21	48	41	36	39	42	64	1,770	108	583	139	19	114
22	40	44	36	38	42	70	1,340	131	464	197	22	153
23	36	52	37	38	43	76	1,010	154	341	246	20	177
24	35	58	37	38	43	82	877	198	254	318	30	171
25	35	62	36	39	44	94	832	227	185	317	37	155
26	34	67	36	41	45	104	788	193	133	445	43	144
27	33	64	35	42	45	105	659	146	100	580	42	131
28	32	62	36	42	45	100	518	121	80	494	39	127
29	31	56	33	40	------	97	414	105	66	349	66	126
30	31	53	35	40	------	97	386	98	57	258	85	115
31	32	------	36	40	------	100	------	148	------	192	113	------
TOTAL	1,062	1,225	1,189	1,328	1,145	1,908	16,701	7,796	4,904	4,259	1,509	4,088
MEAN	34.3	40.8	38.4	42.8	40.9	61.5	557	251	163	137	48.7	136
MAX	59	67	50	95	45	105	2,170	565	583	580	142	248
MIN	21	28	33	27	38	43	110	93	50	23	16	71
CFSM	.19	.22	.21	.23	.22	.33	3.03	1.36	.89	.74	.26	.74
IN.	.21	.25	.24	.27	.23	.39	3.38	1.58	.99	.86	.31	.83

CAL YR 1974 TOTAL 50,257.0 MEAN 138 MAX 1,210 MIN 9.5 CFSM .75 IN 10.16
WTR YR 1975 TOTAL 47,115.0 MEAN 129 MAX 2,170 MIN 16 CFSM .70 IN 9.53

PEAK DISCHARGE (BASE, 500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
04-20	0600	6.77	2,220
05-06	0400	4.78	568
06-21	0200	4.84	604
07-27	1300	4.83	598

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 mi^2 (285 km^2).

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 Grayling.

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.--33 years, 74.9 ft^3/s (2.121 m^3/s), 9.25 in/yr (235 mm/yr).

EXTREMES.--Current year: Maximum discharge, 198 ft^3/s (5.61 m^3/s) Apr. 20, gage height, 2.43 ft (0.741 m); minimum, 54 ft^3/s (1.53 m^3/s) Dec. 4, Mar. 9, gage height, 1.18 ft (0.360 m).
Period of record: Maximum discharge, 274 ft^3/s (7.76 m^3/s) June 2, 1943, gage height, 3.00 ft (0.914 m); minimum, 28 ft^3/s (0.79 m^3/s) Apr. 21, 1946, gage height, 0.80 ft (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 Section 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	63	65	64	68	64	76	145	95	67	65	150
2	74	62	64	62	63	62	75	156	86	66	65	155
3	70	62	63	63	62	66	75	148	81	65	69	150
4	67	61	58	65	64	68	72	143	82	63	68	135
5	64	61	63	63	67	64	71	140	94	61	65	125
6	68	61	63	64	66	68	71	138	92	60	63	120
7	75	61	65	63	62	68	71	134	88	60	62	120
8	78	60	67	64	62	65	71	127	83	60	61	110
9	73	59	62	64	60	58	72	116	78	60	60	105
10	69	59	62	68	62	60	73	110	75	62	61	100
11	67	62	67	81	63	67	73	104	73	65	62	96
12	64	64	66	78	64	68	75	101	73	69	62	96
13	63	64	64	72	63	66	76	100	75	68	62	97
14	66	63	64	74	63	62	78	97	74	70	61	97
15	69	62	64	71	65	62	85	98	78	74	60	94
16	69	62	65	70	66	67	96	100	86	75	58	86
17	67	63	66	68	67	66	106	98	98	70	58	86
18	65	63	65	68	66	67	128	94	144	68	57	83
19	63	64	64	69	67	68	164	92	138	84	57	81
20	63	65	64	68	66	69	194	89	120	91	57	82
21	62	65	64	67	67	70	191	88	103	89	91	84
22	62	65	64	66	68	88	169	90	92	77	116	84
23	62	64	64	65	68	97	157	90	84	73	110	88
24	62	66	63	68	68	96	157	86	80	90	102	86
25	61	67	64	68	68	90	154	90	77	103	98	82
26	61	62	63	69	68	83	145	92	75	100	92	82
27	61	63	63	69	67	81	136	96	72	88	85	83
28	60	66	63	69	68	78	127	92	72	77	88	78
29	61	63	63	70	------	80	120	86	71	72	112	75
30	62	58	63	69	------	77	122	86	69	68	130	74
31	63	------	59	68	------	75	------	94	------	67	140	------
TOTAL	2,045	1,880	1,974	2,107	1,828	2,220	3,280	3,320	2,608	2,262	2,397	2,984
MEAN	66.0	62.7	63.7	68.0	65.3	71.6	109	107	86.9	73.0	77.3	99.5
MAX	78	67	67	81	68	97	194	156	144	103	140	155
MIN	60	58	58	62	60	58	71	86	69	60	57	74
CFSM	.60	.57	.58	.62	.59	.65	.99	.97	.79	.66	.70	.90
IN.	.69	.64	.67	.71	.62	.75	1.11	1.12	.88	.76	.81	1.01

CAL YR 1974 TOTAL 27,835 MEAN 76.3 MAX 210 MIN 54 CFSM .69 IN 9.41
WTR YR 1975 TOTAL 28,905 MEAN 79.2 MAX 194 MIN 57 CFSM .72 IN 9.78

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 mi^2 (196.8 km^2).

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.--17 years, 44.9 ft^3/s (1.272 m^3/s), 8.02 in/yr (204 mm/yr).

EXTREMES.--Current year: Maximum discharge, 144 ft^3/s (4.08 m^3/s) Apr. 20, gage height, 4.66 ft (1.420 m); minimum, 18 ft^3/s (0.51 m^3/s) Mar. 10, result of freezeup.
Period of record: Maximum discharge, 201 ft^3/s (5.69 m^3/s) Apr. 13, 1971, gage height, 5.19 ft (1.582 m); minimum, 7.0 ft^3/s (0.20 m^3/s) Mar. 27, 1965, result of freezeup; minimum daily, 16 ft^3/s (0.45 m^3/s) Aug. 20, 1964.

REMARKS.--Records good. Occasional regulation by State Research Center above gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	38	37	32	34	34	44	111	53	45	44	98
2	43	38	37	32	30	34	43	117	49	43	43	99
3	41	38	36	34	30	36	42	109	48	43	48	90
4	40	37	30	34	31	36	41	109	49	42	44	84
5	39	36	37	32	32	33	41	105	58	41	41	76
6	44	37	34	33	33	37	41	101	55	41	40	75
7	49	37	37	33	32	35	41	94	51	41	39	72
8	45	36	37	33	31	34	42	88	48	40	38	67
9	42	43	33	33	31	29	43	82	46	39	37	63
10	41	43	38	36	30	34	44	77	45	42	39	60
11	40	42	38	53	31	34	46	73	45	47	41	59
12	40	43	36	43	32	35	46	70	45	50	39	58
13	39	40	36	41	32	33	47	67	45	46	38	59
14	43	38	35	39	32	32	51	65	44	52	38	59
15	45	37	35	38	32	32	57	67	54	55	37	56
16	43	37	36	37	33	35	66	65	65	51	36	53
17	42	38	36	37	34	34	74	62	76	48	36	52
18	40	37	35	37	33	35	89	60	108	46	35	50
19	41	38	35	37	34	35	117	61	124	62	33	49
20	40	37	35	36	35	37	138	59	108	61	33	51
21	39	38	34	36	34	38	137	58	88	55	64	52
22	39	37	34	35	35	54	124	60	77	52	58	54
23	39	44	34	35	35	56	118	58	70	51	53	53
24	39	45	33	35	36	53	118	56	64	65	61	51
25	38	41	34	36	36	50	114	54	61	63	59	50
26	38	34	33	35	37	47	105	54	57	59	54	53
27	37	40	33	33	36	46	97	53	54	56	49	51
28	37	38	32	35	36	45	91	51	52	52	51	49
29	38	37	33	35	------	45	88	49	50	49	71	48
30	40	35	33	35	------	45	91	52	48	47	71	47
31	38	------	32	35	------	43	------	58	------	45	83	------
TOTAL	1,266	1,159	1,078	1,115	927	1,206	2,236	2,245	1,837	1,529	1,453	1,838
MEAN	40.8	38.6	34.8	36.0	33.1	38.9	74.5	72.4	61.2	49.3	46.9	61.3
MAX	49	45	38	53	37	56	138	117	124	65	83	99
MIN	37	34	30	32	30	29	41	49	44	39	33	47
CFSM	.54	.51	.46	.47	.44	.51	.98	.95	.81	.65	.62	.81
IN.	.62	.57	.53	.55	.45	.59	1.09	1.10	.90	.75	.71	.90

CAL YR 1974 TOTAL 17,395 MEAN 47.7 MAX 143 MIN 30 CFSM .63 IN 8.51
WTR YR 1975 TOTAL 17,889 MEAN 49.0 MAX 138 MIN 29 CFSM .64 IN 8.76

04135700 South Branch Au Sable River near Luzerne, Mich.

LOCATION.--Lat 44°36'53", long 84°27'20", in SE¼ SE¼ 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.

DRAINAGE AREA.--401 mi^2 (1,039 km^2).

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1951-66. October 1966 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,070 ft (326 m) from topographic map. Apr. 19, 1951, to Nov. 14, 1966, non-recording gage at same site and datum.

AVERAGE DISCHARGE.--9 years, 231 ft^3/s (6.542 m^3/s), 7.82 in/yr (199 mm/yr).

EXTREMES.--Current year: Maximum discharge, 620 ft^3/s (17.6 m^3/s) Sept. 3, gage height, 6.04 ft (1.841 m); minimum, 117 ft^3/s (3.31 m^3/s) Aug. 19, 20, 21.
Period of record: Maximum discharge, 932 ft^3/s (26.4 m^3/s) Apr. 14, 1971, gage height, 6.83 ft (2.082 m); maximum gage height, 7.17 ft (2.185 m) Feb. 5, 1970 (backwater from ice); minimum daily discharge, 105 ft^3/s (2.97 m^3/s) Oct. 7-9, Nov. 3, 1966.

REMARKS.--Records good. Occasional regulation by dams above station. Records for water temperature for the current year are published in Section 2 of this report.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	214	175	175	170	180	184	222	384	239	209	160	599
2	206	172	180	170	180	188	221	421	232	201	158	598
3	192	170	180	170	180	185	219	449	218	192	161	600
4	179	182	170	180	180	191	213	492	215	187	157	609
5	172	177	170	180	180	180	208	473	281	179	153	561
6	175	178	180	180	180	191	204	442	291	176	148	509
7	196	178	180	180	180	189	209	418	290	174	150	463
8	201	171	180	180	175	184	218	402	277	170	153	429
9	199	170	180	180	180	167	229	385	250	164	142	400
10	188	168	180	190	180	179	236	375	225	167	136	380
11	179	175	185	220	175	180	251	365	210	182	136	367
12	174	183	190	230	170	188	262	355	209	196	132	360
13	170	184	180	210	170	181	268	345	211	194	131	353
14	177	182	180	210	170	175	287	335	205	200	134	337
15	187	181	180	200	165	178	316	331	228	199	131	327
16	191	179	180	200	165	192	349	325	282	192	126	316
17	186	180	190	200	170	196	385	321	302	181	124	307
18	179	180	185	195	170	196	446	317	381	172	121	298
19	173	183	180	190	175	191	552	322	397	244	119	294
20	169	185	180	190	180	203	582	318	389	269	118	297
21	167	189	180	190	182	220	576	302	374	268	169	302
22	165	188	180	190	184	234	518	307	343	277	188	312
23	173	184	180	190	188	234	450	271	312	258	193	309
24	175	192	180	190	196	231	412	247	287	301	215	301
25	171	190	180	190	208	238	383	240	271	251	219	294
26	163	180	180	190	206	237	366	238	258	224	215	304
27	162	180	180	190	196	232	346	240	248	214	201	299
28	160	185	175	190	194	226	323	228	237	196	187	290
29	163	180	170	190	------	227	305	216	229	180	258	285
30	176	170	170	190	------	227	306	213	217	171	281	279
31	176	------	170	180	------	219	------	234	------	167	364	------
TOTAL	5,558	5,391	5,550	5,905	5,059	6,243	9,862	10,311	8,108	6,355	5,280	11,379
MEAN	179	180	179	190	181	201	329	333	270	205	170	379
MAX	214	192	190	230	208	238	582	492	397	301	364	609
MIN	160	168	170	170	165	167	204	213	205	164	118	279
CFSM	.45	.45	.45	.47	.45	.50	.82	.83	.67	.51	.42	.95
IN.	.52	.50	.51	.55	.47	.58	.91	.96	.75	.59	.49	1.06

CAL YR 1974 TOTAL 85,698 MEAN 235 MAX 727 MIN 141 CFSM .59 IN 7.95
WTR YR 1975 TOTAL 85,001 MEAN 233 MAX 609 MIN 118 CFSM .58 IN 7.89

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 mi^2 (2,850 km^2), 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.--23 years, 988 ft^3/s (27.98 m^3/s), 12.20 in/yr (310 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,380 ft^3/s (95.7 m^3/s) Sept. 1, gage height, 5.35 ft (1.631 m); minimum, 310 ft^3/s (8.78 m^3/s) Sept. 10; minimum daily, 729 ft^3/s (20.6 m^3/s) Feb. 10.
Period of record: Maximum discharge, 4,160 ft^3/s (118 m^3/s) Apr. 13, 1971, gage height, 6.00 ft (1.829 m); minimum, 18 ft^3/s (0.51 m^3/s) Sept. 18, 19, 20, 21, 28, 1962, gage height, 0.10 ft (0.030 m); minimum daily, 277 ft^3/s (7.84 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,140	986	952	905	939	933	1,040	2,170	1,260	1,010	969	2,980
2	835	977	978	910	894	931	1,050	2,290	1,210	969	949	2,600
3	990	933	995	917	850	914	1,070	1,780	1,140	969	931	2,130
4	1,020	916	943	944	875	905	1,040	2,250	1,170	956	968	1,840
5	1,010	991	939	934	978	922	994	1,970	1,320	908	974	1,720
6	994	1,000	950	930	984	930	966	1,890	1,410	890	931	1,700
7	1,020	952	959	942	878	930	987	1,900	1,360	902	890	1,560
8	1,110	943	1,020	942	850	886	1,090	1,720	1,240	949	895	1,540
9	1,140	942	985	920	768	886	1,100	1,570	1,150	926	915	1,410
10	1,060	922	926	959	729	885	1,130	1,500	1,130	936	885	1,360
11	1,010	948	978	1,280	902	924	1,210	1,470	1,100	968	893	1,380
12	980	1,000	997	1,290	978	944	1,160	1,390	1,110	1,020	905	1,300
13	964	1,000	953	958	903	926	1,150	1,310	1,130	1,020	906	1,280
14	999	969	943	957	849	882	1,260	1,270	1,060	999	866	1,300
15	1,020	925	973	1,010	921	879	1,340	1,290	1,170	1,090	850	1,310
16	1,020	934	996	1,070	1,000	910	1,530	1,280	1,640	1,150	866	1,310
17	1,010	952	993	973	1,000	917	1,620	1,280	1,430	1,030	885	1,280
18	977	941	965	981	968	939	1,980	1,300	2,110	924	849	1,220
19	968	948	967	1,110	943	976	2,450	1,310	2,260	1,330	820	1,200
20	976	970	966	924	926	993	2,610	1,300	2,020	1,730	925	1,300
21	913	988	954	862	918	1,040	2,450	1,300	1,720	1,300	1,040	1,300
22	920	980	918	923	918	1,180	2,250	1,340	1,400	1,140	1,320	1,290
23	944	974	924	887	932	1,220	2,040	1,360	1,350	1,200	1,290	1,310
24	915	998	948	1,100	939	1,140	2,010	1,220	1,320	1,420	1,330	1,310
25	963	1,020	945	1,100	970	1,180	1,950	1,200	1,240	1,510	1,380	1,260
26	967	998	947	1,010	987	1,130	1,700	1,200	1,150	1,290	1,430	1,210
27	917	981	943	946	956	1,080	1,610	1,200	1,100	1,240	1,130	1,230
28	917	981	930	955	934	1,050	1,580	1,150	1,140	1,110	876	1,240
29	924	981	920	1,050	------	1,040	1,420	1,110	1,050	1,020	993	1,170
30	956	958	923	990	------	1,050	1,430	1,090	1,010	1,000	1,260	1,160
31	1,010	------	913	961	------	1,050	------	1,170	------	974	1,370	------
TOTAL	30,589	29,008	29,643	30,640	25,689	30,572	45,217	45,580	39,900	33,880	31,491	44,200
MEAN	987	967	956	988	917	986	1,507	1,470	1,330	1,093	1,016	1,473
MAX	1,140	1,020	1,020	1,290	1,000	1,220	2,610	2,290	2,260	1,730	1,430	2,980
MIN	835	916	913	862	729	879	966	1,090	1,010	890	820	1,160
CFSM	.90	.88	.87	.90	.83	.90	1.37	1.34	1.21	.99	.92	1.34
IN.	1.03	.98	1.00	1.04	.87	1.03	1.53	1.54	1.35	1.15	1.06	1.49

CAL YR 1974 TOTAL 412,199 MEAN 1,129 MAX 2,770 MIN 646 CFSM 1.03 IN 13.94
WTR YR 1975 TOTAL 416,409 MEAN 1,141 MAX 2,980 MIN 729 CFSM 1.04 IN 14.08

04138500 Au Gres River near National City, Mich.

LOCATION.--Lat 44°10'26", long 83°44'36", in NE¼ NE¼ 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 mi^2 (438 km^2).

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.--25 years, 97.9 ft^3/s (2.773 m^3/s), 7.87 in/yr (200 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,130 ft^3/s (32.0 m^3/s) Sept. 1, gage height, 4.91 ft (1.497 m); minimum, 16 ft^3/s (0.45 m^3/s) Aug. 16-21 (part or all of each day).
Period of record: Maximum discharge, 2,500 ft^3/s (70.8 m^3/s) Mar. 6, 1974; maximum gage height, 10.64 ft (3.243 m) Mar. 6, 1974 (backwater from ice); minimum discharge, 5.9 ft^3/s (0.17 m^3/s) Nov. 3, 1966, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Some regulation at low flows.

REVISIONS (WATER YEARS).--WSP 1911: 1959-60.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	50	41	33	40	130	155	158	27	25	22	854
2	34	45	41	32	40	120	150	145	25	25	21	483
3	32	44	40	43	41	110	128	121	25	28	28	220
4	36	52	39	42	42	100	137	177	28	24	28	195
5	40	46	36	37	43	98	131	221	79	21	23	148
6	37	46	34	42	42	94	131	204	87	21	21	122
7	41	41	40	40	41	92	158	162	53	21	20	93
8	40	37	38	42	40	90	205	109	40	36	19	69
9	37	34	34	84	39	90	215	83	35	25	18	59
10	28	34	36	120	38	90	209	72	31	28	18	51
11	27	35	38	210	40	90	211	71	30	57	19	46
12	25	43	40	190	40	92	208	72	66	56	18	54
13	26	38	41	140	40	92	187	67	46	43	20	48
14	40	36	41	110	40	94	186	59	39	49	20	45
15	46	36	38	94	40	96	195	56	72	50	18	43
16	35	36	44	80	40	100	194	55	194	36	17	50
17	36	41	51	70	41	115	183	62	125	32	17	60
18	51	44	48	60	41	140	192	80	279	27	16	42
19	44	43	41	52	42	180	381	63	206	50	16	38
20	42	44	33	50	44	280	283	52	200	64	16	73
21	39	51	46	47	44	442	210	46	137	39	23	96
22	38	45	43	45	45	325	175	53	87	33	34	68
23	37	42	42	45	49	272	174	48	66	28	30	50
24	36	66	40	44	62	414	268	41	52	77	44	43
25	37	57	41	43	240	629	227	42	49	77	51	54
26	37	55	34	43	220	335	191	42	42	45	47	64
27	38	52	41	42	170	249	161	40	36	37	26	59
28	39	49	38	42	150	192	115	35	34	31	20	50
29	40	45	37	42	---	190	134	31	31	27	31	44
30	44	42	36	42	---	175	118	29	27	25	48	47
31	46	---	33	41	---	165	---	29	---	23	101	---
TOTAL	1172	1329	1225	2047	1794	5681	5612	2525	2248	1160	850	3368
MEAN	37.8	44.3	39.5	66.0	64.1	183	187	81.5	74.9	37.4	27.4	112
MAX	51	66	51	210	240	629	381	221	279	77	101	854
MIN	25	34	33	32	38	90	115	29	25	21	16	38
CFSM	.22	.26	.23	.39	.38	1.08	1.11	.48	.44	.22	.16	.66
IN.	.26	.29	.27	.45	.39	1.25	1.24	.56	.49	.26	.19	.74

CAL YR 1974 TOTAL 43540 MEAN 119 MAX 2100 MIN 19 CFSM .70 IN 9.58
WTR YR 1975 TOTAL 29011 MEAN 79.5 MAX 854 MIN 16 CFSM .47 IN 6.39

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 E., 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 mi^2 (303 km^2).

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.--25 years, 144 ft^3/s (4.078 m^3/s), 16.71 in/yr (424 mm/yr).

EXTREMES.--Current year: Maximum discharge, 862 ft^3/s (24.4 m^3/s) Sept. 1, gage height, 3.63 ft (1.106 m); minimum, 72 ft^3/s (2.04 m^3/s) Aug. 19.
Period of record: Maximum discharge, 2,760 ft^3/s (78.2 m^3/s) May 20, 1959, gage height, 6.76 ft (2.060 m); minimum, 55 ft^3/s (1.56 m^3/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 Section 2 of this report.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	106	113	110	105	125	175	278	99	86	90	772
2	110	101	113	110	100	120	184	330	92	84	90	669
3	101	99	108	110	105	120	172	228	90	84	103	284
4	101	101	110	110	110	115	164	297	92	84	99	240
5	101	101	108	110	113	110	158	368	136	80	90	184
6	101	108	103	106	113	115	170	287	161	78	88	158
7	120	106	106	106	110	115	189	231	131	82	86	142
8	108	101	113	108	105	113	222	210	118	84	82	128
9	106	101	110	110	100	110	234	192	108	80	82	120
10	103	101	110	120	100	110	228	178	99	95	84	113
11	99	110	105	160	100	113	243	164	97	128	86	128
12	97	123	103	200	100	113	246	158	113	153	82	136
13	97	115	103	190	100	113	228	147	113	136	82	123
14	115	110	103	160	100	110	231	144	99	136	82	118
15	123	106	103	150	105	115	252	136	126	133	78	110
16	108	103	113	130	105	113	262	136	175	113	76	108
17	106	110	113	125	105	123	258	133	150	106	76	108
18	99	108	113	120	105	142	271	128	240	101	74	103
19	95	108	113	115	110	175	385	123	225	186	74	106
20	95	110	110	110	110	281	432	126	189	265	74	123
21	95	113	110	110	113	350	284	120	150	167	106	123
22	95	108	110	110	113	287	216	118	131	131	126	120
23	97	113	110	110	113	255	213	113	120	118	106	115
24	95	156	108	110	128	274	313	106	113	204	136	110
25	97	147	110	110	147	294	274	120	110	210	136	106
26	97	120	110	110	147	237	222	128	101	147	115	128
27	97	115	105	110	136	201	195	123	97	128	99	128
28	95	118	106	110	133	192	181	110	97	120	92	113
29	95	113	106	110	------	195	175	101	95	108	128	106
30	106	110	110	110	------	204	189	97	90	101	167	103
31	106	------	110	110	------	181	------	99	------	97	293	------
TOTAL	3,188	3,341	3,368	3,770	3,131	5,221	6,966	5,229	3,757	3,825	3,182	5,125
MEAN	103	111	109	122	112	168	232	169	125	123	103	171
MAX	128	156	113	200	147	350	432	368	240	265	293	772
MIN	95	99	103	106	100	110	158	97	90	78	74	103
CFSM	.88	.95	.93	1.04	.96	1.44	1.98	1.44	1.07	1.05	.88	1.46
IN.	1.01	1.06	1.07	1.20	1.00	1.66	2.21	1.66	1.19	1.22	1.01	1.63

CAL YR 1974 TOTAL 53,930 MEAN 148 MAX 1,070 MIN 82 CFSM 1.27 IN 17.15
WTR YR 1975 TOTAL 50,103 MEAN 137 MAX 772 MIN 74 CFSM 1.17 IN 15.93

PEAK DISCHARGE (BASE, 500 FT^3/s).--Sept. 1 (1300)862 ft^3/s (3.63 ft).

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 mi^2 (2.98 km^2).

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.--24 years, 0.54 ft^3/s (0.0153 m^3/s), 6.38 in/yr (162 mm/yr).

EXTREMES.--Current year: Maximum discharge, 64 ft^3/s (1.81 m^3/s) Aug. 31, gage height, 3.64 ft (1.109 m); minimum, 0.01 ft^3/s (0.0003 m^3/s) July 5.
Period of record: Maximum discharge, 181 ft^3/s (5.13 m^3/s) Apr. 3, 1956, from rating curve extended above 40 ft^3/s (1.13 m^3/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 1967-75.

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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.26	.14	.15	.13	.15	.26	.61	2.0	.08	.03	.04	6.9
2	.20	.13	.15	.13	.14	.22	.98	.94	.06	.03	.04	1.5
3	.18	.13	.15	.13	.13	.16	.56	.76	.06	.02	.08	1.0
4	.16	.14	.13	.13	.13	.15	.45	3.5	.11	.02	.05	.98
5	.14	.19	.13	.13	.13	.15	.47	1.4	.18	.02	.04	.45
6	.16	.19	.12	.13	.13	.15	.83	.83	.13	.02	.04	.35
7	.18	.15	.13	.12	.12	.15	1.6	.53	.09	.02	.03	.26
8	.15	.15	.15	.12	.12	.15	1.8	.38	.07	.02	.03	.22
9	.15	.14	.13	.13	.11	.15	1.3	.33	.06	.02	.04	.16
10	.14	.14	.13	.14	.10	.15	1.1	.28	.04	.05	.04	.16
11	.13	.22	.13	.17	.09	.15	1.1	.26	.06	.19	.03	1.1
12	.13	.19	.12	.24	.08	.15	.94	.23	.06	.46	.03	1.0
13	.13	.16	.12	.30	.08	.15	.76	.20	.05	.15	.07	.40
14	.37	.16	.13	.20	.08	.15	.87	.19	.04	.60	.05	.26
15	.20	.16	.13	.19	.08	.18	.94	.20	.25	.23	.04	.20
16	.18	.15	.14	.18	.09	.19	.91	.19	.15	.13	.03	.18
17	.16	.18	.15	.13	.10	.76	.83	.18	.67	.09	.03	.16
18	.14	.16	.15	.14	.10	2.8	1.4	.16	.95	.08	.03	.15
19	.14	.16	.14	.13	.11	12	3.4	.18	1.5	.41	.02	.16
20	.14	.16	.13	.13	.12	12	1.2	.15	.50	.19	.02	.28
21	.13	.16	.13	.13	.13	4.8	.76	.14	.23	.14	.26	.23
22	.14	.15	.13	.13	.14	2.0	.58	.16	.14	.09	.15	.20
23	.14	.26	.13	.13	.16	2.8	1.4	.14	.12	.08	.20	.16
24	.14	.37	.13	.14	2.4	5.1	1.8	.14	.10	1.4	.40	.13
25	.14	.22	.13	.28	3.2	3.2	.98	.18	.09	.29	.23	.18
26	.12	.15	.13	.35	.66	1.2	.69	.14	.07	.15	.13	.29
27	.11	.16	.13	.23	.31	.87	.56	.12	.06	.11	.09	.20
28	.12	.16	.13	.20	.28	.64	.53	.10	.05	.08	.10	.15
29	.13	.16	.13	.18	------	1.1	.53	.09	.04	.06	.56	.13
30	.15	.15	.13	.17	------	1.4	.66	.09	.03	.05	.31	.13
31	.15	------	.13	.16	------	.73	------	.11	------	.04	20	------
TOTAL	4.91	5.14	4.14	5.20	9.47	54.06	30.54	14.30	6.04	5.27	23.21	17.67
MEAN	.16	.17	.13	.17	.34	1.74	1.02	.46	.20	.17	.75	.59
MAX	.37	.37	.15	.35	3.2	12	3.4	3.5	1.5	1.4	20	6.9
MIN	.11	.13	.12	.12	.08	.15	.45	.09	.03	.02	.02	.13
CFSM	.14	.15	.11	.15	.30	1.51	.89	.40	.17	.15	.65	.51
IN.	.16	.17	.13	.17	.31	1.75	.99	.46	.20	.17	.75	.57

CAL YR 1974 TOTAL 251.26 MEAN .69 MAX 26 MIN .03 CFSM .60 IN 8.13
WTR YR 1975 TOTAL 179.95 MEAN .49 MAX 20 MIN .02 CFSM .43 IN 5.82

PEAK DISCHARGE (BASE, 20 FT^3/s).--Mar. 19 (1900) 36 ft^3/s (3.20 ft); Aug. 31 (1600) 64 ft^3/s (3.64 ft).

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 mi^2 (830 km^2), 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.--39 years, 308 ft^3/s (8.723 m^3/s), 13.07 in/yr (322 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,960 ft^3/s (83.8 m^3/s) Sept. 1, gage height, 9.79 ft (2.984 m); minimum, 133 ft^3/s (3.77 m^3/s) Aug. 20, gage height, 1.45 ft (0.442 m).
Period of record: Maximum discharge, 5,340 ft^3/s (151 m^3/s) Mar. 28, 1950, gage height, 13.74 ft (4.188 m), from rating curve extended above 3,800 ft^3/s (108 m^3/s); minimum, 75 ft^3/s (2.12 m^3/s) Nov. 22, 1964, result of freezeup.

REMARKS.--Records good except those for winter periods, which are fair. Occasional regulation from dams above station. Records of water quality for the current year are published in Section 2 of this report.

REVISIONS (WATER YEARS).--WSP 1437: 1937 (M), 1939-40 (M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	260	218	197	200	200	270	445	667	218	175	162	2,500
2	222	207	197	200	200	265	442	814	199	168	161	2,180
3	201	213	195	200	200	260	418	595	194	164	189	1,110
4	192	251	190	200	210	255	386	683	210	166	195	777
5	187	238	190	200	210	250	366	876	354	159	173	592
6	197	244	190	200	210	250	376	738	419	154	161	518
7	239	227	195	200	210	245	431	577	329	162	157	445
8	226	210	200	200	200	240	512	480	271	175	152	390
9	205	202	200	210	190	240	561	418	243	164	146	346
10	201	197	200	290	190	240	559	371	219	197	149	315
11	207	213	195	450	190	240	580	341	215	251	151	317
12	196	235	190	600	200	245	576	322	255	303	151	485
13	189	221	185	500	200	245	522	305	253	295	157	360
14	225	209	190	450	200	245	525	291	229	255	162	307
15	254	203	204	390	200	250	562	283	282	267	149	277
16	222	201	209	350	200	250	585	281	461	225	144	262
17	206	200	212	300	200	290	575	273	394	193	144	260
18	194	200	208	260	205	360	615	264	635	179	138	250
19	186	191	208	240	210	455	975	265	738	315	136	246
20	183	194	200	230	210	746	1,000	271	623	492	138	278
21	181	196	200	230	210	997	768	255	416	361	178	286
22	179	192	200	220	220	812	573	256	330	253	257	265
23	180	191	200	220	240	704	568	251	287	217	211	259
24	178	254	200	210	300	828	786	232	259	330	253	245
25	179	268	200	210	330	952	745	310	243	515	289	233
26	179	223	200	210	320	731	569	315	224	291	231	267
27	182	209	200	210	300	609	454	277	211	251	191	282
28	197	202	200	210	280	536	401	244	203	223	175	260
29	193	200	202	210	------	532	371	220	199	199	233	236
30	212	196	201	210	------	544	386	208	187	183	367	225
31	220	------	195	200	------	469	------	209	------	171	946	------
TOTAL	6,272	6,405	6,153	8,210	6,235	13,555	16,632	11,892	9,300	7,453	6,446	14,773
MEAN	202	214	198	265	223	437	554	384	310	240	208	492
MAX	260	268	212	600	330	997	1,000	876	738	515	946	2,500
MIN	178	191	185	200	190	240	366	208	187	154	136	225
CFSM	.63	.67	.62	.83	.70	1.37	1.73	1.20	.97	.75	.65	1.54
IN.	.73	.74	.72	.95	.72	1.58	1.93	1.38	1.08	.87	.75	1.72

CAL YR 1974 TOTAL 120,104 MEAN 329 MAX 2,060 MIN 151 CFSM 1.03 IN 13.96
WTR YR 1975 TOTAL 113,326 MEAN 310 MAX 2,500 MIN 136 CFSM .97 IN 13.17

PEAK DISCHARGE (BASE, 1,600 FT^3/S).--Sept. 1 (1930) 2,960 ft^3/s (9.79 ft).

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 mi^2 (262 km^2).

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.--24 years, 58.4 ft^3/s (1.654 m^3/s), 7.85 in/yr (199 mm/yr).

EXTREMES.--Current year: Maximum discharge, 516 ft^3/s (14.6 m^3/s) Sept. 3, gage height, 8.42 ft (2.566 m); no flow Aug. 18, 19, 20. Period of record: Maximum discharge, 1,610 ft^3/s (45.6 m^3/s) May 18, 1974, gage height, 10.92 ft (3.328 m); no flow at times in each year.

REMARKS.--Records good except those for winter periods and those below 2 ft^3/s (0.057 m^3/s), which are poor. Some diversion above station for irrigation. Some regulation during low flows from dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.82	.51	5.5	6.2	110	282	180	88	32	24	8.5	250
2	.65	.38	6.1	6.2	94	193	160	80	24	20	6.5	315
3	.43	.35	5.8	6.2	62	129	130	75	20	16	6.2	466
4	.30	.50	5.1	6.3	48	77	120	121	17	13	4.5	488
5	.32	1.6	4.6	6.3	36	55	100	151	63	9.3	2.4	416
6	.26	2.6	4.3	6.4	25	38	94	137	59	7.2	6.5	374
7	.26	1.6	4.2	6.6	22	30	88	122	95	5.4	14	314
8	.26	1.4	4.3	6.8	18	22	98	119	122	3.5	14	278
9	.23	1.2	4.4	7.6	16	19	130	109	131	1.8	11	243
10	.21	1.3	4.4	11	14	17	228	93	117	2.7	7.6	213
11	.17	1.4	4.4	33	13	16	320	77	87	3.6	5.5	179
12	.20	1.5	4.4	78	12	15	342	67	62	5.4	3.3	140
13	.21	1.6	4.6	120	11	16	315	56	41	11	2.4	107
14	.74	1.6	4.9	115	9.4	18	279	44	29	8.4	1.9	79
15	.97	1.4	5.2	90	8.6	20	234	34	35	7.5	.80	58
16	.65	2.2	5.3	62	8.0	23	194	28	52	7.9	.21	44
17	.60	3.8	6.1	54	7.8	30	166	26	57	10	.03	35
18	.68	4.4	6.5	46	8.0	40	150	24	100	11	0	29
19	.58	4.9	6.4	41	9.0	59	209	22	163	90	0	25
20	1.1	5.5	6.3	36	10	85	204	20	191	207	0	53
21	.81	4.2	6.3	33	11	115	234	21	192	109	.08	41
22	.83	4.2	6.1	30	16	177	272	21	192	88	11	37
23	1.0	4.5	6.4	28	34	224	231	20	182	91	5.6	28
24	1.2	6.1	6.4	26	56	348	188	17	166	113	41	23
25	1.2	6.0	6.7	25	100	402	148	18	136	98	64	24
26	1.3	5.2	6.4	29	170	468	123	29	98	71	82	27
27	1.5	4.6	5.9	32	270	492	129	38	69	47	78	27
28	1.7	4.6	5.8	35	321	410	130	43	50	30	58	25
29	1.7	4.8	6.2	43	------	327	111	56	37	21	103	22
30	1.9	5.0	6.2	58	------	256	89	56	29	16	206	19
31	1.6	------	6.2	80	------	219	------	45	------	12	254	------
TOTAL	24.38	88.94	171.4	1,163.6	1,519.8	4,622	5,396	1,857	2,648	1,160.7	998.02	4,379
MEAN	.79	2.96	5.53	37.5	54.3	149	180	59.9	88.3	37.4	32.2	146
MAX	1.9	6.1	6.7	120	321	492	342	151	192	207	254	488
MIN	.17	.35	4.2	6.2	7.8	15	88	17	17	1.8	0	19
CFSM	.008	.03	.05	.37	.54	1.48	1.78	.59	.87	.37	.32	1.45
IN.	.008	.03	.06	.43	.56	1.70	1.99	.68	.98	.43	.37	1.61

CAL YR 1974 TOTAL 35,126.28 MEAN 96.2 MAX 1,530 MIN .14 CFSM .95 IN 12.94
WTR YR 1975 TOTAL 24,028.84 MEAN 65.8 MAX 492 MIN 0 CFSM .65 IN 8.85

04143900 Shiawassee River at Linden, Mich.

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.

DRAINAGE AREA.--81.2 mi^2 (210.3 km^2).

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.--8 years, 64.0 ft^3/s (1.812 m^3/s), 10.70 in/yr (272 mm/yr).

EXTREMES.--Current year: Maximum discharge, 476 ft^3/s (13.5 m^3/s) Apr. 22, gage height, 7.43 ft (2.265 m); minimum, 7.3 ft^3/s (0.21 m^3/s) Oct. 1, gage height, 3.26 ft (0.994 m).
Period of record: Maximum discharge, 476 ft^3/s (13.5 m^3/s) Apr. 22, 1975, gage height, 7.43 ft (2.265 m); minimum, 0.74 ft^3/s (0.021 m^3/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.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	32	53	50	100	160	178	213	70	41	20	142
2	10	33	53	49	100	160	166	205	68	41	20	138
3	15	33	54	49	100	155	193	185	62	42	21	146
4	22	33	53	49	99	147	183	188	56	41	20	192
5	27	36	53	49	99	121	144	205	59	41	20	220
6	28	37	54	49	94	124	157	230	57	42	20	238
7	30	43	53	49	82	126	153	210	56	45	20	232
8	30	47	50	52	75	120	140	210	56	41	19	232
9	29	47	50	60	68	111	148	206	56	40	19	232
10	29	47	52	83	60	83	145	192	55	38	19	220
11	30	46	56	110	57	87	135	159	57	33	19	214
12	33	44	58	105	54	88	131	157	62	29	20	205
13	34	44	60	120	52	82	143	159	62	29	24	196
14	35	44	61	140	50	81	147	151	62	30	22	179
15	37	44	62	174	48	81	144	134	63	29	23	113
16	43	44	62	155	47	81	140	113	65	25	23	143
17	42	45	64	139	45	79	140	99	63	19	22	134
18	40	45	69	100	44	70	159	111	61	19	23	80
19	39	49	73	134	43	85	356	92	58	19	23	99
20	39	49	73	110	44	86	386	69	56	19	23	109
21	37	49	72	82	56	90	438	74	55	19	32	108
22	28	49	71	89	58	126	472	78	53	19	34	107
23	28	50	69	99	61	142	462	76	52	19	48	92
24	28	50	65	84	95	163	406	73	52	23	45	59
25	28	50	61	67	129	198	367	73	52	21	50	68
26	29	54	59	72	125	181	327	77	51	22	52	84
27	29	54	56	74	148	200	298	79	51	21	55	86
28	29	54	56	71	157	204	273	77	51	21	57	86
29	30	54	56	85	---	205	244	75	52	21	64	85
30	32	54	56	86	---	204	231	74	49	21	95	83
31	33	---	53	93	---	196	---	74	---	20	133	---
TOTAL	930.6	1360	1837	2728	2190	4036	7006	4118	1722	890	1085	4322
MEAN	30.0	45.3	59.3	88.0	78.2	130	234	133	57.4	28.7	35.0	144
MAX	43	54	73	174	157	205	472	230	70	45	133	238
MIN	7.6	32	50	49	43	70	131	69	49	19	19	59
CFSM	.37	.56	.73	1.08	.96	1.60	2.88	1.64	.71	.35	.43	1.77
IN.	.43	.62	.84	1.25	1.00	1.85	3.21	1.89	.79	.41	.50	1.98

CAL YR 1974 TOTAL 30655.3 MEAN 84.0 MAX 302 MIN 3.2 CFSM 1.03 IN 14.04
WTR YR 1975 TOTAL 32224.6 MEAN 88.3 MAX 472 MIN 7.6 CFSM 1.09 IN 14.76

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 mi^2 (953 km^2).

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.--28 years, 252 ft^3/s (7.137 m^3/s), 9.30 in/yr (236 mm/yr).

EXTREMES.--Current year. Maximum discharge, 3,880 ft^3/s (110 m^3/s) Apr. 22, gage height, 15.25 ft (4.648 m); minimum, 64 ft^3/s (1.81 m^3/s) Oct. 1, 2, 3; minimum gage height, 4.34 ft (1.323 m) Aug. 11.
Period of record: Maximum discharge, 3,880 ft^3/s (110 m^3/s) Apr. 22, 1975, gage height, 15.25 ft (4.648 m); minimum discharge, 19 ft^3/s (0.54 m^3/s); Aug. 16, 1965; minimum gage height, 3.55 ft (1.082 m) Sept. 16, 1960.

REMARKS.--Records fair. Low flow slightly regulated at times by mills above station. Records of water temperature for the current year are published in Section 2 of this report.

REVISIONS.--WSP 1144: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	88	222	169	591	904	805	865	242	209	82	446
2	67	87	220	161	544	784	742	799	236	180	82	528
3	65	93	230	161	456	665	630	708	222	141	85	688
4	68	98	220	163	406	600	619	650	211	127	85	952
5	74	122	195	158	378	549	612	607	220	119	88	1080
6	76	184	159	150	358	514	605	609	228	115	91	1190
7	73	310	152	156	310	492	580	614	230	120	88	1220
8	80	336	167	174	280	476	584	607	212	120	87	1240
9	83	244	169	266	250	422	564	582	199	124	83	1200
10	82	150	167	366	230	378	571	500	195	119	79	1090
11	80	125	182	544	220	350	575	420	192	117	76	880
12	80	125	193	710	200	328	555	368	197	115	80	675
13	79	127	190	784	190	338	591	342	203	122	108	538
14	83	127	193	799	180	318	625	392	188	127	136	480
15	90	125	201	766	170	282	660	400	180	131	167	376
16	95	125	199	720	170	290	690	412	182	129	167	380
17	98	127	244	623	170	308	660	436	209	119	120	318
18	102	129	288	540	169	328	730	414	214	115	100	280
19	107	136	290	484	182	370	1910	378	199	113	93	280
20	107	140	284	450	197	438	2660	306	195	112	93	282
21	98	141	280	440	205	569	3660	252	195	103	127	304
22	122	141	278	420	300	685	3840	234	192	96	205	312
23	167	140	264	402	474	739	3500	238	174	95	326	300
24	184	147	264	286	700	907	2960	230	163	96	358	280
25	184	150	248	252	853	1070	2490	224	176	122	336	258
26	176	149	238	250	1020	1130	2100	232	212	149	298	242
27	138	147	230	254	1020	1150	1740	246	262	129	266	234
28	90	163	232	234	1010	1090	1400	256	278	96	222	230
29	85	205	197	324	---	1010	1140	228	254	87	188	220
30	91	220	156	450	---	913	919	197	232	87	214	220
31	90	---	165	547	---	847	---	209	---	82	278	---
TOTAL	3081	4601	6717	12203	11233	19244	39717	12955	6292	3716	4808	16723
MEAN	99.4	153	217	394	401	621	1324	418	210	120	155	557
MAX	184	336	290	799	1020	1150	3840	865	278	209	358	1240
MIN	65	87	152	150	169	282	555	197	163	82	76	220
CFSM	.27	.42	.59	1.07	1.09	1.69	3.60	1.14	.57	.33	.42	1.51
IN.	.31	.47	.68	1.23	1.14	1.95	4.01	1.31	.64	.38	.49	1.69

CAL YR 1974 TOTAL 140418 MEAN 385 MAX 1890 MIN 65 CFSM 1.05 IN 14.19
WTR YR 1975 TOTAL 141290 MEAN 387 MAX 3840 MIN 65 CFSM 1.05 IN 14.28

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 mi^2 (1,393 km^2).

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.

GAGE.--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.--44 years, 327 ft^3/s (9.261 m^3/s), 8.25 in/yr (210 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,840 ft^3/s (137 m^3/s) Apr. 22, gage height, 9.25 ft (2.819 m); minimum, 68 ft^3/s (1.93 m^3/s) Oct. 1, gage height, 2.12 ft (0.646 m).
Period of record: Maximum discharge, 6,240 ft^3/s (177 m^3/s) Apr. 6, 1947, gage height, 10.35 ft (3.155 m); minimum, 0.2 ft^3/s (0.006 m^3/s) July 27, 1934, gage height, 1.12 ft (0.341 m); minimum daily, 2.0 ft^3/s (0.057 m^3/s) July 28, 1934.

REMARKS.--Records good. Flow regulated below about 800 cfs by powerplant at Shiawasseetown 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	107	257	209	705	1140	985	1070	334	294	88	1680
2	76	106	249	216	699	964	940	988	328	264	91	1250
3	75	108	225	205	633	818	803	896	305	228	104	1950
4	72	116	241	210	534	771	728	842	305	178	99	2770
5	72	194	251	189	490	708	735	792	1110	153	101	2090
6	74	186	248	182	444	643	744	753	609	143	111	2250
7	81	237	227	211	383	611	733	740	419	148	106	1840
8	79	352	241	292	327	574	746	723	350	151	104	1600
9	82	362	207	648	324	522	784	693	303	355	103	1470
10	88	282	203	747	217	499	845	645	273	205	99	1340
11	89	205	222	1010	275	438	1040	545	266	162	95	1170
12	87	174	268	925	328	420	1140	512	269	156	95	975
13	83	169	264	740	264	443	1150	464	259	160	100	765
14	101	174	253	721	236	484	1180	427	253	183	151	628
15	90	171	252	719	226	452	1100	466	279	185	166	560
16	93	166	271	691	194	560	1090	462	435	174	192	456
17	99	168	272	699	223	583	1020	472	323	167	200	445
18	100	169	302	603	245	605	1020	481	346	152	151	376
19	104	169	334	590	244	640	3480	451	310	146	120	372
20	108	176	321	520	258	672	3870	409	270	143	107	369
21	110	185	331	416	302	777	4160	344	252	135	422	372
22	104	185	301	494	452	1630	4780	342	244	128	680	379
23	121	190	339	448	1160	1670	4690	313	239	123	1620	372
24	184	190	308	421	1850	1840	4230	322	620	121	1770	369
25	203	193	300	384	1710	1890	3600	369	717	123	1100	355
26	201	191	286	342	1410	1640	2970	480	434	137	805	317
27	199	191	267	309	1330	1480	2420	421	369	172	576	301
28	166	188	281	300	1230	1360	1960	365	376	165	437	286
29	115	201	267	528	---	1290	1560	344	364	115	487	283
30	123	241	240	669	---	1190	1270	303	328	92	1520	274
31	107	---	205	672	---	1060	---	343	---	89	1430	---
TOTAL	3357	5746	8233	15310	16693	28374	55773	16777	11289	5147	13230	27664
MEAN	108	192	266	494	596	915	1859	541	376	166	427	922
MAX	203	362	339	1010	1850	1890	4780	1070	1110	355	1770	2770
MIN	71	106	203	182	194	420	728	303	239	89	88	274
CFSM	.20	.36	.49	.92	1.11	1.70	3.46	1.01	.70	.31	.79	1.71
IN.	.23	.40	.57	1.06	1.15	1.96	3.86	1.16	.78	.36	.91	1.91

CAL YR 1974 TOTAL 192750 MEAN 528 MAX 3320 MIN 71 CFSM .98 IN 13.33
WTR YR 1975 TOTAL 207593 MEAN 569 MAX 4780 MIN 71 CFSM 1.06 IN 14.35

PEAK DISCHARGE (BASE, 1,500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
02-24	1800	6.29	2,140	08-23	2200	7.05	2,620
03-22	1800	6.23	2,090	08-30	0500	6.04	1,880
04-22	2000	9.25	4,840	09-04	0300	7.73	3,340
06-05	0800	5.43	1,530				

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 mi^2 (1,650 km^2).

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.--36 years, 417 ft^3/s (11.81 m^3/s), 8.89 in/yr (226 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,220 ft^3/s (148 m^3/s) Apr. 23, gage height, 12.85 ft (3.917 m); minimum, 91 ft^3/s (2.58 m^3/s) Oct. 6, gage height, 2.39 ft (0.728 m).
Period of record: Maximum discharge, 7,500 ft^3/s (212 m^3/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 ft^3/s (0.76 m^3/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 poor. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	126	258	210	900	1400	1320	1430	356	326	102	2610
2	104	129	272	200	850	1300	1270	1250	341	290	99	2040
3	105	129	250	210	780	1200	1200	1130	331	262	101	1800
4	100	124	260	210	690	1100	990	1090	310	228	108	3730
5	100	147	270	200	610	1000	1020	1040	739	186	102	3450
6	97	222	260	190	530	920	1010	962	1030	163	102	3120
7	104	196	260	200	480	840	1030	942	587	151	110	2690
8	100	258	250	230	430	760	1050	868	451	146	106	2200
9	100	344	240	740	390	700	1160	837	382	190	101	1950
10	105	339	232	800	350	650	1290	789	336	290	99	1770
11	105	260	250	1100	290	600	1670	716	310	190	96	1600
12	105	206	300	1050	350	580	1750	631	308	163	96	1380
13	100	177	300	950	400	580	1680	619	299	160	104	1110
14	110	171	290	910	330	600	1600	550	288	165	99	870
15	105	169	303	900	300	620	1520	525	283	177	121	726
16	107	171	303	870	270	650	1450	540	361	180	148	645
17	108	171	317	820	290	700	1390	534	401	171	171	555
18	117	169	308	770	310	750	1290	540	354	162	179	533
19	118	169	360	720	330	800	2990	531	364	156	145	476
20	121	171	360	650	360	900	4190	492	317	151	111	500
21	130	186	360	570	430	1500	4220	439	281	146	143	485
22	127	190	350	600	600	2500	4610	379	264	138	955	488
23	162	188	350	550	1500	2800	5160	369	253	136	1440	491
24	228	202	340	510	2500	2700	4970	339	330	124	3090	476
25	239	202	330	450	2300	2750	4350	356	1290	121	2090	482
26	237	200	310	410	2000	2270	3640	414	670	118	1350	431
27	226	200	300	390	1700	1950	3020	495	457	124	920	408
28	186	200	290	500	1600	1780	2470	417	403	157	652	383
29	175	196	270	700	---	1710	2060	377	395	160	551	368
30	144	216	250	850	---	1620	1640	349	361	128	1300	360
31	124	---	230	900	---	1450	---	331	---	109	1830	---
TOTAL	4090	5828	9023	18360	21870	39680	67010	20281	12852	5368	16621	38127
MEAN	132	194	291	592	781	1280	2234	654	428	173	536	1271
MAX	239	344	360	1100	2500	2800	5160	1430	1290	326	3090	3730
MIN	97	124	230	190	270	580	990	331	253	109	96	360
CFSM	.21	.30	.46	.93	1.23	2.01	3.51	1.03	.67	.27	.84	2.00
IN.	.24	.34	.53	1.07	1.28	2.32	3.91	1.18	.75	.31	.97	2.23

CAL YR 1974 TOTAL 240615 MEAN 659 MAX 3790 MIN 78 CFSM 1.03 IN 14.05
WTR YR 1975 TOTAL 259110 MEAN 710 MAX 5160 MIN 96 CFSM 1.11 IN 15.13

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 mi^2 (143.0 km^2).

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.--43 years, 29.8 ft^3/s (0.844 m^3/s), 7.33 in/yr (186 mm/yr).

EXTREMES.--Current year: Maximum discharge, 720 ft^3/s (20.4 m^3/s) Apr. 21, gage height, 18.70 ft (5.700 m); minimum, 6.6 ft^3/s (0.19 m^3/s) Aug. 20, 21, gage height, 15.21 ft (4.636 m).
Period of record: Maximum discharge, 1,280 ft^3/s (36.2 m^3/s) Apr. 6, 1947, gage height, 19.87 ft (6.056 m), from floodmark, from rating curve extended above 660 ft^3/s (18.7 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	14	15	22	87	112	96	87	31	59	9.2	104
2	13	14	17	22	86	94	90	79	29	45	8.5	121
3	13	14	19	22	77	79	80	71	28	37	10	136
4	13	13	21	22	74	78	107	68	31	31	15	134
5	13	17	18	20	56	70	87	69	53	26	15	127
6	11	20	18	21	49	61	73	70	64	22	13	140
7	11	20	19	22	43	56	69	68	84	20	12	132
8	11	22	23	26	38	53	70	65	87	19	10	120
9	11	22	22	44	31	50	73	61	75	18	9.2	103
10	11	22	23	57	29	48	74	55	59	17	8.5	86
11	11	21	24	99	27	47	77	49	48	12	8.1	71
12	11	20	26	130	26	46	83	47	45	8.1	7.7	56
13	11	19	27	120	25	42	91	46	38	8.1	8.5	49
14	12	19	27	95	25	41	101	44	35	8.5	8.9	44
15	11	18	28	82	25	40	104	42	35	8.5	8.5	39
16	12	17	29	74	26	47	107	41	34	8.5	8.5	34
17	12	18	30	66	27	51	105	39	33	8.9	8.1	31
18	11	18	30	58	27	60	117	38	35	8.9	7.7	30
19	11	17	29	54	27	70	295	37	37	8.9	7.3	31
20	11	18	27	48	26	82	544	35	37	8.9	7.0	33
21	13	19	26	44	28	94	700	33	35	8.5	14	35
22	15	19	26	42	35	116	556	34	31	8.1	26	40
23	15	19	25	38	61	130	426	32	30	7.7	49	41
24	15	20	24	37	100	189	332	32	32	12	94	39
25	14	20	23	41	140	212	259	34	37	15	162	36
26	14	19	21	42	177	212	177	46	62	15	219	34
27	14	19	22	41	163	177	137	44	110	15	183	33
28	14	19	21	44	137	146	117	40	120	14	134	32
29	14	19	21	56	---	123	103	36	100	12	100	31
30	14	18	22	60	---	113	91	33	78	11	83	30
31	14	---	21	75	---	101	---	33	---	10	81	---
TOTAL	388	554	724	1624	1672	2840	5341	1508	1553	511.6	1335.7	1972
MEAN	12.5	18.5	23.4	52.4	59.7	91.6	178	48.6	51.8	16.5	43.1	65.7
MAX	15	22	30	130	177	212	700	87	120	59	219	140
MIN	11	13	15	20	25	40	69	32	28	7.7	7.0	30
CFSM	.23	.34	.42	.95	1.08	1.66	3.22	.88	.94	.30	.78	1.19
IN.	.26	.37	.49	1.09	1.13	1.91	3.60	1.02	1.05	.34	.90	1.33

CAL YR 1974 TOTAL 18921.1 MEAN 51.8 MAX 413 MIN 5.9 CFSM .94 IN 12.75
WTR YR 1975 TOTAL 20023.3 MEAN 54.9 MAX 700 MIN 7.0 CFSM .99 IN 13.49

PEAK DISCHARGE (BASE, 160 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-12	--	--	175	04-21	0700	18.70	720
02-26	1500	16.82	189	08-26	1100	17.00	225
03-25	1900	16.98	221				

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 mi^2 (1,362 km^2).

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, 810,000,000 cu ft (22.9 hm^3) June 7, elevation, 755.45 ft (230.26 m); minimum, 250,000,000 cu ft (7.08 hm^3) Apr. 12, elevation, 746.70 ft (227.59 m).
Period of record: Maximum contents, 996,000,000 cu ft (28.2 hm^3) 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 hm^3) 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 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (millions of cubic feet)	Change in contents during month	
			Millions of cubic feet	Equivalent in ft^3/s
Sept. 30	752.53	574	--	--
Oct. 31	751.67	514	-60	-22.4
Nov. 30	751.74	519	+5	+1.9
Dec. 31	751.20	485	-34	-12.7
Calendar year 1974	--	--	-40	-1.3
Jan. 31	751.48	502	+17	+6.3
Feb. 28	752.46	569	+67	+27.7
Mar. 31	752.17	549	-20	-7.5
Apr. 30	750.64	451	-98	-37.8
May 31	755.17	785	+334	+125
June 30	755.24	792	+7	+2.7
July 31	753.54	650	-142	-53.0
Aug. 31	755.15	784	+134	+50.0
Sept. 30	755.16	784	0	0
Water year 1974-75	--	--	+210	+6.7

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 Powers-Cullen drain, and 3.8 mi (6.1 km) south of Otisville.

DRAINAGE AREA.--531 mi^2 (1,375 km^2).

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.--23 years, 286 ft^3/s (8.100 m^3/s), 7.31 in/yr (186 mm/yr), adjusted for storage since 1954.

EXTREMES.--Current year: Maximum discharge, 3,980 ft^3/s (113 m^3/s) Apr. 22, gage height, 13.62 ft (4.151 m); minimum, 13 ft^3/s (0.37 m^3/s) Sept. 21, 22, 23, 24, 25, 26; minimum gage height, 1.93 ft (0.588 m) Sept. 22, 23, 24.
Period of record: Maximum discharge, 6,150 ft^3/s (174 m^3/s) Apr. 1, 1960, gage height, 14.97 ft (4.563 m); minimum, 2.1 ft^3/s (0.059 m^3/s) Oct. 11, 12, 1971, gage height, 1.57 ft (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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	131	164	199	604	1300	1030	375	290	337	143	713
2	82	133	201	193	602	1090	941	447	274	283	143	699
3	80	133	261	193	598	889	876	524	257	242	143	697
4	91	133	261	196	571	757	808	566	283	220	143	697
5	108	148	259	188	514	674	915	575	442	201	143	697
6	109	167	259	177	469	616	1250	636	677	196	135	703
7	109	167	257	186	415	573	1310	679	737	194	123	694
8	108	165	259	205	380	519	1380	643	674	193	123	690
9	108	165	259	296	377	454	1200	609	649	191	123	688
10	118	165	256	449	375	418	1000	575	609	193	123	623
11	133	165	181	643	373	400	905	469	539	191	123	506
12	133	165	131	794	371	391	876	273	478	191	123	508
13	133	165	162	810	370	388	886	242	364	191	123	506
14	135	165	188	781	368	386	925	198	276	191	123	505
15	133	165	206	764	366	384	983	157	295	189	123	456
16	133	164	223	746	364	393	1060	99	301	152	123	363
17	133	164	233	681	363	425	1130	99	339	92	123	290
18	133	164	239	614	361	503	1190	99	358	92	123	148
19	133	164	242	550	288	625	463	99	506	92	106	103
20	133	162	233	535	177	775	1110	79	532	92	80	106
21	133	164	232	490	179	915	2950	50	494	99	91	60
22	133	164	225	411	188	1020	3910	56	424	130	89	13
23	133	164	215	361	203	1180	3660	52	358	164	89	13
24	133	165	211	332	211	1430	3050	50	337	157	152	13
25	131	164	208	324	559	1750	2470	56	330	147	298	14
26	131	164	196	327	1140	2080	2070	114	337	147	388	14
27	131	164	182	327	1400	2190	1760	245	361	145	391	15
28	131	164	193	327	1420	2010	1530	342	395	145	519	35
29	131	164	193	386	---	1690	1360	361	416	145	643	97
30	131	164	191	469	---	1420	947	317	393	145	681	135
31	131	---	193	557	---	1210	---	308	---	145	710	---
TOTAL	3774	4791	6713	13511	13606	28855	43945	9394	12725	5292	6563	10801
MEAN	122	160	217	436	486	931	1465	303	424	171	212	360
MAX	135	167	261	810	1420	2190	3910	679	737	337	710	713
MIN	80	131	131	177	177	384	463	50	257	92	80	13
MEAN+	99.3	162	204	442	514	923	1427	428	427	118	262	360
CFSM+	.19	.31	.38	.83	.97	1.74	2.69	.81	.80	.22	.49	.68
IN+	.22	.34	.44	.96	1.01	2.00	3.00	.93	.90	.26	.57	.76

CAL YR 1974 TOTAL 167269 MEAN 458 MAX 2700 MIN 78 MEAN+ 457 CFSM+ .86 IN+ 11.68
WTR YR 1975 TOTAL 159970 MEAN 438 MAX 3910 MIN 13 MEAN+ 445 CFSM+ .84 IN+ 11.37

+Adjusted for change in contents in Holloway Reservoir.

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 mi^2 (89.4 km^2).

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.

AVERAGE DISCHARGE.--5 years, 22.9 ft^3/s (0.649 m^3/s), 9.01 in/yr (229 mm/yr).

EXTREMES.--Maximum discharge, 366 ft^3/s (10.4 m^3/s) Apr. 19, gage height, 8.49 ft (2.588 m); minimum,3.1 ft^3/s (0.088 m^3/s) Aug. 10, gage height, 1.67 ft (0.509 m).
Period of record: Maximum discharge, 533 ft^3/s (15.1 m^3/s) May 17, 1974, gage height, 8.21 ft (2.502 m); maximum gage height, 8.68 ft (2.646 m) Dec. 31, 1972; minimum discharge, 1.2 ft^3/s (0.034 m^3/s) Dec. 1, 1971, result of freezeup; minimum gage height, 1.56 ft (0.475 m) Aug. 8, 9, 1971.

REMARKS.--Records good.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	5.1	5.7	7.9	24	31	40	31	9.2	5.3	3.4	35
2	5.3	4.8	6.0	7.6	20	27	37	28	8.5	5.2	3.5	18
3	4.7	4.9	6.3	7.3	17	25	40	26	8.1	5.0	3.8	18
4	4.6	5.5	5.8	7.3	15	22	48	28	12	4.8	3.8	24
5	4.3	8.4	5.4	7.2	14	20	46	28	43	4.7	3.6	21
6	4.3	9.1	5.3	7.3	13	21	44	32	26	4.7	3.6	43
7	4.3	7.5	5.2	6.9	12	21	36	33	18	4.8	3.5	19
8	4.5	6.4	9.4	20	12	19	42	27	15	4.8	3.4	14
9	4.3	5.8	10	100	11	18	51	23	12	4.6	3.3	11
10	4.2	5.6	9.0	93	11	18	75	21	9.4	4.6	3.2	9.6
11	4.0	5.5	8.7	118	11	17	112	19	8.2	4.3	3.3	8.9
12	4.0	5.7	7.7	60	10	20	125	21	10	4.5	3.3	9.2
13	4.1	5.5	8.7	42	10	27	101	25	10	4.6	4.5	8.4
14	5.1	5.7	8.3	34	10	27	98	21	9.2	4.6	4.5	7.6
15	5.2	5.7	8.1	28	9.8	31	82	19	9.0	4.4	4.0	7.0
16	4.9	5.6	9.9	24	9.6	50	71	17	9.8	4.2	3.8	6.7
17	4.6	6.8	11	21	13	64	60	16	14	4.2	3.6	6.3
18	4.4	7.2	9.9	19	14	68	60	15	11	4.1	3.4	6.3
19	4.3	6.6	8.8	17	13	74	254	14	14	4.5	3.3	6.9
20	4.2	6.3	8.0	16	13	68	151	13	11	4.4	3.3	12
21	4.2	6.6	7.6	14	23	59	117	12	8.9	4.1	24	10
22	4.1	7.1	7.3	13	84	106	94	17	7.6	4.0	35	10
23	4.3	6.6	7.3	12	186	150	78	16	6.8	3.9	35	9.7
24	4.2	8.3	7.8	12	191	196	78	14	11	4.1	55	8.4
25	4.2	8.3	7.8	21	90	164	63	12	13	3.9	43	7.5
26	4.1	7.3	7.3	20	61	114	52	12	8.3	3.8	21	7.7
27	4.2	6.5	6.8	17	51	87	44	11	7.0	3.8	15	7.6
28	4.2	6.2	6.5	15	36	70	40	9.6	6.4	3.8	11	6.9
29	4.4	6.1	6.7	100	---	68	36	8.5	6.0	3.6	11	6.6
30	5.2	5.6	7.7	50	---	56	33	8.5	5.6	3.5	17	6.5
31	5.4	---	7.3	31	---	46	---	10	---	3.5	22	---
TOTAL	138.6	192.3	237.3	948.5	984.4	1784	2208	587.6	348.0	134.3	361.1	372.8
MEAN	4.47	6.41	7.65	30.6	35.2	57.5	73.6	19.0	11.6	4.33	11.6	12.4
MAX	5.4	9.1	11	118	191	196	254	33	43	5.3	55	43
MIN	4.0	4.8	5.2	6.9	9.6	17	33	8.5	5.6	3.5	3.2	6.3
CFSM	.13	.19	.22	.89	1.02	1.67	2.13	.55	.34	.13	.34	.36
IN.	.15	.21	.26	1.02	1.06	1.92	2.38	.63	.38	.14	.39	.40

CAL YR 1974 TOTAL 10422.2 MEAN 28.6 MAX 434 MIN 3.4 CFSM .83 IN 11.24
WTR YR 1975 TOTAL 8296.9 MEAN 22.7 MAX 254 MIN 3.2 CFSM .66 IN 8.95

PEAK DISCHARGE (BASE, 120 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-09	0700	5.30	121	03-23	0300	6.93	210
01-10	2400	6.02	157	03-24	1400	7.80	275
01-29	1400	5.92	152	04-12	0100	6.43	180
02-23	0200	7.18	225	04-13	2400	5.46	129
02-24	1100	7.30	233	04-19	0600	8.49	366

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 mi^2 (258.0 km^2).

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.--10 years, 71.3 ft^3/s (2.019 m^3/s), 9.72 in/yr (247 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,430 ft^3/s (40.5 m^3/s) Apr. 21, gage height, 11.32 ft (3.450 m); minimum, 10 ft^3/s (0.28 m^3/s) Aug. 12, gage height, 3.10 ft (0.945 m).
Period of record: Maximum discharge, 1,430 ft^3/s (40.5 m^3/s) Apr. 21, 1975, gage height, 11.32 ft (3.450 m); minimum, 2.7 ft^3/s (0.076 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	21	30	44	130	180	189	167	61	119	13	379
2	30	21	27	40	110	160	159	150	50	86	12	369
3	28	22	42	47	95	146	121	118	34	72	17	442
4	26	24	36	42	85	132	158	142	52	62	21	602
5	25	34	36	39	80	121	130	140	216	53	22	508
6	24	34	36	47	72	133	126	153	146	47	24	508
7	22	38	38	42	68	126	149	189	135	45	21	404
8	21	42	51	73	64	112	158	121	131	52	18	327
9	21	41	46	206	60	83	166	116	135	35	15	271
10	20	36	48	199	56	91	183	109	113	23	13	215
11	20	34	49	334	54	81	243	97	82	23	13	174
12	20	33	54	288	52	87	269	99	70	26	11	154
13	18	33	53	240	50	86	258	98	66	27	13	133
14	22	34	51	190	50	85	268	88	60	28	15	116
15	20	32	51	140	50	86	282	85	57	27	20	107
16	20	32	57	120	50	98	276	82	53	26	24	100
17	23	32	59	110	54	114	254	78	53	24	20	79
18	25	31	57	98	58	133	251	73	57	21	18	70
19	24	33	61	90	63	158	1000	66	76	19	16	70
20	23	36	57	80	68	167	930	57	70	18	15	78
21	22	38	49	75	76	178	1370	45	62	17	70	79
22	21	36	46	70	125	306	990	55	58	16	110	88
23	20	35	47	65	282	409	687	55	50	16	230	88
24	19	40	44	65	335	516	520	61	125	22	344	86
25	19	40	44	70	285	546	382	69	161	24	315	72
26	19	38	40	70	250	466	298	69	159	35	367	64
27	19	40	52	75	220	426	253	60	235	32	389	61
28	20	38	45	99	200	379	217	55	273	25	324	60
29	20	35	40	200	---	330	194	50	212	19	238	58
30	23	34	42	163	---	282	177	46	157	17	314	57
31	21	---	40	145	---	242	---	46	---	15	265	---
TOTAL	683	1017	1428	3556	3142	6459	10658	2839	3209	1071	3307	5819
MEAN	22.0	33.9	46.1	115	112	208	355	91.6	107	34.5	107	194
MAX	30	42	61	334	335	546	1370	189	273	119	389	602
MIN	18	21	27	39	50	81	121	45	34	15	11	57
CFSM	.22	.34	.46	1.15	1.12	2.09	3.56	.92	1.07	.35	1.07	1.95
IN.	.26	.38	.53	1.33	1.17	2.41	3.98	1.06	1.20	.40	1.24	2.17

CAL YR 1974 TOTAL 35546.4 MEAN 97.4 MAX 743 MIN 9.4 CFSM .98 IN 13.28
WTR YR 1975 TOTAL 43188.0 MEAN 118 MAX 1370 MIN 11 CFSM 1.18 IN 16.13

PEAK DISCHARGE (BASE 250 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	1200	7.57	352	06-05	0700	6.75	265
01-29	1400	6.81	271	06-28	0800	6.89	279
02-24	1600	7.66	362	08-27	0600	7.95	396
03-24	1900	9.60	660	08-30	1600	7.50	344
04-19	1100	10.96	1,220	09-04	0900	9.49	628
04-21	0700	11.32	1,430				

04148160 Gilkey Creek near Flint, Mich.

LOCATION.--Lat 43°01'27", long 83°37'32", in NE¼ SW¼ 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 mi^2 (16.29 km^2).

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).

AVERAGE DISCHARGE.--5 years, 5.38 ft^3/s (0.152 m^3/s), 11.62 in/yr (295 mm/yr).

EXTREMES.--Current year: Maximum discharge, 285 ft^3/s (8.07 m^3/s) Apr. 19, gage height, 7.66 ft (2.335 m); no flow Oct. 21-27.
Period of record: Maximum discharge, 285 ft^3/s (8.07 m^3/s) Apr. 19, 1975, gage height, 7.66 ft (2.335 m); no flow on many days during 1970, 1973, and 1974.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.65	.04	.31	1.4	2.7	2.9	3.7	3.2	.69	.88	.09	65
2	.85	.01	.31	1.2	2.2	2.4	4.0	2.3	.63	.75	.12	25
3	.13	.11	.42	1.1	1.5	2.0	4.5	1.9	.88	.63	.33	81
4	.08	.46	.59	1.3	1.3	1.5	5.0	5.1	17	.57	.63	97
5	.07	4.9	.46	1.1	1.1	1.3	5.6	2.9	46	.57	.16	49
6	.10	1.4	.42	1.1	.96	1.6	6.3	4.0	12	.57	.14	61
7	.10	.53	.85	1.3	.86	2.0	8.2	2.3	5.3	8.2	.09	24
8	.14	.39	6.1	17	.78	1.8	13	1.8	2.9	12	.09	13
9	.07	.27	2.7	31	.74	1.4	17	1.5	1.9	1.6	.08	6.9
10	.04	.24	1.4	18	.68	1.3	28	1.3	1.4	1.0	.09	4.0
11	.02	.35	1.1	22	.62	1.3	37	1.2	2.3	.69	.69	2.9
12	.02	.42	2.5	5.5	.58	2.6	27	6.3	2.0	.48	.18	2.5
13	.02	.27	2.6	3.9	.54	5.1	19	3.3	1.7	.48	.44	1.5
14	1.1	.59	1.9	1.5	.52	3.7	16	1.9	1.2	1.0	.33	1.1
15	.35	.65	1.3	1.3	.52	9.6	12	1.6	2.7	.44	.12	.95
16	.08	.35	3.8	1.1	.56	14	9.3	1.3	1.9	.30	.09	.88
17	.04	.71	3.1	1.0	1.9	14	6.9	1.1	1.2	.22	.09	.69
18	.02	.46	1.3	.92	2.5	13	38	.95	1.5	.20	.08	1.2
19	.01	.35	1.3	.84	2.2	15	250	.88	4.2	.20	.08	2.7
20	.01	.39	1.1	.78	2.0	12	43	.75	1.0	.40	.07	7.1
21	0	1.2	1.0	.73	2.4	11	19	1.7	.75	.30	47	1.7
22	0	.93	1.0	.69	20	68	13	3.2	.63	.20	40	1.6
23	0	.65	1.2	.68	56	34	11	.95	.63	.14	104	1.1
24	0	1.7	1.9	.76	72	82	11	.88	25	1.1	77	.81
25	0	1.0	1.5	5.0	19	36	7.7	3.3	21	.24	30	.69
26	0	.49	1.1	3.7	7.9	18	5.5	5.8	7.1	.16	16	.88
27	0	.39	.93	1.6	4.6	10	4.4	1.5	3.3	.14	5.1	.69
28	.01	.42	.93	1.0	3.5	7.9	4.0	.75	2.2	.11	2.3	.57
29	.02	.42	1.0	40	---	12	3.5	.63	1.5	.11	21	.52
30	.60	.35	1.8	12	---	7.9	2.7	.95	1.1	.11	67	.52
31	.13	---	1.8	8.7	---	5.3	---	1.5	---	.09	52	---
TOTAL	4.66	29.44	48.72	184.20	210.16	400.6	635.3	66.74	171.61	33.88	465.39	456.50
MEAN	.15	.98	1.57	5.94	7.51	12.9	21.2	2.15	5.72	1.09	15.0	15.2
MAX	1.1	4.9	6.1	40	72	82	250	6.3	46	12	104	97
MIN	0	.01	.31	.58	.52	1.3	2.7	.63	.63	.09	.07	.52
CFSM	.02	.11	.25	.94	1.19	2.05	3.37	.34	.91	.17	2.38	2.42
IN.	.03	.12	.29	1.09	1.24	2.37	3.76	.39	1.01	.20	2.75	2.70

CAL YR 1974 TOTAL 2017.83 MEAN 5.53 MAX 165 MIN 0 CFSM .88 IN 11.93
WTR YR 1975 TOTAL 2698.20 MEAN 7.39 MAX 250 MIN 0 CFSM 1.17 IN 15.96

PEAK DISCHARGE (BASE, 80 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
02-24	0700	3.58	109	08-23	1900	4.76	156
03-22	1600	3.48	105	08-30	0200	3.09	90
03-24	1000	3.85	120	08-31	2200	3.00	86
04-19	0900	7.66	285	09-03	2200	5.15	172
06-05	0100	3.13	91	09-05	2200	3.16	92
08-21	1800	4.40	142				

04148200 Swartz Creek near Holly, Mich.

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.

DRAINAGE AREA.--12.0 mi^2 (31.1 km^2).

PERIOD OF RECORD.--January 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 905 ft (276 m) from topographic map.

AVERAGE DISCHARGE.--19 years, 7.86 ft^3/s (0.223 m^3/s), 8.89 in/yr (226 mm/yr).

EXTREMES.--Current year: Maximum discharge, 177 ft^3/s (5.01 m^3/s) Apr. 19, 20, gage height, 4.81 ft (1.466 m); minimum, 1.3 ft^3/s (0.037 m^3/s) Aug. 10, gage height, 1.68 ft (0.512 m).
Period of record: Maximum discharge, 177 ft^3/s (5.01 m^3/s) Apr. 19, 20, 1975, gage height, 4.81 ft (1.466 m); minimum, 0.10 ft^3/s (0.003 m^3/s) on many days in 1963, 1964, and 1965.

REMARKS.--Records good.

REVISIONS.--WSP 2111: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.3	3.6	6.6	7.0	16	23	24	26	8.4	4.5	1.8	48
2	3.4	3.3	6.8	6.8	14	20	22	23	7.8	3.9	1.9	49
3	3.4	3.5	7.2	6.5	12	17	24	21	7.2	3.5	2.2	46
4	3.4	4.4	6.9	6.5	10	15	24	21	7.4	3.0	2.3	48
5	3.4	6.6	6.4	6.4	9.1	14	23	21	20	2.8	2.3	43
6	3.4	8.5	6.5	6.1	8.4	13	21	20	24	2.4	2.1	38
7	3.6	7.8	6.5	6.1	7.7	13	21	19	20	2.6	1.8	31
8	3.5	6.9	8.7	7.8	7.2	12	22	17	15	2.6	1.7	24
9	3.3	6.1	9.2	17	6.7	12	23	15	12	2.3	1.5	19
10	2.9	5.8	8.6	25	6.3	11	25	14	9.7	2.1	1.4	15
11	2.8	5.6	8.8	40	6.0	11	28	12	8.9	2.0	1.5	13
12	2.9	5.4	8.8	38	5.8	11	30	15	10	1.9	1.6	11
13	2.9	5.4	9.0	32	5.6	11	29	17	8.9	1.8	2.7	9.9
14	3.7	5.6	9.0	24	5.4	11	27	15	7.8	2.0	3.6	8.8
15	4.1	5.8	9.1	19	5.2	11	26	14	7.5	2.0	3.6	8.1
16	4.1	5.4	9.8	14	5.7	12	25	13	8.0	2.0	3.4	7.3
17	3.8	5.8	10	11	6.2	14	23	12	7.5	2.0	3.0	6.8
18	3.3	6.3	9.7	10	7.0	17	33	11	7.5	2.0	2.7	7.0
19	3.1	6.1	9.1	9.0	7.5	23	168	12	7.3	2.0	2.6	9.0
20	3.0	5.8	8.5	8.0	7.4	26	170	9.7	6.8	2.0	2.4	11
21	2.8	6.1	8.2	7.3	7.6	28	141	9.0	6.1	2.0	5.1	11
22	2.8	6.3	8.0	6.7	11	39	112	12	5.6	1.8	9.7	9.5
23	2.8	6.3	7.8	6.3	24	44	93	12	5.1	1.7	19	8.4
24	2.9	7.1	7.6	6.1	35	50	76	9.9	6.3	6.1	27	7.6
25	3.0	7.4	7.6	7.3	38	52	61	8.9	14	5.4	27	7.0
26	3.0	6.9	7.4	8.2	36	50	50	11	13	3.9	23	7.4
27	3.0	6.4	7.1	7.7	32	43	41	11	10	3.1	17	7.4
28	2.9	6.2	6.8	7.3	27	36	35	9.1	7.8	2.5	13	7.0
29	2.9	5.9	6.7	18	---	33	32	7.9	6.3	2.2	12	6.6
30	3.2	5.9	6.9	21	---	30	28	7.7	5.1	2.0	24	6.4
31	3.5	---	7.0	19	---	26	---	8.8	---	2.0	29	---
TOTAL	100.1	178.2	246.3	415.1	369.8	728	1457	435.0	291.0	82.1	251.9	531.2
MEAN	3.23	5.94	7.95	13.4	13.2	23.5	48.6	14.0	9.70	2.65	8.13	17.7
MAX	4.1	8.5	10	40	38	52	170	26	24	6.1	29	49
MIN	2.8	3.3	6.4	6.1	5.2	11	21	7.7	5.1	1.7	1.4	6.4
CFSM	.27	.50	.66	1.12	1.10	1.96	4.05	1.17	.81	.22	.68	1.48
IN.	.31	.55	.76	1.29	1.15	2.26	4.52	1.35	.90	.25	.78	1.65

CAL YR 1974 TOTAL 4676.03 MEAN 12.8 MAX 96 MIN .78 CFSM 1.07 IN 14.49
WTR YR 1975 TOTAL 5085.70 MEAN 13.9 MAX 170 MIN 1.4 CFSM 1.16 IN 15.76

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 mi^2 (298 km^2).

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.

AVERAGE DISCHARGE.--5 years, 96.6 ft^3/s (2.736 m^3/s), 11.41 in/yr (290 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,160 ft^3/s (89.5 m^3/s) Apr. 19, gage height, 9.02 ft (2.749 m); minimum, 2.2 ft^3/s (0.062 m^3/s) Oct. 5, gage height, 1.68 ft (0.512 m).
Period of record: Maximum discharge, 3,160 ft^3/s (89.5 m^3/s) Apr. 19, 1975, gage height, 9.02 ft (2.749 m); minimum, 0.98 ft^3/s (0.028 m^3/s) Sept. 15, 1973; minimum gage height, 1.16 ft (0.354 m) Aug. 19, 1971.
Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures published in WRD Michigan,1971, 1972, and 1973.

Water year	Date	Discharge (cfs)	Gage Height (feet)
1971	Mar. 15, 1971	1,300	7.35
1972	Apr. 17, 1972	1,380	7.45
1973	Dec. 31, 1972	2,240	8.30

REMARKS.--Records good.

REVISIONS.--Published figures of discharge, in cubic feet per second, for high-water periods in water years 1971, 1972 and 1973, superseding figures published in WRD Michigan, 1971, 1972, and 1973 are given below:

Mar. 15, 1971..... 1,200
Apr. 17, 1972..... 1,180
Dec. 30, 1972..... 662
Dec. 31, 1972..... 1,990
Jan. 01, 1973..... 958

Month	Cfs-days	Maximum	Minumum	Mean	Per Square mile	Runoff in inches
March 1971.....	8,680	1,200	135	280	2.43	2.81
Water year 1970-71	24,686.5	1,200	1.3	67.6	.59	7.98
Calendar year 1971.....	20,572.4	1,200	1.3	56.4	.49	6.65
April 1972.....	6,593	1,180	67	220	1.91	2.13
Water year 1971-72.....	21,459.6	1,180	2.9	58.6	.51	6.94
December 1972	5,889	1,990	69	190	1.65	1.90
Calendar year 1972.....	30,657.7	1,990	5.6	83.8	.73	9.91
January 1973.....	6,717	958	70	271	1.89	2.17
Water year 1972-73.....	43,881.8	1,990	1.2	120	1.04	14.19
Calendar year 1973.....	38,833.6	958	1.2	106	.92	12.56

Revised peak discharge.--1973: Dec. 31 (0800) 2,240 cfs (8.30 ft); Mar. 14 (1800) 888 cfs (6.84 ft).

04148300 Swartz Creek at Flint, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	5.3	15	28	72	139	184	198	44	29	4.3	620
2	6.2	5.1	18	27	60	129	170	170	41	25	5.9	317
3	3.4	8.8	19	26	52	104	126	152	39	21	6.3	532
4	3.4	10	18	25	46	100	181	147	82	19	5.5	714
5	3.0	32	17	26	42	90	156	137	223	16	5.9	474
6	3.2	20	16	23	39	82	143	126	129	24	5.5	494
7	3.4	12	24	26	38	76	150	109	85	34	4.3	292
8	3.2	10	38	107	36	66	170	101	67	26	3.5	217
9	3.2	10	28	309	35	64	203	93	58	18	3.3	182
10	3.2	9.6	26	274	34	61	278	85	52	15	3.3	159
11	4.2	12	24	371	33	58	411	79	55	12	12	144
12	3.4	11	30	178	31	60	442	89	56	12	3.5	131
13	3.2	11	28	113	31	74	389	86	51	13	6.7	113
14	16	14	28	100	30	79	340	80	45	15	11	98
15	6.8	13	29	90	30	86	286	75	55	11	5.5	86
16	4.4	12	40	80	29	150	252	71	51	9.7	4.3	76
17	4.4	14	37	74	37	151	220	68	44	8.6	3.5	67
18	4.2	12	31	68	41	179	390	65	38	7.1	3.5	65
19	4.2	12	29	62	40	215	2690	61	35	7.5	3.5	73
20	4.2	13	29	58	39	207	1350	57	30	6.7	3.5	76
21	4.2	17	26	53	52	217	780	62	26	5.9	264	62
22	4.4	15	26	49	169	675	614	68	24	5.1	210	57
23	3.8	17	27	45	495	575	564	57	21	4.7	895	51
24	3.8	22	27	41	684	745	538	75	364	10	1050	47
25	4.4	19	27	57	429	599	472	75	352	7.1	428	45
26	4.2	16	29	49	248	405	414	66	122	5.1	235	45
27	4.2	16	25	48	191	316	362	59	75	4.3	140	45
28	4.8	16	24	37	168	271	326	50	53	4.3	95	42
29	4.6	16	24	226	---	278	288	45	42	4.3	203	40
30	12	15	27	130	---	252	235	49	35	4.3	701	38
31	6.2	---	27	90	---	204	---	52	---	4.7	604	---
TOTAL	150.0	415.8	813	2890	3231	6707	13124	2707	2394	389.4	4929.8	5402
MEAN	4.84	13.9	26.2	93.2	115	216	437	87.3	79.8	12.6	159	180
MAX	16	32	40	371	684	745	2690	198	364	34	1050	714
MIN	3.0	5.1	15	23	29	58	126	45	21	4.3	3.3	38
CFSM	.04	.12	.23	.81	1.00	1.88	3.80	.76	.69	.11	1.38	1.57
IN.	.05	.13	.26	.93	1.05	2.17	4.25	.88	.77	.13	1.59	1.75

CAL YR 1974 TOTAL 38841.1 MEAN 106 MAX 1700 MIN 1.7 CFSM .92 IN 12.56
WTR YR 1975 TOTAL 43153.0 MEAN 118 MAX 2690 MIN 3.0 CFSM 1.03 IN 13.96

PEAK DISCHARGE (BASE, 450 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
02-24	1300	6.57	738	08-21	1800	6.85	895
03-22	1800	6.82	874	08-23	2200	7.67	1,580
03-24	1500	6.83	881	08-30	0400	6.95	970
04-11	2400	5.46	508	08-31	2200	6.76	836
04-19	1200	9.02	3,160	09-03	2300	7.03	1,030
06-24	1900	6.63	765	09-05	2400	6.01	592

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 mi^2 (144.0 km^2).

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.

AVERAGE DISCHARGE.--5 years, 43.2 ft^3/s (1.223 m^3/s), 10.55 in/yr (268 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,260 ft^3/s (35.7 m^3/s) Apr. 19, gage height, 7.65 ft (2.332 m) from high water marks; minimum, 1.1 ft^3/s (0.031 m^3/s) Aug. 12, gage height, 0.62 ft (0.189 m).
Period of record: Maximum discharge, 1,260 ft^3/s (35.7 m^3/s) Apr. 19, 1975, gage height, 7.65 ft (2.332 m) from high water marks; no flow Aug. 7, 8, 10, 1971; minimum gage height, 0.45 ft (0.137 m) Aug. 8, 10, 1971.

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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	4.1	13	20	67	98	82	82	25	28	4.9	298
2	8.5	3.8	13	14	45	79	72	74	22	22	5.0	275
3	6.5	4.0	16	19	36	62	52	71	20	18	7.8	305
4	6.3	7.0	17	20	31	52	76	77	47	14	7.8	260
5	6.1	17	16	17	29	46	86	76	115	10	7.3	234
6	6.0	14	16	18	27	43	84	73	62	9.9	7.2	208
7	6.0	12	17	20	25	39	89	66	58	13	6.5	162
8	6.1	12	28	60	24	35	91	64	52	12	5.7	128
9	6.0	12	22	113	23	34	96	58	44	9.4	4.9	101
10	5.7	12	19	110	22	32	115	52	35	9.4	4.3	77
11	5.3	12	21	176	23	31	143	48	31	9.7	3.4	64
12	5.2	11	23	110	21	33	154	59	32	10	1.9	59
13	5.0	11	22	83	21	37	156	53	30	11	12	47
14	7.3	12	22	64	20	42	149	52	24	14	7.3	41
15	5.2	12	24	60	20	48	137	50	20	11	5.3	36
16	7.0	12	33	54	21	60	124	46	21	9.0	4.7	33
17	5.5	18	29	48	24	77	111	41	19	8.0	4.3	30
18	5.3	13	22	45	27	80	161	38	19	7.2	4.1	30
19	3.4	13	22	42	26	97	1160	33	17	7.2	3.8	35
20	2.7	13	22	39	27	107	961	26	15	6.6	4.7	44
21	2.5	15	21	35	50	118	495	22	13	6.3	101	39
22	2.4	14	19	33	118	201	285	26	11	5.0	149	40
23	3.1	13	19	30	240	207	203	27	11	4.9	380	36
24	3.6	17	20	28	340	290	178	29	166	13	343	32
25	7.5	16	18	37	285	256	154	31	156	10	340	29
26	8.0	13	21	33	214	203	133	46	152	12	236	29
27	7.8	13	19	32	154	157	117	39	127	12	164	29
28	5.6	12	20	25	129	128	103	29	84	10	112	28
29	4.4	12	18	40	---	120	92	25	57	8.5	115	28
30	5.5	12	14	70	---	103	85	25	40	7.2	264	28
31	4.7	---	14	93	---	89	---	28	---	6.0	242	---
TOTAL	174.1	356.9	629	1597	2103	3004	5943	1466	1525	334.3	2558.9	2795
MEAN	5.62	11.9	20.3	51.5	75.1	96.9	198	47.3	50.8	10.8	82.5	92.8
MAX	8.5	17	33	176	340	290	1160	82	166	28	380	305
MIN	2.4	3.8	13	17	20	31	52	22	11	4.9	1.9	28
CFSM	.10	.21	.37	.93	1.35	1.74	3.56	.85	.91	.19	1.48	1.67
IN.	.12	.24	.42	1.07	1.41	2.01	3.98	.98	1.02	.22	1.71	1.86

CAL YR 1974 TOTAL 17068.5 MEAN 46.8 MAX 650 MIN 1.6 CFSM .84 IN 11.43
WTR YR 1975 TOTAL 22475.2 MEAN 61.6 MAX 1160 MIN 1.9 CFSM 1.11 IN 15.04

NOTE.--No gage-height record Apr. 19, 20.

PEAK DISCHARGE (BASE, 200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-24	1100	5.59	397
03-24	1300	5.51	373
04-19	1200	7.65	1,260
06-24	2130	5.65	418
08-22	0130	5.49	367
08-23	1700	6.46	727
08-30	0600	5.63	410
08-31	2200	5.43	349
09-03	1800	5.77	460

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 mi^2 (2,471 km^2).

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.--43 years, 565 ft^3/s (16.00 m^3/s), 8.04 in/yr (204 mm/yr); adjusted for storage since 1954.

EXTREMES.--Current year: Maximum discharge, 9,730 ft^3/s (276 m^3/s) Apr. 19, gage height, 14.99 ft (4.569 m); minimum, 101 ft^3/s (2.86 m^3/s) Nov. 12, gage height, 2.64 ft (0.805 m).
Period of record: Maximum discharge, 14,900 ft^3/s (422 m^3/s) Apr. 6, 1947, gage height, 16.35 ft (4.983 m); minimum, 9.0 ft^3/s (0.25 m^3/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 ft^3/s (1.42 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	233	268	341	407	1120	2040	1760	975	530	705	245	2680
2	270	263	374	404	1060	1790	1710	865	518	560	245	2010
3	218	260	440	410	905	1530	1520	985	522	446	250	2960
4	212	310	482	413	895	1350	1340	1160	860	454	255	3400
5	210	514	416	392	855	1080	1370	1140	2260	378	258	2670
6	218	419	404	383	845	1030	1610	1200	1530	360	258	2710
7	240	323	419	395	750	1060	1850	1260	1380	615	228	2100
8	253	320	652	612	640	945	2000	1260	1220	1030	220	1710
9	240	315	566	1440	592	855	2080	1220	945	498	214	1580
10	212	359	524	1410	580	840	2000	1050	960	406	214	1390
11	216	332	507	1920	580	668	2090	915	1030	354	253	955
12	240	300	383	1730	573	640	2160	920	905	351	228	905
13	235	310	335	1500	556	820	2040	750	825	371	253	875
14	326	326	353	1400	556	845	1960	546	585	385	248	895
15	285	318	401	1330	535	755	1870	625	640	345	235	860
16	255	320	588	1230	542	890	2010	534	518	330	220	710
17	248	383	620	1120	600	960	2000	392	542	250	212	670
18	250	347	493	1010	672	1080	2340	416	575	218	220	546
19	243	313	479	925	608	1320	8570	423	1330	218	223	466
20	243	298	468	825	486	1440	5920	458	1040	204	206	482
21	238	362	458	830	461	1630	5210	260	705	208	1950	399
22	240	350	461	708	724	2480	5810	454	600	210	1460	354
23	253	344	479	563	1980	3210	5850	312	534	245	2940	357
24	248	410	486	524	2450	3570	5430	324	1300	312	2820	291
25	248	377	465	624	2100	4180	4290	542	1770	263	1790	273
26	245	341	428	704	1810	3800	3610	506	910	240	1490	303
27	240	344	395	668	2040	3510	3140	538	915	240	1280	303
28	245	335	365	664	2130	3320	2680	620	885	258	1260	285
29	253	332	365	1150	---	3000	2310	610	985	253	1660	282
30	329	326	380	1290	---	2630	2190	600	770	248	3090	279
31	283	---	386	1130	---	2160	---	635	---	248	2470	---
TOTAL	7669	10119	13913	28111	27645	55428	88720	22495	28089	11203	26895	33700
MEAN	247	337	449	907	987	1788	2957	726	936	361	868	1123
MAX	329	514	652	1920	2450	4180	8570	1260	2260	1030	3090	3400
MIN	210	260	335	383	461	640	1340	260	518	204	206	273
MEAN+	225	339	436	913	1015	1780	2920	851	939	308	918	1123
CFSM+	.24	.36	.46	.96	1.06	1.87	3.06	.89	.98	.32	.96	1.18
IN+	.27	.40	.53	1.10	1.11	2.15	3.41	1.03	1.10	.37	1.11	1.31

CAL YR 1974 TOTAL 343514 MEAN 941 MAX 6700 MIN 165 MEAN+ 940 CFSM+ .99 IN+ 13.37
WTR YR 1975 TOTAL 353987 MEAN 970 MAX 8570 MIN 204 MEAN+ 977 CFSM+ 1.02 IN+ 13.89

+Adjusted for change in contents in Holloway Reservoir.

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 mi^2 (47.4 km^2).

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.

AVERAGE DISCHARGE.--5 years, 16.5 ft^3/s (0.467 m^3/s), 12.24 in/yr (311 mm/yr).

EXTREMES.--Current year: Maximum discharge, 584 ft^3/s (16.5 m^3/s) Apr. 19, gage height, 5.93 ft (1.807 m); minimum, 3.3 ft^3/s (0.093 m^3/s) Aug. 11, minimum gage height, 1.11 ft (0.338 m) Jan. 5.
Period of record: Maximum discharge, 730 ft^3/s (20.7 m^3/s) Dec. 31, 1972; maximum gage height, 7.08 ft (2.158 m) Mar. 15, 1971 (backwater from ice); minimum discharge, 2.1 ft^3/s (0.059 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	9.4	6.1	7.6	20	11	12	11	10	6.1	4.5	101
2	10	8.5	6.7	7.8	13	10	14	11	6.8	6.1	4.5	36
3	7.5	8.5	7.1	7.6	11	9.6	50	9.4	7.3	5.8	5.4	29
4	6.1	9.7	7.3	7.1	10	9.2	40	11	17	5.6	5.2	195
5	5.7	12	7.4	7.3	9.5	12	23	13	65	5.4	4.5	70
6	5.9	24	7.4	7.2	9.0	9.1	15	14	124	4.4	4.4	78
7	5.3	9.9	7.2	7.0	8.4	14	19	14	21	4.7	4.4	39
8	5.9	7.7	16	15	8.2	13	24	10	14	31	4.0	15
9	6.2	7.1	17	85	7.4	12	31	8.8	11	68	3.8	11
10	5.5	6.7	12	52	7.4	11	39	8.5	9.4	16	3.7	9.1
11	5.2	6.0	9.2	64	7.2	10	72	8.5	9.1	11	3.5	8.5
12	5.2	6.5	8.8	27	6.9	9.7	75	8.5	16	8.8	3.7	9.4
13	5.1	7.1	9.0	14	6.6	18	46	17	10	22	5.6	7.6
14	6.3	6.7	9.5	10	6.4	20	36	9.7	8.8	15	7.9	6.5
15	12	7.7	8.6	9.4	6.3	14	26	8.8	7.9	11	5.6	5.6
16	6.9	7.3	9.5	8.8	6.1	27	22	8.5	14	7.9	4.9	5.4
17	6.4	7.4	15	8.3	7.0	30	18	7.9	8.8	6.5	4.7	5.9
18	6.7	9.2	10	7.9	16	33	22	7.9	8.2	5.8	4.2	5.6
19	6.4	6.6	8.6	7.6	15	32	301	7.3	19	6.5	3.8	7.9
20	6.5	6.6	8.8	7.3	14	27	150	7.0	32	7.9	4.2	19
21	6.0	7.1	8.6	7.0	13	21	39	8.2	11	5.6	32	11
22	5.5	9.4	8.3	6.8	36	65	24	12	8.2	4.5	197	9.7
23	6.5	7.5	7.3	6.7	140	185	19	9.7	6.5	4.9	108	7.3
24	7.3	10	7.9	6.5	190	108	25	6.8	9.7	5.2	283	6.1
25	6.7	10	8.3	12	83	172	22	8.2	83	8.2	73	5.9
26	6.7	8.1	7.7	25	23	46	15	11	21	5.2	18	6.1
27	7.3	7.0	7.2	9.2	13	23	12	9.1	11	4.7	12	6.5
28	6.5	6.9	6.6	7.0	11	17	11	6.8	9.1	4.2	9.4	5.9
29	5.6	6.9	6.6	20	---	21	12	6.3	7.9	4.0	9.7	4.5
30	9.4	6.6	7.0	80	---	22	11	6.5	6.5	4.4	58	4.4
31	16	---	8.0	32	---	14	---	15	---	4.5	92	---
TOTAL	214.7	254.5	276.7	581.1	704.9	1025.6	1235	301.4	593.2	310.9	984.6	731.9
MEAN	6.93	8.48	8.93	18.7	25.2	33.1	41.2	9.72	19.8	10.0	31.8	24.4
MAX	16	24	17	86	190	185	301	17	124	68	283	195
MIN	5.1	6.0	6.1	6.5	6.1	9.1	11	6.3	6.5	4.0	3.5	4.4
CFSM	.38	.46	.49	1.02	1.38	1.81	2.25	.53	1.08	.55	1.74	1.33
IN.	.44	.52	.56	1.18	1.43	2.08	2.51	.61	1.21	.63	2.00	1.49

CAL YR 1974 TOTAL 5768.0 MEAN 15.8 MAX 402 MIN 3.4 CFSM .86 IN 11.72
WTR YR 1975 TOTAL 7214.5 MEAN 19.8 MAX 301 MIN 3.5 CFSM 1.08 IN 14.66

PEAK DISCHARGE (BASE, 150 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
02-24	--	--	220	08-22	1600	4.41	306
03-23	0600	4.09	261	08-24	1200	4.73	357
03-25	0200	4.14	268	08-31	0200	3.25	157
04-19	1600	5.93	584	09-04	1300	4.54	323
06-06	0400	3.67	207				

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 mi^2 (3,080 km^2), 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.--36 years, 716 ft^3/s (20.28 m^3/s), 8.18 in/yr (208 mm/yr).

EXTREMES.--Current year: Maximum discharge, 9,100 ft^3/s (258 m^3/s) Apr. 19, gage height, 15.80 ft (4.816 m); minimum, 211 ft^3/s (5.98 m^3/s) Nov. 13, gage height, 2.35 ft (0.716 m).
Period of record: Maximum discharge, 19,000 ft^3/s (538 m^3/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 ft^3/s (0.76 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	241	294	420	472	1310	2280	2160	1850	687	830	280	4800
2	265	273	465	470	1240	2160	2120	1090	606	758	280	3580
3	281	267	460	465	1080	1810	1920	1030	585	585	283	2510
4	231	283	533	477	1010	1640	1640	1200	636	498	285	6420
5	220	345	528	463	989	1350	1660	1290	1880	463	288	6260
6	220	631	470	441	968	1170	1840	1320	2490	412	317	5160
7	225	441	470	448	900	1270	2100	1350	1670	434	300	4090
8	243	354	628	498	800	1190	2350	1370	1450	953	280	2610
9	256	352	734	1650	750	1030	2630	1380	1250	1090	260	2000
10	245	342	647	1850	670	1020	2700	1310	962	606	260	1910
11	222	417	609	2320	670	938	3250	1140	1060	480	270	1340
12	227	370	563	2300	670	710	3660	965	1100	420	300	1160
13	247	309	458	1860	660	935	3170	1100	968	439	280	1060
14	249	365	444	1700	650	1070	2760	713	842	487	300	1040
15	372	361	460	1600	640	986	2500	731	666	446	290	1010
16	304	375	547	1500	630	1130	2510	752	830	398	280	947
17	269	381	752	1400	640	1330	2450	620	604	377	270	818
18	265	490	647	1300	700	1460	2230	514	695	302	260	758
19	256	388	571	1200	770	1690	6450	547	845	281	260	676
20	258	333	555	1100	680	1870	7770	490	1480	292	250	671
21	252	386	536	950	570	1890	6240	533	1060	269	303	593
22	247	441	528	950	700	2740	6140	424	687	254	3740	574
23	252	422	531	800	2230	6020	6200	531	663	252	3610	539
24	265	456	558	650	3940	6530	6220	422	692	290	6260	456
25	258	496	552	600	4580	7900	5780	563	2400	370	5490	432
26	260	453	509	700	2400	6750	5150	604	1560	313	2510	381
27	254	410	482	810	1870	5540	4470	598	1050	281	1670	429
28	250	417	446	760	2100	4780	3620	636	983	283	1400	420
29	258	403	422	950	---	4260	2810	671	1080	292	1900	393
30	279	403	439	1880	---	3740	2470	658	950	281	2600	386
31	363	---	453	1470	---	2850	---	731	---	279	6200	---
TOTAL	8034	11658	16417	34034	34817	80039	106970	27133	32431	13715	41276	53423
MEAN	259	389	530	1098	1243	2582	3566	875	1081	442	1331	1781
MAX	372	631	752	2320	4580	7900	7770	1850	2490	1090	6260	6420
MIN	220	267	420	441	570	710	1640	422	585	252	250	381

CAL YR 1974 TOTAL 392669 MEAN 1076 MAX 6050 MIN 173
WTR YR 1975 TOTAL 459947 MEAN 1260 MAX 7900 MIN 220

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, 10.33 ft (3.149 m) Sept. 5; minimum, 2.90 ft (0.884 m) Nov. 15.
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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.89	4.40	5.65	4.16	5.63	6.38	6.44	6.29	5.13	5.25	5.05	8.18
2	5.28	4.80	5.84	4.38	5.24	5.99	6.28	6.00	5.01	5.07	4.97	8.74
3	4.92	4.45	5.03	3.85	4.95	5.64	6.94	5.97	4.87	5.27	5.06	8.95
4	4.48	4.78	4.56	4.24	4.78	5.34	6.18	5.93	4.84	5.23	4.98	9.84
5	4.25	5.38	4.10	4.10	4.64	4.94	5.94	5.89	5.17	5.14	5.57	10.28
6	4.53	4.85	4.15	4.11	4.58	4.76	5.79	5.94	5.78	4.93	5.79	10.28
7	4.77	4.55	4.27	3.93	4.43	5.08	5.68	5.90	5.89	5.07	5.29	10.05
8	4.70	4.50	4.48	4.22	4.26	5.27	5.92	5.73	5.82	5.20	4.87	9.33
9	4.79	4.48	4.56	4.90	4.34	4.58	6.19	5.64	5.42	5.28	4.68	8.53
10	4.69	4.54	4.21	5.70	4.16	4.62	6.46	5.42	5.25	5.51	4.90	7.63
11	4.54	4.21	4.25	5.99	4.16	4.51	6.96	5.14	5.13	5.29	4.97	6.74
12	4.89	4.34	4.33	6.48	4.11	4.28	7.42	5.67	4.76	5.12	4.99	6.42
13	4.82	4.25	4.53	6.84	4.17	4.54	7.39	5.33	4.69	5.10	4.76	6.00
14	4.12	4.24	4.53	7.11	4.14	5.14	7.10	4.98	4.99	4.82	5.04	5.64
15	4.74	3.40	4.40	7.08	4.02	4.62	6.88	4.84	4.92	4.80	5.02	5.24
16	4.61	4.34	3.77	6.84	3.96	4.67	6.74	5.09	4.84	4.90	4.86	5.28
17	4.58	3.90	4.08	6.54	4.18	5.04	6.57	4.97	5.24	4.90	4.84	5.18
18	5.08	4.32	4.04	6.09	4.13	5.42	6.26	4.74	5.17	4.76	5.05	5.14
19	4.50	4.38	4.45	5.88	4.38	5.77	7.57	4.75	5.63	4.62	5.11	4.98
20	5.11	4.27	4.31	5.61	4.32	6.06	9.07	4.61	5.87	5.12	4.94	4.80
21	4.39	5.04	4.37	4.94	4.39	6.13	9.47	4.85	5.67	5.28	4.48	4.44
22	3.87	4.55	4.22	5.17	4.50	6.55	9.43	4.87	5.24	4.98	6.03	4.68
23	4.74	4.31	4.08	4.88	5.69	8.28	9.12	5.04	5.09	5.17	6.39	5.05
24	4.39	4.67	4.35	4.81	7.34	9.02	8.84	4.97	5.32	4.77	7.57	5.64
25	4.65	5.00	4.16	4.82	8.40	9.47	8.69	4.94	5.98	5.28	8.43	5.93
26	4.49	4.65	3.75	4.93	7.99	9.53	8.46	4.74	6.39	5.14	7.70	5.22
27	4.59	4.16	3.95	5.03	7.47	9.14	8.09	5.02	5.80	4.90	6.65	4.91
28	4.28	4.14	4.07	5.04	6.90	8.50	7.57	5.11	5.57	5.14	6.11	4.80
29	4.44	4.64	4.08	5.25	---	7.74	7.09	4.90	5.54	5.09	5.70	4.70
30	4.25	4.84	4.30	5.86	---	7.21	6.60	4.68	5.47	4.97	6.48	4.42
31	4.45	---	4.26	5.78	---	6.76	---	4.83	---	5.07	7.34	---
MEAN	4.61	4.48	4.36	5.31	5.05	6.16	7.24	5.25	5.35	5.07	5.60	6.57
MAX	5.28	5.38	5.84	7.11	8.40	9.53	9.47	6.29	6.39	5.51	8.43	10.28
MIN	3.87	3.40	3.75	3.85	3.96	4.28	5.68	4.61	4.69	4.62	4.48	4.42

WTR YR 1975 MEAN 5.42 MAX 10.28 MIN 3.40

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 mi^2 (650 km^2).

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.--27 years, 121 ft^3/s (3.427 m^3/s), 6.55 in/yr (166 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,830 ft^3/s (137 m^3/s) Apr. 19, gage height, 12.90 ft (3.932 m); minimum, 6.3 ft^3/s (0.18 m^3/s) Aug. 21.
Period of record: Maximum discharge, 6,400 ft^3/s (181 m^3/s) Mar. 28, 1967, gage height, 14.86 ft (4.529 m); minimum, 0.2 ft^3/s (0.006 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.6	12	13	180	130	160	94	63	17	8.3	36
2	12	9.9	11	14	90	100	130	88	55	15	7.8	29
3	9.6	8.6	10	14	60	80	110	79	46	14	7.8	22
4	8.3	8.7	9.5	14	42	68	80	78	49	13	9.1	19
5	7.7	9.5	9.5	14	37	60	78	83	670	13	12	17
6	7.4	11	10	14	33	54	82	98	809	12	11	18
7	8.0	13	11	13	30	50	90	130	310	12	9.6	16
8	7.7	12	12	14	29	45	110	103	181	19	8.9	16
9	7.7	9.6	12	15	27	43	130	80	127	22	8.1	16
10	7.5	9.1	13	50	26	41	160	66	95	33	7.5	17
11	7.1	9.0	14	500	24	40	260	56	75	75	7.3	15
12	7.0	8.8	14	350	23	39	420	56	101	43	6.9	14
13	6.9	8.9	15	200	22	39	640	62	98	35	7.3	15
14	8.7	9.2	16	125	21	40	900	57	76	38	9.2	15
15	12	9.6	17	90	20	45	960	53	70	35	17	15
16	11	9.2	17	74	19	56	862	51	206	29	16	14
17	11	10	18	63	19	100	700	46	155	23	11	13
18	8.9	11	18	52	20	170	598	42	97	18	9.3	12
19	7.9	11	18	47	22	540	3,740	40	76	19	7.8	15
20	7.1	12	18	45	24	470	2,130	37	103	110	7.2	24
21	6.7	13	18	41	28	360	560	46	94	106	8.2	31
22	6.9	14	17	38	40	350	324	199	63	42	10	30
23	7.5	14	16	37	90	826	239	161	46	26	16	27
24	7.4	16	16	35	1,400	1,330	258	98	38	23	25	22
25	7.4	16	15	34	1,000	2,440	235	72	33	21	35	19
26	7.0	16	15	44	500	1,050	179	93	30	16	34	19
27	6.9	14	15	50	290	620	142	158	26	13	30	18
28	7.1	14	14	64	180	400	120	107	23	10	22	18
29	7.4	13	14	96	------	270	111	68	20	9.7	18	16
30	8.4	13	14	280	------	210	100	50	18	9.5	48	14
31	9.2	------	14	260	------	180	------	51	------	9.0	45	------
TOTAL	257.4	342.7	443.0	2,700	4,296	10,246	14,608	2,502	3,853	880.2	480.3	572
MEAN	8.30	11.4	14.3	87.1	153	331	487	80.7	128	28.4	15.5	19.1
MAX	12	16	18	500	1,400	2,440	3,740	199	809	110	48	36
MIN	6.7	8.6	9.5	13	19	39	78	37	18	9.0	6.9	12
CFSM	.03	.05	.06	.35	.61	1.32	1.94	.32	.51	.11	.06	.08
IN.	.04	.05	.07	.40	.64	1.52	2.17	.37	.57	.13	.07	.08

CAL YR 1974 TOTAL 60,388.8 MEAN 165 MAX 4,070 MIN 4.2 CFSM .66 IN 8.95
WTR YR 1975 TOTAL 41,180.6 MEAN 113 MAX 3,740 MIN 6.7 CFSM .45 IN 6.10

PEAK DISCHARGE (BASE, 1,100 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-24	2400	9.86	1,900
03-25	0200	10.62	3,230
04-15	unknown	unknown	1,400
04-19	1700	12.90	4,830
06-05	2300	7.09	1,170

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 mi^2 (960 km^2), 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.--28 years, 197 ft^3/s (5.579 m^3/s), 7.23 in/yr (184 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,460 ft^3/s (155 m^3/s) Apr. 19, gage height, 13.16 ft (4.011 m); minimum, 7.6 ft^3/s (0.22 m^3/s) Aug. 12, 13, 21.
Period of record: Maximum discharge, 8,460 ft^3/s (240 m^3/s) Mar. 20, 1948, gage height, 15.80 ft (4.816 m), from graph based on gage readings; minimum, 0.50 ft^3/s (0.014 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	16	43	35	310	280	354	194	103	30	11	49
2	17	17	34	35	250	230	298	180	90	26	11	40
3	18	17	28	35	190	200	170	161	78	23	10	31
4	16	17	22	35	150	170	197	160	79	21	10	26
5	14	19	22	37	120	150	178	160	809	20	12	24
6	14	22	22	38	100	130	170	178	1,270	19	13	23
7	14	24	24	38	84	125	176	223	672	18	11	21
8	14	25	27	41	80	120	227	204	494	20	9.9	20
9	14	23	28	52	74	110	287	182	370	31	9.4	17
10	13	23	30	120	70	110	383	153	254	36	9.0	17
11	12	24	32	900	66	110	680	132	182	66	8.3	17
12	12	22	34	680	62	110	1,170	123	201	55	7.8	16
13	11	22	36	400	58	110	1,420	125	202	43	8.9	16
14	14	22	37	280	54	110	1,660	115	184	44	9.1	17
15	16	22	38	220	52	130	1,620	107	176	41	13	16
16	19	22	39	180	50	150	1,390	103	281	35	16	15
17	17	24	41	160	49	220	1,190	94	250	29	13	15
18	16	25	42	130	50	450	1,030	86	216	24	10	14
19	15	25	43	120	54	860	4,020	78	186	23	9.1	16
20	15	28	42	110	60	760	3,230	72	168	59	8.3	23
21	14	32	42	96	70	600	1,450	125	148	104	10	31
22	13	37	41	90	160	654	935	426	106	47	12	33
23	14	40	40	86	450	1,160	632	466	82	30	15	31
24	13	50	39	82	1,800	1,520	550	300	68	25	27	28
25	13	60	39	80	1,350	3,030	478	200	61	25	34	25
26	13	64	38	90	800	1,540	392	206	53	20	38	24
27	12	65	37	110	600	909	323	229	47	18	34	24
28	13	67	37	130	400	633	270	178	42	15	25	24
29	13	65	36	150	------	513	234	142	38	13	25	22
30	14	52	36	460	------	489	208	110	33	13	46	20
31	15	------	35	410	------	396	------	97	------	12	65	------
TOTAL	444	971	1,084	5,430	7,613	16,079	25,322	5,309	6,943	985	540.8	695
MEAN	14.3	32.4	35.0	175	272	519	844	171	231	31.8	17.4	23.2
MAX	19	67	43	900	1,800	3,030	4,020	466	1,270	104	65	49
MIN	11	16	22	35	49	110	170	72	33	12	7.8	14
CFSM	.04	.09	.09	.47	.74	1.40	2.28	.46	.62	.09	.05	.06
IN.	.04	.10	.11	.55	.77	1.62	2.55	.53	.70	.10	.05	.07

CAL YR 1974 TOTAL 96,147.2 MEAN 263 MAX 5,260 MIN 4.9 CFSM .71 IN 9.67
WTR YR 1975 TOTAL 71,415.8 MEAN 196 MAX 4,020 MIN 7.8 CFSM .53 IN 7.18

PEAK DISCHARGE (BASE, 1,400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-24	1400	10.55	2,000
03-25	0400	11.24	3,600
04-14	1000	8.89	1,760
04-19	1900	13.16	5,460
06-06	0200	8.71	1,570

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 mi^2 (1,650 km^2).

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.--7 years, 392 ft^3/s (11.10 m^3/s), 8.36 in/yr (212 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,590 ft^3/s (215 m^3/s) Apr. 20, gage height, 16.89 ft (5.148 m): minimum, 28 ft^3/s (0.79 m^3/s) Aug. 12, 13, gage height, 2.93 ft (0.893 m).
Period of record: Maximum discharge, 7,990 ft^3/s (226 m^3/s) Mar. 6, 1974, gage height, 17.29 ft (5.270 m); minimum, 22 ft^3/s (0.62 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	50	82	106	599	655	670	426	200	77	36	150
2	44	50	75	82	444	492	597	401	193	70	35	120
3	44	50	71	96	364	401	395	364	173	65	35	118
4	44	53	65	95	293	370	309	354	173	58	35	111
5	42	67	62	86	248	337	345	362	808	53	35	97
6	44	75	60	85	208	284	372	440	2,030	50	33	91
7	45	74	74	90	200	263	402	523	1,260	55	33	81
8	41	70	89	104	190	250	471	480	822	60	32	73
9	40	67	73	233	180	244	602	408	620	51	31	64
10	41	62	76	467	170	280	748	351	452	71	30	58
11	41	59	86	1,210	160	254	1,060	306	342	106	29	58
12	44	60	95	1,820	150	232	1,720	293	380	117	29	57
13	39	56	95	800	135	235	2,200	324	392	104	31	54
14	50	57	99	620	130	260	2,530	305	323	92	32	51
15	57	56	100	480	125	277	2,700	277	290	96	36	50
16	54	55	109	400	117	328	2,470	258	335	86	37	48
17	56	57	115	340	118	525	2,160	238	421	73	39	46
18	50	60	107	270	132	1,010	1,880	220	337	63	37	47
19	46	61	109	240	142	1,470	4,200	203	292	67	34	55
20	45	63	114	225	164	1,420	6,610	186	275	71	32	87
21	42	74	108	210	196	1,210	3,050	241	261	110	36	81
22	41	74	99	200	287	1,070	1,840	702	211	124	49	90
23	46	77	104	180	1,010	1,570	1,260	878	172	87	59	88
24	44	93	100	169	2,610	1,900	1,090	623	153	69	86	80
25	44	96	100	180	3,580	4,290	971	425	140	60	101	74
26	42	95	93	220	2,040	3,300	804	409	126	55	99	75
27	42	94	97	250	1,190	1,770	666	500	115	50	88	70
28	41	94	98	281	856	1,200	570	378	106	45	75	67
29	44	89	88	352	------	987	510	284	97	40	76	64
30	53	86	92	859	------	946	456	232	86	38	101	62
31	52	------	81	962	------	753	------	212	------	37	117	------
TOTAL	1,400	2,074	2,816	11,712	16,038	28,583	43,658	11,603	11,585	2,200	1,558	2,267
MEAN	45.2	69.1	90.8	378	573	922	1,455	374	386	71.0	50.3	75.6
MAX	57	96	115	1,820	3,580	4,290	6,610	878	2,030	124	117	150
MIN	39	50	60	82	117	232	309	186	86	37	29	46
CFSM	.07	.11	.14	.59	.90	1.45	2.28	.59	.61	.11	.08	.12
IN.	.08	.12	.16	.68	.94	1.67	2.55	.68	.68	.13	.09	.13

CAL YR 1974 TOTAL 168,267 MEAN 461 MAX 6,820 MIN 26 CFSM .72 IN 9.83
WTR YR 1975 TOTAL 135,494 MEAN 371 MAX 6,610 MIN 29 CFSM .58 IN 7.91

PEAK DISCHARGE (BASE, 2,400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-25	1300	12.16	3,800
03-25	1700	13.96	4,880
04-20	0700	16.89	7,590

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 mi^2 (2,196 km^2).

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.--37 years (1935-36, 1939-75), 469 ft^3/s (13.28 m^3/s), 7.51 in/yr (191 mm/yr).

EXTREMES.--Current year: Maximum discharge, 7,910 ft^3/s (224 m^3/s) Apr. 20, gage height, 18.80 ft (5.730 m); minimum, 40 ft^3/s (1.13 m^3/s) Aug. 11, 12.
Period of record: Maximum discharge, 17,700 ft^3/s (501 m^3/s) Mar. 18, 1942, gage height, 20.88 ft (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 ft^3/s (0.042 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	80	128	150	740	900	952	617	279	117	56	225
2	72	79	128	155	600	700	880	579	258	108	57	222
3	70	75	128	152	450	550	685	529	243	104	55	193
4	67	77	110	169	410	470	557	513	232	103	52	199
5	66	104	105	143	360	430	540	523	645	92	53	182
6	64	133	100	135	300	370	586	634	1850	83	49	195
7	64	124	105	164	260	350	639	742	1690	82	46	183
8	63	115	152	183	245	310	737	707	1070	101	46	153
9	63	108	153	521	240	280	921	607	796	130	45	140
10	60	102	121	703	215	285	1120	518	613	103	43	124
11	59	99	140	1160	200	300	1470	445	472	116	41	123
12	63	101	160	1950	185	290	2010	423	477	159	42	260
13	58	97	169	1350	170	290	2510	497	505	155	56	180
14	68	95	166	880	165	300	2820	481	439	129	78	141
15	79	95	168	700	160	320	3060	428	379	120	64	125
16	82	97	179	600	155	370	2890	391	373	117	57	116
17	77	97	199	540	155	500	2520	356	470	107	54	108
18	75	104	202	480	165	660	2210	323	456	99	54	107
19	73	108	187	410	180	1660	4430	302	394	96	54	115
20	67	110	180	380	210	1830	7240	277	353	100	49	154
21	65	117	175	345	250	1580	5260	259	330	96	109	173
22	64	125	171	320	330	1620	2590	706	290	133	207	158
23	65	121	165	300	460	1880	1790	1030	237	131	159	156
24	64	136	169	270	1300	2740	1510	882	209	107	282	143
25	64	152	172	280	3500	4250	1370	682	196	90	359	132
26	64	145	138	320	2200	4770	1160	502	176	81	228	133
27	61	141	140	370	1500	2640	970	592	160	74	177	139
28	58	140	150	450	1150	1730	827	524	152	68	152	128
29	62	137	160	580	---	1430	738	398	137	65	141	118
30	76	131	160	850	---	1340	666	332	125	58	154	109
31	81	---	150	1150	---	1130	---	312	---	57	179	---
TOTAL	2083	3345	4730	16160	16255	36275	55658	16111	14006	3181	3198	4634
MEAN	67.2	112	153	521	581	1170	1855	520	467	103	103	154
MAX	82	152	202	1950	3500	4770	7240	1030	1850	159	359	260
MIN	58	75	100	135	155	280	540	259	125	57	41	107
CFSM	.08	.13	.18	.61	.69	1.38	2.19	.61	.55	.12	.12	.18
IN.	.09	.15	.21	.71	.71	1.59	2.44	.71	.61	.14	.14	.20

CAL YR 1974 TOTAL 226586 MEAN 621 MAX 8680 MIN 38 CFSM .73 IN 9.94
WTR YR 1975 TOTAL 175636 MEAN 481 MAX 7240 MIN 41 CFSM .57 IN 7.70

PEAK DISCHARGE (BASE, 3,500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
02-25	1600	15.66	3,950
03-26	0300	16.52	5,470
04-20	1800	18.80	7,910

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 mi^2 (1,261 km^2).

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.--27 years, 376 ft^3/s (10.65 m^3/s), 10.48 in/yr (266 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,250 ft^3/s (149 m^3/s) Sept. 2, gage height, 11.45 ft (3.490 m); minimum, 135 ft^3/s (3.82 m^3/s) July 9, gage height, 2.06 ft (0.628 m).
Period of record: Maximum discharge, 7,680 ft^3/s (217 m^3/s) July 9, 1957, gage height, 12.95 ft (3.947 m); minimum, 5.6 ft^3/s (0.16 m^3/s) July 12, 13, 14, 1959, Aug. 21, 1961; minimum daily, 5.9 ft^3/s (0.17 m^3/s) July 12, 13, 1959.

REMARKS.--Records good except those for the winter period and those for July 11 to Sept. 30, which are fair. Prior to Feb. 21, 1961, regulation at all stages by hydroelectric powerplant 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	416	304	256	265	250	358	375	1,280	260	212	215	3,420
2	271	289	253	252	250	334	413	1,620	282	203	220	4,930
3	243	270	251	255	250	318	423	1,010	276	177	235	2,470
4	244	261	227	255	250	308	402	791	304	163	240	2,200
5	240	266	246	255	250	289	383	704	610	173	220	1,600
6	240	280	244	253	230	277	391	707	670	180	210	1,200
7	246	293	254	255	220	273	455	561	471	255	190	900
8	257	281	265	257	210	274	598	476	301	194	185	756
9	258	267	269	272	200	243	628	382	200	146	180	600
10	251	256	237	347	200	227	616	336	213	146	175	448
11	199	258	264	1,520	210	260	602	362	254	147	190	452
12	201	297	276	1,340	210	273	588	347	291	270	215	520
13	250	324	267	855	220	257	557	337	271	320	200	620
14	351	306	264	657	220	262	480	323	251	300	180	480
15	391	285	266	480	220	261	519	312	302	270	170	402
16	367	269	275	451	210	283	555	310	827	250	160	390
17	272	263	285	440	220	383	567	305	676	240	160	380
18	252	261	280	328	230	518	619	246	824	230	184	380
19	252	259	280	310	250	586	1,020	275	1,160	300	190	390
20	246	260	267	300	280	764	1,170	312	1,140	1,300	184	400
21	241	258	270	280	274	956	825	287	655	1,100	350	450
22	235	252	270	270	272	851	516	334	363	652	700	450
23	234	249	277	270	360	733	617	523	337	584	640	420
24	233	261	269	260	800	860	641	363	366	744	980	390
25	230	280	263	280	1,060	1,330	726	310	337	650	956	376
26	229	278	243	280	808	1,020	540	377	363	440	841	356
27	228	301	248	270	540	645	416	362	343	330	560	364
28	227	296	270	260	444	502	424	280	259	270	376	354
29	223	269	260	260	------	510	425	253	228	250	408	338
30	234	260	260	250	------	535	458	235	229	230	813	326
31	274	------	261	250	------	474	------	236	------	210	1,160	------
TOTAL	8,035	8,253	8,117	12,277	9,138	15,164	16,954	14,556	13,063	10,936	11,687	26,762
MEAN	259	275	262	396	326	489	565	470	435	353	377	892
MAX	416	324	285	1,520	1,060	1,330	1,170	1,620	1,160	1,300	1,160	4,930
MIN	199	249	227	250	200	227	375	235	200	146	160	326
CFSM	.53	.56	.54	.81	.67	1.00	1.16	.97	.89	.72	.77	1.83
IN.	.61	.63	.62	.94	.70	1.16	1.30	1.11	1.00	.84	.89	2.04

CAL YR 1974 TOTAL 169,646 MEAN 465 MAX 3,470 MIN 150 CFSM .95 IN 12.96
WTR YR 1975 TOTAL 154,942 MEAN 424 MAX 4,930 MIN 146 CFSM .87 IN 11.84

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 mi^2 (1,077 km^2).

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.--44 years, 301 ft^3/s (8.524 m^3/s), 9.83 in/yr (250 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,450 ft^3/s (97.7 m^3/s) Sept. 1, gage height, 11.18 ft (3.408 m); minimum, 137 ft^3/s (3.88 m^3/s) Aug. 19.
Period of record: Maximum discharge, 4,960 ft^3/s (140 m^3/s) Mar. 8, 1946, gage height, 12.78 ft (3.895 m); minimum, 12 ft^3/s (0.34 m^3/s) Aug. 18, 1945; minimum daily, 19 ft^3/s (0.54 m^3/s) Aug. 16, 1936; minimum gage height, 2.70 ft (0.823 m) Oct. 8, 1966.

REMARKS.--Records good except those for the winter period, which are fair. Diurnal fluctuation below 750 ft^3/s (21.2 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	380	288	265	255	220	413	424	868	244	300	183	3,150
2	400	281	262	250	220	373	419	870	244	278	181	2,990
3	370	280	259	254	220	342	419	739	239	267	210	2,810
4	354	281	258	254	220	322	413	740	246	251	209	3,140
5	351	299	255	250	220	309	389	719	502	240	196	2,670
6	351	306	250	250	220	306	384	655	482	231	187	2,370
7	353	292	250	252	210	303	396	601	401	225	175	2,040
8	339	286	253	256	210	297	450	542	350	216	168	1,650
9	334	282	251	279	200	284	495	491	317	207	164	1,370
10	329	280	249	383	200	281	488	451	288	220	161	1,180
11	322	293	250	922	200	277	510	412	272	228	157	1,040
12	317	297	252	932	210	276	494	386	271	228	152	964
13	316	294	250	630	220	271	485	368	264	233	161	872
14	355	293	250	570	220	271	482	347	255	242	158	782
15	354	292	252	500	210	263	463	331	315	238	151	708
16	343	289	260	440	220	293	461	321	481	231	149	652
17	336	288	263	370	220	349	463	310	421	223	148	601
18	329	290	258	330	220	369	477	304	522	221	144	548
19	323	281	258	290	230	390	722	290	627	268	142	531
20	320	280	257	260	240	441	722	287	790	282	144	585
21	314	278	258	250	250	507	659	294	741	286	222	588
22	306	274	257	240	300	560	610	373	639	259	439	579
23	303	276	256	250	431	657	563	318	533	241	481	531
24	301	296	256	250	729	737	592	302	502	244	711	503
25	297	291	255	260	905	921	557	291	592	266	969	477
26	292	283	251	270	624	722	535	279	470	244	933	465
27	287	280	251	270	513	623	506	272	422	235	988	449
28	287	274	252	260	455	552	477	257	389	221	942	434
29	284	271	249	250	------	527	479	248	360	207	1,010	420
30	296	267	253	230	------	493	488	245	334	198	1,640	403
31	293	------	252	230	------	445	------	244	------	189	2,060	------
TOTAL	10,136	8,562	7,892	10,687	8,537	13,174	15,022	13,155	12,513	7,419	13,735	35,502
MEAN	327	285	255	345	305	425	501	424	417	239	443	1,183
MAX	400	306	265	932	905	921	722	870	790	300	2,060	3,150
MIN	284	267	249	230	200	263	384	244	239	189	142	403
CFSM	.79	.69	.61	.83	.73	1.02	1.20	1.02	1.00	.57	1.06	2.84
IN.	.91	.77	.71	.96	.76	1.18	1.34	1.18	1.12	.66	1.23	3.17

CAL YR 1974 TOTAL 154,090 MEAN 422 MAX 3,010 MIN 172 CFSM 1.01 IN 13.78
WTR YR 1975 TOTAL 156,334 MEAN 428 MAX 3,150 MIN 142 CFSM 1.03 IN 13.98

PEAK DISCHARGE (BASE, 1,000 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-12	0100	6.18	1,180
02-25	0500	5.84	1,060
05-01	2100	5.88	1,080
09-01	1700	11.18	3,450

04155000 Pine River at Alma, Mich.

LOCATION.--Lat 43°22'46", long 84°39'20", in 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 mi^2 (746 km^2).

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.--45 years, 210 ft^3/s (5.947 m^3/s), 9.90 in/yr (251 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,720 ft^3/s (77.0 m^3/s) Sept. 3, gage height, 8.95 ft (2.728 m); minimum, 38 ft^3/s (1.08 m^3/s) Aug. 12, 13.
Period of record: Maximum discharge, 4,400 ft^3/s (125 m^3/s) Mar. 19, 1948, gage height, 10.81 ft (3.295 m); minimum daily 0.40 ft^3/s (0.011 m^3/s) Sept. 6, 1964, caused by closing dam during construction of waterworks.

REMARKS.--Records good except those for winter periods and those for period of no gage-height record, which are poor. 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 ft^3/s (0.07 m^3s) 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	166	183	179	181	260	380	500	614	164	120	69	1,640
2	175	191	174	180	260	340	480	524	164	111	81	1,690
3	178	188	160	180	250	300	450	507	154	107	128	1,970
4	168	170	149	179	250	280	410	550	151	105	113	2,360
5	149	196	150	179	250	250	400	507	198	96	128	1,730
6	140	224	155	179	240	230	400	455	255	106	111	1,570
7	139	242	158	177	240	220	430	417	301	92	87	1,380
8	121	260	167	181	240	220	460	389	358	75	77	1,130
9	128	252	155	252	230	210	490	357	376	86	75	938
10	144	228	155	432	230	210	530	324	306	104	70	764
11	139	215	155	863	230	210	550	291	237	107	55	643
12	134	202	158	641	230	210	610	267	212	114	40	554
13	122	212	169	600	240	210	582	239	196	143	62	490
14	148	221	156	520	240	220	562	248	201	166	74	435
15	161	218	171	460	250	250	524	231	297	161	89	413
16	189	202	181	430	250	290	492	203	375	153	78	398
17	210	204	175	400	250	350	458	198	391	129	85	369
18	208	191	186	370	260	400	452	199	461	130	77	339
19	193	188	180	340	260	490	670	194	463	175	61	330
20	176	197	180	310	270	550	605	167	416	168	67	321
21	157	176	180	300	300	580	612	181	341	167	176	316
22	153	183	180	290	340	600	618	235	284	171	297	327
23	154	183	180	290	400	660	568	312	236	133	312	342
24	151	203	170	290	520	740	540	364	203	118	413	354
25	148	209	170	300	640	880	484	353	188	106	429	352
26	137	230	170	310	600	840	460	297	187	120	403	332
27	132	233	170	310	530	760	440	239	181	98	392	297
28	145	215	170	290	450	660	420	223	167	87	382	267
29	145	186	170	280	------	610	406	196	156	74	528	252
30	165	175	175	270	------	570	421	174	133	78	666	240
31	170	------	180	260	------	530	------	171	------	76	877	------
TOTAL	4,845	6,177	5,228	10,244	8,710	13,250	15,024	9,626	7,752	3,676	6,502	22,543
MEAN	156	206	169	330	311	427	501	311	258	119	210	751
MAX	210	260	186	863	640	880	670	614	463	175	877	2,360
MIN	121	170	149	177	230	210	400	167	133	74	40	240
CFSM	.54	.72	.59	1.15	1.08	1.48	1.74	1.08	.90	.41	.73	2.61
IN.	.63	.80	.68	1.32	1.13	1.71	1.94	1.24	1.00	.47	.84	2.91

CAL YR 1974 TOTAL 108,714 MEAN 298 MAX 1,680 MIN 61 CFSM 1.03 IN 14.04
WTR YR 1975 TOTAL 113,577 MEAN 311 MAX 2,360 MIN 40 CFSM 1.08 IN 14.67

NOTE.--No gage-height record Jan. 13 to Apr. 10.

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 mi^2 (1,010 km^2), 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.--31 years, 293 ft^3/s (8.298 m^3/s), 10.20 in/yr (259 mm/yr).

EXTREMES.--Current year: Maximum discharge, 3,190 ft^3/s (90.3 m^3/s) Sept. 4, gage height, 8.34 ft (2.542 m); minimum, 62 ft^3/s (1.76 m^3/s) July 6, 7.
Period of record: Maximum discharge, 6,360 ft^3/s (180 m^3/s) Mar. 20, 1948, gage height, 10.00 ft (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 good except those for the winter periods, which are poor. Regulation at low and medium flows by hydroelectric 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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	169	176	220	220	330	470	582	806	226	174	97	2,200
2	180	179	230	220	320	420	585	870	171	149	108	1,780
3	174	183	210	230	320	380	548	647	208	113	244	1,670
4	165	193	200	230	320	350	427	673	221	116	396	2,970
5	185	212	200	230	310	320	511	703	357	117	254	2,280
6	162	215	200	230	310	300	469	645	379	86	206	1,680
7	112	254	210	230	300	280	509	572	392	78	210	1,320
8	174	257	210	230	300	270	574	512	443	179	156	1,090
9	153	281	210	250	290	260	639	467	424	82	135	877
10	95	279	210	520	290	260	693	410	507	86	126	728
11	149	209	210	1,450	290	244	833	387	382	122	125	598
12	155	255	200	1,300	300	228	972	315	360	117	190	528
13	123	212	210	1,000	300	253	906	375	354	166	134	383
14	142	242	210	600	300	250	829	187	270	151	129	392
15	154	242	210	650	310	276	787	298	518	239	144	312
16	133	259	220	580	310	288	726	265	1,010	215	164	314
17	176	192	230	520	320	445	648	248	709	187	212	305
18	197	236	230	470	330	612	613	238	696	187	84	276
19	184	242	230	450	340	616	1,030	203	667	217	179	215
20	161	221	230	410	350	650	966	292	590	363	103	273
21	155	267	230	390	380	660	776	150	505	257	190	268
22	162	220	230	370	450	830	727	231	375	269	821	272
23	133	235	230	370	560	1,240	729	283	312	217	673	276
24	151	217	220	380	820	1,230	742	357	289	208	832	288
25	163	280	220	400	950	1,510	682	410	304	192	976	298
26	170	283	220	400	800	1,150	594	381	226	89	676	308
27	175	305	220	400	650	880	568	310	274	135	516	304
28	127	304	220	390	540	844	553	237	216	150	394	288
29	176	270	200	370	------	815	552	240	212	114	655	255
30	178	240	200	350	------	782	537	221	171	104	1,290	251
31	176	------	220	330	------	650	------	251	------	88	1,360	------
TOTAL	4,909	7,160	6,690	14,370	11,390	17,763	20,307	12,184	11,768	4,967	11,779	22,999
MEAN	158	239	216	464	407	573	677	393	392	160	380	767
MAX	197	305	230	1,450	950	1,510	1,030	870	1,010	363	1,360	2,970
MIN	95	176	200	220	290	228	427	150	171	78	84	215
CFSM	.41	.61	.55	1.19	1.04	1.47	1.74	1.01	1.01	.41	.97	1.97
IN.	.47	.68	.64	1.37	1.09	1.69	1.94	1.16	1.12	.47	1.12	2.19

CAL YR 1974 TOTAL 141,469 MEAN 388 MAX 2,550 MIN 70 CFSM .99 IN 13.49
WTR YR 1975 TOTAL 146,286 MEAN 401 MAX 2,970 MIN 78 CFSM 1.03 IN 13.95

PEAK DISCHARGE (BASE, 1,200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1600	5.93	1,600
03-25	0500	5.34	1,610
04-19	1800	4.91	1,270
09-04	1500	8.34	3,190

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 mi^2 (6,200 km^2) 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.--39 years, 1,645 ft^3/s (46.59 m^3/s), 9.31 in/yr (236 mm/yr).

EXTREMES.--Current year: Maximum discharge, 22,200 ft^3/s (629 m^3/s) Sept. 2, gage height, 27.08 ft (8.254 m); minimum, 260 ft^3/s (7.36 m^3/s) Aug. 21, gage height, 9.68 ft (2.950 m); minimum daily, 351 m^3/s (9.94 m^3/s) Aug. 10.
Period of record: Maximum discharge, 34,000 ft^3/s (963 m^3/s) Mar. 21, 1948, gage height, 29.50 ft (8.992 m); minimum, 39 ft^3/s (1.10 m^3/s) Oct. 12, 1942; minimum daily, 111 ft^3/s (3.14 m^3/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 ft^3/s (986 m^3/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 (1.6km) below. Extremes and daily discharges not adjusted for diversion. Prior to May 20, 1970, discharge below 4,000 ft^3/s (113 m^3/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 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,180	1,130	571	734	1,760	2,120	3,930	4,400	648	1,020	553	14,400
2	1,370	655	989	744	1,000	1,510	3,400	6,600	916	923	455	21,200
3	1,420	600	889	997	1,410	1,850	3,130	5,340	939	713	577	17,600
4	1,370	899	808	759	1,300	2,240	3,430	4,690	980	595	1,040	13,100
5	866	999	1,060	594	1,490	2,340	3,540	4,730	2,050	546	913	13,200
6	660	1,140	1,480	1,090	1,180	2,390	2,130	4,380	3,490	544	774	11,500
7	727	1,660	955	1,360	1,030	2,300	2,350	4,060	3,180	753	597	9,300
8	873	1,210	516	1,350	938	1,340	3,490	3,790	1,740	646	551	7,650
9	845	832	588	1,740	613	760	4,150	3,610	1,630	590	400	5,640
10	1,020	700	996	2,650	698	1,620	4,080	1,930	1,680	754	351	4,730
11	897	1,120	1,030	5,910	1,020	2,100	4,360	1,330	1,320	833	477	4,120
12	654	1,060	1,080	7,140	1,340	2,080	4,300	1,990	1,460	587	655	3,800
13	595	986	1,090	5,050	1,390	2,050	3,420	2,380	1,470	553	539	2,800
14	941	1,030	792	4,270	1,050	2,060	3,510	1,550	816	1,020	490	2,110
15	720	1,180	592	3,730	743	1,220	3,760	1,510	1,240	1,160	480	2,530
16	1,040	881	807	3,210	445	792	3,570	1,690	3,880	934	446	2,650
17	1,140	605	1,120	5,290	512	1,970	3,390	1,120	4,030	875	408	2,650
18	1,210	855	1,020	6,520	1,430	2,900	3,190	787	3,920	673	444	2,340
19	919	1,010	1,210	5,800	1,440	3,090	4,900	1,260	4,080	2,590	580	1,550
20	687	1,030	1,220	4,880	1,980	3,170	5,770	1,400	4,350	5,050	477	1,450
21	711	1,000	903	5,000	2,030	3,270	5,340	1,310	4,130	3,250	1,180	1,550
22	796	1,030	604	5,030	1,270	4,360	4,650	1,430	2,730	2,860	3,710	1,970
23	757	746	1,160	4,150	1,580	5,640	4,360	1,810	1,980	1,280	3,950	2,080
24	774	600	1,410	3,680	3,900	6,280	4,640	1,240	2,040	1,430	3,110	2,130
25	909	890	745	2,520	5,580	7,420	4,670	1,040	1,930	1,540	4,700	2,500
26	713	1,140	786	1,910	5,210	6,740	4,250	988	1,850	1,260	4,580	2,600
27	584	1,350	1,520	2,810	4,150	5,090	2,990	1,680	1,890	558	3,440	1,590
28	566	869	1,010	2,700	3,970	4,650	2,720	1,840	932	834	2,680	1,170
29	743	891	642	2,620	------	4,520	2,780	1,480	796	777	2,950	1,270
30	984	677	1,240	2,800	------	4,590	2,910	1,290	1,050	958	6,220	1,430
31	1,120	------	1,260	2,970	------	4,220	------	847	------	737	8,360	------
TOTAL	27,791	28,775	30,093	100,008	50,459	96,682	113,110	73,502	63,147	36,843	56,087	162,610
MEAN	896	959	971	3,226	1,802	3,119	3,770	2,371	2,105	1,188	1,809	5,420
MAX	1,420	1,660	1,520	7,140	5,580	7,420	5,770	6,600	4,350	5,050	8,360	21,200
MIN	566	600	516	594	445	760	2,130	787	648	544	351	1,170
+	42.0	36.4	53.3	38.7	52.0	54.0	44.2	45.8	49.0	38.3	29.9	56.3
MEAN‡	938	995	1,024	3,265	1,854	3,173	3,814	2,417	2,154	1,226	1,839	5,476
CFSM‡	.39	.41	.43	1.36	.77	1.32	1.59	1.01	.90	.51	.77	2.28
IN‡	.45	.46	.49	1.57	.80	1.52	1.77	1.16	1.00	.59	.88	2.55

CAL YR 1974 TOTAL 857,705 MEAN 2,350 MAX 20,800 MIN 339 MEAN‡ 2,405 CFSM‡ 1.00 IN‡ 13.60
WTR YR 1975 TOTAL 839,107 MEAN 2,299 MAX 21,200 MIN 351 MEAN‡ 2,344 CFSM‡ .98 IN‡ 13.26

PEAK DISCHARGE (BASE, 7,000 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-12	0830	17.96	7,260
01-17	2200	18.61	7,910
03-25	1630	18.29	7,590
09-02	1530	27.08	22,200

+Diversion in cubic feet per second, for industrial use; furnished by Dow Chemical Co.

‡Adjusted for diversion made by Dow Chemical Co.

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 mi^2 (15,700 km^2), 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.

EXTREMES.--Current year: Maximum daily discharge, 24,500 ft^3/s (694 m^3/s) Sept. 6; maximum daily gage height, 18.30 ft (5.578 m) Sept. 6.
Period of record: Maximum discharge, 68,000 ft^3/s (1,930 m^3/s) Mar. 30, 1904, gage height, 24.9 ft (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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1				---	---	---	10500					15000
2				---	---	---	---					20000
3				---	---	---	---					22000
4				---	---	---	---					22600
5				---	---	---	---					23500
6				---	---	---	---					24500
7				---	---	---	---					24100
8				---	---	---	---					20100
9				---	---	---	---					17300
10				---	---	---	---					13900
11				---	---	---	10800					10100
12				11300	---	---	11700					---
13				13500	---	---	12300					---
14				14400	---	---	11500					---
15				12800	---	---	11600					---
16				11700	---	---	11400					---
17				11700	---	---	11200					---
18				10700	---	---	10900					---
19				---	---	---	13900					---
20				---	---	---	15700					---
21				---	---	---	20300					---
22				---	---	10800	20600					---
23				---	---	12300	19400					---
24				---	11800	16900	17300					---
25				---	14600	18400	17200					---
26				---	15000	20200	15900					---
27				---	13400	19400	13900					---
28				---	11600	17700	11900					---
29				---	---	15200	11000					---
30				---	---	13500	---					---
31				---	---	10700	---					---

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) northeast of Owendale.

DRAINAGE AREA.--55 mi^2 (140 km^2), 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.--23 years, 30.6 ft^3/s (0.867 m^3/s), 7.56 in/yr (192 mm/yr).

EXTREMES.--Current year: Maximum discharge, 962 ft^3/s (27.2 m^3/s) May 21, gage height, 9.79 ft (2.984 m); minimum, 2.0 ft^3/s (0.057 m^3/s) Aug. 18, 19, 20.
Period of record: Maximum discharge, 2,550 ft^3/s (72.2 m^3/s) Mar. 25, 1954, gage height, 10.75 ft (3.277 m), from rating curve extended above 1,200 ft^3/s (34.0 m^3/s), site and datum then in use; minimum, 0.1 ft^3/s (0.003 m^3/s) July 31, Aug. 1, 1964.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.4	4.8	11	12	40	25	58	19	34	8.3	3.4	5.1
2	6.4	4.6	11	9.3	29	22	53	18	28	7.5	3.4	4.5
3	5.0	4.5	10	12	19	18	32	17	26	7.2	4.1	4.9
4	4.5	4.9	8.6	11	15	16	34	16	31	6.8	4.3	5.8
5	4.3	5.7	8.2	9.0	13	14	31	16	188	6.4	3.8	5.2
6	4.3	9.0	7.4	10	12	12	32	17	198	5.7	3.3	5.6
7	4.3	9.0	9.0	11	11	11	40	24	75	5.7	3.1	5.0
8	4.1	7.5	11	12	10	10	50	30	55	6.4	3.0	4.7
9	4.0	6.4	10	66	9.5	9.8	68	24	43	5.3	2.7	4.6
10	4.0	6.0	10	117	9.0	9.4	85	22	36	7.2	2.6	4.4
11	4.0	5.7	10	380	8.8	9.2	109	21	33	11	2.7	4.2
12	3.8	6.0	10	280	8.2	9.2	151	22	43	8.6	2.8	4.3
13	3.7	5.7	12	64	7.8	9.6	171	22	42	7.9	2.9	4.4
14	4.8	5.7	12	50	7.4	10	233	21	35	7.2	3.0	4.3
15	8.3	5.3	12	37	7.0	11	258	19	31	6.4	2.7	3.9
16	7.2	5.3	13	29	6.8	15	196	18	36	5.3	2.4	3.8
17	5.3	5.3	16	26	7.0	33	140	17	35	4.9	2.3	3.7
18	4.9	6.4	15	23	7.2	97	126	16	29	4.6	2.1	3.5
19	4.5	6.4	14	21	8.0	100	694	15	26	5.3	2.0	4.3
20	4.4	7.5	14	19	8.6	94	428	15	22	8.3	2.1	16
21	4.5	10	14	18	9.8	82	110	733	20	8.3	3.4	9.8
22	4.4	12	14	17	13	82	82	796	17	6.8	5.0	7.4
23	4.5	12	13	16	70	106	64	280	15	6.4	3.8	5.2
24	4.4	14	14	16	270	190	52	91	15	9.0	5.4	4.6
25	4.4	17	14	17	120	496	47	71	16	7.3	4.9	12
26	4.3	16	11	19	60	232	40	182	13	5.7	3.6	10
27	4.3	14	13	21	44	89	33	76	12	5.0	3.1	6.3
28	4.1	14	12	26	36	73	28	53	12	4.6	2.7	5.4
29	4.3	12	12	40	------	76	23	41	10	4.0	3.1	4.9
30	4.5	12	11	64	------	95	21	36	9.0	3.8	5.2	4.8
31	4.9	------	11	54	------	71	------	38	------	3.6	7.9	------
TOTAL	146.8	254.7	363.2	1,506.3	867.1	2,127.2	3,489	2,786	1,185.0	200.5	106.8	172.6
MEAN	4.74	8.49	11.7	48.6	31.0	68.6	116	89.9	39.5	6.47	3.45	5.75
MAX	8.3	17	16	380	270	496	694	796	198	11	7.9	16
MIN	3.7	4.5	7.4	9.0	6.8	9.2	21	15	9.0	3.6	2.0	3.5
CFSM	.09	.15	.21	.88	.56	1.25	2.11	1.63	.72	.12	.06	.10
IN.	.10	.17	.25	1.02	.59	1.44	2.36	1.88	.80	.14	.07	.12

CAL YR 1974 TOTAL 16,254.3 MEAN 44.5 MAX 997 MIN 2.6 CFSM .81 IN 10.99
WTR YR 1975 TOTAL 13,205.2 MEAN 36.2 MAX 796 MIN 2.0 CFSM .66 IN 8.93

PEAK DISCHARGE (BASE, 500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	2030	7.17	507
03-25	1200	7.44	550
04-19	1630	9.35	883
05-21	1500	9.79	962

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 mi^2 (1,243 km^2).

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.--31 years, 276 ft^3/s (7.816 m^3/s), 7.81 in/yr (198 mm/yr).

EXTREMES.--Current year: Maximum discharge, 11,000 ft^3/s (312 m^3/s) Apr. 19,gage height, 14.94 ft (4.554 m); minimum, 11 ft^3/s (0.31 m^3/s) Oct. 13, gage height, 1.75 ft (0.533 m).
Period of record: Maximum discharge, 14,400 ft^3/s (408 m^3/s) Apr. 5, 1947, gage height, 16.06 ft (4.895 m), from floodmark, from rating curve extended above 9,500 ft^3/s (269 m^3/s); maximum gage height observed, 18.05 ft (5.502 m) Feb. 20, 1951 (backwater from ice); minimum discharge observed, 1.8 ft^3/s (0.051 m^3/s) Sept. 18, 19, 1946.

REMARKS.--Records good except those for the winter period and those for periods of no gage-height record, 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	19	25	36	540	300	320	224	168	54	19	136
2	16	19	25	36	270	190	288	214	139	50	19	94
3	16	20	25	36	160	160	235	197	105	46	24	64
4	16	23	25	34	120	140	143	182	93	42	24	51
5	17	30	25	34	100	120	112	179	490	40	21	43
6	17	33	25	34	84	129	98	194	1080	40	20	42
7	17	30	28	33	73	133	105	233	688	41	19	45
8	15	31	36	37	66	135	135	237	385	41	19	38
9	15	29	40	201	60	115	212	193	258	41	18	33
10	13	25	46	578	55	105	330	163	191	40	19	26
11	14	23	40	2210	51	100	723	144	140	39	41	26
12	14	21	41	2160	48	109	1420	130	150	38	63	27
13	13	20	39	848	45	122	1910	125	170	39	59	26
14	14	21	42	440	43	176	2150	125	155	39	58	31
15	15	24	44	370	42	210	2320	118	130	41	45	32
16	17	22	46	280	40	265	2050	109	110	45	35	28
17	16	24	45	220	40	517	1540	103	97	45	30	25
18	16	25	44	190	50	1060	1530	96	95	39	26	25
19	16	23	43	150	90	1400	8640	87	100	38	24	29
20	16	24	42	120	80	1220	6110	82	110	37	22	34
21	18	24	40	92	80	884	3620	80	110	35	23	39
22	18	25	39	68	120	980	1900	143	105	42	26	49
23	17	25	38	52	400	2050	896	254	98	40	33	41
24	16	30	38	48	1800	2170	623	180	93	36	52	34
25	17	31	37	44	1700	3820	586	137	87	31	66	30
26	19	29	37	75	1100	3210	466	473	81	28	92	29
27	18	28	36	130	620	1480	358	544	75	27	74	28
28	17	27	35	150	440	688	289	308	69	25	53	29
29	16	25	35	225	---	487	256	191	63	22	44	28
30	20	24	34	1070	---	490	236	141	59	21	45	31
31	19	---	37	880	---	409	---	147	---	20	87	---
TOTAL	504	754	1132	10872	8317	23374	39701	5733	5694	1162	1200	1193
MEAN	16.3	25.1	36.5	351	297	754	1323	185	190	37.5	38.7	39.8
MAX	20	33	46	2210	1800	3820	8640	544	1080	54	92	136
MIN	13	19	25	33	40	100	98	80	59	20	18	25
CFSM	.03	.05	.08	.73	.62	1.57	2.76	.39	.40	.08	.08	.08
IN.	.04	.06	.09	.84	.64	1.81	3.08	.44	.44	.09	.09	.09

CAL YR 1974 TOTAL 154819 MEAN 424 MAX 5780 MIN 12 CFSM .88 IN 12.00
WTR YR 1975 TOTAL 99636 MEAN 273 MAX 8640 MIN 13 CFSM .57 IN 7.72

PEAK DISCHARGE (BASE, 3,500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
03-25	0900	10.03	3,930
04-19	1600	14.94	11,000

NOTE.--No gage-height record Feb. 1 to Mar. 5, June 11 to July 14.

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 mi^2 (438 km^2).

PERIOD OF RECORD.--April 1963 to September 1975 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 711.31 ft (216.807 m) above mean sea level.

AVERAGE DISCHARGE.--12 years, 95.9 ft^3/s (2.716 m^3/s), 7.71 in/yr (196 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,570 ft^3/s (129 m^3/s) Apr. 19, gage height, 8.87 ft (2.704 m); minimum, 2.8 ft^3/s (0.079 m^3/s) Oct. 20, minimum gage height, 0.71 ft (0.216 m) Aug. 3.
Period of record: Maximum discharge, 4,570 ft^3/s (129 m^3/s) Apr. 19, 1975, gage height, 8.87 ft (2.704 m); minimum, 0.8 ft^3/s (0.023 m^3/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, which are poor.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.3	10	6.4	21	170	250	139	139	48	17	5.5	30
2	5.1	11	11	14	120	160	158	118	46	15	4.9	30
3	7.0	11	12	29	85	130	94	96	43	14	6.7	30
4	7.0	12	14	20	65	105	64	86	41	12	7.4	29
5	7.8	14	14	15	55	98	80	82	180	11	7.8	25
6	7.0	17	14	13	45	92	85	82	430	11	9.4	30
7	5.4	15	14	13	42	100	91	89	250	11	8.6	37
8	4.9	14	17	20	38	105	100	90	150	14	7.4	42
9	5.4	15	16	55	35	94	125	80	80	13	6.7	34
10	5.5	15	14	275	32	84	189	70	60	10	6.1	25
11	5.2	14	16	930	30	78	362	59	50	11	10	20
12	4.6	17	21	918	29	69	617	53	55	11	16	18
13	4.5	15	21	453	27	72	734	51	63	11	17	16
14	5.1	16	22	304	25	92	730	54	54	15	24	14
15	6.7	16	22	230	25	101	589	52	44	16	19	13
16	7.4	15	24	170	25	138	529	47	38	14	14	11
17	8.6	14	21	140	31	236	548	43	35	12	11	11
18	8.6	14	19	110	38	405	522	41	34	11	8.6	11
19	9.0	13	21	86	48	530	3940	38	37	9.8	7.4	13
20	7.0	13	20	69	41	500	2900	37	39	11	7.0	14
21	6.7	14	20	56	45	423	2290	43	42	9.8	11	17
22	7.4	13	18	45	120	590	1940	58	39	10	16	17
23	7.4	12	20	40	623	1020	1210	76	34	9.4	35	17
24	8.4	13	19	35	1380	1230	938	62	32	10	49	15
25	8.6	12	19	44	1170	1610	730	49	28	7.8	63	14
26	9.0	11	15	60	810	1150	535	89	25	6.4	59	13
27	9.2	11	20	55	551	750	364	95	25	6.7	44	13
28	9.4	11	20	54	330	533	251	72	23	6.7	33	13
29	9.5	12	20	140	---	400	194	52	20	6.1	26	13
30	9.7	10	20	250	---	322	161	42	18	5.8	23	15
31	9.9	---	18	240	---	240	---	45	---	6.1	20	---
TOTAL	225.5	409	552.4	4811	6035	11710	21460	2091	2063	334.6	583.5	600
MEAN	7.31	13.6	17.8	155	216	378	715	67.5	68.8	10.8	18.8	20.0
MAX	9.9	18	24	930	1380	1610	3940	139	430	17	63	42
MIN	4.3	10	6.4	14	25	69	64	37	18	5.8	4.9	11
CFSM	.04	.08	.11	.92	1.28	2.24	4.23	.40	.41	.06	.11	.12
IN.	.05	.09	.12	1.05	1.33	2.58	4.72	.46	.45	.07	.13	.13

CAL YR 1974 TOTAL 58146.9 MEAN 159 MAX 1970 MIN 2.3 CFSM .94 IN 12.80
WTR YR 1975 TOTAL 50877.0 MEAN 139 MAX 3940 MIN 4.3 CFSM .82 IN 11.20

PEAK DISCHARGE (BASE, 900 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	0200	5.70	1,000
02-24	1000	6.74	1,710
03-25	0600	6.73	1,700
04-19	0700	8.87	4,570

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 mi^2 (46.6 km^2).

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.--10 years, 11.6 ft^3/s (0.329 m^3/s), 8.75 in/yr (222 mm/yr).

EXTREMES.--Current year: Maximum discharge, 334 ft^3/s (9.46 m^3/s) Apr. 19, gage height, 9.33 ft (2.844 m); minimum, 0.49 ft^3/s (0.014 m^3/s) Aug. 20, 21, gage height, 3.16 ft (0.963 m).
Period of record: Maximum discharge, 334 ft^3/s (9.46 m^3/s) Apr. 19, 1975, gage height, 9.33 ft (2.844 m); minimum, 0.06 ft^3/s (0.002 m^3/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. Some diversion by pumping for sprinkler irrigation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	4.0	5.4	7.0	14	21	20	17	7.4	5.0	1.1	13
2	4.8	4.0	6.0	6.9	11	18	20	15	8.0	4.5	1.0	9.6
3	4.2	4.5	7.0	6.6	9.6	16	19	14	7.5	3.0	3.2	8.1
4	3.8	6.3	6.8	6.5	9.0	14	18	14	14	2.3	2.9	8.0
5	3.5	12	6.6	6.7	7.9	13	18	14	51	2.4	2.2	8.7
6	3.5	11	6.4	6.2	7.9	13	17	21	29	2.4	2.1	14
7	3.8	8.8	6.1	6.2	7.5	14	17	18	19	2.3	1.7	8.9
8	3.8	7.3	9.5	8.4	7.0	14	19	14	14	2.3	1.4	6.7
9	3.6	6.2	10	24	6.5	13	20	13	11	2.1	1.1	5.7
10	3.6	5.6	8.6	35	6.0	13	30	11	8.8	3.0	1.0	4.8
11	3.4	5.5	7.0	94	5.6	12	56	10	9.5	2.8	.93	4.2
12	3.2	5.5	7.9	52	5.4	12	55	12	14	3.2	.84	4.0
13	3.2	5.3	7.8	31	5.4	14	49	13	10	4.7	1.4	3.8
14	4.5	5.7	7.6	20	5.4	16	46	11	8.2	4.6	1.3	3.5
15	4.8	5.6	7.4	14	5.4	15	41	11	7.9	4.0	.95	3.2
16	4.2	5.3	8.3	11	6.7	23	38	10	8.9	3.4	.79	3.1
17	4.0	6.5	8.6	9.9	8.6	30	34	9.4	7.8	2.9	1.3	2.9
18	3.6	6.7	8.2	8.8	11	38	50	8.9	8.4	2.6	1.1	4.5
19	3.2	6.1	7.5	8.0	12	40	307	8.4	10	2.4	.73	6.6
20	3.2	6.1	7.8	7.7	10	37	302	7.5	8.8	2.2	.70	6.6
21	3.2	6.5	6.8	7.3	9.6	32	224	7.4	7.3	2.0	13	5.7
22	3.2	6.3	7.1	6.9	20	62	130	9.8	6.2	1.7	20	5.5
23	3.2	5.9	6.7	6.5	82	92	64	8.2	5.4	1.4	23	5.0
24	3.2	6.7	6.9	6.5	131	140	48	7.2	7.7	6.8	31	4.1
25	3.2	6.5	7.0	8.4	92	125	36	6.5	9.2	3.8	16	4.1
26	3.2	5.7	6.9	11	47	66	29	8.2	7.0	2.5	9.7	4.8
27	3.2	5.0	6.6	9.0	35	41	23	8.2	5.5	2.1	6.8	4.8
28	3.2	5.1	6.2	8.7	25	32	21	6.8	4.1	1.7	5.1	5.0
29	3.2	5.1	6.3	37	---	30	19	5.9	3.5	1.5	5.0	4.4
30	3.8	4.8	6.9	34	---	27	17	6.5	3.8	1.3	9.9	4.4
31	4.0	---	7.1	19	---	24	---	8.3	---	1.2	12	---
TOTAL	112.7	185.6	225.0	524.2	603.5	1057	1787	335.2	322.9	88.1	179.24	177.7
MEAN	3.64	6.19	7.26	16.9	21.6	34.1	59.6	10.8	10.8	2.84	5.78	5.92
MAX	4.8	12	10	94	131	140	307	21	51	6.8	31	14
MIN	3.2	4.0	5.4	6.2	5.4	12	17	5.9	3.5	1.2	.70	2.9
CFSM	.20	.34	.40	.94	1.20	1.89	3.31	.60	.60	.16	.32	.33
IN.	.23	.38	.46	1.08	1.25	2.18	3.69	.69	.67	.18	.37	.37

CAL YR 1974 TOTAL 5378.90 MEAN 14.7 MAX 186 MIN 1.7 CFSM .82 IN 11.12
WTR YR 1975 TOTAL 5598.14 MEAN 15.3 MAX 307 MIN .70 CFSM .85 IN 11.57

PEAK DISCHARGE (BASE, 60 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	0800	5.58	103
02-24	1700	6.59	148
03-24	1600	6.78	164
04-19	1800	9.33	334

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 mi^2 (391 km^2).

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.--13 years, 85.4 ft^3/s (2.419 m^3/s), 7.68 in/yr (195 mm/yr).

EXTREMES.--Current year: Maximum discharge, 4,520 ft^3/s (128 m^3/s) Apr. 19, gage height, 8.96 ft (2.731 m); minimum, 8.3 ft^3/s (0.24 m^3/s) Oct. 21, '22, 23; minimum gage height, 1.33 ft (0.405 m) Aug. 1, 2.
Period of record: Maximum discharge, 4,520 ft^3/s (128 m^3/s) Apr. 19, 1975, gage height, 8.96 ft (2.731 m); minimum, 3.1 ft^3/s (0.088 m^3/s) Mar. 10, 1964, gage height, 1.19 ft (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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	19	29	187	180	151	128	37	22	9.5	98
2	11	12	20	30	110	130	144	126	38	20	9.5	90
3	12	12	21	27	80	105	94	107	39	20	14	74
4	12	13	27	29	62	90	89	92	44	18	17	53
5	11	17	26	28	49	75	98	92	325	17	18	54
6	11	31	23	26	43	70	94	107	505	16	16	95
7	11	38	23	28	39	65	102	157	299	15	14	81
8	10	30	26	31	36	72	144	121	140	14	13	56
9	10	26	33	135	33	64	197	94	84	14	12	40
10	10	23	34	399	30	59	310	78	66	14	10	31
11	11	21	32	1040	28	58	503	69	55	13	11	28
12	13	21	30	909	26	58	639	61	58	15	11	26
13	12	20	31	468	25	65	578	62	73	16	12	23
14	15	21	33	270	24	80	493	69	56	19	12	22
15	15	21	32	164	23	112	420	61	46	18	15	20
16	17	21	33	130	24	170	360	56	46	18	13	19
17	16	21	35	100	26	266	308	50	44	17	12	18
18	13	22	35	80	38	386	320	47	39	16	11	19
19	11	25	33	67	64	465	3320	44	69	16	9.9	20
20	9.5	25	30	57	49	460	2230	42	65	16	9.9	31
21	8.7	24	31	48	52	388	2160	46	42	15	19	32
22	8.7	23	28	41	81	503	1690	52	33	13	52	31
23	8.7	23	28	35	386	981	1310	58	28	12	117	28
24	9.1	23	26	35	1270	1270	1030	48	31	12	137	26
25	9.9	23	27	42	1180	1280	633	42	40	19	157	24
26	9.9	23	28	58	801	912	367	41	56	20	149	22
27	10	21	26	52	470	585	245	42	47	15	81	23
28	10	21	26	49	295	331	191	39	37	14	49	25
29	10	21	26	209	---	241	155	34	31	12	35	23
30	11	20	26	438	---	227	133	31	26	11	43	25
31	11	---	31	335	---	189	---	34	---	9.5	61	---
TOTAL	349.5	654	879	5439	5531	9937	18508	2130	2499	486.5	1149.8	1157
MEAN	11.3	21.8	28.4	175	198	321	617	68.7	83.3	15.7	37.1	38.6
MAX	17	38	35	1040	1270	1280	3320	157	505	22	157	98
MIN	8.7	12	19	26	23	58	89	31	26	9.5	9.5	18
CFSM	.07	.14	.19	1.16	1.31	2.13	4.09	.45	.55	.10	.25	.26
IN.	.09	.16	.22	1.34	1.36	2.45	4.56	.52	.62	.12	.28	.29

CAL YR 1974 TOTAL 47726.5 MEAN 131 MAX 2190 MIN 6.0 CFSM .87 IN 11.76
WTR YR 1975 TOTAL 48719.8 MEAN 133 MAX 3320 MIN 8.7 CFSM .88 IN 12.00

PEAK DISCHARGE (BASE, 600 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	2000	6.62	1,260
01-30	1200	5.12	756
02-24	1900	7.08	1,470
03-24	2400	7.06	1,460
04-12	1600	4.92	696
04-19	1100	8.96	4,520

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 mi^2 (54.1 km^2).

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.--16 years, 12.0 ft^3/s (0.340 m^3/s), 7.80 in/yr (198 mm/yr).

EXTREMES.--Current year: Maximum discharge, 160 ft^3/s (4.53 m^3/s) Jan. 12, gage height, 4.37 ft (1.332 m); minimum, 1.8 ft^3/s (0.051 m^3/s) Oct. 13; minimum gage height, 2.00 ft (0.610 m) Aug. 1, 2.
Period of record: Maximum discharge, 161 ft^3/s (4.56 m^3/s) Feb. 23, 1974, gage height, 4.38 ft (1.335 m); minimum, 0.2 ft^3/s (0.006 m^3/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 except those for the winter period, which are fair.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	2.6	6.0	11	30	35	40	40	13	13	2.8	76
2	2.7	2.7	9.0	11	28	33	41	38	12	12	2.8	53
3	2.3	3.4	8.7	11	25	30	54	36	11	11	20	50
4	2.2	5.2	8.3	10	22	28	54	38	12	10	20	63
5	2.1	11	7.9	10	19	27	45	37	55	9.3	12	49
6	2.2	11	7.4	10	19	26	40	36	40	8.9	10	55
7	2.3	7.2	8.1	9.9	18	26	39	34	28	9.3	8.8	46
8	2.3	6.0	12	13	17	26	40	31	22	8.9	7.5	39
9	2.1	5.4	13	29	17	26	42	28	19	8.1	7.0	35
10	2.2	5.2	13	37	16	25	44	27	15	8.0	7.0	32
11	2.0	5.4	13	59	16	25	48	25	16	7.6	9.0	29
12	2.1	5.6	12	85	15	24	47	28	21	8.5	11	28
13	1.9	5.2	12	50	15	24	44	31	20	10	11	26
14	3.4	6.0	12	30	15	24	41	28	16	10	11	24
15	3.3	5.6	12	24	14	24	39	26	24	10	10	22
16	2.8	5.2	13	20	15	24	37	24	36	8.4	10	22
17	2.6	6.8	13	19	15	28	35	22	24	7.4	9.3	23
18	2.4	7.2	13	18	16	37	37	21	21	6.8	8.6	24
19	2.6	6.6	13	18	17	45	54	20	20	6.7	8.3	27
20	2.6	7.0	12	18	17	48	54	18	17	7.2	7.4	29
21	2.1	7.7	12	18	17	49	62	18	15	6.6	13	26
22	2.0	8.3	12	18	19	56	60	22	13	5.9	23	25
23	2.7	7.7	11	18	41	61	54	19	12	5.1	41	23
24	2.6	8.8	12	18	58	59	53	17	28	6.4	56	20
25	2.7	8.5	12	20	59	59	50	16	51	5.6	53	18
26	2.7	7.0	12	21	48	61	46	17	34	4.8	45	20
27	2.7	6.6	11	21	45	56	43	14	26	4.4	34	20
28	2.3	6.6	10	18	38	49	42	13	20	3.9	26	18
29	2.7	6.2	11	48	---	48	42	12	17	3.5	24	17
30	2.9	6.0	12	51	---	46	39	12	15	3.2	44	19
31	2.8	---	11	35	---	42	---	15	---	3.0	53	---
TOTAL	77.0	193.7	344.4	778.9	691	1171	1366	763	673	233.5	605.5	958
MEAN	2.48	6.46	11.1	25.1	24.7	37.8	45.5	24.6	22.4	7.53	19.5	31.9
MAX	3.4	11	13	85	59	61	62	40	55	13	56	76
MIN	1.9	2.6	6.0	9.9	14	24	35	12	11	3.0	2.8	17
CFSM	.12	.31	.53	1.20	1.18	1.81	2.18	1.18	1.07	.36	.93	1.53
IN.	.14	.34	.61	1.39	1.23	2.08	2.43	1.36	1.20	.42	1.08	1.71

CAL YR 1974 TOTAL 7593.4 MEAN 20.8 MAX 117 MIN 1.2 CFSM 1.00 IN 13.51
WTR YR 1975 TOTAL 7855.0 MEAN 21.5 MAX 85 MIN 1.9 CFSM 1.03 IN 13.98

PEAK DISCHARGE (BASE, 45 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-12	1100	4.37	160	04-21	1600	3.65	70
01-13	0400	3.90	95	06-05	1200	3.60	66
01-30	0900	3.68	72	06-25	0200	3.49	59
02-24	0400	3.55	61	08-23	2200	3.61	68
03-23	1500	3.56	62	09-01	0500	3.80	86
04-03	1600	3.55	61	09-04	0400	3.63	70
04-11	0100	3.39	49				

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 mi^2 (205.1 km^2).

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.--16 years, 50.9 ft^3/s (1.441 m^3/s), 8.73 in/yr (222 mm/yr).

EXTREMES.--Current year: Maximum discharge, 218 ft^3/s (6.17 m^3/s) Sept. 3, gage height, 4.53 ft (1.381 m); minimum, 14.0 ft^3/s (0.40 m^3/s) July 17, 18, 19, 20, 22, 23, 24; minimum gage height, 2.08 ft (0.634 m) July 22, 23, 24.
Period of record: Maximum discharge, 276 ft^3/s (7.82 m^3/s) Mar. 12, 1974, gage height, 4.95 ft (1.509 m); minimum, 2.4 ft^3/s (0.068 m^3/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 Section 2 of this report.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	34	61	58	114	121	158	184	60	74	17	174
2	25	35	78	57	111	118	162	174	58	70	18	172
3	28	36	69	58	115	116	170	163	56	62	23	191
4	31	36	66	58	111	112	166	158	56	57	27	193
5	28	42	65	58	107	108	163	150	57	63	26	194
6	27	43	64	58	104	107	159	142	57	68	36	196
7	30	44	64	58	103	110	155	129	59	71	39	194
8	35	47	66	65	102	111	152	114	61	64	32	182
9	47	49	56	71	96	111	148	99	62	55	33	169
10	54	52	56	84	93	110	140	89	61	42	34	160
11	53	52	56	93	90	110	128	82	68	31	42	159
12	42	51	65	94	86	110	117	77	75	28	65	153
13	35	54	65	99	84	109	110	73	85	28	77	143
14	33	60	64	103	78	110	107	83	92	23	75	132
15	30	62	64	105	76	108	103	85	106	17	70	123
16	33	65	63	103	76	109	100	89	110	17	61	115
17	36	65	66	101	76	109	101	91	112	17	59	108
18	35	65	68	100	76	110	110	86	109	15	58	105
19	34	65	71	99	75	110	149	80	105	14	48	102
20	30	68	72	96	74	110	153	73	100	15	32	99
21	27	71	74	93	73	117	170	74	94	18	36	93
22	29	73	75	90	76	131	184	75	87	16	46	89
23	42	68	74	89	90	136	195	68	81	16	55	82
24	54	65	74	90	107	151	201	61	79	18	58	77
25	54	64	72	93	110	155	204	56	80	17	75	74
26	43	64	70	92	120	160	201	57	78	17	105	73
27	38	65	68	93	128	162	202	54	81	16	132	76
28	35	64	64	93	123	161	202	52	91	17	151	78
29	34	64	62	108	---	159	198	51	80	17	156	80
30	33	63	61	109	---	157	192	53	78	18	155	77
31	34	---	60	113	---	158	---	59	---	18	174	---
TOTAL	1111	1686	2084	2681	2674	3866	4700	2891	2368	1019	2015	3863
MEAN	35.8	56.2	67.2	86.5	95.5	125	157	92.9	78.9	32.9	65.0	129
MAX	54	73	78	113	128	162	204	184	112	74	174	196
MIN	20	34	50	57	73	107	100	51	55	14	17	73
CFSM	.45	.71	.85	1.09	1.21	1.58	1.98	1.17	1.00	.42	.82	1.63
IN.	.52	.79	.98	1.26	1.26	1.82	2.21	1.35	1.11	.48	.95	1.81

CAL YR 1974 TOTAL 31329 MEAN 85.8 MAX 274 MIN 10 CFSM 1.09 IN 14.71
WTR YR 1975 TOTAL 30948 MEAN 84.8 MAX 204 MIN 14 CFSM 1.07 IN 14.54

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 mi^2 (319 km^2).

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.--22 years (1935-38, 1956-75) 98.3 ft^3/s (2.784 m^3/s), 10.85 in/yr (276 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,720 ft^3/s (48.7 m^3/s) Apr. 19, gage height, 5.37 ft (1.637 m); minimum, 32 ft^3/s (0.91 m^3/s) Aug. 10, gage height, 0.98 ft (0.299 m).
Period of record: Maximum discharge, 1,720 ft^3/s (48.7 m^3/s) Apr. 19, 1975, gage height, 5.37 ft (1.637 m); minimum observed, 4.8 ft^3/s (0.14 m^3/s) Sept. 4, 1936, site then in use.

REMARKS.--Records good. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	107	99	137	150	160	211	353	93	118	62	257
2	84	93	113	139	148	156	224	364	87	97	67	211
3	102	112	118	148	150	160	227	370	63	82	63	341
4	111	115	113	139	147	164	240	379	57	70	47	268
5	107	197	116	130	150	166	260	359	86	64	56	286
6	102	124	115	135	152	174	274	368	57	67	46	322
7	108	113	125	138	143	188	301	335	61	93	41	364
8	110	100	159	260	136	183	306	307	68	82	40	337
9	113	92	138	244	130	178	282	293	76	78	37	308
10	128	85	142	327	134	186	237	271	80	97	35	318
11	141	101	143	306	140	192	266	253	140	80	86	338
12	118	100	160	134	139	169	268	244	188	91	58	295
13	92	84	153	143	136	152	263	154	185	93	52	300
14	115	96	155	145	138	182	265	129	178	84	42	293
15	98	82	155	153	133	190	267	116	214	76	57	297
16	96	72	200	155	136	187	253	84	206	75	42	297
17	95	73	190	156	162	193	253	72	198	74	37	286
18	94	74	180	158	156	196	335	76	195	70	37	332
19	94	77	172	155	142	196	751	82	191	75	39	329
20	98	102	172	158	153	195	270	109	189	67	40	337
21	104	113	164	161	163	218	314	165	180	66	129	275
22	106	100	154	158	192	330	343	181	175	66	136	265
23	105	95	160	159	280	196	351	162	178	63	139	256
24	107	110	155	160	349	296	331	163	256	78	117	238
25	109	99	147	184	182	242	340	193	194	63	126	236
26	111	104	142	164	166	217	331	206	171	57	129	229
27	106	108	137	160	160	211	320	181	168	53	122	195
28	114	105	138	161	163	203	334	176	159	54	136	173
29	119	99	132	298	---	212	333	163	152	56	185	182
30	119	97	137	142	---	201	340	155	154	56	279	203
31	113	---	136	149	---	203	---	129	---	56	381	---
TOTAL	3265	3029	4524	5360	4529	6096	9090	6592	4399	2301	2863	8368
MEAN	105	101	146	173	162	197	303	213	147	74.2	92.4	279
MAX	141	197	200	327	349	330	751	379	256	118	381	364
MIN	46	72	99	130	130	152	211	72	57	53	35	173

CAL YR 1974 TOTAL 69706 MEAN 191 MAX 970 MIN 33
WTR YR 1975 TOTAL 60416 MEAN 166 MAX 751 MIN 35

PEAK DISCHARGE (BASE, (460 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
11-05	1100	3.04	466	04-19	0200	5.37	1,720
01-08	2000	3.06	474	06-24	1800	3.26	597
01-10	1700	3.28	562	08-29	2400	3.25	584
01-29	0800	3.41	620	08-31	1700	3.34	579
02-24	0600	3.39	610	09-03	1700	3.55	725
03-22	1300	3.30	570	09-19	2400	2.99	482

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 mi^2 (46.4 km^2).

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.--16 years, 9.60 ft^3/s (0.272 m^3/s), 7.28 in/yr (185 mm/yr).

EXTREMES.--Current year: Maximum discharge, 165 ft^3/s (4.67 m^3/s) Apr. 19, gage height, 5.12 ft (1.561 m); maximum gage height, 5.20 ft (1.585 m) Jan. 12 (backwater from ice); minimum discharge, 1.3 ft^3/s (0.037 m^3/s) Oct. 21, July 28; minimum gage height, 186 ft (0.567 m) July 28, Aug. 20.
Period of record: Maximum discharge, 368 ft^3/s (10.4 m^3/s) June 25, 1968, gage height, 6.27 ft (1.911 m); minimum, 0.01 m^3/s (<0.001 m^3/s) on several days during July and August, 1964; minimum gage height, 0.82 ft (0.250 m) Aug. 1, 1960.

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

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	1.6	3.8	6.5	20	21	22	22	10	3.5	1.5	18
2	2.2	1.5	3.7	6.1	16	18	21	19	8.1	2.8	1.7	13
3	2.0	2.5	4.7	6.1	14	16	22	17	7.0	2.5	2.4	13
4	1.8	3.5	4.6	6.1	12	14	22	19	6.3	2.2	1.8	16
5	1.6	12	4.6	5.7	10	13	22	18	19	2.0	1.8	14
6	1.6	8.4	4.5	5.5	9.0	14	23	17	15	1.8	1.8	15
7	1.7	6.5	4.8	5.5	8.0	14	27	16	11	2.3	1.6	11
8	1.7	5.3	8.0	16	7.0	14	38	14	8.3	2.1	1.5	7.9
9	1.7	4.7	7.3	54	6.4	12	49	13	7.0	1.9	1.5	6.1
10	1.6	4.1	6.9	65	6.0	12	53	12	5.8	2.3	1.4	5.1
11	1.6	4.3	6.3	82	5.6	12	52	11	7.7	2.1	1.6	4.9
12	1.5	4.1	7.4	95	5.4	14	45	11	12	2.3	2.5	4.8
13	1.5	4.0	8.3	60	5.2	18	37	12	12	3.1	2.5	4.2
14	2.2	4.4	8.2	39	5.1	19	31	11	8.1	3.9	2.2	3.7
15	1.6	4.4	8.2	29	5.1	19	26	10	8.6	2.9	2.6	3.4
16	1.4	4.1	9.3	22	5.4	23	25	9.4	9.0	2.4	2.7	3.5
17	1.4	4.7	9.5	17	5.5	26	22	8.6	6.7	2.2	2.2	3.2
18	1.4	4.3	8.4	13	11	32	25	8.1	6.0	2.0	1.8	4.4
19	1.4	4.1	7.6	11	9.0	39	134	7.5	5.0	2.2	1.7	6.4
20	1.4	4.9	7.0	9.2	8.2	37	94	6.9	4.3	2.0	1.5	13
21	1.4	6.4	6.7	9.0	13	35	70	7.0	3.8	2.3	4.4	7.7
22	1.4	5.7	6.7	8.4	24	69	51	10	3.3	2.1	7.2	6.5
23	1.4	5.3	6.5	7.9	79	76	39	9.9	3.0	1.9	10	5.5
24	1.4	7.1	6.9	7.8	112	83	37	8.6	17	2.2	10	4.6
25	1.5	6.2	7.2	12	87	76	29	8.5	25	1.9	8.6	4.2
26	1.4	5.1	6.5	15	60	56	24	16	18	1.7	8.0	4.6
27	1.4	4.8	6.1	12	40	40	21	11	12	1.5	5.3	4.3
28	1.4	4.6	5.9	11	28	31	20	8.2	8.2	1.4	4.0	4.0
29	1.4	4.2	5.9	48	---	31	20	6.7	6.0	1.5	3.8	3.7
30	1.6	4.0	6.5	49	---	28	19	6.4	4.4	1.5	9.6	6.3
31	1.6	---	6.7	30	---	23	---	13	---	1.5	16	---
TOTAL	49.3	146.8	204.8	764.2	617.9	935	1120	367.8	277.6	68.0	125.2	222.0
MEAN	1.59	4.89	6.61	24.7	22.1	30.2	37.3	11.9	9.25	2.19	4.04	7.40
MAX	2.2	12	9.5	95	112	83	134	22	25	3.9	16	18
MIN	1.4	1.5	3.7	5.5	5.1	12	19	6.4	3.0	1.4	1.4	3.2
CFSM	.09	.27	.37	1.38	1.23	1.69	2.08	.66	.52	.12	.23	.41
IN.	.10	.31	.43	1.59	1.28	1.94	2.33	.76	.58	.14	.26	.46

CAL YR 1974 TOTAL 5336.95 MEAN 14.6 MAX 120 MIN .90 CFSM .82 IN 11.09
WTR YR 1975 TOTAL 4898.60 MEAN 13.4 MAX 134 MIN 1.4 CFSM .75 IN 10.18

PEAK DISCHARGE (BASE, 90 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-12	1100	5.20	150
02-24	0500	4.97	131
03-22	1500	4.51	94
03-24	1000	4.49	93
04-19	0300	5.12	165

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 mi^2 (99.7 km^2).

PERIOD OF RECORD.--September 1955 to September 1975 (discontinued as a continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Water-stage recorder. Datum of gage is 929.80 ft (283.403 m) above mean sea level (levels by Giffels & Webster Engineering Inc.).

AVERAGE DISCHARGE.--20 years, 25.4 ft^3/s (0.719 m^3/s), 8.96 in/yr (228 mm/yr).

EXTREMES.--Current year: Maximum discharge, 428 ft^3/s (12.1 m^3/s) Apr. 19, gage height, 4.26 ft (1.298 m) from high water marks; minimum 6.7 ft^3/s (0.19 m^3/s) Nov. 28, 29, 30, gage height, 1.62 ft (0.494 m).
Period of record: Maximum discharge, 428 ft^3/s (12.1 m^3/s) Apr. 19, 1975, gage height, 4.26 ft (1.298 m) from high water marks; maximum gage height, 4.43 ft (1.350 m) Sept. 22, 1971, caused by construction downstream; minimum discharge, 1.2 ft^3/s (0.034 m^3/s) June 28, July 13, 14, 15, 1959.

REMARKS.--Records good except those for the winter period and those for periods of no gage-height record, which are fair. Occasional regulation by Lake Orion.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	16	7.8	23	41	88	83	72	35	73	16	97
2	57	16	9.5	22	38	78	78	67	34	63	15	90
3	52	17	7.4	23	35	69	92	63	36	53	29	98
4	51	17	7.0	23	33	62	79	65	37	46	32	105
5	58	20	7.4	23	31	56	70	62	48	41	30	96
6	53	18	7.4	23	29	53	65	61	47	38	26	105
7	47	18	7.4	22	28	52	61	60	48	36	20	90
8	44	18	8.1	27	27	50	60	57	48	34	18	80
9	41	18	7.8	32	26	47	60	55	46	31	17	70
10	38	18	7.8	41	25	44	62	53	44	28	15	67
11	35	19	7.8	53	24	42	64	50	45	25	14	64
12	34	19	8.1	60	23	41	66	49	47	26	15	61
13	32	19	8.4	76	23	40	69	49	44	30	19	55
14	34	20	8.8	80	24	38	71	48	39	31	20	51
15	32	19	9.5	74	24	38	71	46	40	30	20	48
16	31	18	11	66	25	38	71	42	42	28	20	45
17	30	19	13	59	27	39	67	39	44	25	18	45
18	28	19	14	54	31	40	67	36	45	23	18	50
19	28	19	16	50	32	46	410	22	45	22	18	62
20	26	19	16	46	31	56	350	7.8	42	25	20	57
21	25	20	18	43	30	71	270	9.2	40	31	29	53
22	25	19	19	40	32	99	200	16	40	25	40	49
23	24	20	20	37	44	101	160	18	39	21	84	46
24	23	20	21	36	63	134	135	27	53	23	86	50
25	22	14	22	37	69	152	115	36	80	20	94	52
26	21	7.0	22	37	99	162	100	37	128	18	120	56
27	19	7.0	22	36	109	159	90	36	144	18	110	54
28	18	7.0	22	36	100	137	82	34	136	17	96	53
29	18	7.0	22	57	---	121	77	31	110	17	90	56
30	17	7.0	22	48	---	103	73	32	86	17	110	55
31	16	---	22	44	---	90	---	35	---	16	100	---
TOTAL	1039	494.0	422.2	1328	1123	2346	3318	1315.0	1712	931	1359	1960
MEAN	33.5	16.5	13.6	42.8	40.1	75.7	111	42.4	57.1	30.0	43.8	65.3
MAX	60	20	22	80	109	162	410	72	144	73	120	105
MIN	16	7.0	7.0	22	23	38	60	7.8	34	16	14	45
CFSM	.87	.43	.35	1.11	1.04	1.97	2.88	1.10	1.48	.78	1.14	1.70
IN.	1.00	.48	.41	1.28	1.09	2.27	3.21	1.27	1.65	.90	1.31	1.89

CAL YR 1974 TOTAL 16507.5 MEAN 45.2 MAX 250 MIN 7.0 CFSM 1.17 IN 15.95
WTR YR 1975 TOTAL 17347.2 MEAN 47.5 MAX 410 MIN 7.0 CFSM 1.23 IN 16.76

NOTE.--No gage-height record Apr. 18-29, Aug. 16 to Sept. 25.

PEAK DISCHARGE (BASE, 90 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-29	0600	2.84	113
02-27	0300	2.82	110
03-26	2200	3.16	168
04-19	unknown	4.26	428
06-27	0700	3.04	146
08-26	unknown	unknown about	130

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 mi^2 (183.6 km^2).

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.--16 years, 49.9 ft^3/s (1.413 m^3/s), 9.56 in/yr (243 mm/yr).

EXTREMES.--Current year: Maximum discharge, 819 ft^3/s (23.2 m^3/s) Apr. 19, gage height, 5.79 ft (1.765 m); minimum, 19.0 ft^3/s (0.538 m^3/s) July 17, 18, 19; minimum gage height, 1.86 ft (0.567 m) Aug. 11.
Period of record: Maximum discharge, 918 ft^3/s (26.0 m^3/s) Feb. 1, 1968; maximum gage height, 5.95 ft (1.814 m) Feb. 10, 1965, backwater from ice; minimum discharge, 1.2 ft^3/s (0.034 m^3/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 fair. Occasional regulation by Lake Orion.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	33	26	48	89	94	125	127	57	106	21	155
2	72	33	45	48	82	83	122	118	54	93	22	141
3	63	35	34	48	75	75	130	110	55	67	30	149
4	58	40	30	49	71	68	124	115	68	55	36	165
5	66	64	30	47	68	61	117	112	218	53	32	149
6	62	49	28	42	68	60	113	110	130	52	33	166
7	56	40	29	42	64	60	116	115	105	50	28	151
8	54	38	37	68	62	59	124	116	94	46	26	125
9	51	37	34	104	58	56	133	112	87	41	26	111
10	49	36	32	140	55	54	142	108	76	40	24	107
11	45	38	30	288	53	50	152	103	82	38	24	104
12	43	38	33	155	50	53	147	104	98	41	24	101
13	43	38	34	120	49	58	140	106	85	58	28	90
14	48	41	34	105	47	57	137	100	69	53	29	84
15	45	40	34	92	46	58	134	97	67	52	30	77
16	41	38	38	82	50	70	134	90	75	47	30	73
17	40	42	38	75	55	86	127	86	67	33	29	69
18	38	43	38	70	60	113	146	83	65	19	28	69
19	36	41	38	67	60	129	614	74	66	20	27	90
20	38	43	38	65	59	129	339	40	58	24	27	102
21	37	44	41	64	61	127	422	47	52	25	44	85
22	36	42	42	59	83	190	426	63	47	23	57	80
23	36	41	42	57	214	209	365	59	55	21	135	75
24	35	44	45	56	341	256	293	55	158	25	134	72
25	35	41	46	64	167	249	236	74	208	23	147	87
26	35	29	44	68	120	210	196	76	173	21	193	95
27	33	27	45	62	115	191	161	60	178	21	178	92
28	32	27	44	59	107	172	141	52	166	20	155	88
29	32	27	44	161	---	160	133	46	146	20	137	89
30	33	26	47	119	---	146	123	47	123	20	176	92
31	33	---	47	98	---	132	---	66	---	21	159	---
TOTAL	1392	1155	1167	2622	2430	3515	5812	2671	2982	1228	2069	3133
MEAN	44.9	38.5	37.6	84.6	86.8	113	194	86.2	99.4	39.6	66.7	104
MAX	72	64	47	288	341	256	614	127	218	106	193	166
MIN	32	26	26	42	46	50	113	40	47	19	21	69
CFSM	.63	.54	.53	1.19	1.22	1.59	2.74	1.22	1.40	.56	.94	1.47
IN.	.73	.61	.61	1.38	1.27	1.84	3.05	1.40	1.56	.64	1.09	1.64

CAL YR 1974 TOTAL 30061 MEAN 82.4 MAX 643 MIN 19 CFSM 1.16 IN 15.77
WTR YR 1975 TOTAL 30176 MEAN 82.7 MAX 614 MIN 19 CFSM 1.17 IN 15.83

PEAK DISCHARGE (BASE, 200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1100	4.78	328
01-29	1500	4.29	221
02-24	0500	4.85	394
03-24	1800	4.26	298
04-19	0900	5.79	819
04-21	2100	4.63	442
06-05	0300	4.17	376
06-25	0100	4.00	328
08-26	1100	3.16	210

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 mi^2 (66.3 km^2).

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.--11 years, 17.5 ft^3/s (0.496 m^3/s), 9.28 in/yr (236 mm/yr).

EXTREMES.--Current year: Maximum discharge, 290 ft^3/s (8.21 m^3/s) Apr. 19, gage height, 5.19 ft (1.582 m); minimum, 5.1 ft^3/s (0.14 m^3/s) Aug. 1, gage height, 1.52 ft (0.463 m).
Period of record: Maximum discharge, 290 ft^3/s (8.21 m^3/s) Apr. 19, 1975; gage height, 5.19 ft (1.582 m); minimum, 0.92 ft^3/s (0.026 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.1	9.4	13	11	42	56	47	53	12	20	5.3	126
2	8.2	9.5	14	11	39	49	45	48	12	15	5.5	110
3	6.6	9.9	14	11	32	41	60	46	12	22	15	93
4	6.2	13	14	11	26	37	52	50	14	16	15	83
5	6.1	27	17	11	23	33	51	43	37	10	8.1	76
6	6.8	28	15	11	20	30	44	41	24	11	6.6	83
7	9.1	20	16	10	17	28	42	35	19	11	6.6	78
8	8.4	17	22	17	16	28	43	29	16	9.9	6.2	63
9	9.6	19	19	35	15	25	44	24	14	9.3	5.8	47
10	9.3	17	18	41	14	23	45	21	12	9.4	5.7	36
11	9.0	16	16	79	13	23	49	17	18	6.8	7.0	29
12	8.6	17	16	90	13	21	49	19	25	6.6	8.8	25
13	8.8	17	17	73	12	21	47	20	24	7.4	16	19
14	14	18	16	48	12	19	45	17	18	8.3	13	16
15	14	17	15	38	12	20	44	19	19	8.3	8.2	14
16	16	15	17	32	14	22	42	18	20	7.3	7.7	13
17	15	18	17	29	14	28	40	16	16	6.8	7.2	12
18	12	18	15	28	19	40	52	14	17	6.3	7.5	16
19	8.8	15	14	26	18	57	241	20	17	6.2	7.0	26
20	8.1	16	13	24	18	68	245	18	11	7.6	6.7	35
21	6.3	14	13	23	18	65	173	20	12	7.3	34	32
22	10	12	13	21	22	73	135	28	12	6.7	54	28
23	10	14	12	20	55	91	110	19	12	6.4	117	26
24	8.3	16	13	19	127	109	99	15	37	8.2	153	23
25	8.2	15	12	22	106	115	90	22	73	6.8	161	21
26	7.3	14	11	25	93	99	81	32	80	6.0	170	24
27	6.9	13	11	22	82	82	70	26	73	5.7	153	22
28	6.9	14	11	20	65	73	61	20	50	5.4	133	20
29	9.2	14	11	59	---	69	56	16	33	5.5	116	18
30	10	13	12	56	---	62	52	10	21	5.5	121	23
31	9.8	---	11	50	---	51	---	15	---	5.4	122	---
TOTAL	284.6	475.8	448	973	957	1558	2254	791	760	274.1	1502.9	1237
MEAN	9.18	15.9	14.5	31.4	34.2	50.3	75.1	25.5	25.3	8.84	48.5	41.2
MAX	16	28	22	90	127	115	245	53	80	22	170	126
MIN	6.1	9.4	11	10	12	19	40	10	11	5.4	5.3	12
CFSM	.36	.62	.57	1.23	1.34	1.96	2.93	1.00	.99	.35	1.89	1.61
IN.	.41	.69	.65	1.41	1.39	2.26	3.28	1.15	1.10	.40	2.18	1.80

CAL YR 1974 TOTAL 9594.2 MEAN 26.3 MAX 213 MIN 4.3 CFSM 1.03 IN 13.94
WTR YR 1975 TOTAL 11515.4 MEAN 31.5 MAX 245 MIN 5.3 CFSM 1.23 IN 16.7

PEAK DISCHARGE (BASE, 100 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-12	0700	3.45	105
02-24	0600	4.08	170
03-24	2400	3.64	118
04-03	0100	3.44	100
04-19	2100	5.19	290
08-25	2200	4.12	186

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 mi^2 (176.1 km^2).

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 hm^3) Apr. 20, elevation, 803.6 ft (244.94 m); minimum, 3,243 acre-ft (4.00 hm^3) Nov. 3-5, 23, 24, Nov. 26 to Dec. 1, 4-7, Feb. 13-17, elevation, 799.0 ft (243.54 m).
Period of record: Maximum contents, 5,495 acre-ft (6.78 hm^3) May 17, 18, 1974, Apr. 20, 1975, elevation 803.6 ft (244.94 m); minimum recorded, 1,758 acre-ft (2.17 hm^3) Nov. 21, 1967, elevation, 794.7 ft (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 1974 TO SEPTEMBER 1975

Date	Elevation (feet)	Contents (acre-feet)	Change in contents during month	
			Acre-feet	Equivalent in ft^3/s
Sept. 30	802.2	4,753	--	--
Oct. 31	799.3	3,373	-1,380	-22.4
Nov. 30	799.0	3,243	-130	-2.2
Dec. 31	799.1	3,285	+42	+0.7
Calendar year 1974	--	--	-1,214	-1.7
Jan. 31	799.4	3,417	+132	+2.1
Feb. 28	799.5	3,461	+44	+0.8
Mar. 31	800.9	4,105	+644	+10.5
Apr. 30	802.7	5,013	+908	+15.3
May 31	802.3	4,805	-208	-3.4
June 30	802.2*	4,753	-52	-0.9
July 31	802.0	4,649	-104	-1.7
Aug. 31	803.0	5,171	+522	+8.5
Sept. 30	802.4	4,857	-314	-5.3
Water year 1974-75	--	--	+104	+0.1

*Estimated

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 mi^2 (176.6 km^2).

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.--17 years, 40.1 ft^3/s (1.136 m^3/s), 7.98 in/yr (203 mm/yr), adjusted for storage since 1963.

EXTREMES.--Current year: Maximum discharge, 399 ft^3/s (11.3 m^3/s) Apr. 20, gage height, 5.72 ft (1.743 m); minimum daily, 11 ft^3/s (0.31 m^3/s) July 30.
Period of record: Maximum discharge, 427 ft^3/s (12.1 m^3/s) Feb. 2, 1968, gage height, 5.86 ft (1.786 m); maximum gage height, 6.71 ft (2.045 m) Mar, 6, 1959, backwater from ice; minimum discharge, 0.9 ft^3/s (0.025 m^3/s) July 10, 1963; minimum gage height, 1.84 ft (0.561 m) July 31, 1964; minimum daily discharge, 1.3 ft^3/s (0.037 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	56	43	42	108	126	13	124	48	54	13	243
2	26	39	45	45	94	108	47	116	45	45	14	223
3	24	35	46	48	83	94	108	109	42	40	16	197
4	24	38	44	48	74	85	97	108	45	37	22	183
5	22	53	45	47	69	79	96	103	79	34	26	164
6	22	61	44	45	66	75	97	102	82	30	27	157
7	22	60	45	45	59	78	97	95	72	28	22	143
8	21	50	53	47	54	71	48	88	61	26	21	131
9	21	44	54	56	50	63	17	81	52	23	21	118
10	21	42	51	100	45	63	53	73	44	22	19	99
11	22	43	49	205	44	61	90	69	44	20	19	92
12	24	44	52	185	42	59	106	68	53	18	19	88
13	22	43	52	155	39	59	111	66	58	27	21	73
14	26	47	51	135	37	61	108	62	55	30	24	62
15	55	44	51	115	39	58	105	61	52	27	26	55
16	55	42	54	95	43	63	101	59	51	24	26	52
17	40	43	53	80	42	70	98	56	48	22	23	49
18	69	44	51	72	45	84	104	54	45	21	20	51
19	84	45	50	64	48	107	290	52	48	19	18	60
20	49	46	47	58	49	127	391	50	48	26	17	73
21	32	48	47	55	50	143	361	60	43	32	24	76
22	26	42	46	54	55	161	298	85	37	27	46	74
23	58	41	44	51	96	206	254	81	34	22	121	68
24	78	45	43	49	219	234	226	70	56	21	178	66
25	63	45	44	53	293	237	197	60	108	19	213	59
26	40	40	41	57	233	227	175	59	108	16	235	57
27	31	40	40	56	177	202	155	57	102	14	226	57
28	107	41	40	55	148	76	146	52	94	13	214	54
29	81	42	39	84	---	37	138	47	84	12	198	52
30	169	42	39	112	---	96	127	43	66	11	245	55
31	106	---	40	119	---	49	---	50	---	12	243	---
TOTAL	1466	1345	1443	2432	2401	3259	4254	2260	1804	772	2357	2931
MEAN	47.3	44.8	46.5	78.5	85.8	105	142	72.9	60.1	24.9	76.0	97.7
MAX	169	61	54	205	293	237	391	124	108	54	245	243
MIN	21	35	39	42	37	37	13	43	34	11	13	49
MEAN+	24.9	42.6	47.2	80.6	86.6	116	157	69.5	59.2	23.2	84.5	92.4
CFSM+	.37	.62	.69	1.18	1.27	1.70	2.30	1.02	.87	.34	1.24	1.35
IN+	.42	.70	.80	1.36	1.32	1.95	2.57	1.17	.97	.39	1.43	1.51

CAL YR 1974 TOTAL 25505 MEAN 69.9 MAX 385 MIN 13 MEAN+ 68.2 CFSM+ 1.00 IN+ 13.57
WTR YR 1975 TOTAL 26724 MEAN 73.2 MAX 391 MIN 11 MEAN+ 73.3 CFSM+ 1.07 IN+ 14.59

+Adjusted for change in contents in Stony Lake.

NOTE.--No gage-height record July 13 to Aug. 13.

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 mi^2 (60.9 km^2).

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.--17 years, 14.2 ft^3/s (0.402 m^3/s), 8.21 in/yr (209 mm/yr).

EXTREMES.--Current year: Maximum discharge, 517 ft^3/s (14.6 m^3/s) Apr. 19, gage height, 10.13 ft (3.088 m); minimum 0.09 ft^3/s (0.003 m^3/s) Oct. 10, 11, 22, 24; minimum gage height, 4.74 ft (1.445 m) Oct. 10, 11, 22, 24-29.
Period of record: Maximum discharge, 1,240 ft^3/s (35.1 m^3/s) June 26, 1968, gage height, 14.45 ft (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 ft^3/s (0.001 m^3/s) Sept. 26, 1974.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.49	.31	.46	2.3	1.2	3.2	2.8	12	1.6	.58	1.1	60
2	.40	.27	.93	2.2	1.1	2.7	3.7	3.7	1.3	.65	.92	14
3	.56	1.9	.75	1.9	1.0	2.1	5.0	2.6	1.1	.94	1.3	29
4	.59	5.8	1.2	1.6	.91	1.7	7.0	4.7	1.2	.60	1.2	18
5	.49	20	1.4	1.2	.74	1.8	9.0	3.1	5.8	.56	4.2	20
6	.23	9.5	1.3	2.6	.72	2.1	12	4.8	1.6	.59	3.3	11
7	.23	1.2	1.8	2.6	.70	2.4	29	2.3	.61	.72	.62	1.7
8	.23	.52	24	36	.68	2.4	30	1.7	.40	.69	.33	.64
9	.15	.30	14	98	.66	2.3	23	1.5	.57	1.1	.37	5.5
10	.10	.23	4.1	64	.64	2.2	16	1.2	.41	10	.42	1.2
11	.10	.48	1.9	39	.62	2.1	8.1	1.3	6.8	3.9	2.1	9.0
12	.11	.86	10	9.1	.60	7.8	4.9	1.4	7.1	9.8	3.3	13
13	.14	.54	16	5.0	.58	11	3.3	1.5	1.5	24	1.8	2.3
14	.88	1.7	9.0	2.1	.56	5.5	2.7	1.2	.42	12	1.3	.66
15	.98	1.8	6.2	1.8	.54	3.9	2.4	.94	4.4	2.9	2.3	.52
16	.89	.67	19	1.6	.65	5.4	2.6	.97	4.5	1.1	1.9	.56
17	.42	2.0	13	1.5	5.4	4.7	2.1	1.0	1.5	.96	.59	.51
18	.31	.97	5.4	1.4	19	5.1	9.1	.98	4.3	.86	.42	5.1
19	.24	.65	2.7	1.3	12	8.4	250	1.0	3.7	1.4	.39	5.5
20	.16	3.1	2.0	1.2	5.5	5.6	43	.93	1.5	.70	.35	9.6
21	.13	3.3	1.7	1.1	11	5.7	28	9.3	.61	.61	14	1.4
22	.10	7.2	1.2	.95	23	55	12	22	.52	.42	19	.93
23	.10	1.2	1.8	1.1	63	23	4.7	5.9	.65	.82	5.5	.67
24	.11	3.1	4.5	2.1	96	57	34	1.3	48	2.5	1.1	.48
25	.14	3.2	4.1	4.7	24	15	13	5.1	43	.84	2.9	1.7
26	.13	.94	1.6	3.6	12	6.9	5.2	13	12	.44	6.2	4.3
27	.11	.57	.81	1.3	6.3	6.9	3.8	5.5	5.4	.46	1.4	.84
28	.12	.67	.73	1.1	4.8	11	4.7	1.6	1.0	.45	.96	.54
29	.13	.58	1.1	35	---	11	4.0	2.6	.72	.67	2.8	.47
30	.20	.40	4.9	7.3	---	5.1	3.0	5.0	.60	.57	28	4.2
31	.32	---	2.5	3.0	---	3.0	---	5.0	---	.86	63	---
TOTAL	9.29	73.96	160.08	337.65	293.90	282.0	578.1	125.12	162.81	82.69	173.07	223.32
MEAN	.30	2.47	5.16	10.9	10.5	9.10	19.3	4.04	5.43	2.67	5.58	7.44
MAX	.98	20	24	98	96	57	250	22	48	24	63	60
MIN	.10	.23	.46	.95	.54	1.7	2.1	.93	.40	.42	.33	.47
CFSM	.01	.11	.22	.46	.45	.39	.82	.17	.23	.11	.24	.32
IN.	.01	.12	.25	.53	.47	.45	.92	.20	.26	.13	.27	.35

CAL YR 1974 TOTAL 8483.98 MEAN 23.2 MAX 550 MIN .07 CFSM .99 IN 13.43
WTR YR 1975 TOTAL 2501.99 MEAN 6.85 MAX 250 MIN .10 CFSM .29 IN 3.96

PEAK DISCHARGE (BASE, 300 FT^3/S).--Apr. 19 (0400) 517 ft^3/s (10.13 ft).

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 mi^2 (42.7 km^2).

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.--10 years, 12.7 ft^3/s (0.360 m^3/s), 10.45 in/yr (265 mm/yr).

EXTREMES.--Current year: Maximum discharge, 632 ft^3/s (17.9 m^3/s) Apr. 19, gage height, 8.76 ft (2.670 m); minimum daily, 0.42 ft^3/s (0.012 m^3/s) July 28; minimum gage height, 1.51 ft (0.460 m) Dec. 2.
Period of record: Maximum discharge, 1,160 ft^3/s (32.9 m^3/s) June 26, 1968, gage height, 10.36 ft (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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.73	1.7	.96	6.6	9.9	14	25	24	5.8	2.0	.60	30
2	1.3	1.0	1.0	6.5	9.0	12	25	16	5.2	1.8	.78	9.5
3	1.2	2.2	3.0	6.0	8.0	11	30	14	4.6	1.5	3.6	16
4	.96	4.1	3.1	5.6	7.6	10	37	16	4.3	1.5	5.7	18
5	.80	12	2.7	5.2	7.1	10	27	14	12	1.2	2.6	9.3
6	1.1	7.5	2.9	5.0	6.5	11	27	16	11	1.2	2.1	14
7	2.1	4.8	3.5	5.2	6.0	10	41	13	4.2	1.7	.88	7.9
8	1.4	2.0	12	27	5.2	12	60	13	3.2	1.8	.80	4.6
9	1.8	1.4	11	103	4.7	10	58	10	3.2	.96	.61	7.0
10	1.4	1.2	6.8	115	4.3	9.5	45	8.9	2.8	2.6	.97	3.9
11	1.5	1.8	5.2	157	4.0	8.4	34	8.3	6.0	2.1	1.3	4.6
12	1.7	2.0	11	27	3.8	13	27	9.4	18	3.7	2.2	6.2
13	1.7	2.2	9.9	19	3.7	21	23	9.2	10	12	2.8	3.3
14	2.0	2.7	8.9	14	3.7	17	22	8.0	5.6	7.0	.98	2.7
15	2.4	2.5	8.6	11	3.7	13	20	7.4	6.4	3.1	1.4	2.8
16	1.2	2.4	13	9.0	4.1	15	19	7.3	9.5	2.1	1.4	3.3
17	.80	2.9	14	7.0	6.6	14	18	6.8	5.8	1.9	.96	3.2
18	.66	2.6	9.8	6.2	16	16	22	6.5	6.8	1.7	.88	5.2
19	.73	2.2	6.1	5.6	14	21	425	6.1	3.9	1.4	.66	7.9
20	.73	3.2	5.3	5.0	13	19	77	5.6	3.0	1.2	.60	9.5
21	.73	4.5	4.9	4.5	15	19	40	9.6	2.5	1.2	6.0	6.2
22	.80	2.8	4.7	4.2	36	181	26	19	2.2	1.5	13	4.4
23	.88	3.2	4.8	4.1	129	90	23	11	2.4	.60	8.8	4.1
24	.96	4.9	6.6	7.0	181	126	41	7.2	19	1.6	6.0	3.6
25	1.0	4.2	7.9	8.8	49	70	28	6.5	28	.96	4.2	3.3
26	1.0	2.6	6.2	10	30	45	23	11	8.6	.88	5.8	4.5
27	.96	2.6	5.0	6.9	21	32	19	9.4	5.6	.80	2.8	3.8
28	.96	2.4	4.5	5.8	16	30	19	5.6	4.2	.42	2.4	2.8
29	.96	2.1	4.9	54	---	36	18	4.0	3.2	.96	3.5	2.6
30	1.1	1.8	7.5	23	---	31	18	4.2	2.4	1.0	15	5.3
31	1.2	---	7.6	12	---	26	---	9.3	---	.48	23	---
TOTAL	36.76	93.5	203.36	686.2	617.9	952.9	1317	316.3	209.4	62.86	122.32	209.5
MEAN	1.19	3.12	6.56	22.1	22.1	30.7	43.9	10.2	6.98	2.03	3.95	6.98
MAX	2.4	12	14	157	181	181	425	24	28	12	23	30
MIN	.66	1.0	.96	4.1	3.7	8.4	18	4.0	2.2	.42	.60	2.6
CFSM	.07	.19	.40	1.34	1.34	1.86	2.66	.62	.42	.12	.24	.42
IN.	.08	.21	.46	1.55	1.39	2.15	2.97	.71	.47	.14	.28	.47

CAL YR 1974 TOTAL 5807.78 MEAN 15.9 MAX 295 MIN .27 CFSM .96 IN 13.09
WTR YR 1975 TOTAL 4828.00 MEAN 13.2 MAX 425 MIN .42 CFSM .80 IN 10.88

PEAK DISCHARGE (BASE, 200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-10	2300	6.99	259
02-24	1100	7.06	265
03-22	1700	7.41	354
04-19	0600	8.76	632

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 mi^2 (1,150 km^2).

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.--28 years, 362 ft^3/s (10.25 m^3/s), 11.07 in/yr (281 mm/yr).

EXTREMES.--Current year: Maximum discharge, 5,520 ft^3/s (156 m^3/s) Apr. 19, gage height, 16.80 ft (5.121 m); minimum, 124 ft^3/s (3.51 m^3/s) Aug. 11, gage height, 5.17 ft (1.576 m).
Period of record: Maximum discharge, 8,000 ft^3/s (277 m^3/s) May 11, 1948, gage height, 19.5 ft (5.94 m), from graph based on gage readings, from rating curve extended above 4,000 ft^3/s (113 m^3/s); minimum, 47 ft^3/s (1.33 m^3/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 ft^3/s (255 m^3/s), from rating curve extended above 4,000 ft^3/s (113 m^3/s).

REMARKS.--Records good.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	181	296	235	377	532	682	564	927	419	417	154	2730
2	219	237	253	344	480	587	540	794	356	344	163	1140
3	241	271	307	358	446	539	658	752	341	300	214	995
4	258	389	307	364	427	516	702	752	327	261	228	1240
5	252	617	297	318	410	492	714	738	568	229	272	976
6	239	565	287	307	420	493	730	728	559	210	277	994
7	249	353	297	322	417	527	824	719	407	286	179	869
8	235	297	573	620	373	546	985	663	356	247	160	784
9	239	259	485	1660	324	475	927	628	339	207	153	704
10	245	232	379	1550	305	476	800	581	327	331	136	663
11	250	252	345	2100	336	468	779	550	447	258	164	847
12	255	284	455	1540	318	497	771	532	665	365	277	964
13	218	246	524	848	305	580	727	521	564	667	188	620
14	253	294	501	653	298	520	692	434	454	388	188	566
15	265	314	466	567	296	505	679	409	571	269	200	531
16	272	244	678	525	302	539	654	378	632	228	216	532
17	240	268	598	452	387	540	630	337	468	220	159	510
18	225	253	470	447	611	585	642	320	507	212	142	585
19	273	249	388	428	474	663	4100	314	498	219	146	702
20	253	311	384	378	433	694	2900	311	438	202	146	768
21	228	336	382	386	466	713	1770	435	397	208	384	623
22	225	315	370	381	636	1260	1590	784	367	203	734	544
23	218	275	375	358	1560	1560	1460	549	367	191	521	511
24	264	320	425	355	2510	1700	1600	452	808	228	638	487
25	290	334	439	412	2010	1540	1270	477	1410	204	703	485
26	250	279	357	473	1330	1220	1050	866	729	172	1090	541
27	225	257	321	374	917	961	933	527	622	154	736	471
28	214	261	311	369	767	861	857	473	552	152	658	420
29	324	240	310	1040	---	769	841	437	504	156	656	401
30	286	231	381	929	---	685	788	408	459	156	1180	547
31	399	---	373	601	---	637	---	652	---	155	1770	---
TOTAL	7785	9079	12273	19836	18090	22830	32177	17448	15458	7839	12832	22750
MEAN	251	303	396	640	646	736	1073	563	515	253	414	758
MAX	399	617	678	2100	2510	1700	4100	927	1410	667	1770	2730
MIN	181	231	235	307	296	468	540	311	327	152	136	401
CFSM	.57	.68	.89	1.44	1.45	1.66	2.42	1.27	1.16	.57	.93	1.71
IN.	.65	.76	1.03	1.66	1.52	1.91	2.70	1.46	1.30	.66	1.08	1.91

CAL YR 1974 TOTAL 202021 MEAN 553 MAX 3260 MIN 113 CFSM 1.25 IN 16.93
WTR YR 1975 TOTAL 198397 MEAN 544 MAX 4100 MIN 136 CFSM 1.23 IN 16.62

PEAK DISCHARGE (BASE, 2,000 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-10	2100	14.03	2,580
02-24	0900	14.76	3,190
04-19	0700	16.80	5,520
09-01	0200	15.77	4,370

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 mi^2 (56.5 km^2).

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.--17 years, 14.9 ft^3/s (0.422 m^3/s), 9.28 in/yr (236 mm/yr).

EXTREMES.--Current year: Maximum discharge, 306 ft^3/s (8.67 m^3/s) Apr. 19, gage height, 4.06 ft (1.237 m); minimum, 2.7 ft^3/s (0.076 m^3/s) Aug. 18, gage height, 1.04 ft (0.317 m).
Period of record: Maximum discharge, 358 ft^3/s (10.1 m^3/s) Feb. 10, 1965, gage height, 4.48 ft (1.366 m); maximum gage height, 4.56 ft (1.390 m) Mar. 12, 1962, backwater from ice; minimum discharge, 0.8 ft^3/s (0.023 m^3/s) July 30, 31, 1964, Aug. 6, 7, 1965; minimum gage height, 0.71 ft (0.216 m) July 21, 1959.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	6.2	13	13	30	43	44	44	20	20	4.4	82
2	15	8.1	15	13	28	39	43	40	17	18	4.4	66
3	12	16	14	12	26	35	40	36	18	17	4.6	53
4	9.8	16	13	12	24	32	40	36	20	16	12	50
5	6.8	21	13	12	22	30	40	34	38	14	13	45
6	8.2	19	13	12	20	29	41	36	35	11	12	51
7	7.7	16	13	12	18	27	41	34	37	11	9.6	43
8	7.1	15	16	15	17	26	43	31	36	10	5.1	38
9	6.8	14	17	29	16	26	43	29	33	9.8	4.7	34
10	6.5	14	17	40	16	25	44	27	30	8.3	4.7	31
11	6.5	14	16	85	15	25	47	26	29	5.2	6.3	28
12	6.4	14	15	76	14	24	47	26	32	8.1	7.8	28
13	11	14	15	58	14	25	47	27	28	18	13	25
14	13	14	15	49	14	25	46	25	24	18	9.6	23
15	10	14	15	39	14	26	46	24	23	15	6.8	22
16	7.8	14	16	34	15	30	46	22	23	13	6.3	21
17	8.3	15	16	30	16	34	45	21	21	10	3.8	20
18	7.5	16	16	28	19	40	52	21	20	6.9	3.1	22
19	7.0	15	15	26	19	46	285	19	19	11	5.1	28
20	6.9	16	15	24	18	48	247	18	18	11	4.8	32
21	7.4	16	14	23	23	49	162	26	17	10	23	26
22	7.5	15	14	23	23	61	117	45	16	6.6	45	23
23	7.9	15	14	21	63	80	98	28	15	5.8	122	21
24	10	16	14	20	173	102	89	24	28	11	163	20
25	10	16	14	21	103	107	77	21	50	13	129	20
26	9.4	15	14	22	72	89	67	23	37	10	118	22
27	8.2	14	13	27	58	71	59	21	30	5.6	79	20
28	6.2	15	12	20	48	60	53	19	27	4.8	57	19
29	6.5	14	12	65	---	57	49	18	24	4.4	48	18
30	6.6	13	13	54	---	53	45	17	22	4.4	77	21
31	6.4	---	15	32	---	47	---	23	---	4.4	82	---
TOTAL	259.8	440.3	447	947	938	1411	2143	841	787	331.3	1084.1	952
MEAN	8.38	14.7	14.4	30.5	33.5	45.5	71.4	27.1	26.2	10.7	35.0	31.7
MAX	15	21	17	85	173	107	285	45	50	20	163	82
MIN	6.2	6.2	12	12	14	24	40	17	15	4.4	3.1	18
CFSM	.38	.67	.66	1.40	1.54	2.09	3.28	1.24	1.20	.49	1.61	1.45
IN.	.44	.75	.76	1.62	1.60	2.41	3.66	1.44	1.34	.57	1.85	1.62

CAL YR 1974 TOTAL 9201.1 MEAN 25.2 MAX 227 MIN 5.1 CFSM 1.16 IN 15.70
WTR YR 1975 TOTAL 10581.5 MEAN 29.0 MAX 285 MIN 3.1 CFSM 1.33 IN 18.06

PEAK DISCHARGE (BASE, 80 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	0900	2.40	90	04-19	1200	4.06	306
01-29	1600	2.43	93	08-23	2200	3.38	195
02-24	0800	3.48	216	09-01	0300	2.42	86
03-24	2400	2.58	117				

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 mi^2 (33.7 km^2).

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.--17 years, 6.48 ft^3/s (0.184 m^3/s), 6.77 in/yr (172 mm/yr).

EXTREMES.--Current year: Maximum discharge, 910 ft^3/s (25.8 m^3/s) Apr. 19, gage height, 6.69 ft (2.039 m); minimum, 0.11 ft^3/s (0.003 m^3/s) July 27.
Period of record: Maximum discharge, 910 ft^3/s (25.8 m^3/s) Apr. 19, 1975, gage height, 6.69 ft (2.039 m); no flow Jan. 25 to Feb. 10, 1961, result of freezeup.

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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.25	.22	.33	1.1	7.3	8.1	6.5	3.7	1.1	.87	.15	32
2	.23	.24	.44	.98	4.5	6.0	6.4	3.3	.91	.71	.17	17
3	.25	.29	.36	.88	3.4	4.7	2.5	2.8	.83	.62	.84	11
4	.26	.45	.36	.99	2.7	3.8	1.6	2.8	1.9	.53	.61	13
5	.23	.70	.34	.94	2.2	3.3	3.0	2.7	51	.48	.80	12
6	.20	.78	.30	.93	1.8	5.3	4.2	3.3	33	.40	.41	36
7	.17	.60	.42	.99	1.5	6.8	6.0	3.4	14	.37	.26	17
8	.19	.50	.97	3.2	1.3	4.0	10	2.8	6.7	.29	.19	9.2
9	.19	.40	.93	25	1.2	3.5	22	2.3	4.1	.20	.19	5.4
10	.18	.39	.86	100	1.0	3.2	54	2.0	2.9	.20	.24	3.8
11	.17	.38	.71	249	.95	3.0	97	2.3	2.6	.16	.23	3.2
12	.17	.38	.86	54	.88	4.0	73	2.0	3.4	.34	.23	2.8
13	.18	.38	.97	27	.85	6.0	41	2.0	3.5	.50	1.2	2.4
14	.19	.39	1.1	12	.82	8.0	28	1.7	2.9	.70	.34	2.1
15	.24	.39	1.1	5.9	.82	10	22	1.7	2.4	.65	.68	1.8
16	.28	.39	1.4	4.0	.88	23	18	1.5	2.4	.58	.45	1.6
17	.24	.42	1.5	3.3	1.2	38	15	1.4	2.2	.44	.31	1.6
18	.22	.46	1.5	2.5	2.0	51	36	1.3	1.7	.37	.19	1.7
19	.19	.50	1.3	2.0	3.4	56	497	1.1	1.6	.33	.20	2.2
20	.18	.82	1.0	1.8	3.9	43	129	.97	2.6	.30	.21	3.1
21	.18	.81	.97	1.6	4.2	29	57	1.0	2.3	.33	6.5	2.7
22	.18	.68	.84	1.5	14	160	18	1.2	1.3	.35	19	2.3
23	.18	.60	.83	1.5	111	174	9.9	1.1	.93	.22	40	2.1
24	.19	.59	.87	1.5	252	209	10	.95	6.3	.29	68	1.7
25	.21	.51	.90	2.6	80	95	8.3	.86	10	.16	49	1.5
26	.22	.40	.84	3.6	25	32	6.1	.83	7.3	.16	32	1.5
27	.21	.38	.83	3.2	14	14	4.8	.78	3.9	.14	21	1.6
28	.20	.40	.77	2.3	10	10	4.3	.84	2.3	.15	12	1.4
29	.19	.39	.82	75	---	11	4.0	.65	1.6	.15	20	1.3
30	.19	.34	.94	51	---	12	3.5	.70	1.1	.17	72	1.7
31	.20	---	1.0	13	---	7.8	---	1.0	---	.18	35	---
TOTAL	6.36	14.18	26.36	653.31	552.80	1044.5	1198.1	54.98	178.77	11.34	382.40	196.7
MEAN	.21	.47	.85	21.1	19.7	33.7	39.9	1.77	5.96	.37	12.3	6.56
MAX	.28	.82	1.5	249	252	209	497	3.7	51	.87	72	36
MIN	.17	.22	.30	.88	.82	3.0	1.6	.65	.83	.14	.15	1.3
CFSM	.02	.04	.07	1.62	1.52	2.59	3.07	.14	.46	.03	.95	.50
IN.	.02	.04	.08	1.87	1.58	2.99	3.43	.16	.51	.03	1.09	.56

CAL YR 1974 TOTAL 4627.21 MEAN 12.7 MAX 338 MIN .08 CFSM .98 IN 13.24
WTR YR 1975 TOTAL 4319.80 MEAN 11.8 MAX 497 MIN .14 CFSM .91 IN 12.36

PEAK DISCHARGE (BASE, 100 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	0300	4.74	416	03-24	1200	4.10	294
01-29	1400	3.16	144	04-11	0100	3.14	140
02-24	0800	4.41	350	04-19	0300	6.69	910
03-22	2000	4.94	456	08-30	0300	2.91	115

NOTE.--No gage-height record Oct. 1 to Nov. 18.

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 mi^2 (515 km^2).

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.--28 years, 119 ft^3/s (3.370 m^3/s), 8.12 in/yr (206 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,500 ft^3/s (184 m^3/s) Apr. 20, gage height, 18.48 ft (5.633 m); minimum, 8.8 ft^3/s (0.25 m^3/s) Aug. 1, gage height, 4.16 ft (1.268 m).
Period of record: Maximum discharge, 6,700 ft^3/s (190 m^3/s) Feb. 2, 1968, gage height, 18.62 ft (5.675 m); minimum, 0.2 ft^3/s (0.006 m^3/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 the winter period, 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	17	25	72	400	230	209	164	70	59	11	1170
2	19	18	20	63	200	200	170	161	62	50	13	816
3	21	18	25	57	150	170	150	131	55	43	17	450
4	22	25	36	54	110	160	145	109	61	38	25	300
5	20	37	40	51	95	140	150	109	324	35	37	300
6	17	63	34	48	84	140	169	104	427	31	29	310
7	13	70	35	66	74	130	179	114	492	27	24	500
8	16	46	41	68	64	130	252	108	328	26	19	330
9	15	37	62	278	56	120	415	87	155	24	15	220
10	14	32	69	599	53	120	535	76	110	23	12	180
11	14	31	59	1430	49	120	633	68	93	24	12	150
12	13	31	59	1790	46	120	716	65	122	21	11	140
13	13	31	68	1180	43	130	654	67	144	28	11	140
14	14	32	79	500	42	140	500	71	109	49	21	130
15	19	33	82	300	42	150	378	65	84	47	25	110
16	25	32	93	240	42	190	310	60	90	41	22	100
17	21	31	121	190	45	300	270	57	86	33	19	96
18	17	36	139	150	62	410	242	54	94	27	16	94
19	17	41	106	130	92	540	1160	50	83	23	12	102
20	15	40	103	100	150	520	5040	47	69	24	12	171
21	15	41	72	79	140	460	1550	47	62	31	18	227
22	15	42	66	82	140	600	728	76	53	27	69	163
23	15	40	59	75	200	1600	483	131	47	22	233	109
24	15	37	59	68	900	1550	370	82	90	20	532	87
25	16	38	62	72	2020	1560	328	65	449	24	1060	74
26	18	38	58	74	1140	1130	286	157	456	27	1240	71
27	17	34	49	80	450	638	237	87	308	23	1280	78
28	17	34	69	87	300	382	200	65	133	20	740	77
29	16	33	56	162	---	295	182	53	93	17	373	68
30	15	31	56	489	---	286	167	47	73	14	491	63
31	16	---	60	762	---	255	---	54	---	12	1250	---
TOTAL	522	1069	1962	9396	7189	12916	16808	2631	4822	910	7649	6826
MEAN	16.8	35.6	63.3	303	257	417	560	84.9	161	29.4	247	228
MAX	25	70	139	1790	2020	1600	5040	164	492	59	1280	1170
MIN	13	17	20	48	42	120	145	47	47	12	11	63
CFSM	.08	.18	.32	1.52	1.29	2.10	2.81	.43	.81	.15	1.24	1.15
IN.	.10	.20	.37	1.76	1.34	2.41	3.14	.49	.90	.17	1.43	1.28

CAL YR 1974 TOTAL 74327 MEAN 204 MAX 3550 MIN 10 CFSM 1.03 IN 13.89
WTR YR 1975 TOTAL 72700 MEAN 199 MAX 5040 MIN 11 CFSM 1.00 IN 13.59

PEAK DISCHARGE (BASE, 1,200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-12	0300	13.93	2,120
02-25	0700	14.26	2,380
03-23	1800	13.69	1,950
04-20	0300	18.48	6,500
08-27	0200	12.69	1,420
08-31	1700	12.59	1,380

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 mi^2 (106.2 km^2).

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.--12 years, 26.5 ft^3/s (0.750 m^3/s), 8.78 in/yr (223 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,410 ft^3/s (39.9 m^3/s) Apr. 19, gage height, 15.17 ft (4.624 m); minimum, 2.6 ft^3/s (0.074 m^3/s) Aug. 2, 13.
Period of record: Maximum discharge, 1,580 ft^3/s (44.7 m^3/s) June 26, 1968; maximum gage height, 16.16 ft (4.926 m) Mar. 12, 1962, backwater from ice; minimum discharge, 0.10 ft^3/s (0.003 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	7.9	12	20	27	33	35	35	17	9.6	3.7	194
2	4.3	8.3	14	17	24	28	30	32	14	8.5	4.5	68
3	4.7	8.8	17	17	22	24	24	29	14	7.9	9.3	64
4	5.0	13	16	16	21	20	27	32	21	7.3	7.4	83
5	4.5	30	15	16	21	18	31	30	247	6.9	5.3	69
6	3.9	26	15	16	21	28	39	32	59	6.5	5.7	140
7	3.1	19	16	17	20	35	61	26	31	6.4	4.6	49
8	3.7	16	22	43	19	23	119	24	23	6.7	4.0	32
9	3.5	15	25	163	16	18	141	22	19	6.1	3.4	25
10	3.3	15	24	251	15	17	132	20	15	7.1	3.0	21
11	3.3	14	23	424	17	16	104	19	21	6.5	3.2	22
12	3.1	14	22	80	14	20	72	20	48	23	3.0	30
13	3.1	14	24	50	13	30	56	22	38	57	4.7	20
14	3.5	13	20	40	12	40	47	20	22	31	4.5	17
15	4.3	14	20	31	12	50	43	19	22	16	4.5	17
16	5.3	13	26	26	14	75	37	18	29	12	6.1	17
17	4.2	14	26	23	19	100	34	17	19	9.5	4.5	16
18	4.1	14	21	20	35	140	42	17	18	8.3	4.0	22
19	3.5	14	18	18	28	160	883	15	15	8.6	3.4	39
20	3.8	14	16	16	25	120	184	14	13	63	3.7	50
21	3.8	15	16	15	59	90	90	42	11	17	15	34
22	4.1	15	16	14	96	430	65	72	9.8	10	29	26
23	4.7	14	16	14	368	470	56	33	9.4	7.9	277	22
24	5.6	15	17	27	538	570	60	25	123	12	93	19
25	6.1	15	19	38	134	200	49	19	128	8.7	73	17
26	6.1	14	19	25	71	90	42	23	39	6.9	119	23
27	6.5	13	17	23	57	55	36	19	24	5.7	38	21
28	7.0	13	16	18	40	47	36	14	19	5.5	22	18
29	7.0	13	16	216	---	50	36	13	15	4.6	28	16
30	7.0	13	19	55	---	52	32	12	11	4.3	351	21
31	7.4	---	20	32	---	43	---	22	---	4.1	164	---
TOTAL	144.2	437.0	583	1781	1758	3092	2643	757	1094.2	394.6	1301.5	1212
MEAN	4.65	14.6	18.8	57.5	62.8	99.7	88.1	24.4	36.5	12.7	42.0	40.4
MAX	7.4	30	26	424	538	570	883	72	247	63	351	194
MIN	3.1	7.9	12	14	12	16	24	12	9.4	4.1	3.0	16
CFSM	.11	.36	.46	1.40	1.53	2.43	2.15	.60	.89	.31	1.02	.99
IN.	.13	.40	.53	1.62	1.60	2.81	2.40	.69	.99	.36	1.18	1.10

CAL YR 1974 TOTAL 16048.6 MEAN 44.0 MAX 860 MIN 2.1 CFSM 1.07 IN 14.56
WTR YR 1975 TOTAL 15197.5 MEAN 41.6 MAX 883 MIN 3.0 CFSM 1.01 IN 13.79

PEAK DISCHARGE (BASE, 300 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	0600	9.98	560	06-05	0800	9.54	503
01-29	1100	9.27	468	06-24	2100	8.72	397
02-24	1000	11.41	760	08-23	1500	10.82	678
03-24	unknown	11.72	806	08-30	0500	11.01	704
04-19	0700	15.17	1,410	09-01	0300	8.31	347

NOTE.--No gage-height record Feb. 28 to Mar. 31.

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 mi^2 (1,901 km^2).

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.--41 years, 515 ft^3/s (14.58 m^3/s), 9.53 in/yr (242 mm/yr).

EXTREMES.--Current year: Maximum discharge, 12,100 ft^3/s (343 m^3/s) Apr. 20, gage height, 16.58 ft (5.054 m); minimum daily, 160 ft^3/s (4.53 m^3/s) Aug. 10; minimum gage height, 5.35 ft (1.631 m) Nov. 21.
Period of record: Maximum discharge, 21,200 ft^3/s (600 m^3/s) Apr. 6, 1947, gage height, 23.55 ft (7.178 m), from floodmark; minimum not determined; minimum gage height, 2.72 ft (0.829 m) Nov. 29, 1963.

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

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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	357	290	478	1110	1090	892	1230	500	500	180	4210
2	263	287	343	428	799	895	830	1100	460	430	200	2330
3	282	292	360	445	681	782	919	1010	460	380	260	1730
4	314	505	370	464	627	742	940	970	460	330	280	1930
5	296	761	370	394	591	698	1000	965	1320	300	330	1490
6	283	793	360	394	540	695	1050	931	1360	280	330	1720
7	318	499	370	429	500	724	1190	924	1010	350	230	1610
8	272	390	650	760	470	757	1600	853	755	300	200	1400
9	276	317	600	2450	444	630	1700	793	540	270	180	1060
10	290	291	520	2560	430	641	1650	760	500	400	160	931
11	293	296	460	4240	410	632	1750	700	650	345	161	1060
12	299	338	580	4100	400	678	1750	680	974	411	310	1340
13	278	300	640	1990	389	854	1700	680	853	1060	220	858
14	294	342	620	1320	371	849	1440	600	615	637	230	749
15	361	387	569	978	367	801	1260	540	682	377	250	664
16	362	290	840	795	356	930	1150	500	882	310	260	668
17	309	330	780	670	471	1010	1050	450	606	290	200	641
18	279	320	700	650	781	1160	1020	440	680	270	180	709
19	323	320	600	607	653	1400	6650	420	640	270	170	976
20	319	380	520	514	641	1540	10300	420	560	300	170	1120
21	278	405	500	516	697	1490	4570	473	500	320	393	1040
22	275	390	480	498	1050	2210	2650	1210	470	310	978	862
23	262	350	480	466	2660	4260	2160	816	460	290	962	747
24	312	380	540	464	5030	4170	2180	620	933	330	1450	668
25	352	400	550	540	5570	4090	1850	640	2380	251	1900	633
26	304	360	470	649	3220	2960	1520	1260	1470	238	2620	725
27	272	320	420	524	1880	1890	1320	717	1130	200	2290	634
28	258	320	420	507	1330	1420	1180	600	823	190	1620	573
29	381	300	440	1470	---	1250	1150	540	689	190	1200	536
30	335	290	480	1740	---	1130	1080	520	590	185	2040	714
31	480	---	469	1500	---	1030	---	769	---	180	3120	---
TOTAL	9436	11310	15791	33540	32468	43408	59501	23131	23952	10494	23074	34328
MEAN	304	377	509	1082	1160	1400	1983	746	798	339	744	1144
MAX	480	793	840	4240	5570	4260	10300	1260	2380	1060	3120	4210
MIN	216	287	290	394	356	630	830	420	460	180	160	536
CFSM	.41	.51	.69	1.47	1.58	1.91	2.70	1.02	1.09	.46	1.01	1.56
IN.	.48	.57	.80	1.70	1.65	2.20	3.02	1.17	1.21	.53	1.17	1.74

CAL YR 1974 TOTAL 324116 MEAN 888 MAX 8330 MIN 135 CFSM 1.21 IN 16.43
WTR YR 1975 TOTAL 320433 MEAN 878 MAX 10300 MIN 160 CFSM 1.20 IN 16.24

PEAK DISCHARGE (BASE, 3,000 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	2400	11.13	4,770
02-25	0200	12.48	6,180
03-23	1800	11.04	4,580
04-20	0600	16.58	12,100
09-01	0700	11.12	5,230

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 (30 m) upstream from bridge on West Maple Road.

DRAINAGE AREA.--33.3 mi^2 (86.2 km^2). Prior to water year 1971, drainage area was 36.9 mi^2 (95.6 km^2). An area of 3.6 mi^2 (9.3 km^2) noncontributing 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 ft^3/s (0.433 m^3/s), 5.63 in/yr (143 mm/yr); 5 years (1971-75), 22.7 ft^3/s (0.643 m^3/s), 9.26 in/yr (235 mm/yr).

EXTREMES.--Current year: Maximum discharge, 593 ft^3/s (16.8 m^3/s) Apr. 19, gage height, 5.28 ft (1.609 m); minimum, 2.3 ft^3/s (0.065 m^3/s) Oct. 23, 24, gage height, 1.51 ft (0.460 m).
Period of record: Maximum discharge, 1,390 ft^3/s (39.4 m^3/s) June 26, 1968, gage height, 8.70 ft (2.652 m); minimum, 0.10 ft^3/s (0.003 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	3.6	8.7	18	25	32	32	46	18	7.5	4.0	106
2	6.8	3.4	13	17	23	28	32	32	15	7.2	6.9	36
3	5.4	7.2	11	17	21	26	31	29	12	6.8	9.4	76
4	6.1	7.5	10	17	20	25	31	37	12	6.1	7.2	68
5	5.5	32	9.6	15	19	23	30	31	17	5.4	7.5	42
6	5.6	24	9.6	15	18	23	30	31	15	5.8	8.5	44
7	5.6	14	12	17	18	26	39	33	13	11	6.7	28
8	4.9	11	25	54	17	25	53	32	12	8.2	5.8	23
9	5.1	9.2	20	118	16	23	57	30	11	6.2	5.1	20
10	4.9	9.2	16	160	15	23	51	29	10	11	4.8	18
11	4.8	11	14	223	15	22	43	27	22	8.9	11	21
12	5.0	11	17	80	15	27	37	28	50	8.4	10	22
13	5.5	8.7	19	44	15	37	32	30	26	14	10	17
14	8.0	12	18	32	15	33	32	26	17	15	7.3	16
15	6.5	12	18	28	15	29	31	26	19	10	8.1	15
16	5.8	10	23	25	17	32	29	24	24	7.7	8.2	16
17	4.7	12	23	23	21	32	28	19	16	6.7	6.9	15
18	8.7	12	18	24	31	36	53	17	14	6.3	5.8	22
19	6.5	12	17	23	25	43	386	16	14	6.4	5.5	29
20	5.8	11	14	20	23	41	111	14	11	6.3	4.9	41
21	5.4	15	14	20	25	41	67	18	9.6	5.8	26	25
22	4.4	13	13	20	52	145	52	25	8.7	5.0	36	20
23	3.4	11	14	19	173	94	45	17	7.9	4.6	22	18
24	3.4	15	16	19	271	109	75	15	32	8.3	15	16
25	3.4	13	17	28	98	79	48	22	35	6.4	13	16
26	3.4	11	14	28	54	54	39	47	17	6.4	17	17
27	3.4	9.6	13	22	39	42	34	24	13	5.2	12	16
28	3.4	9.6	13	21	35	37	40	19	12	4.3	8.6	14
29	3.1	8.7	13	80	---	44	38	17	9.2	4.0	14	15
30	3.6	9.2	15	45	---	39	33	17	8.2	4.1	60	20
31	3.6	---	17	30	---	33	---	22	---	4.1	128	---
TOTAL	159.6	347.9	474.9	1302	1131	1303	1639	800	500.6	223.1	495.2	852
MEAN	5.15	11.6	15.3	42.0	40.4	42.0	54.6	25.8	16.7	7.20	16.0	28.4
MAX	8.7	32	25	223	271	145	386	47	50	15	128	106
MIN	3.1	3.4	8.7	15	15	22	28	14	7.9	4.0	4.0	14
CFSM	.15	.35	.46	1.26	1.21	1.26	1.64	.77	.50	.22	.48	.85
IN.	.18	.39	.53	1.45	1.26	1.46	1.83	.89	.56	.25	.55	.95

CAL YR 1974 TOTAL 10965.2 MEAN 30.0 MAX 280 MIN 3.1 CFSM .90 IN 12.25
WTR YR 1975 TOTAL 9228.3 MEAN 25.3 MAX 386 MIN 3.1 CFSM .76 IN 10.31

PEAK DISCHARGE (BASE, 180 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	0300	3.92	302
02-24	0600	4.17	347
03-22	1400	3.59	243
04-19	0300	5.28	593
08-31	2000	3.89	296

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 km) east of Farmington.

DRAINAGE AREA.--87.9 mi^2 (227.7 km^2).

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.--17 years, 55.6 ft^3/s (1.575 m^3/s), 8.59 in/yr (218 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,790 ft^3/s (50.7 m^3/s) Apr. 19, gage height, 12.80 ft (3.901 m); minimum, 8.4 ft^3/s (0.24 m^3/s) Aug. 1, gage height, 2.67 ft (0.814 m).
Period of record: Maximum discharge, 4,900 ft^3/s (139 m^3/s) June 26, 1968, gage height, 19.04 ft (5.803 m); minimum, 0.1 ft^3/s (0.003 m^3/s) Aug. 2, 1964, gage height, 1.15 ft (0.351 m).

REMARKS.--Records fair.

REVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	15	22	54	69	89	85	149	50	17	8.8	680
2	14	14	27	48	62	78	82	103	38	15	9.1	230
3	12	26	43	47	60	72	82	86	34	15	20	225
4	12	46	39	49	56	66	88	115	32	13	17	295
5	13	118	34	44	51	63	95	94	55	12	16	180
6	13	77	33	57	48	63	106	84	47	12	27	160
7	12	36	36	42	47	69	169	79	35	54	15	85
8	11	28	118	179	45	71	248	77	31	21	12	70
9	11	23	82	610	43	62	242	71	29	16	11	53
10	11	21	53	585	42	64	187	66	27	50	10	46
11	11	25	44	1120	40	60	150	63	58	27	10	70
12	12	27	54	398	41	68	115	66	151	20	21	82
13	13	22	70	120	37	102	94	72	69	30	15	45
14	27	29	68	90	38	97	86	62	45	36	14	40
15	31	32	66	75	38	75	82	58	55	22	14	37
16	20	25	93	70	41	88	77	55	96	17	18	40
17	20	31	88	65	51	83	73	49	46	15	13	37
18	18	31	65	67	104	92	79	44	42	14	11	50
19	28	29	54	62	82	109	1260	39	36	20	11	90
20	23	39	48	53	69	109	549	35	30	17	9.7	136
21	19	43	45	52	73	97	243	36	25	14	31	70
22	20	37	47	55	146	520	166	71	22	12	128	50
23	19	29	45	51	820	466	139	43	20	11	58	43
24	14	40	58	52	1060	443	331	36	33	18	42	39
25	15	42	64	76	539	321	178	45	150	15	34	37
26	14	30	52	93	194	181	126	193	48	12	88	42
27	13	25	45	63	130	115	107	60	32	12	33	39
28	12	27	40	54	102	99	117	44	28	10	22	34
29	13	26	42	333	---	136	125	37	23	9.3	36	30
30	18	23	56	171	---	106	101	37	19	8.8	205	75
31	18	---	55	85	---	87	---	67	---	8.8	440	---
TOTAL	503	1016	1686	4920	4128	4151	5582	2136	1406	573.9	1399.6	3110
MEAN	16.2	33.9	54.4	159	147	134	186	68.9	46.9	18.5	45.1	104
MAX	31	118	118	1120	1060	520	1260	193	151	54	440	680
MIN	11	14	22	42	37	60	73	35	19	8.8	8.8	30
CFSM	.18	.39	.62	1.81	1.67	1.52	2.12	.78	.53	.21	.51	1.18
IN.	.21	.43	.71	2.08	1.75	1.76	2.36	.90	.60	.24	.59	1.32

CAL YR 1974 TOTAL 33377.3 MEAN 91.4 MAX 1030 MIN 8.8 CFSM 1.04 IN 14.13
WTR YR 1975 TOTAL 30611.5 MEAN 83.9 MAX 1260 MIN 8.8 CFSM .95 IN 12.95

PEAK DISCHARGE (BASE, 500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-09	0900	9.53	732	03-24	1500	8.90	590
01-11	0300	11.38	1,280	04-19	1000	12.80	1,790
01-29	1400	8.73	556	04-24	1300	8.56	546
02-24	1200	11.24	1,230	09-01	unknown	unknown	about 1,000
03-22	2000	10.37	961				

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 mi^2 (24.58 km^2).

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.--17 years, 8.10 ft^3/s (0.229 m^3/s), 11.59 in/yr (294 mm/yr).

EXTREMES.--Current year: Maximum discharge, 348 ft^3/s (9.86 m^3/s) Apr. 19, gage height, 8.86 ft (2.701 m); minimum, 0.52 ft^3/s (0.015 m^3/s) Oct. 21; minimum gage height, 5.23 ft (1.594 m) Nov. 1, 2.
Period of record: Maximum discharge, 903 ft^3/s (25.6 m^3/s) June 25, 1968, gage height, 12.95 ft (3.947 m), from rating curve extended above 410 ft^3/s (11.6 m^3/s); minimum, 0.01 ft^3/s (<0.001 m^3/s) Oct. 3, 1967; minimum gage height, 5.08 ft (1.548 m) Sept. 13, 1966.

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	1.8	2.2	7.0	4.4	6.1	7.2	35	8.2	1.8	1.2	80
2	4.7	1.6	4.1	5.3	3.9	4.0	10	8.6	3.6	1.4	1.3	30
3	1.7	33	8.4	4.5	3.3	3.6	13	6.1	3.3	1.3	8.1	40
4	2.5	19	6.8	4.2	3.0	3.0	16	26	5.0	1.2	1.4	50
5	1.9	64	6.3	3.6	2.8	2.8	20	10	9.5	1.2	11	22
6	2.0	15	5.8	3.2	2.6	3.1	26	9.2	2.6	1.6	2.8	26
7	2.5	4.1	17	6.9	2.4	10	37	6.7	2.2	24	1.2	13
8	1.3	3.2	53	95	2.2	5.0	34	4.8	2.0	1.9	1.3	7.0
9	1.5	2.4	20	86	2.0	3.9	23	4.4	2.2	1.4	1.4	5.5
10	1.1	2.4	10	133	1.9	3.5	16	4.8	1.6	30	1.5	4.5
11	1.1	8.4	6.8	63	2.8	3.3	11	4.2	40	2.2	6.5	15
12	.98	3.5	23	17	2.1	14	8.4	8.7	12	9.9	5.4	20
13	1.5	2.9	23	9.0	1.9	14	6.5	4.0	6.8	34	3.9	9.0
14	11	14	20	5.4	1.6	6.4	5.1	1.5	3.2	14	2.2	5.5
15	2.9	5.3	23	4.2	1.7	5.6	5.0	1.6	26	3.6	17	4.0
16	1.7	3.5	50	3.8	2.5	5.4	4.5	1.3	6.3	2.6	5.3	4.1
17	1.6	7.8	21	3.2	24	4.6	3.9	1.4	16	2.4	2.0	2.7
18	.93	5.8	9.6	4.3	26	5.5	14	1.8	16	2.7	1.3	24
19	.72	3.5	7.4	4.5	13	8.6	116	2.1	12	12	1.4	10
20	.68	16	6.3	2.8	8.0	8.1	19	2.7	2.9	2.6	1.0	29
21	2.5	11	5.8	2.6	22	9.9	10	16	2.6	1.3	43	6.6
22	1.4	4.5	7.3	2.5	49	56	7.6	23	2.6	1.4	37	6.8
23	.98	3.5	13	2.4	118	25	11	3.7	4.5	1.3	12	5.1
24	.94	9.0	19	2.7	108	61	30	3.0	68	5.4	27	3.8
25	1.2	15	18	20	26	23	7.7	21	23	1.2	34	6.1
26	1.1	3.8	10	7.3	16	13	4.9	28	9.0	1.0	31	10
27	1.1	2.9	6.3	3.0	9.6	9.6	4.4	5.1	2.4	1.1	7.9	5.3
28	1.2	3.5	6.3	3.1	8.5	8.6	17	3.2	2.0	1.0	4.1	3.0
29	1.6	3.2	6.3	83	---	26	8.8	2.5	1.4	1.0	24	4.2
30	3.8	2.2	18	9.5	---	10	6.8	14	1.4	1.0	131	24
31	2.0	---	9.0	5.4	---	7.4	---	41	---	1.1	90	---
TOTAL	62.63	275.8	442.7	607.4	469.2	370.0	503.8	305.4	298.3	168.6	518.2	476.2
MEAN	2.02	9.19	14.3	19.6	16.8	11.9	16.8	9.85	9.94	5.44	16.7	15.9
MAX	11	64	53	133	118	61	116	41	68	34	131	80
MIN	.68	1.6	2.2	2.4	1.6	2.8	3.9	1.3	1.4	1.0	1.0	2.7
CFSM	.21	.97	1.51	2.07	1.77	1.25	1.77	1.04	1.05	.57	1.76	1.68
IN.	.25	1.08	1.74	2.38	1.84	1.45	1.97	1.20	1.17	.66	2.03	1.87

CAL YR 1974 TOTAL 4446.56 MEAN 12.2 MAX 195 MIN .54 CFSM 1.29 IN 17.43
WTR YR 1975 TOTAL 4498.23 MEAN 12.3 MAX 133 MIN .68 CFSM 1.30 IN 17.63

PEAK DISCHARGE (BASE, 200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-08	2100	8.19	282	04-19	0600	8.86	348
01-10	1800	8.37	302	05-31	0100	7.66	211
01-29	0900	8.44	310	06-24	2100	8.16	275
02-23	0200	7.58	214	08-30	1800	7.94	238
02-24	0600	7.99	258	09-01	unknown	unknown	about 250

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 mi^2 (45.3 km^2).

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.--17 years, 10.9 ft^3/s (0.309 m^3/s), 8.46 in/yr (215 mm/yr).

EXTREMES.--Current year: Maximum discharge, 458 ft^3/s (13.0 m^3/s) Apr. 19, gage height, 5.68 ft (1.731 m); minimum 1.2 ft^3/s (0.034 m^3/s) Aug. 1, gage height, 2.76 ft (0.841 m).
Period of record: Maximum discharge, 1,500 ft^3/s (42.5 m^3/s) June 25, 1968, gage height, 8.70 ft (2.652 m); minimum 0.07 ft^3/s (0.002 m^3/s) Aug. 30, 1966, result of regulation; minimum daily, 0.32 ft^3/s (0.009 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	3.5	3.8	7.4	13	18	17	35	6.5	3.1	1.5	197
2	3.4	3.4	5.3	6.4	12	16	16	25	5.2	3.0	2.3	56
3	3.0	6.0	5.5	6.5	9.9	14	15	20	4.7	2.8	4.4	88
4	2.9	7.8	4.7	6.9	9.3	13	17	23	4.6	2.7	3.2	85
5	2.9	20	4.8	6.0	8.7	12	19	20	7.9	2.5	5.1	44
6	2.8	12	5.0	5.8	8.0	12	23	18	7.0	2.9	5.0	42
7	3.0	7.1	6.5	6.2	7.6	13	28	16	5.1	16	2.8	28
8	2.9	5.3	14	28	7.2	12	38	14	4.2	6.7	2.3	19
9	3.1	4.8	11	57	6.8	11	40	13	4.4	4.2	2.2	14
10	2.9	4.6	8.9	100	6.5	11	36	11	3.8	8.8	1.9	12
11	3.0	5.0	7.4	161	6.2	10	31	11	8.9	5.9	1.9	12
12	3.0	5.1	8.2	48	6.0	13	27	13	17	4.5	1.8	12
13	3.3	4.6	9.2	25	5.9	19	23	14	9.2	4.8	1.9	10
14	4.9	6.1	9.6	17	6.0	18	20	12	6.4	4.3	2.3	8.2
15	4.2	5.8	9.5	14	6.1	16	19	11	15	3.8	2.7	7.8
16	3.5	4.8	11	12	6.4	19	17	9.5	21	3.3	3.5	7.8
17	3.2	6.4	11	10	9.6	18	17	8.4	11	3.0	2.5	7.6
18	3.2	6.3	8.9	9.4	18	22	22	7.8	9.3	2.8	2.2	10
19	3.1	5.7	8.0	8.7	13	27	260	7.0	7.0	4.4	1.7	13
20	3.1	7.8	7.2	8.2	12	26	77	6.3	6.1	4.2	1.8	25
21	3.1	7.4	7.1	8.0	14	22	43	9.0	5.1	2.9	5.8	13
22	3.1	6.6	6.7	7.7	28	67	34	17	4.5	2.7	10	11
23	3.3	5.8	7.0	7.5	118	46	30	9.1	4.1	2.3	5.9	9.3
24	3.4	7.2	8.0	7.8	190	56	62	7.0	13	4.1	6.3	8.1
25	3.4	6.7	8.8	16	68	43	43	9.4	16	2.9	5.7	8.5
26	3.3	5.4	7.0	15	37	30	30	16	8.2	2.4	5.7	10
27	3.3	5.0	6.2	11	26	23	25	7.1	5.8	2.1	4.5	9.6
28	3.4	5.1	6.7	9.4	23	20	27	5.5	5.0	1.9	3.3	8.3
29	2.9	5.0	6.5	47	---	25	29	4.7	4.1	1.9	5.8	8.0
30	3.5	4.7	8.0	25	---	23	25	5.9	3.5	2.0	49	12
31	3.7	---	8.3	18	---	18	---	7.3	---	1.8	184	---
TOTAL	101.7	191.0	239.8	715.9	682.2	693	1110	393.0	233.6	120.7	339.0	796.2
MEAN	3.28	6.37	7.74	23.1	24.4	22.4	37.0	12.7	7.79	3.89	10.9	26.5
MAX	4.9	20	14	161	190	67	260	35	21	16	184	197
MIN	2.8	3.4	3.8	5.8	5.9	10	15	4.7	3.5	1.8	1.5	7.6
CFSM	.19	.36	.44	1.32	1.39	1.28	2.11	.73	.45	.22	.62	1.51
IN.	.22	.41	.51	1.52	1.45	1.47	2.36	.84	.50	.26	.72	1.69

CAL YR 1974 TOTAL 6719.5 MEAN 18.4 MAX 220 MIN 1.9 CFSM 1.05 IN 14.28
WTR YR 1975 TOTAL 5616.1 MEAN 15.4 MAX 260 MIN 1.5 CFSM .88 IN 11.94

PEAK DISCHARGE (BASE, 80 FT^3/S)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
01-11	0300	4.59	212	04-19	0300	5.68	458
01-29	1200	3.83	85	04-24	0900	3.81	88
02-23	0600	4.17	143	08-31	2000	5.57	422
02-24	0700	5.04	301	09-03	2000	4.65	226
03-22	1400	4.12	134				

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 mi^2 (484 km^2).

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.--45 years, 111 ft^3/s (3.144 m^3/s), 8.06 in/yr (205 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,710 ft^3/s (76.7 m^3/s) Sept. 1, gage height, 15.48 ft (4.718 m); minimum, 11 ft^3/s (0.31 m^3/s) July 31; minimum gage height, 3.75 ft (1.143 m) Aug. 20, 21.
Period of record: Maximum discharge, 13,000 ft^3/s (368 m^3/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 ft^3/s (0.051 m^3/s) Aug. 1, 2, 1964, gage height, 3.00 ft (0.914 m).

REMARKS.--Records good except those for the winter period and those for periods of no gage-height record, 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	34	46	98	119	134	174	240	90	40	16	2290
2	45	31	75	92	103	126	170	170	72	33	14	792
3	37	101	82	90	95	117	170	150	60	33	30	527
4	35	156	83	94	89	109	180	200	55	27	45	1060
5	33	263	71	86	85	111	200	160	81	24	68	347
6	35	187	66	105	84	128	236	150	92	27	84	451
7	35	86	68	79	82	143	286	150	61	208	33	201
8	30	67	187	239	80	108	320	140	53	65	24	141
9	32	49	165	894	78	119	296	130	50	42	17	110
10	30	44	99	795	78	111	241	125	50	121	17	94
11	30	46	90	1730	76	109	207	120	124	90	16	180
12	26	58	101	940	69	180	177	125	234	49	40	225
13	28	46	133	238	69	189	153	135	136	94	30	96
14	44	67	132	180	69	139	141	120	81	78	28	79
15	59	77	126	153	80	150	135	110	132	49	25	71
16	39	51	169	140	182	149	128	100	212	39	43	71
17	35	56	160	123	215	153	120	95	103	33	29	68
18	29	63	120	121	153	174	136	82	121	40	21	98
19	27	52	100	115	122	191	1450	75	79	71	20	159
20	34	73	92	106	163	175	1250	68	68	50	17	231
21	28	88	88	104	372	199	344	90	57	34	119	143
22	28	75	90	91	1270	797	252	125	51	30	274	95
23	28	57	88	85	1630	420	225	80	70	26	149	83
24	26	61	110	85	850	511	349	72	457	33	215	71
25	27	83	125	120	280	312	284	130	695	43	248	72
26	28	60	96	172	204	238	201	250	126	24	276	94
27	26	48	84	104	175	203	175	120	80	23	77	75
28	30	48	78	90	152	220	200	95	67	20	46	65
29	26	47	84	596	---	251	190	90	52	18	75	59
30	36	44	105	338	---	200	170	84	44	15	537	169
31	34	---	105	147	---	179	---	110	---	16	1160	---
TOTAL	1029	2218	3218	8350	7024	6345	8560	3891	3653	1495	3793	8217
MEAN	33.2	73.9	104	269	251	205	285	126	122	48.2	122	274
MAX	59	263	187	1730	1630	797	1450	250	695	208	1160	2290
MIN	26	31	46	79	69	108	120	68	44	15	14	59
CFSM	.18	.40	.56	1.44	1.34	1.10	1.52	.67	.65	.26	.65	1.47
IN.	.20	.44	.64	1.66	1.40	1.26	1.70	.77	.73	.30	.75	1.63

CAL YR 1974 TOTAL 62738 MEAN 172 MAX 1720 MIN 18 CFSM .92 IN 12.48
WTR YR 1975 TOTAL 57793 MEAN 158 MAX 2290 MIN 14 CFSM .84 IN 11.50

PEAK DISCHARGE (BASE, 1,200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1700	13.70	1,870
02-23	1500	13.46	1,780
04-19	2100	14.36	2,130
06-24	2100	12.30	1,300
09-01	1000	15.48	2,710
09-04	0700	12.00	1,290

NOTE.--No gage-height record Apr. 28 to June 3.

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 mi^2 (258.7 km^2).

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.--31 years 67.0 ft^3/s (1.897 m^3/s), 9.11 in/yr (231 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,120 ft^3/s (31.7 m^3/s) Sept. 1, gage height, 8.84 ft (2.694 m); minimum, 10 ft^3/s (0.28 m^3/s) Dec. 1, result of freezeup, gage height, 1.72 ft (0.524 m).
Period of record: Maximum discharge, 2,330 ft^3/s (66.0 m^3/s) June 26, 1968; maximum gage height, 10.50 ft (3.200 m) May 10, 1948; minimum discharge, 0.9 ft^3/s (0.025 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	20	20	55	94	119	89	129	70	45	20	936
2	30	18	42	43	74	96	88	95	55	41	20	475
3	25	104	43	43	63	83	90	82	47	38	30	375
4	23	121	36	43	56	74	96	78	45	33	27	502
5	22	197	33	38	54	68	105	79	75	30	51	314
6	23	95	32	36	52	66	117	79	60	34	60	359
7	23	50	48	39	49	92	129	69	50	146	29	222
8	20	36	112	167	46	86	159	63	45	81	23	146
9	21	30	72	333	44	66	178	58	40	41	20	107
10	20	27	49	450	42	67	169	53	38	54	19	88
11	20	32	41	733	37	64	146	50	150	47	23	139
12	17	33	62	350	39	72	123	58	90	41	45	193
13	19	28	69	130	39	95	103	55	66	39	29	85
14	35	50	68	100	35	97	91	51	48	36	23	67
15	42	42	69	80	35	84	84	48	122	31	22	59
16	28	31	113	72	42	82	79	45	176	28	23	57
17	24	36	83	67	87	83	75	43	89	28	22	53
18	21	33	59	64	127	88	92	43	75	45	20	80
19	20	32	50	62	90	106	445	42	60	76	18	97
20	24	48	46	58	78	117	429	42	48	42	18	154
21	20	43	43	54	92	112	234	55	40	29	121	98
22	20	36	45	50	171	205	154	78	35	25	160	71
23	20	32	50	48	583	303	128	52	70	24	93	58
24	20	35	60	49	910	315	155	45	317	33	98	50
25	20	43	65	80	745	259	132	80	808	27	101	60
26	19	32	48	97	348	184	116	210	274	22	122	58
27	18	29	41	70	197	129	97	80	139	21	54	52
28	17	32	39	60	147	105	133	64	83	20	34	45
29	18	29	41	328	---	152	135	56	61	19	72	41
30	29	26	53	225	---	121	116	52	50	19	390	102
31	22	---	53	135	---	100	---	85	---	19	639	---
TOTAL	713	1400	1685	4159	4376	3690	4287	2119	3326	1214	2426	5143
MEAN	23.0	46.7	54.4	134	156	119	143	68.4	111	39.2	78.3	171
MAX	42	197	113	733	910	315	445	210	808	146	639	936
MIN	17	18	20	36	35	64	75	42	35	19	18	41
CFSM	.23	.47	.54	1.34	1.56	1.19	1.43	.68	1.11	.39	.78	1.71
IN.	.27	.52	.63	1.55	1.63	1.37	1.60	.79	1.24	.45	.90	1.92

CAL YR 1974 TOTAL 38160 MEAN 105 MAX 863 MIN 16 CFSM 1.05 IN 14.21
WTR YR 1975 TOTAL 34538 MEAN 94.6 MAX 936 MIN 17 CFSM .95 IN 12.86

PEAK DISCHARGE (BASE, 700 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1900	8.02	805
02-24	1800	8.68	1,020
06-25	1300	8.73	1,050
09-01	0900	8.84	1,120
09-03	1700	7.96	790

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 mi^2 (215.5 km^2).

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.--28 years, 50.2 ft^3/s (1.422 m^3/s), 8.19 in/yr (208 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,140 ft^3/s (32.3 m^3/s) Feb. 25, gage height, 9.64 ft (2.938 m); minimum, 1.8 ft^3/s (0.051 m^3/s) Oct. 3, 9, 10, July 29, 30; minimum gage height, 2.67 ft (0.814 m) July 29, 30, 31.
Period of record: Maximum discharge, 3,600 ft^3/s (102 m^3/s) June 26, 1968, gage height, 13.62 ft (4.151 m); minimum, 0.2 ft^3/s (0.006 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	4.0	4.6	40	43	71	49	68	47	8.0	2.1	750
2	3.4	3.5	8.5	22	35	50	36	45	28	6.2	2.4	194
3	2.3	71	9.1	19	27	33	30	33	22	5.4	6.6	242
4	2.3	55	9.8	17	23	29	36	31	24	4.1	4.8	345
5	2.3	123	8.5	15	19	25	41	31	37	3.5	22	141
6	3.7	31	9.5	16	17	30	50	30	28	11	25	180
7	6.9	12	23	17	15	49	75	23	17	182	8.1	94
8	3.4	6.7	64	138	13	42	120	19	9.7	47	4.9	53
9	2.0	5.4	39	356	12	30	100	17	7.0	10	3.8	37
10	2.0	7.1	24	499	11	32	86	14	6.8	8.7	3.7	29
11	2.8	7.0	17	852	11	34	74	12	44	5.3	9.5	96
12	18	5.8	31	530	10	45	60	17	35	4.9	6.9	140
13	5.4	4.8	39	110	9.7	93	55	15	20	5.8	3.9	66
14	13	21	46	76	9.4	83	50	14	11	6.3	3.7	39
15	5.0	16	48	45	9.1	54	48	11	72	4.7	4.5	27
16	3.1	7.7	80	32	13	62	46	12	106	3.9	3.3	23
17	2.8	14	61	26	36	58	47	9.1	40	3.5	3.7	21
18	3.3	8.8	37	20	45	72	200	8.9	26	6.9	2.7	38
19	4.0	8.2	30	17	40	110	520	7.9	25	23	2.7	42
20	4.0	15	24	15	58	123	450	8.0	14	8.5	2.4	100
21	3.4	12	22	13	80	96	80	30	9.0	4.8	26	70
22	3.6	9.6	20	12	240	177	54	59	6.7	3.9	25	41
23	4.1	7.5	29	11	540	265	46	24	11	5.1	37	30
24	4.8	6.4	39	12	900	280	66	19	185	14	94	25
25	4.4	14	44	29	664	232	58	26	273	4.6	106	26
26	3.8	7.5	31	32	214	110	44	498	68	3.2	139	28
27	4.4	5.9	24	26	131	67	33	167	35	2.7	29	27
28	4.2	6.8	23	20	102	51	57	58	22	2.9	12	20
29	4.5	5.4	22	225	---	100	81	35	16	2.2	46	16
30	14	4.6	36	221	---	93	60	60	11	1.9	626	46
31	4.5	---	38	92	---	54	---	90	---	2.0	770	---
TOTAL	148.2	506.7	941.0	3555	3327.2	2650	2752	1491.9	1256.2	406.0	2036.7	2986
MEAN	4.78	16.9	30.4	115	119	85.5	91.7	48.1	41.9	13.1	65.7	99.5
MAX	18	123	80	852	900	280	520	498	273	182	770	750
MIN	2.0	3.5	4.6	11	9.1	25	30	7.9	6.7	1.9	2.1	16
CFSM	.06	.20	.37	1.38	1.43	1.03	1.10	.58	.50	.16	.79	1.20
IN.	.07	.23	.42	1.59	1.49	1.18	1.23	.67	.56	.18	.91	1.34

CAL YR 1974 TOTAL 29238.9 MEAN 80.1 MAX 1200 MIN 1.9 CFSM .96 IN 13.07
WTR YR 1975 TOTAL 22056.9 MEAN 60.4 MAX 900 MIN 1.9 CFSM .73 IN 9.86

PEAK DISCHARGE (BASE, 900 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-12	0500	9.26	1,020
02-25	0400	9.64	1,140
08-30	1700	8.82	905
09-01	1300	8.82	905

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 mi^2 (148.4 km^2), includes that of Hayes Creek.

PERIOD OF RECORD.--March 1946 to Sept. 30, 1975 (discontinued as continuous-record station; converted to a crest-stage partial-record station).

GAGE.--Nonrecording gage. Datum of gage is 910.00 ft (277.368 m) above mean sea level.

AVERAGE DISCHARGE.--29 years, 37.7 ft^3/s (1.068 m^3/s), 8.93 in/yr (227 mm/yr).

EXTREMES.--Current year: Maximum discharge, 136 ft^3/s (3.85 m^3/s) Apr. 19, 20, 21, gage height, 2.40 ft (0.732 m); minimum, 8.0 ft^3/s (0.23 m^3/s) Aug. 18, gage height, 0.70 ft (0.213 m).
Period of record: Maximum discharge, 266 ft^3/s (7.53 m^3/s) Apr. 7, 1947, gage height, 2.98 ft (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 ft^3/s (0.093 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	18	33	50	67	74	79	112	43	22	9.2	82
2	26	18	38	50	65	70	82	110	43	20	11	79
3	26	20	35	49	64	68	88	108	42	18	14	104
4	26	20	35	48	62	68	90	108	41	17	16	124
5	21	25	36	48	60	68	84	106	42	15	18	130
6	20	25	39	46	58	67	83	104	38	15	18	129
7	20	25	42	46	56	66	81	102	36	18	18	125
8	24	26	45	60	54	65	81	99	36	18	17	120
9	25	26	43	64	54	64	81	93	36	16	16	116
10	26	26	40	71	53	62	81	92	36	16	17	112
11	24	32	39	97	50	60	79	90	36	16	16	110
12	22	30	39	98	48	60	79	87	34	16	15	106
13	19	30	40	92	48	60	79	83	30	16	14	99
14	19	32	45	88	48	59	78	79	28	15	14	92
15	18	34	49	81	49	59	76	73	33	16	12	92
16	18	36	54	74	51	64	74	59	41	16	11	92
17	16	36	56	70	51	64	74	48	40	15	9.6	91
18	15	36	56	70	52	62	75	42	39	15	8.8	90
19	14	34	59	68	53	66	136	38	51	15	9.2	89
20	14	33	60	65	53	68	136	38	50	15	9.6	86
21	13	32	60	64	52	71	136	36	48	15	13	84
22	14	30	59	64	62	81	132	36	48	14	18	81
23	16	27	56	62	86	83	132	33	46	13	20	79
24	17	27	54	62	90	92	130	32	52	18	23	75
25	18	28	52	65	89	92	128	32	56	17	26	72
26	18	29	51	64	84	92	120	39	51	16	26	70
27	18	30	50	64	81	89	115	39	47	14	27	70
28	19	32	50	62	79	88	117	39	45	14	28	70
29	19	31	50	76	---	84	117	39	40	14	40	70
30	18	31	50	70	---	81	114	40	34	13	67	70
31	18	---	50	68	---	81	---	43	---	12	110	---
TOTAL	607	859	1465	2056	1719	2228	2957	2079	1242	490	671.4	2809
MEAN	19.6	28.6	47.3	66.3	61.4	71.9	98.6	67.1	41.4	15.8	21.7	93.6
MAX	26	36	60	98	90	92	136	112	56	22	110	130
MIN	13	18	33	46	48	59	74	32	28	12	8.8	70
CFSM	.34	.50	.83	1.16	1.07	1.25	1.72	1.17	.72	.28	.38	1.63
IN.	.39	.56	.95	1.33	1.12	1.45	1.92	1.35	.81	.32	.44	1.92

CAL YR 1974 TOTAL 22084.6 MEAN 60.5 MAX 169 MIN 9.2 CFSM 1.06 IN 14.34
WTR YR 1975 TOTAL 19181.4 MEAN 52.6 MAX 136 MIN 8.8 CFSM .92 IN 12.45

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 mi^2 (342 km^2).

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 m) upstream at same datum.

AVERAGE DISCHARGE.--27 years, 97.0 ft^3/s (2.747 m^3/s), 9.98 in/yr (253 mm/yr).

EXTREMES.--Current year: Maximum discharge, 478 ft^3/s (13.5 m^3/s) Sept. 7, gage height, 7.66 ft (2.335 m); minimum, 13 ft^3/s (0.37 m^3/s) July 7, gage height, 4.06 ft (1.237 m).
Period of record: Maximum discharge, 645 ft^3/s (18.3 m^3/s) Apr. 5, 1950; maximum gage height, 8.26 ft (2.518 m) June 28, 1968; minimum daily discharge, 5.2 ft^3/s (0.15 m^3/s) Oct. 21, 1971.

REMARKS.--Records good. Flow below about 300 ft^3/s (8.50 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	75	79	110	167	202	186	226	110	86	32	296
2	86	74	88	110	158	191	188	220	110	82	25	353
3	86	76	95	111	153	181	186	214	100	66	34	357
4	83	130	93	110	145	174	194	213	86	57	43	361
5	81	144	93	106	141	166	194	212	89	55	49	379
6	99	124	93	105	141	159	191	200	95	53	57	398
7	102	79	98	103	130	160	191	192	90	36	55	432
8	100	108	116	127	125	160	196	181	86	52	47	374
9	95	91	119	186	120	153	200	175	81	59	42	326
10	92	60	114	211	117	149	197	173	73	61	42	289
11	91	81	109	282	114	146	194	168	75	62	46	268
12	90	86	111	279	112	142	190	165	95	58	54	249
13	89	84	115	244	109	145	184	162	99	51	56	241
14	96	88	115	209	108	141	179	154	89	56	53	227
15	93	86	117	191	108	137	175	148	93	48	56	211
16	82	84	124	181	112	140	171	134	113	45	55	195
17	73	90	126	169	114	140	169	115	105	51	49	182
18	73	93	125	162	122	149	176	104	106	53	43	174
19	67	91	126	155	122	164	311	100	104	50	35	179
20	63	91	127	150	121	174	389	92	97	55	29	191
21	61	97	127	144	119	179	379	93	89	49	42	186
22	59	98	127	139	130	192	330	104	103	47	62	176
23	59	92	124	133	196	218	300	97	107	43	73	177
24	60	100	124	134	267	236	293	90	100	38	80	174
25	61	99	123	144	287	250	296	86	111	40	89	170
26	63	89	120	146	256	242	282	100	111	44	88	177
27	60	83	115	142	233	226	263	95	106	48	81	175
28	59	80	112	140	216	210	254	77	107	43	70	166
29	64	79	110	176	---	204	246	70	105	43	71	160
30	73	78	111	191	---	202	235	78	97	35	114	161
31	75	---	111	175	---	196	---	104	---	38	187	---
TOTAL	2417	2730	3487	4965	4243	5528	6939	4342	2932	1604	1859	7404
MEAN	78.0	91.0	112	160	152	178	231	140	97.7	51.7	60.0	247
MAX	102	144	127	282	287	250	389	226	113	86	187	432
MIN	59	60	79	103	108	137	169	70	73	35	25	160
CFSM	.59	.69	.85	1.21	1.15	1.35	1.75	1.06	.74	.39	.45	1.87
IN.	.68	.77	.98	1.40	1.20	1.56	1.96	1.22	.83	.45	.52	2.09

CAL YR 1974 TOTAL 55852 MEAN 153 MAX 488 MIN 42 CFSM 1.16 IN 15.74
WTR YR 1975 TOTAL 48450 MEAN 133 MAX 432 MIN 25 CFSM 1.01 IN 13.65

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 mi^2 (383 km^2).

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.--27 years, 110 ft^3/s (3.115 m^3/s), 10.09 in/yr (256 mm/yr).

EXTREMES.--Current year: Maximum discharge, 365 ft^3/s (10.3 m^3/s) Apr. 21, gage height, 2.94 ft (0.896 m); maximum gage height, 3.61 ft (1.100 m) Sept. 7; minimum discharge, 32 ft^3/s (0.91 m^3/s) Aug. 21; minimum gage height, 0.80 ft (0.244 m) Apr. 21.
Period of record: Maximum discharge, 1,080 ft^3/s (30.6 m^3/s) Dec. 29, 1950, gage height, 5.05 ft (1.539 m), from rating curve extended above 600 ft^3/s (17.0 m^3/s) by logarithmic plotting; minimum, 2.6 ft^3/s (0.074 m^3/s) May 27, 1963, gage height, 0.53 ft (0.162 m); minimum daily, 6.4 ft^3/s (0.18 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	158	121	125	175	228	211	245	140	100	48	216
2	92	156	122	122	169	210	216	235	135	91	41	285
3	92	132	111	124	166	200	224	164	123	84	45	318
4	92	158	115	124	160	195	210	142	119	74	47	332
5	89	198	112	121	155	185	206	183	122	66	54	332
6	95	182	109	119	155	180	203	207	116	60	58	348
7	103	149	110	118	145	180	203	206	111	65	56	351
8	102	131	121	132	140	175	205	201	109	59	54	330
9	104	186	126	161	135	170	208	194	107	60	52	310
10	102	179	126	191	135	165	206	136	103	63	51	280
11	102	139	123	228	133	160	206	93	97	66	55	260
12	103	128	125	255	131	160	205	136	105	68	57	253
13	143	161	125	252	126	160	202	175	115	68	61	232
14	154	176	125	232	124	155	138	170	112	69	64	227
15	158	141	127	214	127	155	103	165	113	68	64	219
16	178	132	133	199	132	155	138	150	124	66	64	194
17	134	123	133	187	134	155	158	135	124	63	59	190
18	112	121	133	180	137	160	172	130	124	64	54	186
19	131	120	134	173	141	180	259	125	123	66	48	184
20	128	118	134	165	139	195	328	120	121	70	39	189
21	104	123	136	159	138	206	213	125	111	70	46	176
22	92	122	135	153	142	216	136	130	106	67	68	170
23	89	119	133	147	179	229	226	120	109	61	79	170
24	85	127	133	144	232	245	277	115	113	55	92	174
25	86	128	134	150	264	253	288	115	124	53	103	173
26	154	119	131	156	267	256	283	125	117	50	105	173
27	152	115	128	152	255	248	273	115	114	51	99	172
28	118	111	125	149	239	234	273	98	112	53	88	167
29	151	110	124	168	---	227	264	90	112	54	85	157
30	149	111	123	180	---	219	255	105	104	52	100	157
31	125	---	124	182	---	219	---	130	---	51	98	---
TOTAL	3608	4173	3891	5162	4575	6075	6489	4580	3465	2007	2034	6925
MEAN	116	139	126	167	163	196	216	148	116	64.7	65.6	231
MAX	178	198	136	255	267	256	328	245	140	100	105	351
MIN	85	110	109	118	124	155	103	90	97	50	39	157
CFSM	.78	.94	.85	1.13	1.10	1.32	1.46	1.00	.78	.44	.44	1.56
IN.	.91	1.05	.98	1.30	1.15	1.53	1.63	1.15	.87	.50	.51	1.74

CAL YR 1974 TOTAL 64522 MEAN 177 MAX 439 MIN 36 CFSM 1.20 IN 16.22
WTR YR 1975 TOTAL 52984 MEAN 145 MAX 351 MIN 39 CFSM .98 IN 13.32

04172000 Huron River near Hamburg, Mich.

OCATION.--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.

RAINAGE AREA.--308 mi^2 (798 km^2).

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

AGE.--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.

VERAGE DISCHARGE.--24 years, 207 ft^3/s (5.862 m^3/s), 9.13 in/yr (232 mm/yr).

XTREMES.--Current year: Maximum discharge, 707 ft^3/s (20.0 m^3/s) Apr. 22, gage height, 6.26 ft (1.908 m); maximum gage height, 6.34 ft (1.932 m) Sept. 6; minimum discharge, 85 ft^3/s (2.40 m^3/s) Aug. 2; minimum gage height, 3.80 ft (1.158 m) Oct. 26.
Period of record: Maximum discharge, 1,560 ft^3/s (44.2 m^3/s) May 15, 1956; maximum gage height, 8.46 ft (2.579 m) June 30, 1968; minimum discharge, 32 ft^3/s (0.91 m^3/s) July 2, 3, 1965; minimum gage height, 3.16 ft (0.963 m) Aug. 1-3, 1964.

EMARKS.--Records good except those for period of no gage-height record, which are fair. Occasional regulation by Kent Lake, 11 mi (18 km) above station.

EVISIONS.--WSP 2112: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	127	193	201	240	360	579	468	527	230	209	87	399
2	128	206	241	240	340	535	451	497	234	198	86	453
3	127	221	269	240	329	493	453	470	236	182	91	508
4	127	224	265	235	319	455	451	441	231	167	98	550
5	128	255	231	235	308	423	440	381	237	150	105	576
6	128	299	214	230	302	397	425	365	239	137	114	602
7	130	311	209	230	293	382	412	362	227	175	113	606
8	135	289	220	300	284	371	408	359	217	183	109	601
9	138	259	231	400	272	354	405	351	208	183	105	591
10	139	263	234	470	260	343	409	338	200	171	100	566
11	140	279	232	610	250	331	416	293	190	162	99	534
12	139	258	232	600	249	323	418	249	196	153	101	501
13	141	234	233	530	236	318	418	253	207	151	102	463
14	170	245	234	460	236	316	411	258	208	152	107	424
15	196	260	238	410	227	311	384	262	210	150	109	394
16	201	244	249	380	230	310	331	262	233	146	115	372
17	217	232	250	370	233	312	320	257	242	137	117	349
18	198	224	260	350	242	320	332	248	247	128	115	332
19	171	218	265	330	248	335	417	233	248	124	109	331
20	173	220	270	320	251	351	510	217	242	127	104	360
21	169	220	270	310	250	364	639	214	234	126	103	330
22	152	219	275	300	254	386	688	216	221	121	133	330
23	142	217	270	290	294	408	609	216	208	115	163	330
24	137	225	270	300	370	447	590	215	208	114	185	320
25	133	231	265	310	473	493	601	212	228	110	202	330
26	131	229	260	310	588	520	609	212	241	104	213	330
27	168	219	250	310	637	534	594	215	242	99	206	320
28	193	211	240	300	624	534	579	213	237	96	194	305
29	178	203	235	360	---	532	562	204	231	93	180	300
30	196	197	230	415	---	514	545	200	222	92	205	300
31	206	---	235	380	---	488	---	216	---	89	300	---
TOTAL	4858	7105	7578	10765	8959	12779	14295	8956	6754	4344	4170	12707
MEAN	157	237	244	347	320	412	477	289	225	140	135	424
MAX	217	311	275	610	637	579	688	527	248	209	300	606
MIN	127	193	201	230	227	310	320	200	190	89	86	300
CFSM	.51	.77	.79	1.13	1.04	1.34	1.55	.94	.73	.45	.44	1.38
IN.	.59	.86	.92	1.30	1.08	1.54	1.73	1.08	.82	.52	.50	1.53

CAL YR 1974 TOTAL 120588 MEAN 330 MAX 1020 MIN 93 CFSM 1.07 IN 14.56
WTR YR 1975 TOTAL 103270 MEAN 283 MAX 688 MIN 86 CFSM .92 IN 12.47

NOTE.--No gage-height record Dec. 18 to Feb. 2.

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 mi^2 (332 km^2).

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.--23 years, 76.9 ft^3/s (2.178 m^3/s), 8.16 in/yr (207 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,210 ft^3/s (34.3 m^3/s) Sept. 1, gage height, 11.95 ft (3.642 m); minimum, 19 ft^3/s (0.54 m^3/s) Dec. 2, gage height, 5.41 ft (1.649 m).
Period of record: Maximum discharge, 1,500 cfs (42.5 m^3/s) June 26, 1968, gage height, 12.95 ft (3.947 m); minimum, 7.3 ft^3/s (0.21 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	31	35	61	111	161	135	162	63	39	22	1130
2	24	31	31	60	94	136	127	134	55	36	23	797
3	24	31	46	56	80	113	145	116	51	34	27	560
4	24	45	77	54	74	104	154	115	50	35	25	428
5	24	52	46	50	70	94	148	117	53	34	26	281
6	24	72	50	51	66	93	151	114	50	32	30	253
7	24	51	45	50	62	97	163	105	45	34	24	191
8	24	42	40	84	58	96	209	93	43	34	23	149
9	24	37	56	271	56	97	242	83	41	34	22	122
10	24	35	58	312	54	89	224	77	40	33	22	104
11	24	34	58	544	52	86	205	73	45	31	22	93
12	26	35	56	383	49	92	177	76	68	31	21	94
13	27	34	54	240	48	128	152	84	59	34	21	81
14	30	35	62	190	46	133	137	75	49	41	20	72
15	33	37	69	140	45	111	127	70	59	38	21	66
16	30	35	74	80	51	127	120	66	106	35	23	65
17	29	34	72	76	55	129	114	63	78	32	22	62
18	29	41	65	72	72	150	118	60	65	31	22	63
19	29	43	63	69	71	184	470	56	55	32	22	73
20	29	40	60	66	73	197	422	52	51	33	21	88
21	29	40	58	62	81	179	267	61	47	32	23	78
22	29	40	56	59	152	226	193	67	43	33	33	70
23	30	40	55	57	644	267	166	63	41	24	30	65
24	31	38	58	57	779	311	174	59	52	30	32	60
25	30	39	60	72	644	316	162	54	112	29	33	59
26	30	41	57	81	400	224	141	59	79	27	48	69
27	30	38	55	70	248	171	124	53	62	25	38	64
28	30	37	56	67	196	146	147	48	53	24	33	58
29	30	36	55	192	---	170	192	45	47	24	37	55
30	31	36	60	186	---	171	156	49	42	23	342	64
31	32	---	62	140	---	140	---	68	---	22	1080	---
TOTAL	858	1180	1749	3952	4431	4738	5462	2417	1704	976	2188	5414
MEAN	27.7	39.3	56.4	127	158	153	182	78.0	56.8	31.5	70.6	180
MAX	33	72	77	544	779	316	470	162	112	41	1080	1130
MIN	24	31	31	50	45	86	114	45	40	22	20	55
CFSM	.22	.31	.44	.99	1.23	1.20	1.42	.61	.44	.25	.55	1.41
IN.	.25	.34	.51	1.15	1.29	1.38	1.59	.70	.50	.28	.64	1.57

CAL YR 1974 TOTAL 46880 MEAN 128 MAX 975 MIN 19 CFSM 1.00 IN 13.62
WTR YR 1975 TOTAL 35069 MEAN 96.1 MAX 1130 MIN 20 CFSM .75 IN 10.19

PEAK DISCHARGE (BASE, 500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1300	9.63	578
02-24	1400	10.46	798
04-19	1600	9.61	580
09-01	0300	11.95	1,210

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 mi^2 (1,888 km^2).

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.--71 years, 449 ft^3/s (12.72 m^3/s), 8.36 in/yr (212 mm/yr), adjusted for diversion since 1955.

EXTREMES.--Current year: Maximum discharge, 3,140 ft^3/s (88.9 m^3/s) Aug. 31, gage height, 16.01 ft (4.880 m); minimum, 21 ft^3/s (0.59 m^3/s) July 21; minimum gage height, 11.60 ft (3.536 m) Aug. 8; minimum daily discharge, 56 ft^3/s (1.59 m^3/s) Aug. 1.
Period of record: Maximum daily discharge, 5,840 ft^3/s (165 m^3/s) Mar. 14, 1918; minimum daily, 4 ft^3/s (0.11 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	175	280	363	405	660	1300	994	1170	405	245	56	2430
2	181	341	363	377	636	1170	867	1120	368	238	116	2120
3	168	318	390	400	630	1080	1050	970	368	288	171	1570
4	175	515	272	372	600	946	994	839	445	276	178	1500
5	175	495	280	377	600	769	923	946	450	368	145	1200
6	181	490	296	363	588	783	902	690	395	184	190	1560
7	187	445	305	354	530	797	902	776	309	284	153	1240
8	187	435	354	465	510	755	962	720	296	253	153	1040
9	175	460	350	660	490	696	978	678	415	220	142	1090
10	193	440	350	902	445	630	1080	630	242	230	145	895
11	197	381	363	1390	465	630	1020	727	386	264	142	1010
12	296	386	377	1370	400	624	986	630	318	288	139	881
13	223	377	377	1050	386	648	954	690	435	415	142	818
14	249	400	386	916	386	642	923	445	336	386	139	811
15	284	415	435	853	372	600	888	535	450	234	159	720
16	234	415	415	888	377	570	853	600	564	168	148	624
17	227	420	435	825	430	582	630	582	341	184	187	576
18	354	354	425	811	435	708	470	530	520	213	148	630
19	354	350	415	762	440	783	1400	445	435	284	151	734
20	309	359	415	690	440	690	1710	505	368	405	139	690
21	104	341	420	630	445	881	1430	381	368	168	171	564
22	162	332	425	588	576	954	1310	400	368	131	216	618
23	296	314	405	558	1240	1040	1400	445	405	178	296	530
24	124	323	410	535	1880	1110	1480	465	350	203	253	618
25	168	345	415	470	1780	1390	1200	425	696	210	350	505
26	203	327	415	520	1660	1220	1240	475	242	216	480	570
27	234	314	405	606	1380	1110	923	368	386	216	332	546
28	184	314	390	535	1420	970	1480	381	420	213	216	552
29	131	314	395	702	---	1110	1290	368	415	165	405	546
30	300	309	420	755	---	1180	1190	332	460	165	1150	376
31	184	---	405	690	---	1070	---	490	---	91	2280	---
TOTAL	6614	11309	11871	20819	20201	27438	32429	18758	11956	7383	9092	27564
MEAN	213	377	383	672	721	885	1081	605	399	238	293	919
MAX	354	515	435	1390	1880	1390	1710	1170	696	415	2280	2430
MIN	104	280	272	354	372	570	470	332	242	91	56	376
MEAN+	231	393	396	690	741	905	1101	628	420	267	316	938
CFSM+	.32	.54	.54	.95	1.02	1.24	1.51	.86	.58	.37	.43	1.29
IN+	.37	.60	.63	1.09	1.06	1.43	1.69	.99	.64	.42	.50	1.44

CAL YR 1974 TOTAL 280222 MEAN 768 MAX 3900 MIN 101 MEAN+ 789 CFSM+ 1.08 IN+ 14.69
WTR YR 1975 TOTAL 205434 MEAN 563 MAX 2430 MIN 56 MEAN+ 583 CFSM+ .80 IN+ 10.86

+ Adjusted for diversion for municipal supply; record furnished by City of Ann Arbor.

04174800 Huron River at Ypsilanti, Mich.

LOCATION.--Lat 42°14'57", long 83°36'45", in SW¼ sec.4, T.3 S., R.7 E., Washtenaw County, on left bank, 30 ft (9 m) downstream from bridge on Forest Avenue in Ypsilanti, 4.9 mi (7.9 km) downstream from Geddes Dam and 5.6 mi (9.0 km) upstream from Ford Dam, and at mile 42.8 (68.9 km).

DRAINAGE AREA.--807 mi^2 (2,090 km^2).

PERIOD OF RECORD.--June 1974 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 700 ft (213 m) from topographic map (nearest 5 ft).

EXTREMES.--June to September 1974: Maximum daily discharge during period, 930 ft^3/s (26.3 m^3/s) June 3; minimum discharge, 83 ft^3/s (2.35 m^3/s) Sept. 12, gage height, 7.00 ft (2.134 m); minimum daily, 167 ft^3/s (4.73 m^3/s) Sept. 13.
Water year 1975: Maximum discharge, 3,490 ft^3/s (98.8 m^3/s) Aug. 31, gage height, 11.91 ft (3.630 m); minimum, 62 ft^3/s (1.76 m^3/s) Aug. 1, gage height, 6.88 ft (2.097 m); minimum daily, 81 ft^3/s (2.29 ft^3/s) Aug. 1.

REMARKS.--Records good except those for periods of no gage-height record, which are fair. Considerable regulation caused by many dams above station; storage capacity is small. Records of chemical analyses for the current year are published in Section 2 of this report.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1									900	414	190	215
2									920	446	230	224
3									930	406	230	297
4									900	518	260	263
5									800	396	240	246
6									720	394	230	185
7									660	386	250	222
8									900	390	278	219
9									820	354	250	320
10									740	224	260	210
11									635	309	280	198
12									665	311	310	281
13									800	209	280	167
14									750	248	310	218
15									700	212	320	192
16									655	248	278	222
17									605	209	260	205
18									605	242	278	188
19									620	233	296	174
20									612	227	317	215
21									682	206	274	190
22									518	212	245	188
23									434	221	293	228
24									607	242	257	171
25									467	222	281	178
26									502	198	254	185
27									487	195	233	183
28									486	206	233	171
29									403	224	242	312
30									428	205	251	198
31									---	200	233	---
TOTAL									19951	8707	8143	6465
MEAN									665	281	263	216
MAX									930	518	320	320
MIN									403	195	190	167
CFSM									.82	.35	.33	.27
IN.									.92	.40	.38	.30

NOTE.--No gage-height record June 1-10.

04174800 Huron River at Ypsilanti, Mich.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	207	273	438	490	760	1500	1040	1210	460	280	81	2220
2	221	349	493	470	740	1400	954	1160	435	270	127	2050
3	205	374	470	440	720	1250	1110	1080	450	330	217	1500
4	208	535	298	445	700	1100	1050	807	485	320	155	1630
5	232	627	342	402	700	900	1010	1200	525	400	195	1160
6	210	491	328	393	680	920	972	680	495	210	209	1480
7	228	455	350	398	620	920	1010	906	380	310	190	1280
8	228	432	452	580	580	850	1060	824	354	280	152	1190
9	220	496	421	894	560	750	1070	802	485	240	157	1070
10	241	473	399	1160	500	700	1100	752	342	250	157	918
11	215	432	419	1780	520	680	1120	790	450	285	167	1070
12	311	401	446	1500	450	680	1040	780	450	309	150	942
13	262	398	432	1160	430	680	1020	758	475	495	158	834
14	283	432	468	972	420	680	978	555	465	384	146	864
15	303	468	496	960	410	620	966	642	626	298	173	812
16	265	442	488	1000	410	580	948	653	763	207	158	708
17	277	468	555	950	450	600	730	664	425	206	183	692
18	356	390	482	900	470	697	580	626	610	233	185	697
19	273	382	500	850	480	840	1520	520	555	275	158	736
20	481	434	453	800	480	720	1740	595	455	393	161	829
21	181	378	505	700	480	900	1350	590	430	242	219	670
22	188	370	461	650	700	1000	1330	495	465	126	236	648
23	341	326	446	620	1400	1100	1330	500	485	191	270	600
24	206	371	482	600	2200	1200	1460	500	450	208	371	605
25	221	393	486	520	1980	1460	1230	520	900	199	330	658
26	271	361	473	600	1860	1300	1280	560	350	236	580	642
27	299	345	450	700	1600	1200	924	440	450	196	327	626
28	245	349	414	620	1700	1050	1480	450	500	201	264	555
29	205	363	460	800	---	1140	1330	420	520	171	367	595
30	341	343	457	850	---	1220	1220	400	560	175	1690	510
31	235	---	473	800	---	1110	---	642	---	137	2480	---
TOTAL	7959	12351	13837	24004	23000	29747	33952	21521	14795	8057	10413	28791
MEAN	257	412	446	774	821	960	1132	694	493	260	336	960
MAX	481	627	555	1780	2200	1500	1740	1210	900	495	2480	2220
MIN	181	273	298	393	410	580	580	400	342	126	81	510
CFSM	.32	.51	.55	.96	1.02	1.19	1.40	.86	.61	.32	.42	1.19
IN.	.37	.57	.64	1.11	1.06	1.37	1.57	.99	.68	.37	.48	1.33

WTR YR 1975 TOTAL 228427 MEAN 626 MAX 2480 MIN 81 CFSM .78 IN 10.53

NOTE.--No gage-height record Jan. 15 to Feb. 24.

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 mi^2 (176.1 km^2).

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.

AVERAGE DISCHARGE.--5 years, 43.9 ft^3/s (1.243 m^3/s), 8.77 in/yr (223 mm/yr).

EXTREMES.--Current year: Maximum discharge, 668 ft^3/s (18.9 m^3/s) Feb. 24, gage height, 7.84 ft (2.390 m): minimum, 2.9 ft^3/s (0.08 m^3/s) Aug. 1, gage height, 1.02 ft (0.311 m).
Period of record: Maximum discharge, 668 ft^3/s (18.9 m^3/s) Feb. 24, 1975, gage height, 7.84 ft (2.390 m); maximum gage height, 8.31 ft (2.533 m) Feb. 20, 1971, backwater from ice; minimum discharge, 2.7 ft^3/s (0.076 m^3/s) Aug. 24, 1971, gage height, 1.00 ft (0.305 m).

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

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	9.5	14	23	59	79	63	67	37	12	3.4	161
2	10	8.6	17	23	52	69	59	54	28	11	4.6	90
3	11	9.8	21	22	48	62	70	47	26	9.5	6.8	59
4	9.1	19	19	21	44	55	85	47	23	8.8	7.8	91
5	8.7	25	15	19	40	49	89	45	27	8.0	6.0	59
6	10	23	18	20	36	47	83	42	33	6.7	14	45
7	11	14	21	23	32	52	78	38	24	12	8.6	32
8	11	11	29	55	28	50	73	34	20	13	7.4	25
9	11	10	30	177	25	47	63	31	18	9.7	6.7	22
10	9.1	10	24	239	22	45	56	29	17	8.0	6.5	20
11	8.2	10	23	537	21	43	51	27	17	7.4	6.7	21
12	9.2	12	24	442	20	46	46	28	34	7.5	6.3	47
13	11	10	23	143	20	58	41	31	23	8.2	5.9	33
14	13	12	25	97	21	66	39	26	19	13	7.2	25
15	15	13	28	68	23	58	39	25	22	10	6.5	22
16	14	11	30	54	27	59	38	24	50	9.3	8.5	21
17	13	13	31	45	32	60	38	23	32	8.0	6.6	19
18	11	16	27	39	44	76	53	24	26	8.4	7.1	19
19	10	15	24	35	58	97	331	21	21	11	5.8	29
20	10	15	23	31	63	101	209	19	19	11	5.6	37
21	10	17	22	29	66	88	98	21	16	8.8	6.3	35
22	12	14	21	27	122	112	75	23	15	7.7	11	26
23	13	13	21	27	391	134	68	23	15	7.4	9.1	23
24	13	14	22	34	618	149	75	20	20	7.7	17	20
25	13	14	23	43	483	151	66	19	48	7.7	14	20
26	11	15	22	54	183	85	56	25	30	5.7	18	41
27	11	14	21	39	114	67	50	21	23	5.2	14	35
28	11	14	21	37	94	61	59	18	19	5.1	9.3	27
29	11	13	21	121	---	96	85	17	17	5.4	10	23
30	11	13	23	143	---	94	66	17	14	4.9	66	29
31	11	---	24	72	---	67	---	48	---	4.7	159	---
TOTAL	343.3	407.9	707	2739	2786	2323	2302	934	733	262.8	471.7	1156
MEAN	11.1	13.6	22.8	88.4	99.5	74.9	76.7	30.1	24.4	8.48	15.2	38.5
MAX	15	25	31	537	618	151	331	67	50	13	159	161
MIN	8.2	8.6	14	19	20	43	38	17	14	4.7	3.4	19
CFSM	.16	.20	.34	1.30	1.46	1.10	1.13	.44	.36	.12	.22	.57
IN.	.19	.22	.39	1.50	1.52	1.27	1.26	.51	.40	.14	.26	.63

CAL YR 1974 TOTAL 21258.4 MEAN 58.2 MAX 560 MIN 5.7 CFSM .86 IN 11.63
WTR YR 1975 TOTAL 15165.7 MEAN 41.5 MAX 618 MIN 3.4 CFSM .61 IN 8.30

PEAK DISCHARGE (BASE, 300 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1000	7.66	594
02-24	1300	7.84	668
04-19	1700	7.25	445

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 mi^2 (342 km^2).

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.

AVERAGE DISCHARGE.--5 years, 106 ft^3/s (3.002 m^3/s), 10.91 in/yr (277 mm/yr).

EXTREMES.--Current year: Maximum discharge, 404 ft^3/s (11.4 m^3/s) Aug. 31, gage height, 5.75 ft (1.753 m); minimum, 10 ft^3/s (0.28 m^3/s) Oct. 20, 21; minimum gage height, 1.31 ft (0.399 m) Oct. 4.
Period of record: Maximum discharge, 404 ft^3/s (11.4 m^3/s) Aug. 31, 1975, gage height, 5.75 ft (1.753 m); minimum, 4.5 ft^3/s (0.13 m^3/s) Nov. 29, 1971; minimum gage height, 1.31 ft (0.399 m) Nov. 14, 1973, Oct. 4, 1974.

REMARKS.--Records good except those for the winter period, which are fair. Occasional regulation by many dams above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	35	80	85	146	258	187	193	96	32	22	362
2	31	34	80	85	137	250	178	183	92	33	23	321
3	33	44	79	80	125	239	184	172	87	34	26	286
4	22	86	104	80	116	218	190	170	85	47	26	252
5	24	119	77	76	111	202	204	164	92	46	28	228
6	29	129	82	74	105	198	208	181	102	42	34	203
7	32	105	64	74	100	195	203	177	96	42	30	180
8	31	94	78	90	95	196	205	172	87	39	28	157
9	26	79	88	120	90	181	202	157	78	37	26	138
10	24	75	85	180	85	193	194	145	71	34	24	121
11	26	69	77	250	80	173	187	133	74	32	23	114
12	23	73	78	210	80	169	179	129	105	30	22	114
13	39	71	84	190	80	174	169	134	105	34	21	109
14	20	71	88	160	80	172	158	130	95	39	20	97
15	30	73	90	150	80	160	151	124	103	38	20	83
16	33	71	96	140	79	163	146	115	142	36	21	82
17	32	68	101	135	84	159	137	106	128	35	21	78
18	31	72	96	130	102	168	133	99	113	35	20	80
19	46	72	95	130	108	182	232	90	104	39	19	85
20	32	73	94	120	108	192	260	83	103	39	19	104
21	30	74	92	120	107	191	244	85	91	37	19	104
22	35	68	88	120	125	196	230	93	85	35	22	91
23	33	65	89	120	247	210	217	92	79	33	21	82
24	32	70	89	108	334	228	212	89	84	36	24	70
25	30	69	92	115	353	252	209	88	98	35	36	69
26	28	67	91	124	319	234	198	95	81	32	48	70
27	27	63	88	114	289	215	188	96	70	31	53	60
28	26	61	84	104	278	206	185	88	65	28	50	63
29	25	54	80	139	---	207	194	79	58	26	62	53
30	30	57	81	173	---	211	197	78	32	25	205	64
31	33	---	86	160	---	199	---	97	---	24	390	---
TOTAL	925	2161	2676	3956	4043	6191	5781	3837	2701	1085	1403	3920
MEAN	29.8	72.0	86.3	128	144	200	193	124	90.0	35.0	45.3	131
MAX	46	129	104	250	353	258	260	193	142	47	390	362
MIN	20	34	64	74	79	159	133	78	32	24	19	53
CFSM	.23	.55	.65	.97	1.09	1.52	1.46	.94	.68	.27	.34	.99
IN.	.26	.61	.75	1.11	1.14	1.74	1.63	1.08	.76	.31	.40	1.10

CAL YR 1974 TOTAL 46362 MEAN 127 MAX 399 MIN 17 CFSM .96 IN 13.07
WTR YR 1975 TOTAL 38679 MEAN 106 MAX 390 MIN 19 CFSM .80 IN 10.90

PEAK DISCHARGE (BASE, 280 FT^3/S).--Feb. 24 (2200) 364 ft^3/s (5.38 ft); Aug. 31 (1100) 404 ft^3/s (5.75 ft).

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 mi^2 (692 km^2).

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.--19 years, 177 ft^3/s (5.013 m^3/s), 9.00 in/yr (229 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,150 ft^3/s (32.6 m^3/s) Aug. 31, gage height, 10.00 ft (3.048 m); minimum, 40 ft^3/s (1.13 m^3/s) July 30, gage height, 3.74 ft (1.140 m).
Period of record: Maximum discharge, 2,920 ft^3/s (82.7 m^3/s) June 26, 1968, gage height, 12.66 ft (3.859 m); minimum, 6.4 ft^3/s (0.18 m^3/s) Aug. 26, 1964, gage height, 2.57 ft (0.783 m); minimum daily, 8.3 ft^3/s (0.24 m^3/s) Oct. 30, 1965.

REMARKS.--Records good except those for the winter period, which are poor. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	78	85	116	161	298	488	331	430	242	102	61	988
2	79	84	133	152	268	441	327	421	205	91	61	765
3	75	95	119	143	233	414	368	357	179	88	62	630
4	76	120	121	152	218	412	365	354	174	164	54	521
5	75	161	140	143	200	378	368	294	181	120	58	444
6	68	195	126	137	190	331	381	373	182	111	66	391
7	69	188	127	139	180	344	381	341	168	103	64	322
8	72	171	143	154	170	378	414	340	166	105	63	285
9	75	148	150	335	160	324	410	317	156	77	60	280
10	75	140	151	523	160	310	397	293	145	86	57	249
11	73	133	147	825	150	306	374	270	144	83	55	235
12	70	128	146	650	150	283	352	263	165	79	53	256
13	70	114	147	490	150	350	331	255	174	87	53	219
14	75	146	154	430	150	343	320	250	172	107	51	209
15	85	133	167	400	154	318	268	243	214	100	53	176
16	79	126	180	360	156	314	274	231	268	91	55	180
17	80	129	184	320	160	304	254	215	245	84	54	153
18	81	115	184	300	206	304	302	209	231	80	52	153
19	79	134	180	280	224	324	566	195	205	81	51	164
20	79	136	169	248	214	359	629	183	189	84	48	175
21	87	141	163	226	206	371	539	191	174	81	50	186
22	106	134	158	228	270	385	484	172	160	85	74	178
23	150	127	153	239	755	385	441	233	140	66	66	167
24	80	125	157	205	1090	390	435	201	146	71	77	156
25	84	130	161	214	917	428	426	193	263	69	129	143
26	81	126	161	240	738	437	385	214	200	68	131	138
27	78	126	157	225	631	400	368	200	170	66	117	67
28	73	121	155	209	544	365	373	186	147	65	99	110
29	58	117	150	294	---	378	428	172	131	77	101	104
30	89	114	152	462	---	382	415	164	121	50	249	124
31	81	---	158	356	---	328	---	260	---	61	885	---
TOTAL	2480	3942	4709	9240	8942	11274	11706	8020	5457	2682	3109	8168
MEAN	80.0	131	152	298	319	364	390	259	182	86.5	100	272
MAX	150	195	184	825	1090	488	629	430	268	164	885	988
MIN	58	84	116	137	150	283	254	164	121	50	48	67
CFSM	.30	.49	.57	1.12	1.19	1.36	1.46	.97	.68	.32	.37	1.02
IN.	.35	.55	.66	1.29	1.25	1.57	1.63	1.12	.76	.37	.43	1.14

CAL YR 1974 TOTAL 93922 MEAN 257 MAX 988 MIN 52 CFSM .96 IN 13.09
WTR YR 1975 TOTAL 79729 MEAN 218 MAX 1090 MIN 48 CFSM .82 IN 11.11

PEAK DISCHARGE (BASE, 700 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	2200	9.73	992
02-24	0100	9.96	1,100
08-31	2400	10.00	1,150

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 mi^2 (1,199 km^2).

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.--22 years, 307 ft^3/s (8.694 m^3/s), 9.00 in/yr (229 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,840 ft^3/s (52.1 m^3/s) Apr. 20, gage height, 11.45 ft (3.490 m); maximum gage height, 12.14 ft (3.700 m), Jan. 12, from high-water mark (backwater from ice); minimum discharge, 77 ft^3/s (2.18 m^3/s) July 30, Aug. 20, 21; minimum gage height, 2.50 ft (0.762 m) July 30.
Period of record: Maximum discharge, 5,580 ft^3/s (158 m^3/s) Apr. 30, 1956, gage height, 14.87 ft (4.532 m), from rating curve extended above 4,000 ft^3/s (113 m^3/s) by logarithmic plotting; minimum, 18 ft^3/s (0.51 m^3/s) Aug. 10, 1964, gage height, 1.33 ft (0.405 m); minimum daily, 25 ft^3/s (0.71 m^3/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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	119	163	301	645	800	514	798	490	169	95	1250
2	111	117	182	274	510	750	502	717	398	146	93	1150
3	106	141	168	252	435	700	531	619	352	139	107	837
4	105	197	164	254	384	650	569	553	341	540	98	661
5	105	254	189	237	375	600	624	501	361	490	94	537
6	98	259	191	221	363	489	654	613	379	418	112	475
7	96	237	183	226	339	520	660	747	344	293	103	402
8	99	220	203	263	294	622	661	759	314	225	100	350
9	103	202	208	490	305	633	668	591	280	180	95	329
10	103	196	211	850	307	523	629	509	262	168	90	299
11	102	190	205	1400	305	488	579	450	259	155	87	304
12	102	172	209	1350	290	439	531	424	304	142	86	373
13	99	155	211	1330	269	475	490	403	321	185	84	324
14	103	178	215	1100	250	501	471	384	316	200	82	297
15	113	174	234	906	250	471	427	370	381	189	85	227
16	109	166	272	738	251	452	370	353	485	171	90	245
17	107	172	292	656	272	460	337	330	478	150	85	213
18	109	175	296	563	363	471	448	316	414	140	84	213
19	108	166	285	486	436	513	1220	297	340	150	83	227
20	105	189	261	432	412	583	1760	278	293	150	79	238
21	109	187	246	437	390	616	1620	275	257	140	81	244
22	114	182	236	351	522	614	1280	301	235	130	116	238
23	177	175	228	362	900	634	989	330	216	123	106	224
24	102	171	240	337	1300	645	815	315	205	116	114	208
25	113	181	255	354	1600	687	768	335	361	113	174	194
26	111	169	267	406	1200	660	705	397	372	109	180	189
27	108	171	262	395	1000	626	614	358	298	105	171	141
28	106	167	254	355	900	552	608	343	235	103	146	126
29	88	162	243	529	---	579	706	314	209	102	142	160
30	124	158	246	850	---	631	771	301	188	99	241	165
31	115	---	279	882	---	619	---	482	---	94	678	---
TOTAL	3369	5402	7098	17587	14867	18003	21521	13763	9688	5634	3981	10840
MEAN	109	180	229	567	531	581	717	444	323	182	128	361
MAX	177	259	296	1400	1600	800	1760	798	490	540	678	1250
MIN	88	117	163	221	250	439	337	275	188	94	79	126
CFSM	.24	.39	.49	1.22	1.15	1.25	1.55	.96	.70	.39	.28	.78
IN.	.27	.43	.57	1.41	1.19	1.45	1.73	1.11	.78	.45	.32	.87

CAL YR 1974 TOTAL 172906 MEAN 474 MAX 2580 MIN 73 CFSM 1.02 IN 13.89
WTR YR 1975 TOTAL 131753 MEAN 361 MAX 1760 MIN 79 CFSM .78 IN 10.59

PEAK DISCHARGE (BASE, 1,400 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	--	--	about 1,450
02-25	unknown	unknown	about 1,650
04-20	1900	11.45	1,840

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 mi^2 (245.0 km^2).

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.--10 years, 64.4 ft^3/s (1.824 m^3/s), 9.24 in/yr (235 mm/yr).

EXTREMES.--Current year: Maximum discharge, 1,060 ft^3/s (30.0 m^3/s) Jan. 11, gage height, 10.65 ft (3.246 m); minimum, 6.5 ft^3/s (0.18 m^3/s) July 18, gage height, 3.45 ft (1.052 m).
Period of record: Maximum discharge, 3,990 ft^3/s (113 m^3/s) June 26, 1968, gage height, 13.37 ft (4.075 m); minimum, 5.4 ft^3/s (0.15 m^3/s) Oct. 9, 12, 1966; minimum gage height, 3.26 ft (0.994 m) July 24, 1966.

REMARKS.--Records good except those for the winter period, which are fair. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	18	18	33	100	114	70	86	43	30	12	880
2	18	18	20	27	80	93	69	79	37	25	12	337
3	18	26	20	30	65	78	94	68	35	24	13	211
4	18	29	21	27	55	67	104	63	33	24	14	199
5	16	47	26	24	50	60	109	61	33	23	16	142
6	16	33	18	24	47	58	114	61	41	22	16	117
7	17	25	18	24	45	65	127	61	35	23	14	90
8	16	21	32	50	41	62	151	60	32	23	14	74
9	18	20	28	246	39	57	136	58	29	23	12	61
10	16	20	24	377	36	54	114	54	27	22	12	54
11	17	21	22	970	34	51	100	50	30	21	12	63
12	16	21	25	426	32	59	87	47	45	21	12	89
13	16	20	25	215	31	109	76	45	38	22	12	66
14	19	23	28	130	29	104	69	44	35	19	12	52
15	19	20	32	100	27	74	24	42	61	9.5	12	45
16	18	18	37	80	28	87	26	40	106	8.0	14	42
17	18	22	36	65	42	78	101	39	64	7.5	12	36
18	17	24	33	55	81	91	59	37	50	7.0	12	38
19	17	23	31	50	73	114	272	35	41	8.5	12	47
20	16	24	28	45	72	124	222	33	35	14	12	58
21	16	23	27	40	95	113	135	34	28	15	12	50
22	16	22	26	39	209	139	103	33	21	14	17	44
23	16	20	26	36	747	149	88	41	16	14	14	40
24	17	20	27	37	880	173	93	36	19	14	16	36
25	17	23	29	50	427	159	87	35	20	14	16	51
26	17	20	27	61	249	109	75	38	45	14	16	68
27	17	19	27	47	182	86	66	35	33	14	15	53
28	17	19	26	44	147	75	76	32	16	13	13	43
29	17	18	26	244	---	92	109	28	24	13	26	36
30	20	18	30	183	---	94	90	29	36	13	389	30
31	18	---	33	135	---	74	---	54	---	12	965	---
TOTAL	532	675	826	3914	3943	2862	3046	1458	1108	526.5	1756	3152
MEAN	17.2	22.5	26.6	126	141	92.3	102	47.0	36.9	17.0	56.6	105
MAX	20	47	37	970	880	173	272	86	106	30	965	880
MIN	16	18	18	24	27	51	24	28	16	7.0	12	30
CFSM	.18	.24	.28	1.33	1.49	.98	1.08	.50	.39	.18	.60	1.11
IN.	.21	.27	.32	1.54	1.55	1.13	1.20	.57	.44	.21	.69	1.24

CAL YR 1974 TOTAL 29621.0 MEAN 81.2 MAX 950 MIN 13 CFSM .86 IN 11.65
WTR YR 1975 TOTAL 23798.5 MEAN 65.2 MAX 970 MIN 7.0 CFSM .69 IN 9.36

PEAK DISCHARGE (BASE, 380 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1030	10.65	1,060
01-29	1800	8.53	433
02-23	1500	10.51	985
04-19	1800	8.39	414
08-31	0900	10.50	980

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 mi^2 (2,699 km^2).

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.--38 years, 691 ft^3/s (19.57 m^3/s), 9.01 in/yr (229 mm/yr).

EXTREMES.--Current year: Maximum discharge, 6,280 ft^3/s (178 m^3/s) Feb. 25, gage height, 7.88 ft (2.402 m); minimum, 92 ft^3/s (2.61 m^3/s) Aug. 2, 21; minimum gage height, 2.11 ft (0.643 m) Aug. 17.
Period of record: Maximum discharge, 12,900 ft^3/s (365 m^3/s) May 19, 1945, Mar. 29, 1950; maximum gage height, 10.7 ft (3.26 m) Feb. 1, 1949, backwater from ice , site and datum then in use; minimum discharge, about 2 ft^3/s (0.06 m^3/s) Sept. 4, 1938, Sept. 19, 20, 1941, site then in use.

REMARKS.--Records good except those for the winter period, which are poor. 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 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	116	240	526	1770	3060	1260	1470	731	280	101	2800
2	131	130	174	535	1510	2280	1110	1420	873	240	94	2100
3	131	151	237	536	1100	1680	1010	1340	804	192	108	1600
4	123	172	218	480	857	1290	1060	1180	672	363	108	1200
5	118	212	257	418	766	1030	1200	1000	611	987	119	900
6	114	274	250	393	693	929	1270	930	646	1090	141	620
7	104	309	200	392	622	903	1270	1070	654	835	137	580
8	108	310	227	505	550	1020	1250	1310	621	749	137	540
9	111	288	259	1900	480	1030	1200	1390	528	627	138	500
10	110	266	350	2910	460	1100	1150	1210	450	460	126	460
11	110	256	306	5440	450	1010	1090	937	410	290	122	500
12	107	245	291	4500	450	892	992	785	408	217	116	540
13	113	236	297	3500	430	870	899	678	414	185	117	500
14	107	231	306	3000	400	850	825	639	414	188	110	460
15	101	217	341	2500	383	860	780	608	442	251	114	430
16	105	204	393	1900	362	864	730	568	793	245	105	430
17	119	216	456	1400	391	858	662	536	1060	215	99	359
18	123	215	513	1100	592	978	814	504	1140	192	105	346
19	119	223	537	900	792	1230	3040	475	949	161	100	330
20	109	241	536	780	962	1420	2820	470	747	169	97	348
21	108	241	442	700	1120	1430	2590	440	589	282	98	390
22	117	244	402	644	1570	1440	2670	437	491	346	102	391
23	114	243	365	592	3670	1450	2640	449	401	250	110	387
24	109	239	367	558	5630	1500	2350	484	440	179	144	358
25	137	234	398	566	6020	1550	1870	499	766	148	260	343
26	155	228	426	616	5820	1400	1500	470	795	125	250	378
27	122	234	453	619	5260	1270	1280	472	864	116	240	386
28	116	223	468	647	4120	1140	1180	503	708	109	220	326
29	119	215	443	961	---	1240	1320	472	475	101	300	270
30	130	209	450	1490	---	1440	1380	443	340	104	600	212
31	129	---	500	1670	---	1340	---	726	---	100	1500	---
TOTAL	3635	6822	11102	42678	47230	39354	43212	23915	19236	9796	6118	18984
MEAN	117	227	358	1377	1687	1269	1440	771	641	316	197	633
MAX	155	310	537	5440	6020	3060	3040	1470	1140	1090	1500	2800
MIN	101	116	174	392	362	850	662	437	340	100	94	212
CFSM	.11	.22	.34	1.32	1.62	1.22	1.38	.74	.62	.30	.19	.61
IN.	.13	.24	.40	1.52	1.69	1.40	1.54	.85	.69	.35	.22	.68

CAL YR 1974 TOTAL 350467 MEAN 960 MAX 7000 MIN 89 CFSM .92 IN 12.51
WTR YR 1975 TOTAL 272082 MEAN 745 MAX 6020 MIN 94 CFSM .72 IN 9.71

PEAK DISCHARGE (BASE, 3,500 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1700	7.75	6,000
02-25	0500	7.88	6,280
04-19	1800	6.43	4,020

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 mi^2 (534 km^2).

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.--35 years, 161 ft^3/s (4.560 m^3/s), 10.61 in/yr (270 mm/yr).

EXTREMES.--Current year: Maximum discharge, 2,000 ft^3/s (56.6 m^3/s) Apr. 20, gage height, 8.34 ft (2.542 m); maximum gage height, 10.83 ft (3.301 m) Jan. 11, before channelization; minimum discharge, 16 ft^3/s (0.45 m^3/s) Aug. 14, 15.
Period of record: Maximum discharge, 4,250 ft^3/s (120 m^3/s) Apr. 29, 1956, gage height, 13.82 ft (4.212 m); minimum, 5.0 ft^3/s (0.14 m^3/s) Aug. 9, 1964.

REMARKS.--Records good prior to March 1, and subsequent to Apr. 1, below 350 ft^3/s (9.91 m^3/s). All others fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	28	38	125	279	450	232	398	243	82	21	314
2	20	29	35	105	215	398	198	351	207	72	20	201
3	20	37	33	103	170	328	238	288	189	68	27	143
4	22	50	36	95	140	282	398	253	182	87	31	110
5	23	73	40	80	120	232	434	230	233	72	34	95
6	23	88	45	83	110	201	383	675	258	64	31	92
7	22	75	49	86	100	261	344	1040	194	80	26	74
8	22	62	55	146	90	541	316	617	159	59	23	63
9	23	55	60	786	84	394	295	418	138	52	21	53
10	25	50	60	1070	80	297	277	316	123	44	20	47
11	25	46	78	1530	80	229	246	258	116	40	19	60
12	25	44	65	1320	90	195	216	224	160	37	18	186
13	25	42	58	867	85	219	192	213	174	36	17	107
14	23	40	62	636	80	232	175	198	150	39	17	77
15	21	38	81	468	76	190	163	184	166	39	17	62
16	21	36	139	350	80	190	154	170	235	37	20	53
17	22	36	148	280	90	196	146	158	192	44	22	49
18	21	35	124	220	175	235	177	151	164	95	20	47
19	22	54	103	180	204	300	1260	143	143	97	19	54
20	23	50	92	150	185	355	1760	134	131	88	18	65
21	25	48	86	130	195	328	1100	139	127	62	20	68
22	24	46	77	120	358	307	675	185	118	50	69	60
23	24	45	72	110	1170	319	462	218	107	43	53	53
24	26	44	80	100	1560	312	402	171	106	38	71	48
25	26	44	119	110	1440	342	408	162	139	34	241	44
26	25	43	117	179	1090	298	349	169	179	31	115	42
27	25	43	98	148	778	240	293	179	149	29	83	41
28	25	42	96	129	541	196	288	156	123	26	58	40
29	25	40	87	388	---	235	561	136	106	25	46	38
30	29	39	110	603	---	349	446	128	92	23	72	35
31	28	---	144	398	---	283	---	218	---	22	333	---
TOTAL	731	1402	2487	11095	9665	8934	12588	8280	4803	1615	1602	2421
MEAN	23.6	46.7	80.2	358	345	288	420	267	160	52.1	51.7	80.7
MAX	29	88	148	1530	1560	541	1760	1040	258	97	333	314
MIN	20	28	33	80	76	190	146	128	92	22	17	35
CFSM	.11	.23	.39	1.74	1.67	1.40	2.04	1.30	.78	.25	.25	.39
IN.	.13	.25	.45	2.00	1.75	1.61	2.27	1.50	.87	.29	.29	.44

CAL YR 1974 TOTAL 71699 MEAN 196 MAX 1530 MIN 16 CFSM .95 IN 12.95
WTR YR 1975 TOTAL 65623 MEAN 180 MAX 1760 MIN 17 CFSM .87 IN 11.85

PEAK DISCHARGE (BASE, 1,200 FT^3/S)

DATE	TIME	G.H.	DISCHARGE
01-11	1500	10.83	1,640
02-24	2200	10.87	1,630
04-20	0145	8.34	2,000
05-07	0145	6.07	1,250

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 1975

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (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.44W., Gogebic County, at bridge on State Highway 28, 7 miles southwest of Merriweather, 5.5 miles downstream from Little Presque Isle River, and 2.0 miles east of Tula.	261	1945-73† 1974-75	10-02-73 05-21-75	‡245 a623
*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	1972-75	05-21-75	a987
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† 1971-75	07-01-75	20.6
*04044813	Two Hearted River near Paradise, Mich.	Lat 46°41'57", long 85°25'19", 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	1972-75	12-02-74 04-28-75 05-03-75 05-05-75 07-08-75	186 a1,320 a1,370 a1,300 154
*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 McMahen Creek at bridge on county road, 2 miles upstream from mouth, 3.5 miles south of Brimley.	40.7	1972-75	10-23-74 01-08-75 04-27-75 05-20-75 07-09-75 09-26-75	45.5 23.6 a363 42.7 12.3 23.4
*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	1972-75	10-23-74 01-08-75 04-25-75 05-20-75 09-25-75	25.5 5.95 a435 9.10 3.08
		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	1973-75	11-18-74 02-05-75 06-27-75 07-16-75	391 130 310 187
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 1970-75	10-17-74 11-07-74 11-21-74 01-29-75 04-10-75 05-08-75 06-11-75 07-29-75 09-02-75 09-23-75	a10.1 a20.1 a21.3 a22.3 a28.2 a48.1 a25.1 a18.1 a 4.16 a14.6
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	1972-75	10-17-74 11-19-74 01-29-75 04-09-75 05-08-75 06-12-75 07-29-75 09-02-75 09-23-75	a3.27 a5.62 a2.92 a1.39 a8.14 a4.88 a .37 a7.51 a .73

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
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	1973-75	10-18-74 02-06-75 04-21-75 04-24-75 08-08-75	11.8 4.70 a215 a314 2.30
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	1973-75	10-18-74 02-06-75 06-25-75 08-22-75	132 59.3 a255 5.29
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	1973-75	10-25-74 02-06-75 06-25-75 08-22-75	8.91 4.73 15.0 0
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	1971-75	10-24-74 04-03-75	23.1 15.5
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	1972-75	11-14-74 02-07-75 05-19-75 07-31-75	a203 25.2 172 12.6
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	1971-75	11-19-74 03-19-75 05-14-75	1.15 .98 1.45
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	1971-75	11-19-74 03-19-75 05-14-75	a 11.7 a 12.4 a 5.79
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	1971-75	11-19-74 03-18-75 05-14-75	a 13.6 a 9.22 a 13.4
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	1971-75	11-19-74 03-18-75 05-14-75	1.49 .73 3.54
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	1971-75	11-19-74 03-18-75 05-14-75	2.06 1.32 3.66
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	1973-75	10-25-74 01-20-75 06-25-75 08-22-75	8.46 6.70 10.7 2.01
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	1969-75	11-01-74 12-20-74 08-08-75 09-24-75	.21 .25 .48 .28
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	1974-75	10-29-74 11-27-74 01-02-75 02-12-75 03-20-75 04-24-75 05-29-75 07-02-75 09-18-75	71.1 105 74.3 86.9 a251 a223 119 45.5 121

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
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	1974-75	10-25-74 11-26-74 05-29-75 09-16-75	a24.5 43.3 28.4 33.2
*04120295	Black Creek near Muskegon, Mich.	Lat 43°12'14" long 86°09'52", in NE¼ 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.		1974-75	10-02-74 11-05-74 03-11-75 04-15-75 05-20-75 07-02-75	30.0 41.9 57.2 66.2 55.4 a53.0
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, at upstream side of bridge on highway U.S. 131 in Howard City.	85.4	1973-75	07-02-75	35.1
*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 county road, 0.85 miles downstream from hydroelectric plant on Hart Lake, 1.8 miles northwest of Hart.		1974-75	12-11-74 02-12-75 05-21-75 07-03-75	80.5 a154 a87.7 94.4
*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.		1974-75	11-06-74 05-21-75 07-03-75	53.5 52.0 41.7
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	1973-75	07-02-75	124
*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 at bridge on highway U.S.31, 3.4 miles northwest of Freesoil, and 7 miles upstream from Hamlin Lake	127	1942-73† 1974-75	11-06-74 04-16-75 07-03-75	123 182 123
*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† 1974-75	04-07-75 07-11-75	173 203
*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.		1974-75	10-03-74 12-18-74 01-08-75 02-05-75 03-20-75 04-09-75 05-15-75 07-14-75	166 224 203 223 248 299 280 209
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	1974-75	10-03-74 01-08-75 02-05-75 03-20-75 04-09-75 07-14-75	2.47 3.33 6.83 19.2 29.8 a34.8
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 hydroelectric plant in Elk Rapids, 500 ft upstream from mouth.	513	1973-75	10-10-74 11-11-74 12-19-74 01-20-75 04-09-75 07-14-75 08-26-75	717 766 581 480 809 337 877

Discharge measurements made at low-flow partial-record stations during water year 1975--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
*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 culvert 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.		1974-75	10-09-74 11-14-74 12-17-74 01-16-75 02-18-75 03-24-75 04-09-75 07-15-75	90.7 94.8 92.3 93.4 88.4 a119 89.2 a157
		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 downstream side of bridge on State Highway 55, in Tawas City.	156	1973-75	--	See Table III
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	1973-75	03-26-75 04-10-75	ad276 ad247
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 and 1.5 miles southeast of Lapeer.	77.9	1973-75	10-17-74 11-19-74 07-23-75 09-30-75	22.6 39.4 18.3 46.0
*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	1974-75	10-17-74 11-20-74 06-16-75 07-23-75 09-30-75	43.4 68.6 a169 33.6 88.5
		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	1956-75	10-18-74 11-20-74	11.4 16.8
*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	1974-75	10-18-74 11-20-74 07-21-75 09-30-75	2.21 7.04 3.76 9.88
		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.12E., at Inwood Road, Macomb County, 5.2 miles northeast of Goodison.	34.6	1972-75	10-23-74 11-19-74 06-03-75 07-09-75 08-13-75	19.3 26.0 24.7 15.7 21.4
		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	1967-75	06-02-75 07-10-75 08-14-75	20.5 14.7 11.3
*04177080	East Branch St. Joseph River nr 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	1974-75	11-01-74 12-20-74 05-01-75 07-11-75 09-16-75	15.1 a38.6 a196 16.3 18.4

* Also a crest-stage station.
† Operated as a continuous-record station.
‡ Not published in 1974 report.
a Not base flow
b Since 1970, affected by diversion for industrial use
c Approximately.
d Discharge measurement made by employee's of Michigan Department of Natural Resources.

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 1975

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (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.48N., R.44W., Gogebic County, at bridge on State Highway 28, 7 miles southwest of Merriweather, 5.5 miles downstream from Little Presque Isle River and 2.0 miles east of Tula.	261	1945-73‡, 1974-75	04-25-75	11.68	2,800
*04032150	Presque Isle River near Connorville, Mich.	Lat 46°41'46", long 89°58'26", in SE¼ sec.30, T.50N., R.45W., Gogebic County, at bridge on South Boundary Road, 1.0 mile upstream from mouth, and 10 miles north of Connorville.	358	1972-75	04-25-75	9.07	4,750
04039500	South Branch Ontonagon River at Ewen, Mich.	Lat 46°31'58", long 89°16'37", in NW¼ sec.26, T.48N., R.40W., Ontonagon County, on piers of old State Highway 28 bridge at Ewen.	348	1939-41, 1942-71‡, 1972-75	04-25-75	16.95	5,300
04041000	Perch River near Sidnaw, Mich.	Lat 46°31'06", long 88°39'48", in NE¼ sec.34, T.48N., R.35W., Baraga County, at State Highway 28, 2.5 miles east of Sidnaw.	63.1	1913-15‡, 1957-75	04-28-75	9.59	516
04042500	Otter River near Elo, Mich.	Lat 46°50'09", long 88°38'12", in NE¼ NE¼ sec.8, T.51N., R.34W., Houghton County, 50 ft upstream from highway bridge, 1.6 miles north of Pelkie, 2.5 miles south of Elo, and 5.5 miles upstream from Otter Lake.	162	1943-72‡, 1973-75	04-24-75	6.78	1,910
04044200	Carp Creek at Ishpeming, Mich.	Lat 46°29'11", long 87°41'21", in NW¼ sec.9, T.47N., R.27W., Marquette County, at bridge on Highway 41A at Ishpeming.	16.5	1970-75	04-24-75	7.27	223
*04044813	Two Hearted River near Paradise, Mich.	Lat 46°41'57", long 85°25'19", in NW¼ SW¼ sec.27, T.50N., R.9W., Luce County, at foot bridge in State Forest Campground, 0.4 mile upstream from mouth, and 18 miles northwest of Paradise.	201	1973-75	05-02-75	7.71	1,520
*04045538	West Branch Waiska River near Brimley, Mich.	Lat 46°21'18", long 84°35'35", in SW¼ NW¼ sec.29, T.46N., R.2W., Chippewa County, at bridge on county road, 3.2 miles upstream from mouth, and 3.5 miles south of Brimley.	40.7	1973-75	06-18-75	8.15	845
*04045559	East Branch Waiska River near Brimley, Mich.	Lat 46°25'07", long 84°28'24", in NW¼ NE¼ sec.6, T.46N., R.1W., Chippewa County, at bridge on county road, 4.0 miles upstream from mouth, and 4.7 miles east of Brimley.	31.9	1973-75	06-18-75	13.20	878
		Streams tributary to Lake Michigan					
04049500	Manistique River at Germfask, Mich.	Lat 46°14'00", long 85°55'40", in SE¼ sec.4, T.44N., R.13W., Schoolcraft County, 600 ft upstream from bridge on State Highway 77, 1.0 mile south of Germfask.	341	1938-70‡, 1971-75	04-27-75	5.30	1,230
04055000	Manistique River near Blaney, Mich.	Lat 46°05'05", long 86°03'35", in SE¼ sec. 28, T.43N., R.14W., Schoolcraft County, 40 ft downstream from logging bridge, 0.5 mile downstream from Duck Creek, 7 miles southwest of Blaney.	704	1938-70‡, 1971-75	04-27-75	17.94	4,920

See footnotes on page

Annual maximum discharge at crest-stage partial-record stations during water year 1975--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 Michigan--Continued					
04057000	Indian River near Manistique, Mich.	Lat 45°59'30", long 86°17'15", in NE¼ sec.34, T.42N., R.16W., Schoolcraft County, near outlet of Indian Lake, 2.4 miles northwest of Manistique.	302	1938-71‡, 1972-75	05-05-75	5.41	857
04057900	Black River near Republic, Mich.	Lat 46°25'08", long 87°53'21", in NE¼ sec.2, T.46N., R.29W., Marquette County, at bridge on county road, 4.4 miles east of Republic.	34.4	1961-68‡, 1970-75	05-05-75	4.20	390
04096020	Galien River near Union Pier, Mich.	Lat 41°49'39", long 86°39'21", in NE¼ sec.32, T.7S., R.20W., Berrien County, on downstream side of bridge on Union Pier Rd., 1.5 miles east of Union Pier.	86.1	1973-75	04-19-75	8.27	531
04097060	Little Portage Creek near Fulton, Mich.	Lat 42°05'19", long 85°23'29", in SW¼ sec.29, T.4S., R.9W., Kalamazoo County, at bridge on 38th St., 2.8 miles southwest of Fulton.	27.0	1965-67‡, 1972-75	09-03-75	5.82	222
04097370	Flowerfield Creek at Flowerfield, Mich.	Lat 42°03'50", long 85°39'44", in SW¼ sec.1, T.5S., R.12W., St. Joseph County, at Flowerfield Rd., at Flowerfield.	42.6	1964-75	08-30-75	1.71	53
04112700	Sycamore Creek near Mason, Mich.	Lat 42°36'38", long 84°27'58", in NE¼ NE¼ sec.31, T.3N., R.1W., Ingham County, at bridge on Harper Road, 0.7 mile downstream from Aurelius and VeVoy Drain, and 2.6 miles northwest of Mason.	39.5	1975	04-19-75	12.53	1,080
04113090	Carrier Creek near Grand Ledge, Mich.	Lat 42°43'36", long 84°39'16", in SE¼ SW¼ sec.15, T.4N., R.3W., Eaton County, at bridge on St. Joe Avenue, 3.7 miles upstream from mouth, and 4.0 miles southeast of Grand Ledge	7.18	1975	04-18-75	8.03	316
04119055	Plaster Creek at Grand Rapids, Mich.	Lat 42°54'46", long 85°39'02", in SE¼ sec.7, T.6N., R.11W., Kent County, on right downstream side of bridge on 28th Street, at Grand Rapids.	46.6	1974-75	01-11-75	9.27	715
04119160	Buck Creek at Grandville, Mich.	Lat 42°54'09", long 85°45'46", in SE¼ sec.18, T.6N., R.12W., Kent County, on right downstream side of bridge on Wilson Avenue, at Grandville.	50.5	1974-75	01-11-75	8.01	540
*04120295	Black Creek near Muskegon, Mich.	Lat 43°12'14", long 86°09'52", in NW¼ NW¼ sec.1, T.9N., R.16W., Muskegon County, at bridge on Mill Iron Rd., 4.8 miles east of Muskegon.	a39	1974-75	08-31-75	3.92	310
04121000	Muskegon River near Merritt, Mich.	Lat 44°20'08", long 84°53'24", in NW¼ NW¼ sec.2, T.22N., R.5W., Missaukee County, on right bank 35 ft upstream from bridge on State Highway 55, 2.7 miles east of Merritt.	355	1946-73‡, 1974-75	09-03-75	7.28	741
*04122223	Pentwater River near Hart, Mich.	Lat 43°43'27", long 86°22'36", in NW¼ SW¼ sec.5, T.15N., R.17W., Oceana County, at culverts on county road, 0.8 mile downstream from hydroelectric plant on Hart Lake, 1.8 miles northwest of Hart.	a78	1975	09-01-75	4.79	205
*04122230	North Branch Pentwater River near Pentwater, Mich.	Lat 43°47'42", long 86°21'30", in NE¼ SE¼ sec.8, T.16N., R.17W., Oceana County, at bridge on highway U.S. 31, 3.5 miles northwest of Pentwater.	a44	1975	09-01-75	3.62	346
*04123000	Big Sable River near Freesoil, Mich.	Lat 44°07'13", long 86°16'48", in NE¼ NE¼ sec.24, T.20N., R.17W., Mason County, at bridge on highway U.S. 31, 3.4 miles northwest of Freesoil.	127	1942-73‡, 1974-75	09-03-75	--	470

Annual maximum discharge at crest-stage partial-record stations during water year 1975--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 Michigan--Continued					
*04123500	Manistee River near Grayling, Mich.	Lat 44°41'35", long 84°50'50", in SW¼ NW¼ sec.31, T.27N., R.4W., Crawford County, on right bank 25 ft upstream from bridge on State Highway 72, 6.8 miles northwest of Grayling.	159	1942-73‡, 1974-75	04-20-75	1.50	324
04124500	East Branch Pine River near Tustin, Mich.	Lat 44°06'09", long 85°31'02", in NE¼ NW¼ sec.28, T.20N., R.10W., Osceola County, 75 ft downstream from highway bridge, 3.0 miles west of Tustin.	a63	1953-63‡, 1964-75	09-01-75	4.41	250
04126600	Betsie River near Benzonia, Mich.	Lat 44°36'02", long 86°05'57", in NW¼ NW¼ sec.2, T.25N., R.15W., Benzie County, at bridge on highway U.S. 31, 1.2 miles south of Benzonia.	a170	1975	03-24-75	3.68	720
*04127850	Boyne River near Boyne City, Mich.	Lat 45°11'48", long 84°57'26", in NW¼ SW¼ sec.5, T.32N., R.5W., Charlevoix County, at culvert on Dam Rd., 0.3 mile downstream from nonoperative hydroelectric plant, 2.8 miles southeast of Boyne City.	a65	1975	07-19-75	3.93	662
		Streams tributary to Lake Huron					
04132000	Black River near Cheboygan, Mich.	Lat 45°29'59", long 84°19'36", in NW¼ NW¼ sec.21, T.36N., R.1E., Cheboygan County, on left bank 0.3 mile downstream from Black Lake, 5.3 miles upstream from Alvarns Dam, and 12.6 miles southeast of Cheboygan.	597	1942-74‡, 1975	04-30-75	4.30	2440
04132500	Thunder Bay River near Hillman, Mich.	Lat 45°00'30", long 83°58'21", in NE¼ SE¼ sec.8, T.30N., R.4E., Montmorency County, on left bank 25 ft upstream from bridge on State Highway 32, 5.2 miles southwest of Hillman.	232	1946-72‡, 1973-75	04-20-75	8.65	945
04138000	East Branch Au Gres River at McIvor, Mich.	Lat 44°13'57", long 83°42'03", in NW¼ NW¼ sec.10, T.21N., R.6E., Iosco County, on right bank 25 ft downstream from bridge on Whittemore Road at McIvor, and 11.5 miles upstream from mouth.	a84	1950-73, 1974-75	03-25-75	3.98	163
04138600	Gamble Creek at Lupton, Mich.	Lat 44°25'26", long 84°01'32", in SW¼ SW¼ sec.36, T.24N., R.3E., Ogemaw County, at culvert on Lupton Road, 0.5 mile south of Lupton.	9.47	1953-56, 1959-75	03-20-75	3.40	53
04138700	Bixby Creek near Rose City, Mich.	Lat 44°26'06", long 84°07'16", in NE¼ NW¼ sec 31, T.24N., R.3E., Ogemaw County, at bridge on State Highway 33, 0.9 mile north of Rose City.	2.68	1953-75	03-20-75	3.17	62
04138800	Houghton Creek at Rose City, Mich.	Lat 44°25'17", long 84°06'34", in NE¼ NE¼ sec.6, T.23N., R.3E., Ogemaw County, at bridge on Rose City Road, 0.3 mile east of Rose City.	13.3	1953-75	03-20-75	2.04	186
04138900	Wilkins Creek near Rose City, Mich.	Lat 44°24'18", long 84°06'59", in NE¼ NW¼ sec.7, T.23N., R.3E., Ogemaw County, at bridge on State Highway 33, 1.1 miles south of Rose City.	9.15	1953-75	3-20-75	2.58	90
04139000	Houghton Creek near Lupton, Mich.	Lat 44°23'45", long 84°02'50", in SE¼ SE¼ sec.10, T.23N., R.3E., Ogemaw County, 2.7 miles southwest of Lupton.	29.7	1950-72‡, 1973-75	03-20-75	4.54	214
04139500	Rifle River at "The Ranch" near Lupton, Mich.	Lat 44°23'36", long 84°02'18", in SE¼ SW¼ sec.11, T.23N., R.3E., Ogemaw County, at downstream side of bridge, 2.7 miles south of Lupton.	56.8	1951-71‡, 1972-75	03-20-75	8.81	354

Annual maximum discharge at crest-stage partial-record stations during water year 1975--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.23N., R.3E., Ogemaw County, on right bank 20 ft upstream from culverts on Peters Road, 1.5 miles north of Selkirk.	21.4	1950-72‡, 1973-75	09-01-75	4.97	174
04140200	Klacking Creek near Selkirk, Mich.	Lat 44°20'05", long 84°08'46", in NE¼ NE¼ sec.2, T.22N., R.2E., Ogemaw County, at bridge on Campbell Road, 4.0 miles northwest of Selkirk.	7.51	1953-75	03-20-75	1.36	66
04141100	Shepards Creek near Selkirk, Mich.	Lat 44°18'27", long 84°05'05", in SE¼ SE¼ sec.8, T.22N., R.3E., Ogemaw County, at bridge on Bedtelyon Road, 1.1 miles southwest of Selkirk.	4.44	1953-75	03-20-75	3.70	107
04144180	Jones Creek near Gaines, Mich.	Lat 42°53'02", long 83°52'27", in SE¼ sec.28, T.6N., R.5E., Genesee County, at bridge on Baldwin Road, 1.7 miles northeast of Gaines.	7.60	1970-75	04-19-75	9.04	190
04144200	Porter Drain near Gaines, Mich.	Lat 42°53'26", long 83°50'59", in SE¼ sec.27, T.6N., R.5E., Genesee County, at bridge on Seymour Road, 3.2 miles east of Gaines.	4.68	1970-75	04-19-75	5.83	135
04144220	Jones Creek at Duffield, Mich.	Lat 42°54'45", long 83°54'27", in SE¼ sec.17, T.6N., R.5E., Genesee County, at bridge on Grand Blanc Road, 1.0 mile south of Duffield.	23.4	1970-75	04-19-75	9.28	656
*04146020	South Branch Flint River near Millville, Mich.	Lat 43°04'44", long 83°18'25", in SE¼ sec.29, T.8N., R.10E., Lapeer County, on downstream right wingwall of bridge on Saginaw Road, 1.6 miles north of Lapeer.	160	1974-75	04-20-75	9.65	1,230
04147800	Powers-Cullen Drain near Genesee, Mich.	Lat 43°05'33", long 83°33'31", in SE¼ sec.18, T.8N., R.8E., Genesee County, at bridge on Coldwater Road, 3.3 miles southeast of Genesee.	9.17	1970-75	04-19-75	b5.30	c320
04147900	Lefler-Scothan Drain near Otisville, Mich.	Lat 43°08'11", long 83°32'27", in NE¼ sec.5, T.8N., R.8E., Genesee County, at bridge on Frances Road, 2.2 miles south of Otisville.	4.90	1970-75	04-19-75	5.02	115
04148120	Kearsley Creek near Atlas, Mich.	Lat 42°57'15", long 83°32'42", in NE¼ sec.5, T.6N., R.8E., Genesee County, at bridge on Jordan Road, 1.2 miles north of Atlas.	55.7	1970-75	04-20-75	7.91	620
04148139	Black Creek near Davison, Mich.	Lat 43°01'28", long 83°33'24", in SE¼ sec.7, T.7N., R.8E., Genesee County, at bridge on Irish Road, 2.0 miles west of Davison.	22.8	1970-75	04-20-75	7.50	460
04148144	Chipmunk Creek near Genesee, Mich.	Lat 43°04'01", long 83°36'59", in SE¼ sec.27, T.8N., R.7E., Genesee County, at bridge on Genesee Road, 3.1 miles south of Genesee.	5.50	1970-75	04-19-75	d5.45	c190
04148255	Swartz Creek near Grand Blanc, Mich.	Lat 42°53'09", long 83°41'29", in SE¼ sec.25, T.6N., R.6E., Genesee County, at bridge on Baldwin Road, 4.1 miles southwest of Grand Blanc.	36.0	1970-75	04-19-75	5.65	210
04148260	Swartz Creek near Swartz Creek, Mich.	Lat 42°58'22", long 83°45'43", in SW¼ sec.28, T.7N., R.6E., Genesee County, at bridge on Bristol Road, 3.9 miles east of Swartz Creek.	67.2	1970-75	04-19-75	11.09	1,600
04148265	Kimball Drain near Swartz Creek, Mich.	Lat 42°55'15", long 83°49'51", in NE¼ sec.14, T.6N., R.5E., Genesee County, at bridge on Morrish Road, 2.4 miles south of Swartz Creek.	10.6	1970-75	04-19-75	9.21	300

Annual maximum discharge at crest-stage partial-record stations during water year 1975--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					
04148270	West Branch Swartz Creek near Swartz Creek, Mich.	Lat 42°58'22", long 83°46'08", in SW¼ sec.28, T.7N., R.6E., Genesee County, at bridge on Bristol Road, 3.2 miles east of Swartz Creek.	40.8	1970-75	04-19-75	11.03	1,770
04148410	Thread Creek near Goodrich, Mich.	Lat 42°53'19", long 83°32'10", in SE¼ sec.29, T.6N., R.8E., Genesee County, at bridge on Baldwin Road, 2.4 miles southwest of Goodrich.	28.5	1970-75	04-19-75	7.75	355
04148610	Cole Creek near Flushing, Mich.	Lat 43°02'44", long 83°51'06", in SW¼ sec.35, T.8N., R.5E., Genesee County, at bridge on Potter Road, 1.2 miles south of Flushing.	8.51	1970-75	04-19-75	6.60	210
04148620	Freeman Drain near Montrose, Mich.	Lat 43°07'04", long 83°53'37", in SE¼ sec.5, T.8N., R.5E., Genesee County, at bridge on Mt. Morris Road, 4.0 miles south of Montrose.	8.21	1970-75	04-19-75	6.34	290
04148640	Armstrong Creek near Montrose, Mich.	Lat 43°08'04", long 83°50'03", in SE¼ sec.35, T.9N., R.5E., Genesee County, at bridge on Morrish Road, 4.1 miles southeast of Montrose.	11.0	1970-75	08-24-75	6.03	250
04148740	Central-Stadler Drain near Montrose, Mich.	Lat 43°09'46", long 83°50'14", in SE¼ sec.23, T.9N., R.5E., Genesee County, at bridge on Wilson Road, 3.1 miles east of Montrose.	14.2	1970-75	04-19-75	6.11	340
04148800	Pine Run near Montrose, Mich.	Lat 43°12'42", long 83°48'54", in SE¼ sec.1, T.9N., R.5E., Genesee County, at bridge on Elms Road, 4.7 miles northeast of Montrose.	27.8	1970-75	04-19-75	8.87	670
04148900	Silver Creek near Clio, Mich.	Lat 43°12'54", long 83°45'55", in NW¼ sec.4, T.9N., R.6E., Genesee County, at bridge on Weir Road, 3.0 miles northwest of Clio.	4.01	1970-75	04-19-75	3.85	100
04149300	Misteguay Creek near Flushing, Mich.	Lat 43°01'31", long 83°54'41", in NE¼ sec.7, T.7N., R.5E., Genesee County, at bridge on Duffield Road, 3.7 miles southwest of Flushing.	17.4	1970-75	04-19-75	10.56	1,150
04151000	Cass River at Vassar, Mich.	Lat 43°22'15", long 83°34'52", in NW¼ SW¼ sec.7, T.11N., R.8E., Tuscola County, at bridge on State Highway 15, at Vassar.	700	1949-70‡, 1971-75	04-20-75	14.04	7,750
04153500	Salt River near North Bradley, Mich.	Lat 43°42'10", long 84°28'14", in NE¼ SE¼ sec.7, T.15N., R.1W., Midland County, at bridge on North Saginaw Road, 1.1 miles southeast of North Bradley.	138	1935-71‡, 1972-75	09-01-75	17.9	8,200
04154500	Chippewa River near Midland, Mich.	Lat 43°35'40", long 84°22'10", in NE¼ NE¼ sec.24, T.14N., R.1W., Midland County, on upstream side of bridge on Meridian Road, 6.5 miles southwest of Midland.	597	1947-72‡, 1973-75	05-19-74 09-02-75	6.40 8.53	e4,540 6,960
		Streams tributary to St. Clair River					
*04160350	Pine River near Rattle Run, Mich.	Lat 42°52'49", long 82°34'04", in NE¼ sec.9, T.5N., R.16E., St. Clair County, on right downstream wingwall of bridge on Gratiot Road, 1.9 miles northeast of Rattle Run.	135	1974-75	04-19-75	23.87	5,400

Annual maximum discharge at crest-stage partial-record stations during water year 1975--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 St. Clair					
04161760	West Branch Stony Creek near Washington, Mich.	Lat 42°43'53", long 83°06'02", in SE¼ sec.25, T.4N., R.11E., Oakland County, at bridge on Huron-Clinton Metropolitan Park Road, and 3.4 miles west of Washington.	22.5	1965-75	04-19-75	4.42	470
04164010	North Branch Clinton River at Almont, Mich.	Lat 42°54'59", long 83°02'42", in NE¼ sec.28, T.6N., R.12E., Lapeer County, at bridge on State Highway 53, at Almont.	9.56	1959-62, 1963-68‡, 1969-75	04-19-75	8.62	691
04164050	North Branch Clinton River near Romeo, Mich.	Lat 42°49'11", long 82°58'35", in NW¼ sec.31, T.5N., R.13E., Macomb County, at bridge on 33-Mile Road, 2.2 miles northeast of Romeo.	49.7	1959-64, 1965-69‡, 1970-75	04-19-75	5.54	3,500
04164150	North Branch Clinton River near Meade, Mich.	Lat 42°43'50", long 82°54'23", in NE¼ sec.34, T.4N., R.13E., Macomb County, on left bank at bridge on 27-Mile Road, 1.9 miles northwest of Meade.	89.6	1959-67, 1968-72‡, 1973-75	04-19-75	7.76	4,500
04164200	Coon Creek near Armada, Mich.	Lat 42°47'41", long 82°52'58", in SW¼ sec.1, T.4N., R.13E., Macomb County, at bridge on North Road, 3.4 miles south of Armada	10.0	1959-65, 1966-70‡, 1971-75	04-19-75	6.25	480
04164250	Tupper Brook at Ray Center, Mich.	Lat 42°45'42", long 82°54'04", in NW¼ sec.23, T.4N., R.13E., Macomb County, at bridge on 29-Mile Road, at Ray Center.	8.62	1959, 1960-64‡, 1965-75	04-19-75	6.80	410
04164350	Highbank Creek near Armada, Mich.	Lat 42°28'24", long 82°51'08", in NW¼ sec.6, T.4N., R.14E., Macomb County, at bridge on 32-Mile Road, 3.0 miles southeast of Armada.	14.9	1959-65, 1966-70‡, 1971-75	04-19-75	15.88	1,890
04164360	East Branch Coon Creek near New Haven, Mich.	Lat 42°45'46", long 82°50'57", in NW¼ sec.19, T.4N., R.14E., Macomb County, at bridge on 29-Mile Road, 3.4 miles northwest of New Haven.	36.1	1959-67, 1967-72‡, 1973-75	04-19-75	8.95	2,700
04164400	Deer Creek near Meade, Mich.	Lat 42°42'39", long 82°51'32", in NW¼ sec.6, T.3N., R.14E., Macomb County, at bridge on 25½-Mile Road, 0.9 mile southeast of Meade.	12.7	1959-60, 1961-65‡, 1966-75	04-19-75	8.47	624
04164450	McBride Drain near Macomb, Mich.	Lat 42°41'14", long 82°55'14", in NE¼ NE¼ sec.16, T.3N., R.13E., Macomb County at bridge on 24-Mile Road, 2.2 miles southeast of Macomb.	5.79	1960-64‡, 1965-75	04-19-75	9.17	153
04164600	Middle Branch Clinton River near Macomb, Mich.	Lat 42°42'03", long 82°59'44", in SE¼ sec.2, T.3N., R.12E., Macomb County, at bridge on Schoenherr Road, 2.0 miles west of Macomb.	22.2	1959-64, 1965-69‡, 1971-75	04-19-75	11.80	1,220
04165200	Gloede Ditch near Waldenburg, Mich.	Lat 42°37'39", long 82°57'10", in SW¼ sec.32, T.3N., R.13E., Macomb County, 2.2 miles south of Waldenburg.	16.0	1959, 1960-64‡, 1965-75	04-19-75	17.20	374
		Streams tributary to Detroit River					
04166650	Johnson Drain near Brookville, Mich.	Lat 42°22'52", long 83°33'18", in SE¼ sec.24, T.1S., R.7E., Washtenaw County, on right downstream side of bridge on Napier Road, 1.2 miles east of Brookville.	11.5	1974-75	02-24-75	7.76	f190
04167325	Fowler Creek near Willow Run, Mich.	Lat 42°16'37", long 83°33'51", in SW¼ sec.25, T.2S., R.7E., Washtenaw County, on right downstream side of bridge on Gotfredson Road, 1.4 miles northeast of Willow Run.	4.26	1974-75	01-10-75	5.63	f55

Annual maximum discharge at crest-stage partial-record stations during water year 1975--Continued

Station number	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Streams tributary to Detroit River--Continued					
04168660	Frank and Poet Drain at Trenton, Mich.	Lat 42°09'19", long 83°12'22", in NW¼ sec.13, T.4S., R.10E., Wayne County, at bridge on King Road, at Trenton.	19.3	1972-75	02-24-75	7.90	237
		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.3N., R.8E., Oakland County, on downstream side of culvert on White Lake Road, 2.5 miles south of Andersonville.	14.0	1974-75	04-19-75	3.17	120
04172050	O'Connor Drain near Whitmore Lake, Mich.	Lat 42°32'55", long 83°44'46", in NE¼ sec.17, T.1S., R.6E., Washtenaw County on right downstream side of bridge on Sixmile Road, 2.8 miles south of Whitmore Lake.	9.71	1974-75	04-19-75	4.83	f59
04172198	Arms Creek near Whitmore Lake, Mich.	Lat 42°24'47", long 83°50'44", in SE¼ sec.4, T.1S., R.5E., Washtenaw County, on right downstream side of bridge on Walsh Road, 4.4 miles west of Whitmore Lake.	17.5	1974-75	02-24-75	6.67	f130
04172500	Portage River near Pinckney, Mich.	Lat 42°25'40", long 83°57'35", in SW¼ sec.34, T.1N., R.4E., Livingston County, at bridge on Tiplady Road, 2.0 miles upstream from Little Portage Lake, and 2.2 miles southwest of Pinckney.	79.1	1945-71‡, 1972-75	04-19-75	3.63	148
04173000	Huron River near Dexter, Mich.	Lat 42°23'10", long 83°54'40", in S½ sec.13, T.1S., R.4E., Washtenaw County, at bridge on North Territorial Road, 0.5 mile east of Hudson Mills, 2 miles downstream from Portage Lake Outlet, and 4 miles north of Dexter.	522	1946-72‡, 1973-75	04-27-75	5.41	1,450
04173150	Mill Creek near Sylvan, Mich.	Lat 42°15'06", long 84°02'02", in SW¼ sec.36 T.2S., R.3E., Washtenaw County, on right downstream side of bridge on Manchester Road (M-52), 3.3 miles southwest of Sylvan.	11.1	1974-75	--	g	<80
04173155	Pleasant Lake Extension Drain near Sylvan, Mich.	Lat 42°14'51", long 84°01'46", in NW¼ sec.1, T.3S., R.3E., Washtenaw County, at left downstream side of bridge on Waldo Road, 3.7 miles southeast of Sylvan.	23.8	1974-75	04-19-75	7.69	f67
04173250	Mill Creek near Lima Center, Mich.	Lat 42°15'56", long 83°56'45", in NE¼ sec.34, T.2S., R.4E., Washtenaw County, at Guenther Rd., 2.0 miles upstream from North Fork Mill Creek, and 2.2 miles south of Lima Center.	47.3	1973-75	08-31-75	10.16	640
04173320	Letts Creek at Chelsea, Mich.	Lat 42°19'29", long 84°01'15", in NE¼ sec.12, T.2S., R.3E., Washtenaw County, on left downstream side of bridge on Manchester Road (M-52), at Chelsea.	18.8	1974-75	02-24-75	7.06	f89
04173350	North Fork Mill Creek near Lima Center, Mich.	Lat 42°17'15", long 83°56'14", in SW¼ sec.23, T.2S., R.4E., Washtenaw County, on right downstream side of bridge on Dancer Road, 1.2 miles southeast of Lima Center.	59.0	1974-75	02-24-75	7.00	f285
04173400	Frey Fitzsimmons Drain near Lima Center, Mich.	Lat 42°16'56", long 83°54'24", in NE¼ sec.25, T.2S., R.4E., Washtenaw County, on left downstream side of bridge on Jerusalem Road, 2.8 miles southeast of Lima Center.	6.53	1974-75	02-24-75	5.68	f86

Annual maximum discharge at crest-stage partial-record stations during water year 1975--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					
04174300	Honey Creek near Foster, Mich.	Lat 42°18'34", long 83°48'28", in NE¼ sec.14, T.2S., R.5E., Washtenaw County, on right downstream side of bridge on Miller Road, 1.4 miles west of Foster.	22.3	1974-75	02-24-75	6.25	f150
04174509	Traver Creek at Ann Arbor, Mich.	Lat 42°17'26", long 83°44'10", in SE¼ sec.21, T.2S., R.6E., Washtenaw County, on right downstream side of bridge on Broadway Street, at Ann Arbor.	6.99	1974-75	02-24-75	5.75	f66
04174518	Pittsfield-Ann Arbor Drain at Ann Arbor, Mich.	Lat 42°15'53", long 83°41'18", in SE¼ sec.35, T.2S., R.6E., Washtenaw County, on left downstream side of bridge on Chalmers Drive, at Ann Arbor.	10.9	1974-75	04-19-75	5.39	f410
04174522	Swift Drain at Ann Arbor, Mich.	Lat 42°15'53", long 83°40'37", in NW¼ sec.36, T.2S., R.6E., Washtenaw County, on right downstream side of bridge on Huron River Drive East, at Ann Arbor.	4.79	1974-75	04-19-75	6.81	f39
04174680	Fleming Creek at Dixboro, Mich.	Lat 42°19'05", long 83°38'16", in NW¼ sec.17, T.2S., R.7E., Washtenaw County, on right downstream side of bridge on Ford Road (M-153), 1.0 mile east of Dixboro.	15.0	1974-75	02-24-75	8.16	f195
04175290	Sugar Creek near Oakville, Mich.	Lat 42°05'54", long 83°36'31", in NE¼ sec.33, T.4S., R.7E., Washtenaw County, on right downstream side of bridge on Fuller Road, 1.7 miles northwest of Oakville.	13.5	1974-75	02-24-75	7.94	f155
04175310	Paint Creek near Ypsilanti, Mich.	Lat 42°12'22", long 83°37'16", in SW¼ sec.21, T.3S., R.7E., Washtenaw County, on left downstream side of bridge on Stony Creek Road, 2.0 miles south of Ypsilanti.	15.3	1974-75	02-24-75	8.69	f115
04175330	Paint Creek at Oakville, Mich.	Lat 42°05'44", long 83°35'18", in NE¼ sec.34, T.4S., R.7E., Washtenaw County, on right downstream side of bridge on Liss Road, 1.0 mile north of Oakville.	34.9	1974-75	02-24-75	8.96	f310
04175650	Iron Creek near Clinton, Mich.	Lat 42°05'37", long 83°59'17", in SW¼ sec.29, T.4S., R.4E., Washtenaw County, on right downstream side of bridge on Bartlet Road, 1.7 miles north of Clinton	28.8	1974-75	02-24-75	h5.57	f103
04176356	Saline River near Bridgewater, Mich.	Lat 42°09'38", long 83°50'40", in NE¼ sec.4, T.4S., R.5E., Washtenaw County, on right downstream side of bridge on Austin Road, 3.0 miles east of Bridgewater.	41.6	1974-75	01-11-75	9.22	f420
04176370	Saline River tributary near Saline, Mich.	Lat 42°10'34", long 83°49'17", in SE¼ sec.34, T.3S., R.5E., Washtenaw County, on right downstream side of bridge on Saline Waterworks Road, 2.2 miles northwest of Saline.	13.2	1974-75	01-11-75	6.24	f190
04176380	Wood Outlet Drain at Saline, Mich.	Lat 42°10'37", long 83°47'17", in NW¼ sec.36, T.3S., R.5E., Washtenaw County, on downstream side of bridge on Saline Waterworks Road, 0.8 mile north of Saline.	13.7	1974-75	01-11-75	i5.82	c195

* Also a low-flow partial-record station.
‡ Operated as a continuous-record gaging station.
a Approximately.
b Occurred Apr. 22, 1975 (backwater from Flint River).
c Computed on basis of correlation with nearby stations.
d Occurred Apr. 21, 1975 (backwater from Kearsley Reservoir).
e Revised from 1974 report.
f Maximum discharge for period Oct. 1, 1974 to Aug. 20, 1975.
g Peak stage did not reach bottom of gage.
h Maximum gage-height, 5.59 ft, Jan. 11, 1975 (backwater from ice).
i Backwater from ice.

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 1975

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Superior				
Welsh Creek	Montreal River	Lat 46°29'30", long 90°10'23", in NW¼ NW¼ sec.10, T.47N., R.47W., Gogebic County, above county road above Ironwood Township sewage plant, 2 miles north of Ironwood, Mich.	a 5	1969-70	08-06-75	* 0.33
Montreal River	Lake Superior	Lat 46°30'26", long 90°13'47", in SE¼ SW¼ sec.31, T.48N., R.47W., Michigan meridian, Gogebic County, 0.2 mile above Spring Creek and 4.2 miles northwest of Ironwood, Mich.	80.6	1970-71 1973	08-06-75	* 8.33
Spring Creek	Montreal River	Lat 46°30'47", long 90°09'22", in SW¼ sec.35, T.48N., R.47W., Gogebic County, 4 miles north of Ironwood, Mich.	a 7	1962	08-06-75	* 1.40
Black River	Lake Superior	Lat 46°28'26", long 90°00'06", in NW¼ sec.13, T.47N., R.46W., Gogebic County, at bridge in Ramsay, Mich.	78.0	1922‡ 1924-29‡ 1969-70	08-05-75	* 4.38
Plymouth Mine Pond Outlet	Alward Creek	Lat 46°28'14", long 89°58'56", in SE¼ NW¼ sec.18, T.47N., R.45W., Gogebic County, at culvert on Plymouth Road, at Ramsay, Mich.		1974	12-04-74 01-15-75 04-09-75 05-22-75 08-05-75	* 1.19 * .84 * .87 * 1.41 * .46
Jackson Creek	Black River	Lat 46°27'05", long 89°51'58", in SE¼ SE¼ sec.24, T.47N., R.45W., Gogebic County, at bridge on U.S. Highway 2, 3.5 miles southeast of Wakefield, Mich.	a17		08-05-75	*b .20
Connors Creek	Jackson Creek	Lat 46°32'16", long 89°55'15", in SE¼ SW¼ sec.22, T.48N., R.45W., Gogebic County, at mouth, 1.2 miles north of Thomaston, Mich.	a 5		08-06-75	* 0
Kallander Creek	Black River	Lat 46°28'52", long 90°02'59", in NW¼ sec.10, T.47N., R.46W., Gogebic County, immediately above Bessemer sewage plant, 0.1 mile below unnamed tributary, in Bessemer, Mich.	a 1.2	1970	08-06-75	*b .01
Mineral River	Lake Superior	Lat 46°44'00", long 89°33'46", in N½ sec.16, T.50N., R.42W., Ontonagon County, at bridge on State Highway M-64, 1.5 miles southeast of White Pine, Mich.	6.80	1942,1970	08-06-75	* 0
do	do	Lat 46°45'44", long 89°34'30", in NE¼ sec.5, T.50N., R.42W., Ontonagon County, at bridge on State Highway M-64, at White Pine, Mich.	10.5	1970	08-06-75	* 0
Middle Branch Ontonagon River	Ontonagon River	Lat 46°16'30", long 89°10'39", in NW¼ NW¼ sec.27, T.45N., R.39W., Gogebic County, at bridge on U.S. Highway 45, 0.1 mile north of Watersmeet, Mich.	48.0	1967 1969-70	08-05-75	* 21.1
Baltimore River	do	Lat 46°32'01", long 89°12'18", in NE¼ sec.29, T.48N., R.39W., Ontonagon County, 1.3 miles west of Bruce Crossing, Mich.	19.2	1942	08-07-75	* 2.83
Clear Creek	Baltimore River	Lat 46°32'07", long 89°10'54", in SE¼ SE¼ sec.21, T.48N., R.39W., Ontonagon County, at box culvert on State Highway 28, 0.1 mile west of Bruce Crossing, Mich.	8.51	1942,1967, 1969-70	08-07-75	* 4.09
Adventure Creek	East Branch Ontonagon River	Lat 46°44'46", long 89°03'49", in SE¼ NW¼ sec.9, T.50N., R.38W., Ontonagon County, between Milwaukee, St. Paul, and Pacific Railway and county road, 1.5 miles southeast of Mass, Mich.	a 5	1969-70	08-06-75	* .02
Merriweather Creek	Lake Gogebic	Lat 46°34'04", long 89°38'58", in SW¼ sec.11, T.48N., R.43W., Ontonagon County, at bridge on State Highway 28, 0.6 mile southwest of Merriweather, Mich.	25.2	1970	08-06-75	*b .02
Misery River	Lake Superior	Lat 46°59'23", long 88°58'57", in NW¼ SE¼ sec.15, T.53N., R.37W., Ontonagon County, 0.6 mile above Little Misery River, 10 miles west of Toivola, Mich.	39.4	1970	08-06-75	* 16.3

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Superior--Continued				
Hills Creek	Lake Superior	Lat 47°16'52", long 88°26'47", in SW¼ NW¼ sec.1, T.56N., R.33W., Houghton County, 1.1 miles north of Centennial Heights, Mich.	a 2		08-05-75	* .15
Eagle River	do	Lat 47°24'50", long 88°17'53", in NW¼ NW¼ sec.19, T.58N., R.31W., Keweenaw County, at bridge on State Highway 26, at Eagle River, Mich.	21.0		08-05-75	* 3.22
Plumbago Creek	Sturgeon River	Lat 46°38'44", long 88°28'57", in SE¼ NW¼ sec.18, T.49N., R.33W., Baraga County, at Alberta, Mich.	1.64	1957-58	08-06-75	* .48
Pilgrim River	Portage Lake	Lat 47°03'44", long 88°35'46" in NW¼ SW¼ sec. 23, T.54N., R.34W., Houghton County, at bridge on county road, 1.5 miles east of Baltic, Mich.	all	1947,1970	08-06-75	* 4.97
Gooseneck Creek	do	Lat 47°07'45", long 88°29'27", in SE¼ SE¼ sec.28, T.55N., R.33W., Houghton County, at bridge on State Highway 26, 0.5 mile northeast of Dollar Bay, Mich.	a 5		08-05-75	* .21
Dover Creek	Torch Lake	Lat 47°10'04", long 88°26'11", in NE¼ NW¼ sec.13, T.55N., R.33W., Houghton County, at first bridge downstream from State Highway 26 in Hubbell, Mich.	a 6		08-05-75	* .04
Scales Creek	Trap Rock River	Lat 47°15'50", long 88°24'10", in NW¼ SW¼ sec. 8, T56N., R.32W., Houghton County, at bridge on county highway, 0.5 mile southeast of Wolverine, Mich.	a 1		08-05-75	* .07
Slaughterhouse Creek	Scales Creek	Lat 47°16'42", long 88°23'21", in NW¼ SE¼ sec. 5, T.56N., R.32W., Houghton County, at end of road, 0.3 mile south of Copper City, Mich.	a 8		07-08-75 08-06-75	* 1.59 * .52
Hammell Creek	Trap Rock River	Lat 47°12'17", long 88°24'16", in NE¼ SE¼ sec. 31, T.56N., R.32W., Houghton County, at bridge on county road, 0.5 mile above mouth, at Lake Linden, Mich.	a 5	1969-70	08-05-75	* 2.72
Sawmill Creek	Torch Lake	Lat 47°11'10", long 88°23'37", in SW¼ SE¼ sec. 5, T.55N., R.32W., Houghton County, at bridge on county highway, 1,000 ft upstream from mouth, 0.8 mile east of Lake Linden, Mich.	a 5		08-05-75	* 0.66
Sixmile Creek	Keweenaw Bay	Lat 46°44'58", long 88°30'34", in NW¼ sec.12, T.50N., R.34W., Baraga County, at bridge on D.S.S.& A. Railway, 2.0 miles southwest of Baraga, Mich.	all	1969-70	08-06-75	* 5.31
Falls River	do	Lat 46°45'06", long 88°27'08", in SE¼ sec. 5, T.50N., R.33W., Baraga County, at bridge on U.S. Highway 41, 0.5 mile upstream from mouth, at L'Anse, Mich.	47.9	1955-56	08-06-75	*18.1
Linden Creek	do	Lat 46°45'37", long 88°26'48", in SW¼ NW¼ sec. 4, T.50N., R.33W., Baraga County, 300 feet upstream from municipal sewage treatment plant, at L'Anse , Mich.	a 9		08-06-75	* 1.49
Carp River	Lake Superior	Lat 46°31'50", long 87°36'14", in N½ sec. 30, T.48N., R.26W., at Baldwin Road, 1.75 miles north of Negaunee, Mich.	43.8	1963	8-19-75	c40.4
Carp River	do	Lat 46°31'37", long 87°33'39", in sec. 33, T.48N., R.26W., at County Road 492, 2.5 miles northeast of Negaunee, Mich.	52.2	1963	08-19-75	c47.0
Carp River	do	Lat 46°30'22", long 87°32'05", in SE¼ sec. 34, T.48N., R.26W., at Private Mine Road, 0.5 mile south of Eagle Mills, Mich.	a55		08-19-75	c44.2
Carp River	do	Lat 46°29'39", long 87°28'15", in SE¼ sec. 6, T.47N., R.25W., on county road, 200 ft upstream from Carp River Lake, 5.5 miles west of Harvey, Mich.	a62		08-19-75	c46.5

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan				
Rapid River	Little Bay de Noc	Lat 46°06'05", long 87°02'05", in SE¼ SE¼ sec. 22, T.43N., R.22W., Delta County, at bridge on County Road 432, 6 miles northeast of Rock, Mich.	a 55		08-06-75	* 0.24
do	do	Lat 46°01'21", long 86°58'44", in SW¼ NE¼ sec.19, T.42N., R.21W., Delta County, at bridge on county road, 0.2 mile west of U.S. Highway 41 and 5 miles northeast of Perkins, Mich.	a100		08-06-75	* 1.10
do	do	Lat 45°56'16", long 86°57'54", in NE¼ NW¼ sec.20, T.41N., R.21W., Delta County, at condemned steel truss bridge on county road, 0.8 mile north of Rapid River, Mich.	a140	1949-50 1963,1967, 1969-70	08-06-75	* 2.98
Tacoosh River	do	Lat 45°58'41", long 87°04'08", in SE¼ NW¼ sec.4, T.41N., R.22W., Delta County, at bridge on county road, at Perkins, Mich.	a 20		08-06-75	* 0
do	do	Lat 45°56'17", long 86°58'56", in NW¼ sec. 19, T.41N., R.21W., Delta County, at bridge on county road, 1 mile northwest of Rapid River, Mich.	a 60	1967 1969-70	08-07-75	* .31
Days River	do	Lat 46°04'07", long 87°11'19", in NW¼ NE¼ sec.4, T.42N., R.23W., Delta County, at concrete dam in county park, 1 mile west of Rock, Mich.	a 9		08-06-75	* .005
do	do	Lat 45°55'49", long 87°04'11", in SW¼ sec.21, T.41N., R.22W., Delta County, at bridge on State Highway 35, at Brampton, Mich.	a 45		08-06-75	* 1.10
do	do	Lat 45°53'43", long 86°59'33", in NW¼ NW¼ sec.2, T.40N., R.22W., Delta County, at bridge on county road, (formerly U.S. Highways 2 and 41), 2.2 miles southwest of Rapid River, Mich.	a 70	1967 1969-70	08-07-75	* 6.30
Squaw Creek	Escanaba River	Lat 45°58'29", long 87°13'33", in SE¼ sec.6, T.41N., R.23W., Delta County, 500 ft upstream from mouth, 5.0 miles north of Cornell, Mich.	a 22	1967-68	08-05-75	* 0.42
Indian Creek	do	Lat 45°58'16", long 87°12'50", in NW¼ sec.8, T.41N., R.23W., Delta County, 0.5 mile upstream from mouth, 4.8 miles north of Cornell, Mich.	a 6		08-05-75	*b .10
Hunters Brook	do	Lat 45°57'13", long 87°14'03", in NW¼ sec.18, T.41N., R.23W., Delta County, at bridge on county road 523, 3.7 miles north of Cornell, Mich.	a 40		08-05-75	* 6.93
Mosquito Creek	do	Lat 45°55'55", long 87°12'36", in SE¼ sec.20, T.41N., R.23W., Delta County, at culverts on trail road, 2.2 miles north of Cornell, Mich.	a 6		08-05-75	* .30
Bobs Creek	do	Lat 45°55'00", long 87°13'15", in SW¼ sec.29, T.41N., R.23W., Delta County, at bridge on trail road, 0.5 mile upstream from mouth, 1.0 mile north of Cornell, Mich.	a 8		08-05-75	* .14
Silver Creek	do	Lat 45°53'02", long 87°05'48", in NW¼ sec.12, T.40N., R.23W., Delta County, at culvert on county road, 3.5 miles southwest of Brampton, Mich.	a 3		08-06-75	* .05
Reno Creek	do	Lat 45°50'27", long 87°05'38", in SW¼ sec.24, T.40N., R.23W., Delta County, at culvert on county road, 3 miles west of Gladstone, Mich.	a 12		08-05-75	* .80
Bichler Creek	do	Lat 45°48'29", long 87°06'01", in NE¼ sec.2, T.39N., R.23W., Delta County, at culvert on county road 426, 2.8 miles north of Escanaba, Mich.	a 9		08-05-75	* .64

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Willow Creek	Portage Creek	Lat 45°44'46", long 87°05'28", in NW¼ SE¼ sec.25, T.39N., R.23W., Delta County, at bridge on U.S. Highway 2, at Escanaba, Mich.	a 6	1970	04-21-75 08-07-75	131 * .96
Portage Creek	Little Bay de Noc	Lat 45°43'42", long 87°06'42", in NW¼ SE¼ sec.35, T.39N., R.23W., Delta County, at bridge on County Road C-31, at Escanaba, Mich.	a15	1970	08-07-75	* .37
do	do	Lat 45°42'43", long 87°05'36", in SE¼ SW¼ sec.1, T.38N., R.23W., Delta County, at State Highway 35, 0.4 mile upstream from mouth, at Escanaba, Mich.	a30	1968	04-21-75 04-24-75	215 314
Bark River	Green Bay	Lat 45°40'52", long 87°17'04", in NW¼ NW¼ sec.21, T.38N., R.24W., Delta County, at bridge on county road, 2 miles south of Bark River, Mich.	a25	1970	08-07-75	* .88
Birch Creek	Springer Creek	Lat 45°12'08", long 87°35'12", in NW¼ NW¼ sec.1, T.32N., R.27W., Menominee County, at culvert on Birch Creek Road, 1.2 miles east of Birch Creek, Mich.	a 5		08-12-75	* 0
do	do	Lat 45°11'24", long 87°34'36", in NW¼ NE¼ sec.12, T.32N., R.27W., Menominee County, at bridge on Twin Creek Road, 2 miles southeast of Birch Creek, Mich.	a 6		08-12-75	* .06
Bis Creek	Green Bay	Lat 45°11'14", long 87°35'47", in NW¼ NE¼ sec.11, T.32N., R.27W., Menominee County, at culvert on Twin Creek Road, 1 mile southeast of Birch Creek, Mich.	a 1		08-12-75	* 0
Sunset Creek	Iron River	Lat 46°08'22", long 88°36'28", in SE¼ NW¼ sec.7, T.43N., R.34W., Iron County, at outlet of Sunset Lake, 3.5 miles northeast of Iron River, Mich.	11.5	1974	10-29-74 01-29-75 05-22-75	* .72 * 2.57 * 13.6
Pine Creek	Sturgeon River	Lat 45°49'38", long 87°53'50", in SW¼ sec.28, T.40N., R.29W., Dickinson County, at bridge on county road, 1.2 miles upstream from Fern Creek, 3 miles north of Norway, Mich.	a54	1972	08-05-75	* 5.85
Little Cedar River	Menominee River	Lat 45°24'54", long 87°36'28", in NW¼ sec.23, T.35N., R.27W., Menominee County, at bridge on village street, at Stephenson, Mich.	a180	1959,1963, 1967 1969-70	04-21-75	1,260
Little River	do	Lat 45°08'43", long 87°39'56", in SW¼ sec.20, T.32N., R.27W., Menominee County, 3.3 miles northwest of Menominee, Mich.	a60	1967,1970	08-12-75	* 0
Dober Mine Pond Outlet	Iron River	Lat 46°02'08", long 88°38'08", in NW¼ NW¼ sec.1, T.42N., R.35W., Iron County, at mouth, at Stambaugh, Mich.	--	1973-74	12-05-74	* .23
Baw Beese Lake Inlet	St. Joseph River	Lat 41°53'17", long 84°35'38", in NE¼ SE¼ sec.1, T.7S., R.3W., Hillsdale County, at bridge on State Highway 34 between Third and Forth Lakes, 1.5 miles southeast of Hillsdale, Mich.			06-16-75	3.45
Baw Beese Lake Outlet	do	Lat 41°54'18", long 84°37'01", in NE¼ SE¼ sec.35, T.6S., R.3W., Hillsdale County, at Lakeview Road, at Hillsdale, Mich.		1974	10-22-74 01-06-75 01-24-75 02-11-75 03-03-75 03-12-75 04-08-75 04-25-75 05-08-75 05-21-75 06-04-75	*b .1 * 10.2 * 9.00 * 8.76 * 9.44 * 8.28 * 10.5 b10 11.0 10.3 b11
King Lake Inlet	do	Lat 41°53'48", long 84°39'04", in NE¼ NE¼ sec.4, T.7S., R.3W., Hillsdale County, at Cambria Road, 1.0 mile southwest of Hillsdale, Mich.		1974	06-16-75	1.08

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
King Lake Outlet	St. Joseph River	Lat 41°54'01", long 84°37'55", in SE¼ SE¼ sec.34, T.6S., R.3W., Hillsdale County, at M-99, 1.0 mile south of Hillsdale, Mich.		1974	06-16-75	5.68
do	do	Lat 41°54'26", long 84°37'28", in NE¼ NW¼ sec.35, T.6S., R.3W., Hillsdale, County, at Steamburg Road, at Hillsdale, Mich.		1974	10-22-74	* .47
					11-01-74	* .60
					11-11-74	* 1.22
					12-04-74	* 1.47
					12-11-74	* 1.56
					01-06-75	* 1.63
					01-24-75	* 2.61
					02-11-75	* 1.98
					03-03-75	6.44
					03-12-75	7.11
					04-08-75	7.70
					05-08-75	10.0
					06-06-75	7.18
					08-05-75	* .72
					09-22-75	* 2.02
St. Joseph River	Lake Michigan	Lat 41°54'58", long 84°37'32", in NE¼ SW¼ sec.26, T.6S., R.3W., Hillsdale County, at South Street, at Hillsdale, Mich.		1974	06-16-75	9.25
do	do	Lat 41°55'45", long 84°38'22", in SW¼ SE¼ sec.22, T.6S., R.3W., Hillsdale County, at Fayette Street, at Hillsdale, Mich.		1974	10-22-74	* 1.71
					11-01-74	* 2.27
					11-11-74	* 3.08
					12-04-74	* 3.29
					01-06-75	*13.8
					01-09-75	*11.8
					01-13-75	20.1
					01-23-75	*13.7
					02-11-75	*12.2
					02-25-75	30.2
					03-12-75	19.8
					03-27-75	19.3
					04-08-75	22.3
					04-24-75	21.7
					05-07-75	41.9
					06-06-75	20.2
					07-10-75	* 9.40
					08-05-75	* 3.02
					09-22-75	* 5.23
do	do	Lat 41°56'04", long 84°38'26", in NE¼ sec.22, T.6S., R.3W., Hillsdale County, just below sewage treatment plant, at Hillsdale, Mich.		1974	06-16-75	17.2
Winona Lake Outlet	St. Joseph River	Lat 41°56'31", long 84°37'54", in SW¼ sec.14, T.6S., R.3W., Hillsdale County, at Hillsdale Street, at Hillsdale, Mich.		1974	06-16-75	2.95
Beebe Creek	do	Lat 41°56'31", long 84°31'16", in NE¼ NE¼ sec.22, T.6S., R.2W., Hillsdale County, at Mauck Road, 2.0 miles south of North Adams, Mich.		1974	06-16-75	13.4
do	do	Lat 41°56'38", long 84°31'32", in SW¼ SE¼ sec.15, T.6S., R.2W., Hillsdale County, at Knowles Road, 2.0 miles south of North Adams, Mich.		1974	03-20-75	24.1
					06-16-75	21.5
do	do	Lat 41°56'27", long 84°33'02", in NW¼ NW¼ sec.21, T.6S., R.3W., Hillsdale County, at State Road, 4.5 miles west of Hillsdale, Mich.		1974	10-22-74	* 2.01
					11-01-74	* 2.58
					11-11-74	* 2.82
					12-03-74	* 2.82
					01-08-75	* 9.07
					01-10-75	61.8
					01-23-75	*10.4
					02-18-75	16.7
					03-03-75	31.5
					03-13-75	*26.2
					04-07-75	34.9
					04-24-75	46.8
					05-07-75	66.7
					05-22-75	*18.4
					06-30-75	25.7
					07-23-75	* 3.13
					08-20-75	* 1.53
					09-19-75	* 3.26

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Beebe Creek	St. Joseph River	Lat 41°57'04", long 84°34'26", in SW¼ NW¼ sec.17, T.6S., R.2W., Hillsdale County, at Lake Pleasant Road, 3.0 miles northwest of Hillsdale, Mich.		1974	10-21-74	* 5.19
					11-01-74	* 5.89
					11-12-74	* 4.69
					12-03-74	* 4.79
					01-08-75	* 6.22
					01-09-75	56.4
					01-13-75	76.8
					01-23-75	*14.4
					02-18-75	18.5
					03-03-75	33.6
					03-13-75	*33.5
					03-26-75	43.0
					04-07-75	40.5
					04-23-75	53.2
					05-07-75	85.0
					05-22-75	25.2
					06-30-75	33.9
					07-23-75	* 2.22
					08-20-75	* 2.69
					09-19-75	* 4.58
do	do	Lat 41°57'44", long 84°35'35", in NW¼ SW¼ sec.7, T.6S., R.2W., Hillsdale County, at Milnes Road, 3.5 miles northwest of Hillsdale, Mich.		1974	06-16-75	37.2
Unnamed tributary	Beebe Creek	Lat 41°59'02", long 84°33'53", in NW¼ NE¼ sec.5, T.6S., R.2W., Hillsdale County, at Barker Road, 5.5 miles northwest of Hillsdale, Mich.		1974	06-16-75	.17
do	do	Lat 41°58'08", long 84°35'35", in NE¼ NE¼ sec.7, T.6S., R.2W., Hillsdale County, at Milnes Road, 4.0 miles northwest of Hillsdale, Mich.		1974	06-16-75	10.8
do	Unnamed tributary	Lat 41°58'02", long 84°35'35", in NW¼ sec.7, T.6S., R.2W., Hillsdale County, at Milnes Road, 3.5 miles northwest of Hillsdale, Mich.		1974	06-16-75	1.12
Half Moon Lake Outlet	Beebe Creek	Lat 41°58'38", long 84°36'40", in NW¼ SW¼ sec.1, T.6S., R.3W., Hillsdale County, at North Adams Road, 4.0 miles north of Hillsdale, Mich.		1974	06-16-75	1.24
Unnamed tributary	Beebe Creek	Lat 41°57'59", long 84°35'48", in SE¼ NE¼ sec.12, T.6S., R.3W., Hillsdale County, at Ball Road, 3.5 miles northwest of Hillsdale, Mich.		1974	10-21-74	* 2.31
					10-31-74	* 3.21
					11-12-74	* 3.48
					01-07-75	* 3.57
					01-09-75	26.9
					01-21-75	* 4.50
					02-18-75	11.5
					03-13-75	19.1
					03-26-75	20.3
					04-07-75	19.9
					04-23-75	22.2
					05-07-75	29.8
					05-22-75	16.7
					06-30-75	* 4.93
					07-23-75	* 2.25
					08-20-75	* 2.11
					09-19-75	* 3.22
St. Joseph River	Lake Michigan	Lat 41°57'23", long 84°39'31", in SW¼ SE¼ sec.9, T.6S., R.3W., Hillsdale County, at Moore Road, 1.2 miles northwest of Hillsdale, Mich.		1967,1971, 1974	10-21-74	*19.0
					10-31-74	*24.6
					11-12-74	*19.4
					12-02-74	*20.0
					01-06-75	32.6
					02-11-75	39.6
					03-12-75	72.4
					03-26-75	109
					04-24-75	133
					05-08-75	170
					05-21-75	58.7
					06-27-75	102
					08-05-75	*15.2

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
St. Joseph River	Lake Michigan	Lat 41°58'58", long 84°39'52", in NE¼ NW¼ sec. 4, T.6S., R.3W., Hillsdale County, at Chicago St. (US-12), at Jonesville, Mich.		1974	10-16-74	*30.0
					11-08-74	*28.6
					12-02-74	*23.0
					01-07-75	*29.8
					01-23-75	49.8
					02-14-75	33.9
					03-12-75	77.8
					04-08-75	117
					04-24-75	148
					05-08-75	174
					05-20-75	53.8
					06-10-75	79.4
					06-27-75	126
					08-19-75	*20.0
					09-22-75	*28.6
do	do	Lat 41°59'37", long 84°40'20", in SE¼ NE¼ sec.32, T.5S., R.3W., Hillsdale County, just below sewage treatment plant, at Jonesville, Mich.		1974	06-17-75	93.2
do	do	Lat 42°00'54", long 84°43'16", in NE¼ NW¼ sec.25, T.5S., R.4W., Hillsdale County, at Sterling Road, 3.5 miles northwest of Jonesville, Mich.		1974	06-17-75	105
do	do	Lat 42°01'58", long 84°44'13", in NW¼ SE¼ sec.14, T.5S., R.4W., Hillsdale County, at Homer Road (M-99), 300 ft below dam, 1.5 miles southwest of Litchfield, Mich.		1974	06-17-75	133
Herricksville Drain	St. Joseph River	Lat 42°01'45", long 84°45'00", in NE¼ sec.22, T.5S., R.4W., Hillsdale County, at culvert on Herring Road, 1 mile south of Litchfield, Mich.			09-24-75	.50
St. Joseph River	Lake Michigan	Lat 42°02'37", long 84°45'52", in NW¼ NW¼ sec.15, T.5S., R.4W., Hillsdale County, at Litchfield Road, at Litchfield, Mich.		1974	10-16-74	*24.0
					10-30-74	*32.7
					11-08-74	*35.4
					11-27-74	*29.0
					12-13-74	*34.0
					01-16-75	125
					01-22-75	70.1
					02-13-75	44.3
					02-26-75	261
					03-11-75	95.5
					03-25-75	125
					04-21-75	201
					05-06-75	145
					05-20-75	75.2
					06-09-75	120
					06-17-75	95.7
					06-26-75	136
					08-01-75	*25.7
					09-18-75	*37.7
South Sand Lake Outlet	Middle Sand Lake	Lat 42°55'52", long 84°41'56", in SW¼ NE¼ sec.30, T.6S., R.3W., Hillsdale County, at Bacon Road, 3.0 miles west of Hillsdale, Mich.		1974	06-17-75	5.49
Unnamed tributary	Sand Creek	Lat 41°55'58", long 84°41'42", in NE¼ SE¼ sec.19, T.6S., R.3W., Hillsdale County, at Mechanic Road, below confluence of small lake outlets, 3.0 miles west of Hillsdale, Mich.		1974	06-17-75	3.71
Middle Sand Lake Outlet	do	Lat 42°56'34", long 84°42'06", in NE¼ SW¼ sec.19, T.6S., R.3W., Hillsdale County, at Mechanic Road, 3.5 miles west of Hillsdale, Mich.		1974	06-17-75	12.8

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Sand Creek	St. Joseph River	Lat 41°55'21", long 84°41'55", in SW¼ SW¼ sec.18, T.6S., R.3W., Hillsdale County, at Sand Lake Road, 4.0 miles northwest of Hillsdale, Mich.		1974	10-16-74	* 3.77
					10-31-74	* 4.17
					11-08-74	* 6.42
					11-27-74	* 4.82
					12-11-74	* 5.31
					01-08-75	* 5.74
					01-09-75	* 5.87
					01-22-75	* 7.79
					02-18-75	* 7.14
					02-25-75	16.3
					03-11-75	11.5
					03-25-75	13.2
					04-22-75	17.5
					05-06-75	19.7
					05-20-75	13.5
					06-06-75	21.4
					06-27-75	18.4
					08-05-75	* 7.65
					09-19-75	*11.2
do	do	Lat 41°57'47", long 84°44'20", in NW¼ SE¼ sec.11, T.6S., R.4W., Hillsdale County, at bridge on Chicago Road, 1.5 miles east of Allen, Mich.		1964	03-20-75	14.6
					06-17-75	26.9
Unnamed tributary	Sand Creek	Lat 41°58'51", long 84°44'20", in NW¼ NE¼ sec.2, T.6S., R.4W., Hillsdale County, at Beulow Road, 4.0 miles west of Jonesville, Mich.		1974	06-17-75	1.83
Sand Creek	St. Joseph River	Lat 41°59'08", long 84°45'04", in NE¼ NE¼ sec.3, T.6S., R.4W., Hillsdale County, at Jonesville Road, 4.0 miles west of Jonesville, Mich.		1974	06-17-75	28.6
do	do	Lat 42°03'04", long 84°48'22", in SW¼ NW¼ sec.8, T.5S., R.4W., Hillsdale County, at mouth near Storms Road, 2.5 miles west of Litchfield, Mich.		1974	10-01-74	* 9.28
					10-08-74	* 9.38
					10-15-74	*10.7
					10-30-74	*11.7
					11-07-74	*15.1
					11-26-74	*13.2
					12-12-74	*15.2
					01-20-75	22.0
					02-12-75	*17.8
					03-10-75	32.4
					03-24-75	45.8
					04-22-75	44.9
					05-05-75	40.8
					06-09-75	44.4
					07-16-75	22.6
					08-18-75	*16.5
					09-17-75	27.7
St. Joseph River	Lake Michigan	Lat 42°04'21", long 84°49'50", in SE¼ SE¼ sec.36, T.4S., R.5W., Calhoun County, at South County Line Road, 4.0 miles northwest of Litchfield, Mich.		1974	06-17-75	146
Soap Creek	St. Joseph River	Lat 42°00'32", long 84°47'15", in SW¼ NW¼ sec.28, T.5S., R.4W., Hillsdale County, at McLain Road, 4.0 miles southwest of Litchfield, Mich.		1974	01-08-75	* 1.36
					01-09-75	4.82
					01-22-75	* 1.69
					02-13-75	* 2.11
					02-26-75	7.68
					03-11-75	4.16
					03-25-75	7.01
					04-22-75	9.22
					05-06-75	25.0
					05-20-75	5.47
					06-26-75	9.73
					08-19-75	* .75
					09-18-75	* 2.81

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Soap Creek	St. Joseph River	Lat 42°04'07", long 84°50'04", in NW¼ NE¼ sec.1, T.5S., R.5W., Branch County, at Ely Road, 6.0 miles northwest of Litchfield, Mich.		1974	10-08-74	* 3.34
					10-15-74	* 3.39
					10-30-74	* 4.18
					11-07-74	* 5.26
					11-26-74	* 4.52
					12-12-74	* 5.24
					01-20-75	13.4
					02-12-75	9.54
					03-10-75	18.7
					03-24-75	25.0
					04-21-75	80.0
					05-05-75	26.2
					05-19-75	21.5
					06-09-75	21.8
					06-17-75	22.7
					06-25-75	20.2
					07-31-75	* 9.28
					09-17-75	15.0
St. Joseph River	Lake Michigan	Lat 42°06'04", long 84°50'38", in NW¼ NW¼ sec.25, T.4S., R.5W., Calhoun County, at bridge at T-Drive South, 3.0 miles southwest of Homer, Mich.			06-17-75	176
Nottawa Creek	St. Joseph River	Lat 42°06'57", long 85°10'40", in NE¼ NE¼ sec.24, T.4S., R.8W., Calhoun County, at bridge on Six Mile Road, 3 miles northeast of Athens, Mich.		1973-74	01-07-75	c48.0
Portage Creek	Portage River	Lat 42°05'39", long 85°31'46", in NW¼ sec.30, T.4S., R.10W., Kalamazoo County, at 24th St., 1.7 miles south of Vicksburg, Mich.	53.9	1964-65 1967	11-26-74	*c44.6
Wanadoga Creek	Battle Creek	Lat 42°23'48", long 85°07'57", in NW¼ SW¼ sec.9, T.1S., R.7W., Calhoun County, at State Highway M-66, 4.2 miles north of Battle Creek, Mich.		1973-74	01-07-75	c25.8
Kalamazoo River	Lake Michigan	Lat 42°38'50", long 86°11'53", in NE¼ sec.16, T.3N., R.16W., Allegan County, 2.8 miles above mouth at Old U.S.-31, at Saugatuck, Mich.	a2,020	1974	10-02-74	1410
					11-08-74	1540
					12-03-74	1870
					01-06-75	1290
					02-03-75	2620
					03-10-75	2460
					05-05-75	3560
					06-02-75	2940
					07-07-75	1340
					08-04-75	1090
					09-08-75	2920
Grand River	do	Lat 42°10'08", long 84°23'02", in SE¼ NE¼ sec.35, T.3S., R.1W., Jackson County, at Draper Road, 2.0 miles south of Vandercook, Mich.	41.0	1960 1963-65d 1974	01-07-75	*c27.2
do	do	Lat 42°38'44", long 84°39'02", in SE¼ sec.15, T.3N., R.3W., Eaton County, at bridge in Dimondale, Mich.			11-22-74	*c 293
					02-24-75	c1780
					03-31-75	c1140
					04-14-75	c1080
					04-30-75	c1660
					05-05-75	c1260
					05-20-75	*c 682
					06-11-75	*c 454
					06-26-75	c 485
					08-26-75	c 274
					09-15-75	c 772
					09-25-75	*c 360
do	do	Lat 42°38'51", long 84°39'07", in SE¼ sec.15, T.3N., R.3W., Eaton County, 100 ft below dam at Dimondale, Mich.			10-24-74	*c 157
					11-08-74	*c 374
					12-03-74	*c 289
					12-16-74	*c 442
					01-17-75	c 650
					01-31-75	c 749
					02-14-75	*c 299
					07-17-75	*c 170
					07-28-75	*c 215
					08-06-75	c 154

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Red Cedar River	Grand River	Lat 42°38'28", long 84°04'21", in NE¼ NE¼ sec.22, T.3N., R.3E., Livingston County, at bridge on Fowlerville Road, 1.5 miles south of Fowlerville, Mich.			10-02-74	*c 4.53
					12-13-74	*c 13.3
Sycamore Creek	Red Cedar River	Lat 42°38'25", long 84°28'55", in NW¼ NW¼ sec.19, T.3N., R.1W., Ingham County, at bridge on Holt Road, 1.7 miles east of Holt, Mich.		1973	01-07-75	*c 26.0
Grand River	Lake Michigan	Lat 42°46'05", long 84°40'08", in SE¼ sec.3, T.4N., R.3W., Eaton County, at bridge on Webster Street in Delta Mills, 5.0 miles east of Grand Ledge, Mich.			10-07-74	*c 271
					10-24-74	*c 250
					11-08-74	*c 449
					11-22-74	*c 385
					12-03-74	*c 373
					12-16-74	*c 811
					01-17-75	c1130
					01-31-75	c1610
					02-14-75	c 516
					02-24-75	c3480
					03-31-75	c1850
					04-14-75	c2270
					04-30-75	c3170
					05-05-75	c2100
					05-20-75	*c1040
					06-10-75	*c 515
					06-26-75	c1300
					07-17-75	*c 357
					07-28-75	*c 340
					08-06-75	*c 295
					08-26-75	c 703
					09-15-75	c1070
					09-25-75	*c 536
Prairie Creek	Grand River	Lat 43°08'55", long 84°59'24", in SE¼ SE¼ sec.23, T.9N., R.6W., Montcalm County, at bridge on Fenwick Road, 5.0 miles east of Fenwick, Mich.			09-16-75	c 28.4
do	do	Lat 42°06'46", long 84°58'27", in SW¼ NW¼ sec.1, T.8N., R.6W., Ionia County, at bridge on Van Vleck Road, 0.5 mile east of Palo, Mich.			09-16-75	c 42.0
do	do	Lat 43°02'10", long 84°59'45", in NW¼ SW¼ sec.35, T.8N., R.6W., Ionia County, at bridge on Stage Road, 5.0 miles northeast of Ionia, Mich.			09-16-75	c 67.4
do	do	Lat 42°59'28", long 85°01'45", in NE¼ SE¼ sec.16, T.7N., R.6W., Ionia County, at bridge on State Highway 21, 1.5 miles east of Ionia, Mich.	89.6	1955,1960, 1963-65	09-16-75	c 95.0
Dickerson Creek	Flat River	Lat 43°15'01", long 85°11'27", in NW¼ NW¼ sec.19, T.10N., R.7W., Montcalm County, at bridge on Sidney Road, 3.0 miles west of Sidney, Mich.			09-16-75	c 21.9
do	do	Lat 43°10'05", long 85°07'30", in NE¼ SE¼ sec.36, T.10N., R.8W., Montcalm County, at bridge on Peck Road, 3.8 miles northeast of Greenville, Mich.		1972	09-16-75	c 44.1
do	do	Lat 43°12'16", long 85°12'04", in SW¼ NE¼ sec.15, T.9N., R.7W., Montcalm County, at bridge on State Highway 57, 3.7 miles southwest of Sheridan, Mich.		1972	09-16-75	c 77.9
do	do	Lat 43°07'46", long 85°10'25", in NW¼ sec.32, T.9N., R.7W., Montcalm County, at bridge on Miller Road, 5.0 miles southeast of Greenville, Mich.			09-18-75	c 87.8
Muskegon River	Lake Michigan	Lat 44°20'08", long 84°53'24", in NW¼ NW¼ sec.2, T.22N., R.5W., Missaukee County, on right bank 35 ft upstream from bridge on State Highway 55, 2.7 miles east of Merritt, Mich.	355	1946-73e	04-22-75	572
				1974f	07-09-75	215

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Clam River	Muskegon River	Lat 44°15'11", long 85°24'37", in SE¼ SW¼ sec.33, T.22N., R.9W., Wexford County, at bridge on Lake Street, in Cadillac, Mich.		1970,1973	06-11-75 07-29-75	*c 47.0 *c 3.48
do	do	Lat 44°16'02", long 85°24'28", in SE¼ SE¼ sec. 28, T.22N., R.9W., Wexford County, at culvert on Platt Road, in Cadillac, Mich.			06-11-75 07-29-75 08-06-75	*c 48.2 *c 6.88 *c 6.64
do	do	Lat 44°16'52", long 85°23'03", in SW¼ SE¼ sec.22, T.22N., R.9W., Wexford County, at Boom Road, 1.7 miles northeast of Cadillac, Mich.			06-10-75 07-29-75 08-05-75 08-06-75	*c 47.6 *c 5.74 *c 5.40 *c 5.28
do	do	Lat 44°17'06", long 85°21'45", in SE¼ sec.23, T.22N., R.9W., Wexford County, at Trail Camp Foot Bridge, 2 miles northeast of Cadillac, Mich.			08-05-75	*c 2.83
do	do	Lat 44°17'03", long 85°20'11", in SW¼ SW¼ sec.19, T.22N., R.8W., Wexford County, at County Line Road, 3.5 miles northeast of Cadillac, Mich.			06-10-75 07-29-75 08-05-75	*c 49.8 *c 4.53 *c 6.05
do	do	Lat 44°17'02", long 85°17'44", in SE¼ SE¼ sec.20, T.22N., R.8W., Missaukee County, at LaChance Road, 5 miles northeast of Cadillac, Mich.			06-10-75 07-29-75 08-05-75	*c 59.2 *c 12.8 *c 12.6
Tamarack Creek	Little Muskegon River	Lat 43°29'14", long 85°12'52", in NW¼ SE¼ sec.25, T.13N., R.8W., Mecosta County, at 65th Avenue, 7.5 miles southwest of Millbrook, Mich.			09-23-75	c 0.92
do	do	Lat 43°28'53", long 85°13'28", in NE¼ NE¼, sec.35, T.13N., R.8W., Mecosta County, at 70th Avenue, 8 miles southwest of Millbrook, Mich.			09-23-75	c 2.96
do	do	Lat 43°28'14", long 85°14'39", in SE¼ SE¼ sec.34, T.13N., R8W., Mecosta County, at 80th Avenue, 9.5 miles southwest of Millbrook, Mich.			09-23-75	c 5.30
Unnamed tributary	Tamarack Creek	Lat 43°28'55", long 85°14'54", in SE¼ SE¼ sec.27, T.13N., R.8W., Mecosta County, at One Mile Road, 2.5 miles northeast of Lakeview, Mich.			09-23-75	c 3.52
Tamarack Creek	Little Muskegon River	Lat 43°28'03", long 85°15'14", in SE¼ SW¼ sec.34, T.13N., R.8W., Mecosta County, at Bale Road, 2 miles northeast of Lakeview, Mich.			09-23-75	c 9.31
do	do	Lat 43°27'18", long 85°16'24", in SW¼ sec.4, T.12N., R.8W., Montcalm County, at Lakeview Road, 0.5 mile north of Lakeview, Mich.		1969	08-12-75 09-03-75 09-23-75	*c 2.87 c 43.4 *c 12.7
Tamarack Lake Inlet	Tamarack Lake	Lat 43°27'00", long 85°15'30", in NE¼ sec.10, T.12N., R.8W., Montcalm County, at public access road, 1 mile east of Lakeview, Mich.			08-12-75 09-03-75	*c 0.16 c 2.01
Tamarack Lake Outlet	do	Lat 43°26'46", long 85°17'08", in SE¼ NE¼ sec.8, T.12N., R.8W., Montcalm County, at North Street, in Lakeview, Mich.			09-23-75	*c 2.04
Tamarack Creek	Little Muskegon River	Lat 43°27'02", long 85°17'36", in NE¼ NW¼ sec.8, T.12N., R.8W., Montcalm County, at Satterlee Road, 0.5 mile northwest of Lakeview, Mich.			09-23-75	*c 18.3
Unnamed tributary	Tamarack Creek	Lat 43°26'46", long 85°19'36", in SE¼ NE¼ sec.12, T.12N., R.9W., Montcalm County, at Yankee Road, 2.2 miles west of Lakeview, Mich.			08-12-75	*c 0.86
Pickeral Lake Outlet	do	Lat 43°25'53", long 85°19'28", in SE¼ NE¼ sec.13, T.12N., R.9W., Montcalm County, at State Highway M-46, 2.4 miles southwest of Lakeview, Mich.			08-12-75	*c 1.38

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Tamarack Creek	Little Muskegon River	Lat 43°23'45", long 85°32'33", in SE¼ SE¼ sec.30, T.12N., R.10W., Montcalm County, at State Highway M-46, 3.6 miles west of Howard City, Mich.			08-12-75	*c 9.32
Muskegon River	Lake Michigan	Lat 43°19'05", long 86°02'11", in NW¼ sec.30, T.11N., R.14W., Muskegon County, at Maple Island Road, 5.0 miles southwest of Bridgeton, Mich.		1974	10-03-74	1790
					11-07-74	2000
					12-04-74	1920
					01-07-75	1820
					02-04-75	1840
					03-11-75	1870
					04-02-75	2670
					05-06-75	3040
					06-03-75	2320
					07-08-75	1750
					08-05-75	1290
					09-09-75	5730
East Branch Pine River	Pine River	Lat 44°06'09", long 85°31'02", in NE¼ NW¼ sec.28, T.20N., R.10W., Osceola County, 75 ft downstream from highway bridge, 3.0 miles west of Tustin, Mich.	a63	1953-63e 1964-74f	09-17-75	117
Manistee River	Lake Michigan	Lat 44°14'54", long 86°19'25", in SW¼ SW¼ sec.1, T.21N., R.16W., Manistee County, at bridge on Maple Street, in Manistee, Mich.			10-09-74	2350
					11-06-74	2480
					12-05-74	2470
					01-08-75	1140
					02-05-75	1290
					03-12-75	2110
					04-03-75	2170
					05-07-75	2870
					06-04-75	2790
					07-09-75	2690
					08-04-75	2660
Platte River	Lake Michigan	Lat 44°42'24", long 85°51'42", in SE¼ SE¼ sec.27, T.27N., R.13W., Benzie County, 0.5 mile downstream from Lake Ann, 1.5 miles southwest of village of Lake Ann, Mich.	47.6	1958	08-12-75	*c 22.7
do	do	Lat 44°42'24", long 85°52'46", in SE¼ SE¼ sec.28, T.27N., R.13W., Benzie County, 2.2 miles southwest of village of Lake Ann, Mich.			08-12-75	c 26.3
Upper Woodcock Lake Outlet	Platte River	Lat 44°42'25", long 85°52'58", in SE¼ SE¼ sec.28, T.27N., R.13W., Benzie County, at Mill Rd., 2.3 miles southwest of village of Lake Ann, Mich.			08-12-75	*c 3.06
Lower Woodcock Lake Outlet	do	Lat 44°42'17", long 85°52'50", in SE¼ SE¼ sec.28, T.27N., R.13W., Benzie County, 2.3 miles southwest of village of Lake Ann, Mich.			08-12-75	*c 5.31
Bell Lake Outlet	do	Lat 44°40'51", long 85°53'00", in SW¼ NE¼ sec.4, T.27N., R.13W., Benzie County, at Bronson Lake Road, 3.5 miles southwest of village of Lake Ann, Mich.			08-12-75	*c 2.06
Platte River	Lake Michigan	Lat 44°41'06", long 85°53'18", in SW¼ NE¼ sec.4, T.26N., R.13W., Benzie County, 0.5 mile downstream from Bronson Lake, at culverts on Burnt Mill Road, 3.5 miles southwest of village of Lake Ann, Mich.	66.2	1958,1971	08-12-75	*c 41.2
do	do	Lat 44°39'56", long 85°55'59", in NE¼ SW¼ sec.7, T.26N., R.13W., Benzie County, below State Fish Hatchery, 4.0 miles east of Honor, Mich.			08-12-75	*c 48.2
North Branch Boardman River	Boardman River	Lat 44°43'39", long 85°10'30", in NE¼ NE¼ sec.20, T.27N., R.7W., Kalkaska County, at culvert on State Highway M-66, at Kalkaska, Mich.			8-13-75	*c 12.8
South Branch Boardman River	do	Lat 44°40'32", long 85°23'12", in NE¼ SW¼ sec.3, T.26N., R.9W., Grand Traverse County, 0.5 mile upstream from confluence with North Branch, and 5.8 miles northwest of South Boardman, Mich.	46.7	1968,1971	08-13-75	*c 46.6

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Michigan--Continued				
Boardman River	Grand Traverse Bay	Lat 44°40'27", long 85°23'47", in SE¼ SE¼ sec.4, T.26N., R.9W., Grand Traverse County, at Supply Rd., 6.1 miles northwest of South Boardman, Mich.		1971	08-13-75	*c 81.1
do	do	Lat 44°39'07", long 85°27'18", in SW¼ NW¼ sec.18, T.26N., R.9W., Grand Traverse County, 2 miles above Browns Bridge Pond, and 4.0 miles northeast of Mayfield, Mich.			08-13-75	*c132
East Creek	Boardman River	Lat 44°38'08", long 85°31'07", in SE¼ NE¼ sec.21, T.26N., R.10W., Grand Traverse County, at bridge on Garfield Rd., 0.9 mile northeast of Mayfield, Mich.		1949	08-13-75	*c 19.7
		Streams tributary to Lake Huron				
Caribou Creek	Lake Huron	Lat 45°59'05", long 83°58'56", in SE¼ SE¼ sec.31, T.42N., R.4E., Chippewa County, at bridge on South Road, 4.7 miles west of Detour Village, Mich.	a 4	1967-72d	08-12-75	* .03
West Branch Sturgeon River	Sturgeon River	Lat 45°14'55", long 84°40'36", in NE¼ SE¼ sec.16, T.33N., R.3W., Cheboygan County, 3.8 miles southwest of Wolverine, Mich., and 5 miles upstream from mouth.	56.8	1954,1958 1974	10-22-74	* 60.9
Black River	Cheboygan River	Lat 45°29'59", long 84°19'36", in NW¼ NW¼ sec.21, T.36N., R1E., Cheboygan County, on left bank 0.3 mile downstream from Black Lake, 12.6 miles southeast of Cheboygan, Mich.	597	1942-74e	10-17-74 05-05-75	* 404 1920
Ocqueoc River	Lake Huron	Lat 45°28'50", long 84°06'46", in SW¼ SW¼ sec.20, T.36N., R3E., Presque Isle County, 10.2 miles northeast of Onaway, Mich., 3.2 miles upstream from mouth.			10-10-74	c 91.2
do	do	Lat 45°28'50", long 84°06'41", in SE¼ SE¼ sec.19, T.36N., R.3E., Presque Isle County, at highway bridge, 5.1 miles north of Ocqueoc, Mich.		1973-74	02-20-75	*c 68.4
Trout River	do	Lat 45°25'04", long 83°51'47", in SW¼ SW¼ sec.17, T.35N., R.5E., Presque Isle County, at Sportsman Club, near end of Church Highway, 2.2 miles east of Rogers City, Mich.			02-06-75 03-20-75 04-08-75 07-08-75 09-16-75	* 6.47 10.5 12.9 * 3.30 * 6.84
Thunder Bay River	do	Lat 45°00'30", long 83°58'21", in NE¼ SE¼ sec.8, T.30N., R.4E., Montmorency County, at bridge on State Highway M-32, 5.2 miles southwest of Hillman, Mich.	232	1946-72e 1973-74f	04-16-75	658
do	do	Lat 45°04'15", long 83°26'16", in SW¼ NE¼ sec.22, T.31N., R.8E., Alpena County, at 9th Avenue, in Alpena, Mich.			04-13-49 10-16-74	g891 c895
Shellenbarger Lake Outlet	Au Sable River	Lat 44°39'23", long 84°41'20", in NE¼ NE¼ sec.17, T.26N., R.3W., Crawford County, at culvert on State Highway M-72, 1 mile east of Grayling, Mich.		1956,1971	07-21-75	c 11.4
Au Sable River	Lake Huron	Lat 44°40'45", long 84°34'39", in SE¼ NW¼ sec.5, T.26N., R.2W., Crawford County, above Stephens Bridge, 7.0 miles east of Grayling, Mich., 105 miles upstream from mouth.	200	1964-67, 1971	07-21-75	c218
Robinson Creek	South Branch Au Sable River	Lat 44°29'50", long 84°35'25", in SW¼ SW¼ sec.5, T.24N., R.2W., Roscommon County, at Main Street, in Roscommon, Mich.			07-22-75	c 18.0
South Branch Au Sable River	Au Sable River	Lat 44°29'57", long 84°35'12", in SW¼ sec.5, T.24N., R.2W., Roscommon County, at State Highway M-144, at Roscommon, Mich.		1971	07-22-75	c186
Tank Creek	South Branch Au Sable River	Lat 44°29'50", long 84°35'17", in SE¼ sec.6, T.24N., R.2W., Roscommon County, at Main St., at Roscommon, Mich.		1971	07-22-75	c 2.99
Beaver Creek	do	Lat 44°30'40", long 84°36'04", in SW¼ sec.36, T.25N., R.3W., Roscommon County, 1 mile northwest of Roscommon, Mich.			07-22-75	c 13.6

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Huron--Continued				
South Branch Au Sable River	Au Sable River	Lat 44°32'27", long 84°33'03", in SE¼ SE¼ sec.21, T.25N., R.2W., Crawford County, at Chase Bridge, 3.6 miles northwest of Roscommon, Mich., 14.3 miles upstream from mouth.		1971	07-22-75	c245
Au Sable River	Lake Huron	Lat 44°26'09", long 83°26'06", in SE¼ NW¼ sec.35, T.24N., R.8E., Iosco County, at bridge on Rea Road, 5.3 miles west of Oscoda, Mich.		1970,1974	10-14-74	c1230
					10-15-74	c 958
					10-15-74	c 789
					10-15-74	c2340
do	do	Lat 44°25'32", long 83°25'52", in SW¼ sec.35, T.24N., R.8E., Iosco County, 5 miles west of Oscoda, Mich.			10-14-74	c 540
Van Etten Creek	Au Sable River	Lat 44°26'49", long 83°20'21", in SW¼ NW¼ sec.27, T.24N., R.9E., Iosco County, at Detroit and Mackinac railroad bridge, 2.0 miles northwest of Oscoda, Mich.		1973-74	10-11-74	*c 100
					10-15-74	*c 92.0
					03-12-75	*c 147
Tawas River	Lake Huron	Lat 44°17'00", long 83°30'17", in SE¼ SE¼ sec.19, T.22N., R.8E., Iosco County, at highway bridge on Monument Rd., at East Tawas, Mich.		1972-74	10-23-74	*c 44.7
					11-21-74	*c 56.6
					12-19-74	*c 64.8
					01-15-75	c 114
					02-19-75	*c 54.4
					03-12-75	*c 68.6
					03-26-75	c 136
					04-10-75	c 116
					04-23-75	c 150
					05-07-75	c 145
					05-21-75	*c 84.0
					06-24-75	c 115
East Branch Au Gres River	do	Lat 44°08'28", long 83°38'34", in SW¼ SW¼ sec.9, T.20N., R.7E., Arenac County, at channel dredge at Turner Rd., 0.2 mile east of Edmonds Rd., 5.2 miles southwest of Alabaster, Mich.		1973-74	10-22-74	*c 42.8
					11-21-74	*c 49.1
					01-15-75	c 89.8
					02-19-75	*c 45.7
					03-12-75	*c 56.3
					05-07-75	c 136
					05-21-75	*c 54.8
					06-24-75	c 126
do	do	Lat 44°08'34", long 83°37'51", in SE¼ SE¼ sec.9, T.20N., R.7E., Arenac County, at bridge on channel dredge, at Turner Road, 0.8 mile east of Edmonds Rd., 4.7 miles southwest of Alabaster, Mich.		1974	12-19-74	*c 46.1
					03-26-75	c 296
					04-10-75	c 180
					04-23-75	c 148
Wilkins Creek	Rifle River	Lat 44°24'18", long 84°06'59", in NE¼ NW¼ sec.7, T.23N., R.3E., Ogemaw County, at bridge on State Highway M-33, 1.1 miles south of Rose City, Mich.	9.15	1953-74f	08-21-75	55.2
North Branch Pine River	Pine River	Lat 43°59'08", long 83°53'18", in NE¼ SE¼ sec.5, T.18N., R.5E., Arenac County, 200 ft upstream from South Branch, 3.6 miles east of Standish, Mich.		1973-74	10-22-74	*c 5.33
					11-21-74	*c 6.90
					12-19-74	*c 9.77
					01-15-75	c 44.6
					02-19-75	*c 24.3
					03-12-75	*c 14.7
					04-23-75	c 40.2
					05-07-75	c 50.8
					05-21-75	*c 9.92
					06-24-75	c 12.3
South Branch Pine River	Pine River	Lat 43°58'58", long 83°53'37", in SW¼ SE¼ sec.5, T.18N., R.5E., Arenac County, at bridge on Pine River Rd., 3.3 miles east of Standish, Mich.		1974	10-22-74	*c 0.10
					11-23-74	*c 1.78
					12-19-74	*c 4.25
					01-15-75	c 57.2
					02-19-75	*c 7.11
					03-12-75	*c 6.57
					04-23-75	c 39.6
					05-07-75	c 54.3
					05-21-75	*c 4.65
					06-24-75	c 11.4
Pinconning River	do	Lat 43°51'30", long 83°57'58", in NW¼ SW¼ sec.23, T.17N., R.4E., Bay County, at bridge on U.S. 23, at Pinconning, Mich.		1942,1974	10-22-74	*c 0.09
					11-23-74	*c 1.16
					12-19-74	*c 1.78
					02-19-75	*c 7.04
					03-12-75	*c 2.10
					03-26-75	c 41.1
					04-10-75	c 55.6
					04-23-75	c 11.2
					05-07-75	c 12.0
					05-21-75	*c 1.61
					06-24-75	c 6.52

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Huron--Continued				
South Branch Shiawassee River	Shiawassee River	Lat 42°36'59", long 83°57'53", in SE¼ SW¼ sec.27, T.3N., R.4E., Livingston County, at Grand River Road, 1.2 miles west of Howell, Mich.		1973-74	10-02-74 12-13-74	c 6.79 c 28.1
North Ore Creek	do	Lat 42°47'29", long 83°50'42", in SE¼ NE¼ sec.34, T.5N., R.5E., Livingston County, at bridge on Silver Lake Road in Argentine, Mich.			05-20-75 05-20-75	c 51.6 c 5.93
Cass River	Saginaw River	Lat 43°30'38", long 83°20'35", in SE¼ SW¼ sec.30, T.13N., R.10E., Tuscola County, at bridge on Deckerville Rd., 3.0 miles northeast of Caro, Mich.		1969	11-24-74	c 39.0
Sucker Creek	Cass River	Lat 43°29'05", long 83°20'50", in SE¼ SE¼ sec.1, T.12N., R.9E., Tuscola County, at culvert on Albin Rd., 2.7 miles southeast of Caro, Mich.			11-12-74	c 7.34
O'Brien Drain	do	Lat 43°22'30", long 83°28'37", in SE¼ SW¼ sec.25, T.12N., R.8E., Tuscola County, at culvert on State Highway M-46, 3.8 miles southwest of Wahjamega, Mich.			11-12-74	c 0.52
Evergreen Creek	do	Lat 43°22'30", long 83°28'59", in SE¼ SE¼ sec.26, T.12N., R.8E., Tuscola County, at culvert on State Highway M-46, 3.9 miles southeast of Wahjamega, Mich.			11-12-74	c 4.38
Cass River	Saginaw River	Lat 43°22'15", long 83°34'52", in NW¼ SW¼ sec.7, T.11N., R.8E., Tuscola County, at bridge on State Highway M-15, in Vassar, Mich.	710	1949-70e 1971-74f	11-12-74 04-16-75	c 77.6 2710
Chippewa River	Tittabawassee River	Lat 43°35'40", long 84°22'10", in NE¼ NE¼ sec.24, T.14N., R.1W., Midland County, at bridge on Meridan Road, 6.5 miles southwest of Midland, Mich.	597	1947-72e 1973-74f	05-02-75	2060
Sugar River	do	Lat 44°06'23", long 84°25'37", in NE¼ SE¼ sec.21, T.20N., R.1W., Gladwin County, at bridge on Hockaday Road, 9.3 miles north of Gladwin, Mich.	20.0	1968	09-12-75	c 35.9
do	do	Lat 44°03'35", long 84°23'17", in SE¼ SE¼ sec.2, T.19N., R.1W., Gladwin County, at end of Breaut Road, 7.1 miles northeast of Gladwin, Mich.			09-12-75	c 51.3
Tittabawassee River	Saginaw River	Lat 43°48'22", long 84°23'10", in NW¼ SW¼ sec.1, T.16N., R.1W., Midland County, at bridge on State Highway M-30, 0.5 mile north of Edenville, Mich.			11-06-74	c1700
Sebewaing River (State Drain)	Lake Huron	Lat 43°42'43", long 83°25'40", in SE¼ SE¼ sec.16, T.15N., R.9E., Huron County, at bridge on Rescue Road, 1.4 miles southeast of Sebewaing, Mich.	a62	1940-54e 1973-74	10-23-74 11-22-74 12-20-74 01-16-75 02-20-75 03-13-75 03-26-75 04-11-75 04-24-75 05-08-75 05-22-75 06-25-75	*c 0.44 c 2.26 c 8.90 c 28.5 *c 3.00 *c 8.72 c 102 c 188 c 62.8 c 26.0 c 257 *c 10.4
East Fork Sebewaing River (Columbia Drain)	Sebewaing River	Lat 43°43'38", long 83°23'46", in SE¼ SE¼ sec.10, T.15N., R.9E., Huron County, at bridge on Gettel Road, 2.5 miles east of Sebewaing, Mich.	a38	1940-54e 1973-74	10-23-74 11-22-74 12-20-74 03-13-75 03-27-75 04-11-75 04-24-75 05-08-75 05-22-75 06-25-75	*c 1.11 c 3.24 c 5.28 *c 5.27 c 41.5 c 113 c 32.3 c 11.1 c 270 *c 4.69

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake Huron--Continued				
Pigeon River	Lake Huron	Lat 43°55'03", long 83°14'36", in SE¼ SE¼ sec.1, T.17N., R.10E., Huron County, at bridge on Limerick Road, 2.1 miles southeast of Caseville, Mich.		1973-74	10-12-74	*c 2.72
					10-23-74	*c 9.28
					11-22-74	c 12.3
					12-12-74	*c 25.1
					01-16-75	c 84.2
					02-20-75	c 18.4
					03-13-75	*c 65.3
					03-27-75	c443
					04-11-75	c253
					04-24-75	c127
					05-08-75	c 66.0
					05-22-75	c980
					06-25-75	*c 21.7
Bad Axe Drain	Bad Axe Creek	Lat 43°48'35", long 82°59'12", in NE¼ NE¼ sec.19, T.16N., R.13E., Huron County, at Pit Road, in Bad Axe, Mich.			05-21-75	c 3.02
					07-07-75	c 0.35
do	do	Lat 43°48'36", long 82°59'13", in SW¼ SE¼ sec.18, T.16N., R.13E., Huron County, at Pit Road, in Bad Axe, Mich.			05-21-75	c 3.68
Bad Axe Creek	Pinnebog River	Lat 43°50'15", long 83°01'29", in NE¼ NE¼ sec.11, T16N., R.12E., Huron County, at Richardson Road, 2.8 miles northwest of Bad Axe, Mich.			05-21-75	c 7.59
					07-07-75	*c 1.55
do	do	Lat 43°51'44", long 83°02'32", in NW¼ NW¼ sec.35, T.17N., R.12E., Huron County, at Thomas Road, 4.8 miles northwest of Bad Axe, Mich.			07-07-75	*c 2.08
do	do	Lat 43°52'52", long 83°06'08", in SE¼ SE¼ sec.19, T.17N., R.12E., Huron County, at Pinnebog Road, 3.8 miles south of Pinnebog, Mich.			05-21-75	c 17.5
					07-07-75	*c 1.78
do	do	Lat 43°53'09", long 83°07'22", in SW¼ NW¼ sec.19, T.17N., R.12E., Huron County, at Grassmere Road, 3.6 miles southwest of Pinnebog, Mich.			05-20-75	c 7.47
Pinnebog River	Lake Huron	Lat 43°55'14", long 83°07'32", in NE¼ NE¼ sec.12, T.17N., R.11E., Huron County, at bridge on Limerick Road, 1.5 miles southwest of Pinnebog, Mich.		1973-74	10-23-74	*c 2.30
					11-22-74	c 18.0
					12-20-74	c 39.2
					01-16-75	c 82.8
					02-20-75	c 36.5
					03-13-75	*c 55.6
					04-11-75	c331
Willow Creek	do	Lat 44°01'42", long 82°50'16", in NW¼ NE¼ sec.4, T.18N., R.14E., Huron County, at bridge on State Highway M-25, at Huron City, Mich.		1974	10-23-74	*c 0.81
					11-22-74	c 28.5
					12-20-74	c 25.8
					01-16-75	c 48.5
					02-20-75	c 42.5
					03-13-75	*c 37.3
					03-27-75	c163
					04-11-75	c192
					04-24-75	c 96.1
					05-08-75	c 59.6
					05-22-75	c 17.6
					06-25-75	*c 5.82
		Streams tributary to St. Clair River				
Belle River	St. Clair River	Lat 42°56'47", long 83°06'26", in SE¼ SE¼ sec.12, T.6N., R.11E., Lapeer County, at bridge on Dryden Road, 1.0 mile east of Dryden, Mich.	8.22	1967	07-14-75	c 4.18
do	do	Lat 42°57'14", long 83°06'20", in SW¼ NW¼ sec.7, T.6N., R.12E., Lapeer County, at bridge on Bishop Road, 1.0 mile northeast of Dryden, Mich.			07-14-75	c 4.49
do	do	Lat 42°58'20", long 83°05'17", in SE¼ NE¼ sec.6, T.6N., R.12E., Lapeer County, at bridge on Hall Road, 2.6 miles northeast of Dryden, Mich.	16.9	1967-71	07-14-75	c 4.52

Discharge measurements made at miscellaneous sites during water year 1975--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements Date	Measurements Discharge (cfs)
		Streams tributary to Lake St. Clair				
Salt River	Lake St. Clair	Lat 42°45'32", long 82°45'51", in SE¼ NW¼ sec.23, T.4N., R.14E., Macomb County, at bridge on Gratiot Avenue, 2.5 miles northeast of New Haven, Mich.			07-15-75	c .79
do	do	Lat 42°43'11", long 82°47'09", in NW¼ NE¼ sec.3, T.3N., R.14E., Macomb County, at bridge on 26 Mile Road, at New Haven, Mich.			07-15-75	c 1.97
North Branch Clinton River	Clinton River	Lat 42°54'59", long 83°02'42", in NE¼ sec.28, T.6N., R.12E., Lapeer County, at bridge on State Highway 53, at Almont, Mich.	9.56	1959-62 1963-68e 1969-74f	07-14-75	c 5.78
do	do	Lat 42°49'11", long 82°58'35", in NW¼ sec.31, T.5N., R.13E., Macomb County, at bridge on 33 Mile Road, 2.2 miles northeast of Romeo, Mich.	49.7	1959-64 1965-69e 1970-74f	07-14-75	c21.8
East Pond Creek	North Branch Clinton River	Lat 42°49'52", long 83°04'12", in NW¼ NE¼ sec.29, T.5N., R.12E., Macomb County, at bridge on 34 Mile Road, 3.0 miles northwest of Romeo, Mich.			07-14-75	c 6.19
do	do	Lat 42°48'57", long 83°04'12", in SW¼ sec.29, T.5N., R.12E., Macomb County, at bridge on 34 Mile Road, 3.0 miles northwest of Romeo, Mich.			07-14-75	c 7.54
do	do	Lat 42°49'01", long 83°00'35", in NW¼ NE¼ sec.35, T.5N., R.12E., Macomb County, at bridge on McVicer Road, 0.5 mile north of Romeo, Mich.			07-14-75	c17.5
do	do	Lat 42°48'16", long 83°58'18", in NW¼ sec.6, T.4N., R.13E., Macomb County, at bridge on Powell Road, 1.6 miles east of Romeo, Mich.	24.5	1960-61 1963-64 1966-67	07-14-75	c18.3
Taft Drain	do	Lat 42°44'20", long 83°01'02", in NE¼ sec.26, T.4N., R.12E., Macomb County, at bridge on Jewell Road, 4.0 miles south of Romeo, Mich.			07-15-75	c 1.08
		Streams tributary to Detroit River				
Ecorse River	Detroit River	Lat 42°16'07", long 83°10'50", in private claim 51, T.3S., R.11E., Wayne County, at bridge on Rupp St., at Lincoln Park, Mich.	16.5	1971-73	10-02-74 12-13-74	c 1.29 c 9.86
South Branch Ecorse River	Ecorse River	Lat 42°13'41", long 83°12'26", in NW¼ NW¼ sec.24, T.3S., R.10E., Wayne County, at bridge on Moran Road, at Lincoln Park, Mich.	all	1973	10-02-74 12-13-74	c .86 c 7.95

* Base flow.
a Approximately.
b Field estimate.
c Discharge measurement made by employees of Michigan Department of Natural Resources.
d Operated as a low-flow partial-record station.
e Operated as a continuous-record gaging station.
f Operated as a crest-stage partial-record station.
g Not previously published.

SECTION 2. WATER-QUALITY RECORDS

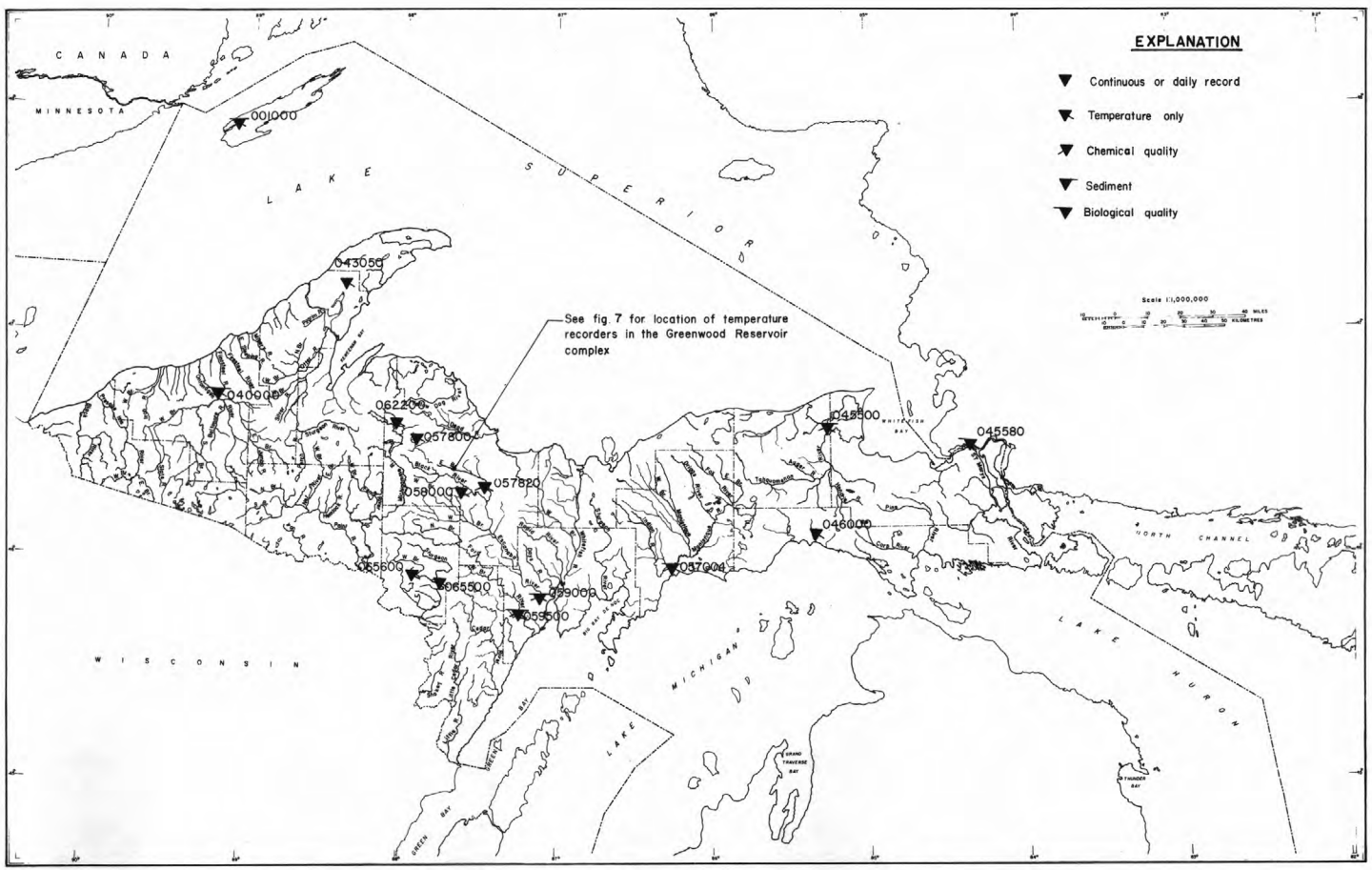

Figure 5.--Map showing identification number and location of water-quality stations in Upper Peninsula of Michigan.

Figure 6.--Map showing identification number and location of water-quality stations in Lower Peninsula of Michigan.

04001000 WASHINGTON CREEK AT WINDIGO, MICH.
(Hydrologic bench-mark, pesticide and radiochemical 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, at gaging station 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 mi^2 (34.2 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1964 to September 1975.
Water temperatures: October 1964 to September 1975.
Sediment records: August 1966 to September 1975 (partial-record station).

EXTREMES.--1974-75:
Water temperatures: Maximum, 22.0°C July 18, Aug. 1; minimum, freezing point on many days during December to April.
Period of record:
Water temperatures: Maximum, 22.0°C July 26, 30, 31, 1970, July 18, Aug. 1, 1975; minimum freezing point on many days during winter period.

REMARKS.--Intermittent ice cover during winter period. Recorder stopped Oct. 1-16, Jan. 4 to Feb.5, Aug. 28 to Sept. 3, range in temperature 5.5°C to 8.0°C, 0.0°C to 0.5°C, 12.5°C to 16.5°C, respectively.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
17...	1015	9.4	11	16	4.5	2.5	.5	62	0	51	5.0	3.0
FEB.												
05...	1550	6.9	13	13	5.0	2.4	.5	57	0	47	7.2	2.2
MAR.												
04...	1300	5.9	15	15	4.7	2.8	.6	65	0	53	5.7	1.6
MAY												
05...	1700	77	8.6	8.6	2.5	1.1	.5	32	0	26	6.6	1.0
JUNE												
10...	1100	5.7	9.0	18	4.5	2.4	.6	80	0	66	5.0	2.2
SEP.												
10...	0900	2.4	14	22	7.5	4.4	.7	104	0	85	6.3	4.8

DATE	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
OCT.											
17...	.1	.01	.01	92	73	58	8	8	.1	120	6.6
FEB.											
05...	.3	.09	.01	82	72	53	6	9	.1	110	7.1
MAR.											
04...	.1	.10	.00	100	78	57	4	10	.2	140	6.8
MAY											
05...	.4	.18	.01	65	45	32	6	7	.1	75	6.8
JUNE											
10...	.1	.04	.02	76	81	63	0	8	.1	115	7.6
SEP.											
10...	.2	.04	.01	125	111	86	1	10	.2	270	7.3

DATE	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CARBON DIOXIDE (CO2) (MG/L)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.										
17...	4.5	11.9	94	25	290	140	20	2	.05	--
FEB.										
05...	.0	14.0	98	7.2	B42	B3	B78	--	--	--
MAR.										
04...	.5	11.2	79	16	B76	B20	<1	--	--	--
MAY										
05...	5.5	12.8	100	8.1	40	30	<1	22	4.6	--
JUNE										
10...	13.0	10.1	97	3.2	140	52	50	4	.06	100
SEP.										
10...	10.5	9.4	85	8.3	B1500	B230	B14	--	--	--

B--RESULTS BASED ON COLONY COUNT OUTSDIE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04001000 WASHINGTON CREEK AT WINDIGO, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TOTAL LINDANE (UG/L)	TOTAL MALA-THION (UG/L)	TOTAL METHYL PARA-THION (UG/L)	TOTAL PARA-THION (UG/L)	TOTAL PCB (UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
OCT. 17...	.00	.00	.00	.00	.0	0	.00	.00	.00

DATE	TOTAL ALDRIN (UG/L)	TOTAL CHLOR-DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)
OCT. 17...	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
OCT. 17...	0	0	.2	0	1	10
FEB. 05...	8	40	.0	0	0	6
MAY 05...	4	10	.3	0	0	8
SEP. 10...	9	30	.1	0	0	10

DATE	CYANIDE (CN) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
OCT. 17...	.00	0	0	1	<10	3	560
FEB. 05...	.00	0	10	1	<10	1	430
MAY 05...	.00	1	0	0	<10	7	470
SEP. 10...	.00	0	0	0	<10	0	670

DATE	TOTAL FILT-RABLE RESIDUE (MG/L)	TOTAL NON-FILT-RABLE RESIDUE (MG/L)	DIS-SOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUS-PENDED GROSS ALPHA AS U-NAT. (UG/L)	DIS-SOLVED GROSS BETA AS CS-137 (PC/L)	SUS-PENDED GROSS BETA AS CS-137 (PC/L)	DIS-SOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUS-PENDED GROSS BETA AS SR90 /Y90 (PC/L)	DIS-SOLVED RA-226 (RADON METHOD) (PC/L)	DIS-SOLVED URANIUM (U) (UG/L)
OCT. 17...	88	1	1.4	<.4	3.2	<.4	2.6	<.4	.01	.03

04001000 WASHINGTON CREEK AT WINDIGO, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	6.5	5.5	1.0	1.0	0.0	0.0	---	---	0.0	0.0
2	---	---	5.5	5.5	1.0	1.0	0.0	0.0	---	---	0.0	0.0
3	---	---	5.5	5.0	1.0	1.0	0.0	0.0	---	---	0.5	0.0
4	---	---	5.0	4.0	1.0	0.5	---	---	---	---	0.5	0.5
5	---	---	4.0	3.5	0.5	0.5	---	---	---	0.0	0.5	0.5
6	---	---	3.5	3.0	1.0	1.0	---	---	0.0	0.0	0.5	0.5
7	---	---	3.0	3.0	0.5	0.5	---	---	0.0	0.0	0.5	0.5
8	---	---	3.0	3.0	0.5	0.5	---	---	0.5	0.0	0.5	0.5
9	---	---	4.0	3.0	0.5	0.5	---	---	0.5	0.5	0.5	0.5
10	---	---	4.0	4.0	0.5	0.5	---	---	0.5	0.5	1.0	0.5
11	---	---	4.0	4.0	0.5	0.5	---	---	0.5	0.5	0.5	0.5
12	---	---	4.0	3.0	0.5	0.5	---	---	0.5	0.5	0.5	0.5
13	---	---	3.0	2.0	0.5	0.5	---	---	0.5	0.5	0.5	0.5
14	---	---	2.0	1.5	0.5	0.5	---	---	0.5	0.5	0.5	0.5
15	---	---	1.5	1.5	0.5	0.5	---	---	0.5	0.5	0.5	0.5
16	---	---	1.5	1.5	0.5	0.5	---	---	0.5	0.5	0.5	0.5
17	4.5	4.5	1.5	1.5	0.5	0.5	---	---	0.5	0.5	0.5	0.5
18	4.5	4.0	1.5	1.5	0.5	0.5	---	---	0.5	0.0	0.5	0.5
19	4.0	4.0	1.5	1.5	0.5	0.5	---	---	0.5	0.0	0.5	0.5
20	4.0	4.0	1.5	1.5	0.5	0.5	---	---	0.0	0.0	0.5	0.5
21	4.0	3.5	1.5	1.5	0.5	0.5	---	---	0.0	0.0	0.5	0.0
22	5.0	3.5	1.5	1.5	0.0	0.0	---	---	0.0	0.0	0.0	0.0
23	5.0	4.5	1.5	1.5	0.0	0.0	---	---	0.0	0.0	0.0	0.0
24	4.5	4.0	1.5	1.5	0.0	0.0	---	---	0.0	0.0	0.5	0.0
25	4.0	4.0	1.5	1.5	0.0	0.0	---	---	0.0	0.0	0.5	0.5
26	4.0	4.0	1.0	1.0	0.0	0.0	---	---	0.0	0.0	0.5	0.5
27	4.0	4.0	1.0	1.0	0.0	0.0	---	---	0.0	0.0	0.5	0.5
28	5.5	4.0	1.0	1.0	0.0	0.0	---	---	0.0	0.0	0.5	0.5
29	6.5	5.5	1.0	1.0	0.0	0.0	---	---	---	---	0.5	0.5
30	7.0	6.5	1.0	1.0	0.0	0.0	---	---	---	---	0.5	0.5
31	7.0	7.0	---	---	0.0	0.0	---	---	---	---	0.5	0.5
MONTH	---	---	6.5	1.0	1.0	0.0	---	---	0.5	0.0	1.0	0.0

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.5	0.5	5.5	4.0	10.5	12.0	19.0	17.0	22.0	19.0	---	---
2	0.5	0.5	5.0	5.0	13.0	10.5	19.0	17.0	20.5	19.0	---	---
3	0.5	0.5	5.0	5.0	13.5	11.0	19.5	17.0	19.5	17.0	---	---
4	0.5	0.5	5.5	5.0	13.0	10.5	19.0	17.5	19.5	17.5	14.5	12.0
5	0.5	0.5	5.5	5.5	12.5	11.5	18.5	16.5	18.5	16.0	13.5	12.5
6	0.5	0.5	5.5	3.5	11.5	11.0	19.5	17.0	18.0	14.0	11.5	11.0
7	0.5	0.5	6.5	5.5	10.5	10.0	19.5	16.5	17.5	14.0	11.0	10.0
8	0.5	0.5	7.5	6.0	13.0	10.5	19.0	16.5	18.5	14.0	11.0	10.0
9	0.5	0.5	8.0	6.5	13.0	11.5	17.0	14.5	19.0	15.5	10.5	8.0
10	0.5	0.5	9.0	7.0	13.5	12.0	16.0	14.5	19.0	16.0	11.0	10.5
11	0.5	0.5	9.5	8.0	13.5	12.0	15.0	13.5	18.5	15.0	12.0	11.0
12	0.5	0.5	9.5	7.0	12.0	10.5	16.0	13.0	19.0	16.0	11.5	10.0
13	0.5	0.0	10.0	7.0	12.0	10.5	15.5	13.0	18.5	16.0	10.0	9.0
14	0.0	0.0	10.0	9.0	14.0	12.0	14.5	13.5	17.5	14.5	10.5	8.5
15	0.0	0.0	9.5	8.0	14.0	13.0	16.5	14.0	16.0	15.5	11.5	10.5
16	0.0	0.0	10.5	7.0	14.0	12.0	18.5	16.0	15.5	14.0	11.5	11.0
17	0.0	0.0	12.0	8.5	14.5	12.5	20.5	18.0	16.0	13.0	11.5	10.5
18	0.0	0.0	14.0	10.0	15.5	13.5	22.0	19.0	15.5	12.0	12.5	11.5
19	0.0	0.0	13.0	10.5	15.5	13.5	20.5	18.5	16.0	13.0	12.0	11.5
20	0.0	0.0	14.5	10.5	15.5	13.5	19.0	17.0	14.5	13.0	11.5	11.5
21	0.0	0.0	16.0	12.5	15.5	13.0	17.0	16.0	15.5	14.5	11.5	10.5
22	0.0	0.0	16.5	13.0	18.0	15.0	17.5	16.0	15.5	12.5	10.5	10.0
23	0.0	0.0	17.0	14.0	18.0	16.0	17.0	16.0	16.0	13.5	10.0	10.0
24	0.0	0.0	15.5	14.0	17.5	15.5	16.0	15.0	17.5	14.0	10.0	9.5
25	0.0	0.0	17.5	13.0	17.5	14.5	16.0	13.5	18.0	16.0	9.5	8.5
26	0.0	0.0	16.5	13.5	18.5	16.0	16.5	14.0	17.0	15.0	9.0	8.5
27	1.5	1.0	14.5	12.0	19.5	17.0	18.0	14.5	15.5	12.5	9.0	8.5
28	3.0	2.5	15.0	12.5	19.0	16.0	18.5	15.0	---	---	9.0	8.5
29	4.0	4.0	14.0	12.0	19.0	17.5	19.5	16.0	---	---	9.5	8.5
30	4.0	4.0	14.5	12.0	18.0	16.5	20.5	17.0	---	---	10.0	9.0
31	---	---	14.0	12.0	---	---	21.5	17.5	---	---	---	---
MONTH	4.0	0.0	17.5	3.5	19.5	10.0	22.0	13.0	22.0	12.0	14.5	8.0
YEAR	22.0	0.0										

04040000 ONTONAGON RIVER NEAR ROCKLAND, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 46°43'15", long 89°12'25", in NE¼ sec.20, T.50 N., R.39 W., Ontonagon County, at gaging station 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 mi^2 (3,470 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1974 to September 1975.
Specific conductance: October 1974 to September 1975.
Water temperatures: October 1974 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 190 micromhos July 11; minimum observed, 75 micromhos Apr. 27, 28.
Water temperatures: Maximum observed, 27.0°C July 31, Aug. 1; minimum observed, freezing point on several days during January and February.

REMARKS.--Samples for chemical analyses consist of a cross-sectional composite taken at cableway, 200 ft (61 m) upstream from bridge on Victoria Road. Daily records are based on samples collected at the mid-stream point from bridge on Victoria Road. Complete ice cover during winter period. Considerable regulation by powerplant on West Branch, 5 mi (8 km) above station; Bond Falls Reservoir 25 mi (40 km) above station; and by Gogebic and Cisco Lakes in headwaters.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
03...	1400	1010	8.3	20	5.0	2.5	1.3	76	0	62	6.8	3.0
NOV.												
06...	1500	1310	9.1	17	3.8	1.9	1.0	50	0	41	7.9	3.1
DEC.												
10...	1500	1100	8.1	17	3.8	2.0	.8	59	0	48	6.1	2.1
JAN.												
22...	0900	E850	9.6	18	4.6	2.2	.9	69	0	57	5.0	1.2
FEB.												
19...	0900	--	10	20	4.9	2.2	.9	73	0	60	5.5	2.4
APR.												
01...	1300	E1000	9.9	16	4.4	2.5	1.2	59	2	52	7.0	1.6
23...	1300	16800	5.7	15	3.4	1.1	1.5	50	0	41	6.9	2.2
MAY												
20...	1400	6140	5.6	25	5.9	1.5	2.3	50	0	41	5.9	2.4
JUNE												
18...	1600	1480	7.4	15	3.8	1.9	1.0	59	0	48	5.2	2.3
JULY												
10...	1800	633	7.4	17	4.6	2.1	1.3	74	0	61	4.8	2.2
AUG.												
13...	1330	484	8.3	21	5.9	2.5	1.2	101	0	83	4.8	1.4
SEP.												
16...	1245	300	9.2	27	6.0	2.9	1.2	100	0	82	6.2	2.8

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
03...	1400	8.3	0	0	1	0	<10	0	2	0	8	8
JAN.												
22...	0900	6.3	1	0	0	0	<10	0	1	0	9	5
APR.												
23...	1300	19	4	2	--	3	20	0	9	4	28	24
JULY												
10...	1800	6.1	1	1	2	2	<10	0	0	0	9	8

E--ESTIMATED VALUE

04040000 ONTONAGON RIVER NEAR ROCKLAND, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
03...	.1	.01	.31	.32	.02	110	85	71	8	7	.1	140
NOV.												
06...	.2	.09	.44	.53	.06	78	69	58	17	7	.1	82
DEC.												
10...	.3	.08	.23	.31	.03	102	69	58	10	7	.1	100
JAN.												
22...	.1	.13	.25	.38	.02	80	76	64	7	7	.1	147
FEB.												
19...	.2	.14	.27	.41	.01	82	82	70	10	6	.1	--
APR.												
01...	.0	.16	.51	.67	.03	88	74	58	6	8	.1	125
23...	.2	.13	.91	1.0	.11	95	62	51	10	4	.1	97
MAY												
20...	.2	.09	1.3	1.4	.48	94	73	87	46	4	.1	135
JUNE												
18...	.2	.08	.66	.74	.07	59	66	53	5	7	.1	110
JULY												
10...	.1	.01	.35	.36	.02	84	76	61	0	7	.1	120
AUG.												
13...	.3	.01	.23	.24	.02	86	95	77	0	7	.1	145
SEP.												
16...	.3	.00	.16	.16	.02	88	105	92	10	6	.1	162

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
03...	8.4	9.0	1	--	--	.5	B28	B5	54	16	44	100
NOV.												
06...	7.6	6.5	30	--	--	2.0	57	17	25	28	99	100
DEC.												
10...	8.4	1.0	10	--	--	.4	--	--	--	25	74	63
JAN.												
22...	8.1	.5	6	15.7	110	.9	B96	B9	B3	13	E30	100
FEB.												
19...	--	--	5	--	--	--	B84	B7	B3	--	--	--
APR.												
01...	8.6	.0	20	14.4	100	.3	B180	B6	<10	38	E103	100
23...	7.9	2.5	200	13.4	100	1.0	310	--	--	1400	63500	66
MAY												
20...	7.6	15.0	220	10.0	100	2.0	160	--	--	860	14300	100
JUNE												
18...	8.2	17.0	45	9.3	99	.6	--	B100	50	72	288	100
JULY												
10...	7.9	22.5	10	8.5	100	1.5	54	15	37	16	27	100
AUG.												
13...	8.2	22.5	6	8.7	100	1.0	95	<1	86	11	14	100
SEP.												
16...	7.8	14.5	10	10.0	100	2.5	120	17	28	20	16	--

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
03...	600	420	16	2	530	34	.6	.0	0	0	--	40
JAN.												
22...	410	100	7	3	30	11	.0	.0	0	0	20	10
APR.												
23...	9600	1100	19	6	230	150	.3	.2	0	0	80	80
JULY												
10...	700	320	23	14	40	30	.1	.1	0	0	40	20

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04040000 ONTONAGON RIVER NEAR ROCKLAND, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 06	34	1.5	0.8	0.4	0.1	1750
FEB. 19	28	0.6	0.6	0.2	0.2	0
AUG. 13	34	10	8.8	2.2	0.4	545

REMARKS.-- a/ Sampling Method Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 03	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	44
		Pennales		
		Achnanthaceae		
		Achnanthes	--	11
		Cocconeis	--	2
		Cymbellaceae		
		Cymbella	--	2
		Diatomaceae		
		Diatoma	--	13
		Fragilariaceae		
		Asterionella	--	5
		Synedra	--	5
		Meridionaceae		
		Merdion	--	5
		Nitzschiaceae		
		Nitzschia	--	11
		TOTAL	850	
NOV. 06	1500	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	22
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	6
		Melosira	--	6
		Pennales		
		Achnanthaceae		
		Achnanthes	--	6
		Diatomaceae		
		Diatoma	--	11
		Fragilariaceae		
		Synedra	--	11
		Gomphonemataceae		
		Gomphonema	--	11
		Naviculaceae		
		Navicula	--	22
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	6
		TOTAL	360	
DEC. 10	1500	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Cocconeis	--	1
		Cymbellaceae		
		Cymbella	--	1
		Fragilariaceae		
		Asterionella	--	4
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Navicula	--	3
		Nitzschiaceae		
		Nitzschia	--	4
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	71
		Oscillatoriaceae		
		Lyngbya	--	12
		TOTAL	620	
JAN. 22	0900	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	21
		Pennales		
		Achnanthaceae		
		Achnanthes	--	7
		Cymbellaceae		
		Cymbella	--	7
		Fragilariaceae		
		Asterionella	--	4
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	4
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	54
		TOTAL	240	

04040000 ONTONAGON RIVER NEAR ROCKLAND, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB. 19	0900	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	23
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	6
		Cymbellaceae		
		Cymbella	--	6
		Fragilariaceae		
		Asterionella	--	3
		Synedra	--	9
		Naviculaceae		
		Caloneis	--	6
		Nitzschiaceae		
		Nitzschia	--	6
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	43
		TOTAL	260	
APR. 01	1300	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Cocconeis	--	8
		Cymbellaceae		
		Cymbella	--	8
		Diatomaceae		
		Diatoma	--	8
		Eunotiaceae		
		Eunotia	--	8
		Fragilariaceae		
		Synedra	--	8
		Gomphonemataceae		
		Gomphonema	--	15
		Meridionaceae		
		Meridion	--	31
		Naviculaceae		
		Navicula	--	8
		Nitzschiaceae		
		Nitzschia	--	8
		TOTAL	210	
APR. 23	1300	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Gomphonemataceae		
		Gomphonemataceae		
		Gomphonema	--	25
		Naviculaceae		
		Navicula	--	50
		Nitzschiaceae		
		Nitzschia	--	25
		TOTAL	270	
MAY 20	1400	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Naviculaceae		
		Navicula	--	50
		Nitzschiaceae		
		Nitzschia	--	50
		TOTAL	240	

04040000 ONTONAGON RIVER NEAR ROCKLAND, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JUNE 18	1600	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	4
		Schenedesmaceae		
		Scenedesmus	--	17
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Melosira	--	13
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Cocconeis	--	8
		Gomphonemataceae		
		Gomphonema	--	4
		Meridionaceae		
		Meridion	--	4
		Naviculaceae		
		Navicula	--	25
		Nitzschiaceae		
		Nitzschia	--	13
		TOTAL	1,700	
JULY 10	1800	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	100	18
		Kirchneriella	33	6
		Scenedesmaceae		
		Scenedesmus	130	24
		Zygnematales		
		Desmidiaceae		
		Cosmarium	22	4
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	44	8
		Fragilariaceae		
		Fragilaria		
		Gomphonemataceae		
		Gomphonema	56	10
		Naviculaceae		
		Navicula	11	2
		Nitzschiaceae		
		Nitzschia	140	27
		Surirellaceae		
		Surirella	--	<1
		Tabellariaceae		
		Tabellaria	--	<1
AUG. 13	1330	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	15	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	15	1
		Melosira	220	22
		Pennales		
		Achnanthaceae		
		Achnanthes	91	9
		Cocconeis	15	1
		Cymbellaceae		
		Cymbella	30	3
		Distomaceae		
		Distoma	15	1
		Fragilariaceae		
		Fragilaria	30	3
		Gomphonemataceae		
		Gomphonema	60	6
		Naviculaceae		
		Gyrosigma	15	1
		Navicula	100	10
		Pinnularia	30	3
		Nitzschiaceae		
		Nitzschia	100	10
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	160	16
		Aphanizomenon	120	12
SEP. 16	1245	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	320	30
		Pwnnales		
		Achnanthaceae		
		Cocconeis	15	1
		Cymbellaceae		
		Cymbella	15	1
		Diatomaceae		
		Diatoma	15	1
		Fragilariaceae		
		Synedra	31	3
		Gomphonemataceae		
		Gomphonema	47	4
		Naviculaceae		
		Navicula	100	10
		Pinnularia	15	1
		Nitzschiaceae		
		Nitzschia	47	4
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	<1
		Aphanizomenon	470	43

04040000 ONTONAGON RIVER NEAR ROCKLAND, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	120	100	138	125	145	130	76	130	116	151	169
2	---	92	95	120	130	140	135	79	125	120	155	162
3	---	100	100	125	125	140	135	80	110	118	181	162
4	---	90	95	128	130	135	135	90	125	167	158	168
5	---	100	100	140	130	140	125	93	150	124	174	174
6	---	100	100	120	130	140	135	86	115	125	154	181
7	---	100	102	125	130	140	155	94	125	125	178	172
8	---	110	100	130	130	140	145	88	130	144	153	172
9	---	138	95	110	125	140	155	90	120	173	176	172
10	120	105	105	120	130	145	145	98	115	136	175	167
11	120	150	115	135	135	150	150	100	120	190	157	166
12	130	100	110	125	140	150	150	115	140	154	162	167
13	150	92	115	130	135	145	140	110	135	173	155	167
14	120	85	118	125	120	150	150	115	125	130	159	166
15	130	95	120	130	130	150	140	125	125	128	183	163
16	120	90	118	125	130	145	140	120	140	142	185	162
17	118	100	120	122	125	165	125	110	120	148	181	170
18	115	100	120	125	130	160	115	105	115	137	158	171
19	140	120	110	125	140	165	100	100	107	176	172	169
20	110	120	145	115	140	150	90	130	169	146	164	164
21	115	92	118	120	145	145	95	130	155	144	170	166
22	105	95	125	130	140	135	---	105	124	140	165	166
23	107	90	118	130	140	130	130	95	113	151	175	165
24	110	90	120	130	140	115	87	90	118	147	184	165
25	100	80	115	130	140	120	87	100	119	153	169	173
26	120	90	115	120	140	120	87	95	164	144	168	163
27	145	90	120	130	140	120	75	100	124	179	164	169
28	115	98	125	125	140	120	75	100	131	151	171	168
29	130	90	115	130	---	120	80	105	131	162	169	162
30	155	90	125	130	---	125	79	125	136	---	169	165
31	122	---	140	125	---	125	---	120	---	152	177	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	9.5	1.5	0.5	0.5	0.5	1.5	7.5	15.0	26.5	27.0	16.5
2	---	9.5	1.0	0.0	0.5	0.5	1.5	10.0	15.5	26.0	25.0	19.5
3	---	8.0	0.5	0.5	0.5	0.5	1.5	9.0	16.0	25.5	21.0	17.0
4	---	7.0	0.5	0.5	0.5	0.5	1.5	9.0	15.5	22.5	25.0	20.0
5	---	7.0	1.0	1.0	0.5	0.5	1.0	10.5	15.5	25.0	20.0	16.0
6	---	7.0	1.0	1.0	0.5	1.0	1.5	11.0	16.0	26.0	23.0	14.0
7	---	6.0	1.0	1.0	0.5	1.5	2.0	12.0	14.0	25.5	18.0	14.5
8	---	7.0	1.0	1.0	0.5	0.5	2.0	10.0	18.0	25.0	24.0	13.0
9	---	6.0	1.0	1.0	0.5	0.5	3.0	10.5	14.0	21.0	23.0	10.5
10	11.0	6.0	1.0	1.0	0.5	1.0	2.5	11.5	19.0	23.0	21.5	16.0
11	12.5	6.0	1.0	0.5	0.5	1.5	2.5	12.0	17.0	23.0	24.0	15.5
12	10.0	4.5	1.0	0.5	0.5	1.0	1.0	11.0	16.0	17.5	23.5	14.0
13	8.0	4.0	1.0	0.5	0.5	1.0	1.5	11.0	17.5	16.0	23.0	11.0
14	9.0	2.5	1.0	0.5	0.5	1.0	3.0	10.5	18.0	19.0	21.5	8.0
15	8.0	2.0	1.0	0.5	0.5	1.0	3.0	8.0	17.0	23.5	19.0	16.0
16	9.0	1.5	1.0	0.5	0.5	1.0	3.0	8.0	17.0	24.0	20.0	14.0
17	8.0	2.0	0.5	0.5	0.5	1.0	2.0	9.0	17.5	25.0	18.5	13.0
18	7.0	3.0	0.5	0.5	0.0	1.0	1.5	13.0	17.5	24.5	21.0	14.0
19	5.0	3.0	0.5	0.5	0.5	1.0	1.5	18.0	19.5	24.5	---	15.0
20	5.0	2.0	0.5	0.5	1.0	1.0	2.0	17.0	17.5	23.0	20.0	13.0
21	5.0	2.0	0.5	0.0	1.0	1.0	4.0	19.0	22.0	22.0	20.5	12.0
22	8.0	2.0	0.5	0.0	1.0	1.0	---	21.0	22.5	25.0	21.0	13.0
23	7.0	2.0	1.0	0.5	0.5	1.0	4.0	23.0	22.0	23.0	18.5	13.5
24	9.0	1.0	1.0	0.5	1.0	---	4.0	21.0	22.5	22.5	18.0	10.0
25	7.0	1.0	1.0	0.5	1.0	1.0	5.5	21.0	23.5	23.0	22.5	8.0
26	6.0	1.0	0.5	0.5	0.5	0.5	5.0	21.0	24.5	23.5	20.5	13.5
27	6.0	1.5	0.5	0.5	0.5	1.0	5.0	20.0	22.5	20.0	21.0	12.0
28	8.5	1.5	0.5	0.5	0.5	1.0	7.0	18.5	23.5	25.0	19.0	10.5
29	9.0	1.0	0.5	0.5	---	1.0	5.5	18.5	24.0	26.0	18.0	12.5
30	9.0	1.0	0.5	0.0	---	1.0	8.0	16.0	25.0	26.5	20.0	13.0
31	---	---	0.5	0.0	---	1.5	---	16.0	---	27.0	16.0	---

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, temperature recorder at gaging station 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 mi^2 (72.5 km^2).

PERIOD OF RECORD.--Water temperatures: October 1971 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 24.5°C July 30; minimum, freezing point on many days during November to April.
Period of record:
Water temperatures: Maximum 24.5°C July 30, 1975; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	9.0	8.5	9.0	8.5	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.0
2	9.0	8.0	8.0	7.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5
3	9.0	7.0	7.5	7.0	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5
4	9.5	9.0	7.0	6.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5
5	10.0	9.5	6.5	6.0	1.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5
6	9.5	9.0	6.0	5.5	1.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5
7	9.0	8.0	5.5	5.5	1.5	1.0	0.5	0.5	0.5	0.5	1.5	0.5
8	9.0	8.0	5.5	5.5	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.0
9	9.0	8.5	5.5	5.5	0.5	0.5	1.0	0.5	0.5	0.5	0.5	0.5
10	10.5	9.0	6.0	5.5	0.5	0.5	1.0	0.5	0.5	0.5	0.5	0.0
11	11.5	10.0	6.0	6.0	1.0	0.5	1.0	0.5	0.5	0.5	0.5	0.5
12	10.5	9.0	6.0	4.5	1.5	1.5	0.5	0.0	0.5	0.5	0.5	0.5
13	8.5	7.5	4.5	3.5	1.5	1.5	0.5	0.5	0.5	0.5	0.5	0.0
14	8.5	8.5	3.5	2.5	2.0	1.5	0.5	0.5	0.5	0.5	0.5	0.0
15	8.5	8.0	2.5	2.5	2.0	1.5	0.5	0.5	0.5	0.5	0.5	0.0
16	8.0	7.5	3.0	2.5	1.5	1.0	0.5	0.5	0.5	0.5	2.0	0.0
17	8.0	7.0	3.5	3.0	1.5	1.0	0.5	0.5	0.5	0.5	3.0	1.0
18	7.0	6.5	3.5	3.0	1.0	1.0	0.5	0.5	0.5	0.5	2.0	1.5
19	6.5	6.0	3.5	3.0	1.5	0.0	0.5	0.5	0.5	0.5	2.0	1.0
20	6.0	5.5	3.0	2.5	1.0	1.0	0.5	0.5	0.0	0.0	2.0	1.5
21	6.5	4.5	2.5	2.0	1.5	1.0	0.5	0.5	0.0	0.0	1.5	1.5
22	7.5	6.5	2.0	2.0	1.0	0.0	0.5	0.5	0.0	0.0	2.0	1.5
23	7.5	6.5	2.5	2.0	1.0	1.0	0.5	0.5	0.5	0.0	2.0	2.0
24	7.0	6.0	2.5	2.0	1.0	1.0	0.5	0.5	1.0	0.5	2.0	0.5
25	7.0	6.5	2.0	1.5	1.0	0.0	0.5	0.5	1.0	0.5	1.0	1.0
26	7.5	7.0	2.0	0.0	1.0	0.0	0.5	0.5	0.5	0.0	1.0	1.0
27	7.5	6.5	2.0	2.0	1.0	1.0	0.5	0.5	0.0	0.0	1.0	1.0
28	8.5	7.5	2.0	2.0	1.0	1.0	0.5	0.5	0.0	0.0	1.0	1.0
29	8.5	8.5	1.0	0.0	1.0	1.0	0.5	0.5	---	---	1.0	1.0
30	9.0	8.5	1.0	1.0	1.0	0.5	0.5	0.5	---	---	1.0	1.0
31	9.0	9.0	---	---	0.5	0.5	0.5	0.5	---	---	1.0	1.0
MONTH	11.5	4.5	9.0	0.0	2.0	0.0	1.0	0.0	1.0	0.0	3.0	0.0

04043050 TRAP ROCK RIVER NEAR LAKE LINDEN, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	1.0	1.0	6.0	3.5	15.5	10.5	22.5	17.5	23.0	19.0	18.0	14.5
2	1.5	0.5	7.5	3.5	17.0	10.5	22.5	17.5	20.5	18.0	17.0	14.0
3	1.5	0.0	5.5	4.5	16.5	11.0	22.5	17.5	22.0	16.5	15.5	13.5
4	1.0	0.0	6.0	4.5	16.0	11.5	23.0	17.0	22.0	17.5	17.0	13.0
5	1.5	0.0	8.0	5.5	14.5	12.0	22.5	17.0	20.0	16.5	15.0	14.0
6	2.0	0.0	9.5	6.0	12.5	10.5	22.0	17.0	20.0	14.5	15.0	13.0
7	2.0	0.0	11.0	7.0	13.5	10.0	23.0	17.0	20.0	14.5	14.0	12.5
8	2.5	0.5	11.0	7.5	15.5	10.5	22.0	17.5	21.0	15.0	12.5	11.0
9	2.5	1.0	12.0	8.5	17.0	11.5	20.0	16.0	21.5	17.0	13.0	9.5
10	3.0	1.0	13.0	9.0	16.0	13.0	18.5	15.0	21.5	17.0	13.0	12.0
11	3.0	1.0	12.0	10.0	14.5	13.0	17.0	14.5	21.0	16.0	14.0	12.0
12	3.0	1.0	12.0	8.0	13.0	12.0	16.5	13.0	21.0	16.0	12.0	11.0
13	3.0	1.0	13.5	8.5	14.0	11.5	19.0	13.0	21.0	17.0	12.5	9.0
14	2.5	2.0	12.5	10.5	17.0	13.0	17.0	14.0	20.0	16.0	13.0	9.0
15	2.0	1.5	11.5	8.5	15.5	12.5	21.0	14.5	19.5	15.5	15.0	11.0
16	2.0	1.5	12.0	7.5	14.0	11.5	23.5	17.5	19.0	16.0	14.5	13.0
17	1.5	1.0	15.0	9.0	14.0	13.0	24.0	19.0	18.5	15.0	15.0	12.0
18	1.0	0.0	17.0	12.0	16.0	13.0	24.0	19.5	18.0	13.0	15.0	12.5
19	0.5	0.0	15.0	13.0	17.0	13.5	23.5	19.5	18.5	14.0	15.0	12.0
20	2.0	0.0	14.5	12.5	16.0	14.5	21.0	18.5	17.0	15.0	14.5	12.5
21	2.0	0.0	17.5	13.5	19.5	14.0	20.5	15.5	16.0	15.0	12.5	11.5
22	3.0	0.0	19.5	14.5	19.5	16.5	22.0	17.0	16.5	14.0	12.0	10.5
23	0.5	0.0	20.0	15.5	20.5	16.5	20.0	16.0	17.0	14.0	12.5	10.0
24	2.0	0.5	18.0	15.5	20.0	16.0	17.0	15.5	20.0	15.0	12.5	9.5
25	4.0	0.5	19.5	13.0	21.0	15.5	18.5	14.0	19.5	16.5	12.5	10.0
26	3.0	0.5	17.5	15.5	21.5	15.5	19.5	14.5	19.0	15.0	12.0	8.0
27	5.5	1.5	17.5	14.5	20.5	16.5	21.0	16.0	18.5	14.0	12.5	8.5
28	3.5	2.0	17.0	13.5	21.5	16.5	21.0	15.5	17.0	15.0	13.0	9.0
29	2.5	2.5	13.5	12.5	20.5	16.5	23.0	16.0	17.5	14.5	12.0	9.5
30	6.5	1.5	15.5	11.5	22.0	16.5	24.5	20.0	18.0	13.0	13.0	10.5
31	---	---	16.5	11.5	---	---	24.0	19.0	18.0	13.5	---	---
MONTH	6.5	0.0	20.0	3.5	22.0	10.0	24.5	13.0	23.0	13.0	18.0	8.0
YEAR	24.5	0.0										

04045500 TAHQUAMENON RIVER NEAR TAHQUAMENON PARADISE, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 46°34'30", long 85°16'10", in NE¼ sec.11, T.48 N., R.8 W., Luce County, at gaging station 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 mi^2 (2,046 km^2).

PERIOD OF RECORD.--Chemical analysis: October 1974 to September 1975.
Specific conductance: October 1974 to September 1975.
Water temperatures: October 1974 to September 1975.

REMARKS.--Primary sampling point at cableway cross-section, 40 feet downstream from gage.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
22...	1500	765	6.7	17	4.9	1.5	.7	68	0	56	9.5	2.2
NOV.												
26...	1500	1280	7.1	14	4.6	1.2	.9	47	0	39	11	4.3
DEC.												
18...	1600	600	8.3	18	5.6	1.6	.8	70	0	57	12	1.0
JAN.												
07...	1230	483	9.2	23	5.5	1.8	.8	79	0	65	13	1.9
FEB.												
13...	1430	460	9.5	22	5.0	2.0	1.1	81	0	66	13	2.7
APR.												
02...	1100	664	9.0	24	5.3	1.5	.8	76	0	62	11	2.5
MAY												
01...	1130	4500	4.2	8.4	2.4	.8	.8	44	0	36	7.1	1.4
29...	1100	507	4.7	20	5.1	1.7	.9	78	0	64	10	2.3
JULY												
03...	0930	445	6.2	23	5.6	1.5	.6	84	0	69	8.4	1.9
AUG.												
04...	1310	281	7.4	25	6.1	1.6	.8	108	0	89	11	2.1
SEP.												
02...	1300	487	7.9	26	6.7	1.8	.7	96	0	79	16	1.5
29...	1230	572	7.6	21	5.1	1.4	.6	74	0	61	15	2.0

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
22...	1500	16	1	1	1	0	0	0	0	0	6	1
JAN.												
07...	1230	7.8	1	0	1	1	<10	0	--	1	13	10
MAY												
01...	1130	19	1	1	5	0	20	0	1	0	5	3
AUG.												
04...	1310	8.6	1	0	0	0	<10	0	0	0	5	3

04045500 TAHQUAMENON RIVER NEAR TAHQUAMENON PARADISE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
22...	.2	.03	.38	.41	.02	110	77	63	7	5	.1	120
NOV.												
26...	.3	.09	.25	.34	.01	64	67	54	15	5	.1	73
DEC.												
18...	.3	.11	.23	.34	.07	94	82	68	11	5	.1	140
JAN.												
07...	.1	.14	.45	.59	.03	102	95	80	15	5	.1	160
FEB.												
13...	.2	.15	.50	.65	.03	100	95	76	10	5	.1	160
APR.												
02...	.2	.15	.28	.43	.02	149	92	82	20	4	.1	135
MAY												
01...	.2	.06	.35	.41	.01	57	47	31	0	5	.1	60
29...	.4	.07	.66	.73	.04	115	84	71	7	5	.1	120
JULY												
03...	.2	.04	.55	.59	.03	113	89	81	12	4	.1	135
AUG.												
04...	.3	.02	.78	.80	.02	112	108	88	0	4	.1	155
SEP.												
02...	.2	.07	.39	.46	.03	106	108	93	14	4	.1	155
29...	.2	.04	.43	.47	.02	113	88	73	12	4	.1	147

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
22...	7.8	6.0	3	11.1	91	1.7	B47	B1	B39	2	4.1	100
NOV.												
26...	7.9	1.0	3	12.4	89	.9	B18	B6	B7	2	6.9	100
DEC.												
18...	7.9	.0	1	12.0	83	1.4	B77	B1	B3	--	--	--
JAN.												
07...	7.2	1.5	4	9.8	72	8.0	B4	B1	B2	6	7.8	100
FEB.												
13...	7.3	.5	1	--	--	6.5	B43	B3	<1	11	14	100
APR.												
02...	6.7	.0	2	8.0	60	24	B42	<1	B2	--	--	--
MAY												
01...	7.2	7.0	2	9.9	83	4.4	B24	<1	<1	8	97	100
29...	7.1	19.5	2	9.1	100	9.9	B5	B4	B6	7	9.6	100
JULY												
03...	7.6	24.0	3	5.9	71	3.4	B13	10	B120	8	9.6	100
AUG.												
04...	8.1	25.5	2	6.8	83	1.4	--	20	--	1	.76	100
SEP.												
02...	7.5	18.5	3	8.3	90	4.9	34	22	25	3	3.9	100
29...	7.2	12.5	3	8.8	84	7.5	69	B11	B13	8	12	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
22...	590	440	10	7	10	0	.1	.1	0	0	--	20
JAN.												
07...	670	370	4	2	35	13	.1	.1	0	0	30	7
MAY												
01...	380	200	51	1	10	10	.2	.1	0	0	40	7
AUG.												
04...	660	270	4	0	40	4	.2	.1	0	0	10	10

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04045500 TAHQUAMENON RIVER NEAR TAHQUAMENON PARADISE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 26	35	2.3	0.8	0.8	0.2	1880
FEB. 13	37	0.3	0.2	0.0	0.0	0

REMARKS.-- a/ Sampling Method Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 22	1500	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	29
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Cocconeis	--	14
		Rhoiocosphenia	--	29
		Fragilariaceae		
		Synedra	--	14
		Naviculaceae		
		Navicula	--	14
		TOTAL	75	
NOV. 26	1500	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	24
		Eunotiaceae		
		Eunotia	--	10
		Gomphonemataceae		
		Gomphonema	--	10
		Meridionaceae		
		Meridion	--	10
		Naviculaceae		
		Navicula	--	24
		Nitzschiaceae		
		Nitzschia	--	19
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	--	5
		TOTAL	30	
DEC. 18	1600	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Gomphonemataceae		
		Gomphonema	--	33
		Naviculaceae		
		Navicula	--	33
		Nitzschiaceae		
		Nitzschia	--	33
		TOTAL	8	
JAN. 07	1230	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	25
		Cocconeis	--	25
		Naviculaceae		
		Navicula	--	25
		Nitzschiaceae		
		Nitzschia	--	25
		TOTAL	44	
FEB. 13	1430	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	12
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Melosira	--	45
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cocconeis	--	3
		Cymbellaceae		
		Cymbella	--	6
		Naviculaceae		
		Navicula	--	9
		Nitzschiaceae		
		Nitzschia	--	18
		TOTAL	220	
APR. 02	1100	Chrysophyta		
		Bacillariohyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	40
		Cocconeis	--	20
		Naviculaceae		
		Navicula	--	20
		Nitzschiaceae		
		Nitzschia	--	20
		TOTAL	28	

04045500 TAHQUAMENON RIVER NEAR TAHQUAMENON PARADISE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAY 01	1130	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	33
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	8
		Pennales		
		Achnanthaceae		
		Achnanthes	--	17
		Eunotiaceae		
		Eunotia	--	8
		Fragilariaceae		
		Synedra	--	8
		Gomphonemataceae		
		Gomphonema	--	25
		TOTAL	53	
MAY 29	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	21
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	25
		Pennales		
		Fragilariaceae		
		Synedra	--	4
		Nitzschiaceae		
		Nitzschia	--	50
		TOTAL	980	
JULY 03	0930	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Micractiniaceae		
		Golenkinia	12	5
		Occystaceae		
		Ankistrodesmus	12	5
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	12	5
		Pennales		
		Achnanthaceae		
		Achnanthes	12	5
		Cocconeis	12	5
		Gomphonemataceae		
		Gomphonema	12	5
		Naviculaceae		
		Navicula	75	30
		Nitzschiaceae		
		Nitzschia	87	35
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Glenodiniaceae		
		Glenodinium	12	5
AUG. 04	1310	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Kirchneriella	--	<1
		Volvocales		
		Volvocaceae		
		Pandorina	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	240	20
		Melosira	920	74
		Pennales		
		Achnanthaceae		
		Cocconeis	--	<1
		Fragilariaceae		
		Synedra	35	3
		Naviculaceae		
		Navicula		
		Nitzschiaceae		
		Nitzschia	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Gomphosphaeria	--	<1

04045500 TAHQUAMENON RIVER NEAR TAHQUAMENON PARADISE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP. 02	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Oocystis	--	<1
		Scenedesmaceae		
		Scenedesmus	67	16
		Volvocales		
		Volvocaceae		
		Pandorina	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	110	28
		Melosira	130	32
		Pennales		
		Meridionaceae		
		Meridion	16	4
		Naviculaceae		
		Navicula	16	4
		Nitzschiaceae		
		Nitzschia	67	16
		Euglenophyta		
		Cryphtophyceae		
		Cryptomonidales		
		Cryptomonodaceae		
		Cryptomonas	--	<1
SEP. 29	1230	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	38	15
		Pennales		
		Fragilariaceae		
		Synedra	19	8
		Naviculaceae		
		Navicula	38	15
		Nitzschiaceae		
		Nitzschia	77	31
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agemnellum	77	31

04045500 TAHQUAMENON RIVER NEAR TAHQUAMENON PARADISE, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1500 AND 1700 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	115		---	110	70	---	65		---	---	---
2	---	---		---	140	107	---	65		153	166	---
3	---	---		---	162	138	---	---		151	170	188
4	---	---		---	150	120	---	---		156	169	---
5	---	---		---	145	112	150	65		162	172	---
6	---	---		---	154	122	145	67		---	175	---
7	---	---		---	155	122	---	70		171	179	---
8	---	---		---	155	118	---	68		174	179	---
9	---	---		---	158	---	155	---		171	181	---
10	---	---		---	152	120	---	---		178	174	---
11	---	---		---	152	130	175	---		177	---	---
12	---	---		---	150	135	145	---		179	193	---
13	---	---		---	---	130	155	---		181	---	---
14	70	---		---	137	137	155	---		183	---	---
15	100	---		---	125	---	155	---		188	---	---
16	---	---		140	---	---	150	---		---	200	---
17	118	---		110	112	110	---	---		192	193	---
18	115	---		---	130	---	125	---		204	203	123
19	---	---		---	146	134	115	105		195	200	---
20	---	---		135	148	---	90	105		194	204	---
21	---	---		138	112	142	90	115		190	---	---
22	120	---		60	147	138	90	115		186	---	---
23	120	---		135	---	---	85	---		179	---	---
24	---	---		120	140	127	75	140		178	---	---
25	---	---		122	148	125	75	135		183	---	---
26	---	---		122	130	58	---	135		---	---	143
27	---	---		147	142	---	200	---		172	---	---
28	---	---		140	128	112	200	145		167	183	---
29	---	---		137	---	---	75	---		162	185	---
30	---	---		133	---	---	70	---		162	---	---
31	---	---		110	---	122	---	---		166	189	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1500 AND 1700 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	8.0		---	0.0	0.0	---	7.5		---	---	---
2	---	---		---	0.0	0.0	---	9.5		25.0	24.0	---
3	---	---		---	0.0	0.0	---	---		24.5	26.0	16.5
4	---	---		---	0.0	0.0	---	---		26.5	25.0	---
5	---	---		---	0.0	0.0	0.0	8.5		24.5	23.0	---
6	---	---		---	0.0	0.0	0.0	9.0		---	23.5	---
7	---	---		---	0.0	0.0	---	10.5		24.5	23.0	---
8	---	---		---	0.0	0.0	---	12.0		24.0	23.0	---
9	---	---		---	0.0	0.0	0.0	---		24.0	23.0	---
10	---	---		---	0.0	0.0	---	---		22.0	23.0	---
11	---	---		---	0.0	0.0	0.0	---		21.0	---	---
12	---	---		---	0.0	0.0	0.0	---		24.5	23.0	---
13	---	---		---	0.0	0.0	0.0	---		21.5	---	---
14	9.0	---		---	0.0	0.0	0.0	---		20.5	---	---
15	8.5	---		---	0.0	0.0	0.0	---		22.5	---	---
16	---	---		0.0	0.0	0.0	0.0	---		---	22.5	---
17	8.0	---		0.0	0.0	0.0	---	---		23.5	25.0	---
18	7.5	---		---	0.0	0.0	0.5	---		24.0	22.0	15.0
19	---	---		---	0.0	0.0	1.0	17.5		24.5	18.0	---
20	---	---		0.0	0.0	0.0	1.5	18.5		23.0	---	---
21	---	---		0.0	0.0	0.0	2.0	20.0		22.5	---	---
22	4.5	---		0.0	0.0	0.0	1.5	21.0		23.0	---	---
23	6.5	---		0.0	0.0	0.0	2.0	---		21.0	---	---
24	---	---		0.0	0.0	0.0	2.5	22.5		22.0	---	---
25	---	---		0.0	0.0	0.0	2.5	23.5		21.5	---	---
26	---	---		0.0	0.0	0.0	---	20.5		---	---	12.0
27	---	---		0.0	0.0	0.0	6.5	---		22.5	---	---
28	---	---		0.0	0.0	0.0	6.5	21.5		23.0	19.0	---
29	---	---		0.0	---	0.0	7.5	---		22.0	19.0	---
30	---	---		0.0	---	0.0	7.5	---		23.0	---	---
31	---	---		0.0	---	0.0	---	---		---	19.0	---

04045580 ST. MARYS RIVER ABOVE SAULT STE. MARIE, MICH.
(National stream-quality accounting network and radiochemical station)

LOCATION.--Lat 46°29'29", long 84°25'17", in NW¼ sec.10, T.47 N., R.1 W., Chippewa County, at Sault Ste. Marie municipal raw-water intake at Big Point, 1 mi (1.6 km) west of Sault Ste. Marie.

DRAINAGE AREA.--80,900 mi^2 (210,000 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1969 to September 1975.
Specific conductance: March 1974 to September 1975.
Water temperatures: March 1974 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 92 micromhos Dec. 23, Jan. 24; minimum observed, 76 micromhos Apr. 24.
Water temperatures: Maximum observed, 20.0°C Aug. 9-13, 16, 17; minimum observed, 1.0°C on many days during January to April.
Period of record:
Specific conductance: Maximum observed, 96 micromhos Apr. 15, 1974; minimum observed, 76 micromhos Apr. 24, 1975.
Water temperatures: Maximum observed 20.0°C Aug. 9-13, 16, 17, 1975; minimum observed, freezing point Mar. 14, 15, 1974.

REMARKS.--Primary sampling point is at raw-water tap in Sault Ste. Marie municipal treatment plant at Big Point. Intake is 1,500 feet out at a depth of 30 feet, 10 feet above the bottom of the channel. Discharge estimates obtained from U.S. Army Corps of Engineers, Sault Ste. Marie.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
23...	0900	E75000	2.2	13	2.8	1.5	.5	50	0	41	3.5	.9
NOV.												
27...	0900	E75000	2.2	14	3.5	1.0	.6	53	0	43	3.3	1.8
DEC.												
18...	1145	E75000	2.4	14	3.1	.3	.6	53	0	43	4.4	1.2
JAN.												
08...	0830	E73000	2.4	14	3.0	1.2	.5	51	0	42	4.2	.5
FEB.												
12...	1300	E85000	2.5	15	2.9	1.1	.5	52	0	43	3.3	1.2
APR.												
01...	1400	E87000	2.5	14	3.1	1.2	.5	60	0	49	3.2	.9
30...	1300	E99000	2.5	13	3.0	1.1	.6	56	0	46	3.6	1.0
MAY												
28...	1100	E98000	2.3	14	2.7	1.3	.6	60	0	49	2.6	1.0
JULY												
02...	0845	E86700	2.2	12	3.3	1.4	.5	52	0	43	3.4	1.5
AUG.												
05...	1130	E86000	2.3	13	2.5	1.3	.5	58	0	48	3.2	1.5
SEP.												
03...	1015	E81500	2.3	14	2.6	1.1	.6	54	0	44	2.4	1.4
30...	1030	E73400	2.3	14	2.5	1.1	.5	58	0	48	2.4	1.1

DATE	TOTAL FILTRABLE RESIDUE (MG/L)	TOTAL NONFILTRABLE RESIDUE (MG/L)	DISSOLVED GROSS ALPHA AS U-NAT. (UG/L)	SUSPENDED GROSS ALPHA AS U-NAT. (UG/L)	DISSOLVED GROSS BETA AS CS-137 (PC/L)	SUSPENDED GROSS BETA AS CS-137 (PC/L)	DISSOLVED GROSS BETA AS SR90 /Y90 (PC/L)	SUSPENDED GROSS BETA AS SR90 /Y90 (PC/L)	DISSOLVED RA-226 (RADON METHOD) (PC/L)
MAY									
28...	56	<1	<.4	<.4	2.1	<.4	1.6	<.4	.03
SEP.									
30...	55	<1	<.6	<.4	2.0	<.4	1.6	<.4	.03

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
23...	0900	8.6	0	1	--	1	<10	0	0	0	6	4
JAN.												
08...	0830	5.6	0	0	--	1	<10	1	2	0	11	5
APR.												
30...	1300	1.7	1	0	1	0	<10	0	1	0	7	1
AUG.												
05...	1130	1.8	0	0	1	0	<10	0	0	0	6	3
SEP.												
30...	1030	5.4	0	0	0	0	0	0	0	0	6	2

E--ESTIMATED VALUE

04045580 ST. MARYS RIVER ABOVE SAULT STE.MARIE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO
OCT.											
23...	.1	.25	.15	.40	.00	--	49	44	3	7	.1
NOV.											
27...	.0	.25	.00	.25	.05	64	53	49	6	4	.1
DEC.											
18...	.1	.25	.28	.53	.06	56	52	48	4	1	.0
JAN.											
08...	.1	.26	.31	.57	.00	50	51	47	5	5	.1
FEB.											
12...	.4	.28	.07	.35	.01	46	53	49	7	5	.1
APR.											
01...	.1	.28	.07	.35	.00	58	52	48	0	5	.1
30...	.0	.27	.17	.44	.01	60	52	45	0	5	.1
MAY											
28...	.0	.25	.10	.35	.00	62	54	46	0	6	.1
JULY											
02...	.1	.25	.12	.37	.01	60	50	44	1	6	.1
AUG.											
05...	.3	.24	.28	.52	.00	51	51	43	0	6	.1
SEP.											
03...	.1	.23	.15	.38	.01	49	50	46	2	5	.1
30...	.0	.26	.00	.26	.00	55	51	45	0	5	.1

DATE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)
OCT.										
23...	100	7.9	9.5	1	12.0	98	1.0	B2	<1	B7
NOV.										
27...	80	8.0	9.5	1	12.5	100	.8	B1	<1	<1
DEC.										
18...	90	8.1	4.5	2	14.0	100	.7	B5	<1	<1
JAN.										
08...	90	7.3	3.5	1	13.9	100	4.1	<1	<1	<1
FEB.										
12...	90	7.5	1.5	0	--	--	2.6	B3	<1	<1
APR.										
01...	91	6.6	.0	0	11.8	82	24	<1	<1	<1
30...	81	7.9	3.0	1	11.6	98	1.1	B7	<1	<1
MAY										
28...	--	8.0	7.5	1	11.2	110	1.0	<1	B1	<1
JULY										
02...	97	7.7	13.0	0	10.1	100	1.7	B10	B3	B7
AUG.										
05...	--	8.0	18.5	1	8.9	100	.9	--	B4	--
SEP.										
03...	93	7.5	18.0	1	9.8	98	2.7	--	51	B144
30...	81	7.6	15.0	1	10.2	100	2.3	B3	<1	10

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
23...	20	0	0	0	--	36	--	.4	0	0	--	60
JAN.												
08...	110	10	--	8	--	10	.0	.0	0	0	40	40
APR.												
30...	150	10	12	1	10	10	.3	.3	0	0	50	30
AUG.												
05...	250	10	7	0	10	0	.1	.1	0	0	70	50
SEP.												
30...	50	0	6	2	20	1	.1	.0	0	0	70	40

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04045580 ST. MARYS RIVER ABOVE SAULT STE.MARIE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a/]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 27	35	1.5	0.8	0.2	0.2	3500
MAY 28	28	1.8	1.7	0.6	0.1	167

REMARKS.-- a/ Sampling Method Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 23	0900	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Oocystis	--	14
		Scenedesmaceae		
		Scenedesmus	--	7
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Anaulaceae		
		Terpsinoe	--	18
		Coscinodiscus		
		Cyclotella	--	4
		Pennales		
		Fragilariaceae		
		Asterionella	--	4
		Synedra	--	11
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	11
		Cyanophyta		
		Myxophyta		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	29
		TOTAL	290	
NOV. 27	0900	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Occystis	--	7
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	10
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Cocconeis	--	1
		Fragilariaceae		
		Asterionella	--	18
		Fragilaria	--	15
		Synedra	--	6
		Naviculaceae		
		Navicula	--	1
		Nitzschiaceae		
		Nitzschia	--	4
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	7
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis		
		Anacystis incerta	--	28
		TOTAL	530	
DEC. 18	1145	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Dictyosphaerium	--	8
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	8
		Pennales		
		Achnanthaceae		
		Achnanthes		
		Fragilariaceae		
		Asterionella	--	8
		Fragilaria	--	52
		Synedra		
		Naviculaceae		
		Navicula	--	2
		Tabellariaceae		
		Tabellaria	--	10
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	2
		TOTAL	660	
JAN. 08	0830	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	18
		Pennales		
		Achnanthaceae		
		Cocconeis	--	3
		Fragilariaceae		
		Asterionella	--	9
		Synedra	--	3
		Nitzschiaceae		
		Nitzschia	--	12
		Tabellariaceae		
		Tabellaria	--	6
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	6
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	44
		TOTAL	240	

04045580 ST. MARYS RIVER ABOVE SAULT STE.MARIE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB. 12	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	33
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Pennales		
		Fragilariaceae		
		Synedra	--	14
		Naviculaceae		
		Navicula	--	3
		Nitzschiaceae		
		Nitzschia	--	8
		Tabellariaceae		
		Tabellaria	--	8
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	3
		Oscillatoriaceae		
		Lyngbya	--	28
		TOTAL	410	
APR. 01	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	15
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Pennales		
		Fragilariaceae		
		Asterionella	--	15
		Synedra	--	4
		Nitzschiaceae		
		Nitzschia	--	8
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	54
		TOTAL	740	
APR. 30	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	19
		Scenedesmaceae		
		Scenedesmus	--	38
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Rhizosoleniaceae		
		Rhizosolenia	--	5
		Pennales		
		Fragilariaceae		
		Asterionella	--	10
		Fragilaria	--	10
		Tabellariaceae		
		Tabellaria	--	19
		TOTAL	200	
MAY 28	1100	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	5
		Melosira	--	10
		Pennales		
		Fragilariaceae		
		Asterionella	--	5
		Fragilaria	--	35
		Nitzschiaceae		
		Nitzschia	--	30
		Surirellaceae		
		Surirella	--	5
		Tabellariaceae		
		Tabellaria	--	10
		TOTAL	510	

04045580 ST. MARYS RIVER ABOVE SAULT STE.MARIE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JULY 02	0845	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	32	3
		Tetraedron	32	3
		Scenedesmaceae		
		Scenedesmus	32	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	240	23
		Rhizosoleniaceae		
		Rhizosolenia	65	6
		Pennales		
		Achnanthaceae		
		Achnanthes	32	3
		Cymbellaceae		
		Cymbella	16	2
		Fragilariaceae		
		Asterionella	32	3
		Synedra	16	2
		Nitzschiaceae		
		Nitzschia	140	14
		Tabellariaceae		
		Tabellaria	130	12
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	270	26
AUG. 05	1130	Chlorophyta		
		Chlorophyceae		
		Tetrasporales		
		Coccomyxaceae		
		Elakatothrix	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	35	5
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	88	12
		Cocconeis	--	<1
		Cymbellaceae		
		Cymbella	--	<1
		Fragilariaceae		
		Asterionella	53	7
		Fragilaria	--	<1
		Naviculaceae		
		Caloneis	17	2
		Navicula	120	16
		Nitzschiaceae		
		Denticula	--	<1
		Nitzschia	70	9
		Tabellariaceae		
		Tabellaria	88	12
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	240	33
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	35	5
SEP. 03	1015	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	<1
		Oocystis	90	19
		Scenedesmaceae		
		Crucigenia	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	30	6
		Cymbellaceae		
		Cymbella	--	<1
		Fragilariaceae		
		Asterionella	--	<1
		Naviculaceae		
		Navicula	30	6
		Nitzschiaceae		
		Nitzschia	45	10
		Tabellariaceae		
		Tabellaria	30	6
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinorryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	240	52
SEP. 30	1030	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	8	6
		Pennales		
		Cymbellaceae		
		Cymbella	--	<1
		Fragilariaceae		
		Asterionella	8	6
		Fragilaria	16	11
		Naviculaceae		
		Navicula	8	6
		Tabellariaceae		
		Tabellaria	8	6
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	81	56
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	16	11

04045580 ST. MARYS RIVER ABOVE SAULT STE.MARIE, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1000 AND 1200 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	90	90	90	90	89	87	81	83	85	85	86
2	88	90	90	90	90	89	88	82	86	84	86	86
3	90	90	89	90	90	87	87	88	85	84	86	87
4	91	91	89	90	90	87	87	82	85	83	85	87
5	90	90	87	90	90	89	88	82	85	88	84	87
6	89	90	85	90	90	89	88	81	82	85	86	86
7	89	90	88	90	90	88	86	81	85	87	86	86
8	88	90	90	89	90	89	85	82	85	86	87	87
9	90	90	90	90	90	89	87	81	83	85	87	86
10	90	90	89	88	91	89	87	82	85	84	87	87
11	89	89	90	90	89	88	87	83	82	84	87	87
12	90	90	89	90	90	88	86	83	83	85	86	86
13	90	90	89	90	89	88	83	83	82	84	78	87
14	91	90	90	90	88	89	82	82	82	84	86	87
15	90	90	90	90	89	89	82	82	83	83	86	87
16	90	90	90	89	89	89	83	81	83	86	86	87
17	90	90	89	90	88	87	82	85	82	86	87	86
18	90	90	90	90	89	88	82	85	84	78	87	87
19	90	90	90	90	88	88	83	84	83	86	87	86
20	90	90	90	90	88	88	82	82	83	86	87	86
21	89	90	90	91	89	87	82	83	83	86	87	87
22	90	90	90	89	88	88	82	83	83	86	87	87
23	90	90	92	91	88	86	86	86	84	86	86	87
24	91	90	90	92	88	87	76	86	84	86	85	87
25	90	90	90	89	88	88	82	85	85	85	82	87
26	90	90	90	89	89	86	82	85	84	85	87	87
27	90	90	90	89	89	88	82	83	84	86	86	87
28	91	90	90	89	88	87	79	84	83	86	86	87
29	90	90	90	89	---	88	82	85	84	86	86	87
30	90	90	90	89	---	88	81	85	86	86	86	87
31	90	---	---	90	---	88	---	84	---	85	87	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1000 AND 1200 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	10.5	5.0	3.5	1.0	1.0	1.0	2.5	7.0	12.5	19.0	18.5
2	12.5	10.0	5.5	3.5	1.0	1.0	1.0	3.0	8.0	12.5	19.0	18.0
3	12.0	10.0	5.5	3.5	1.0	1.0	1.0	3.0	9.5	12.5	19.0	17.5
4	12.0	9.5	4.5	3.5	1.0	1.0	1.0	3.0	9.5	13.0	19.0	17.5
5	12.5	9.0	5.0	3.0	1.0	1.0	1.0	3.0	9.5	15.0	18.5	17.5
6	12.5	9.0	5.5	3.5	1.0	1.0	1.0	3.0	9.0	17.5	18.0	17.5
7	11.0	9.0	5.0	3.0	1.0	1.0	1.0	3.0	8.5	17.5	19.0	17.0
8	12.0	9.0	5.0	3.5	1.0	1.0	1.0	3.5	8.0	18.0	19.5	16.5
9	11.0	9.0	4.0	3.5	1.0	1.0	1.0	4.0	8.0	17.5	20.0	16.0
10	11.0	9.0	3.5	3.5	1.0	1.0	1.0	4.5	9.0	17.5	20.0	16.0
11	11.5	9.0	4.5	3.5	1.0	1.0	1.0	5.0	10.0	17.5	20.0	16.0
12	11.5	9.0	4.5	2.5	1.0	1.0	1.0	5.0	10.0	18.0	20.0	15.5
13	11.5	8.5	4.5	2.0	1.0	1.0	1.0	5.0	9.5	18.0	20.0	14.0
14	11.5	8.0	4.0	1.5	1.0	1.0	1.0	5.0	8.5	18.0	19.5	14.0
15	11.0	7.5	4.5	1.5	1.0	1.0	1.5	5.5	9.0	17.5	19.5	14.5
16	10.5	7.0	4.0	1.5	1.0	1.0	1.5	4.5	8.5	18.0	20.0	14.5
17	10.5	7.0	5.0	1.0	1.0	1.0	1.5	5.5	8.5	18.5	20.0	13.0
18	10.0	7.0	4.0	1.0	1.0	1.0	1.5	5.5	9.5	18.5	19.5	14.0
19	9.5	7.5	4.0	1.0	1.0	1.0	1.5	6.0	9.5	18.5	19.0	15.0
20	9.0	7.5	4.0	1.0	1.0	1.0	1.5	6.5	9.5	19.0	19.0	15.0
21	8.5	7.5	4.0	1.0	1.0	1.0	1.5	6.5	10.0	19.0	19.5	15.0
22	9.0	7.0	4.0	1.0	1.0	1.0	1.5	7.0	10.5	18.5	19.5	14.5
23	9.5	7.0	4.0	1.0	1.0	1.0	1.5	6.5	10.0	18.5	19.0	14.0
24	9.5	7.5	3.5	1.0	1.0	1.0	1.5	7.0	10.0	18.5	18.5	14.0
25	9.5	6.5	3.5	1.0	1.0	1.0	1.5	7.0	11.5	17.0	19.0	14.0
26	9.5	5.5	3.5	1.0	1.0	1.0	1.5	7.0	12.0	17.5	18.5	14.0
27	9.0	6.0	3.0	1.0	1.5	1.0	1.5	6.5	12.0	17.5	18.5	14.0
28	9.0	6.0	4.0	1.0	1.0	1.0	1.5	7.0	11.5	18.0	18.5	14.0
29	9.5	5.5	4.0	1.0	---	1.0	1.5	7.0	12.0	18.0	18.5	14.5
30	10.0	5.0	4.0	1.0	---	1.0	2.5	7.0	12.5	18.5	18.5	14.5
31	10.5	---	---	1.0	---	1.0	---	7.5	---	19.0	18.5	---

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, temperature recorder at gaging station on rigth bank 10 feet (3 m) upstream from highway bridge, 15 feet (5 m) downstream from Peters Creek entering from the right, 3.5 miles (5.6 km) upstream from Lake Michigan and 4 miles (6 km) southwest of Garnet.

DRAINAGE AREA.--28 mi^2 (73 km^2) approximately.

PERIOD OF RECORD.--Water temperatures: October 1951 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 17.5°C June 21-23, 25; minimum, freezing point on many days during winter period.
Period of record:
Water temperatures: Maximum, 19.5°C July 21, 22, 1952; minimum, freezing point on many days during winter period.

REMARKS.--Intermittent ice cover during winter period. No temperature record Dec. 4 to Feb. 11, Sept. 4-30, probe covered with sand.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	8.5	8.0	8.0	7.0	1.5	1.5			---	---	0.0	0.0
2	8.0	7.5	8.0	7.0	1.5	1.0			---	---	0.0	0.0
3	7.5	7.0	7.0	6.0	1.0	1.0			---	---	0.0	0.0
4	7.5	7.0	6.0	5.5	---	---			---	---	0.0	0.0
5	9.0	7.5	5.5	5.0	---	---			---	---	0.0	0.0
6	9.0	8.5	5.0	4.5	---	---			---	---	0.5	0.0
7	8.5	7.5	4.5	4.0	---	---			---	---	1.0	1.0
8	7.5	7.0	4.0	4.0	---	---			---	---	1.0	0.5
9	7.0	7.0	4.5	4.0	---	---			---	---	0.5	0.5
10	8.0	7.0	5.0	4.5	---	---			---	---	0.5	0.5
11	8.0	7.5	5.0	5.0	---	---			---	---	0.5	0.5
12	8.0	7.5	4.5	4.5	---	---			0.0	0.0	0.5	0.5
13	7.5	6.5	3.5	3.5	---	---			0.0	0.0	0.5	0.5
14	7.0	7.0	3.5	3.0	---	---			0.0	0.0	0.5	0.5
15	7.0	6.5	3.0	2.5	---	---			0.0	0.0	0.5	0.5
16	7.0	7.0	2.5	2.0	---	---			0.0	0.0	1.0	0.5
17	6.5	6.0	2.0	2.0	---	---			0.0	0.0	1.0	0.5
18	6.0	5.5	2.0	2.0	---	---			0.0	0.0	1.5	1.0
19	5.5	5.0	2.5	2.0	---	---			0.5	0.0	2.0	1.0
20	5.0	5.0	3.0	2.5	---	---			0.5	0.5	1.5	1.0
21	5.0	5.0	3.0	2.5	---	---			0.5	0.5	1.0	1.0
22	5.0	4.5	2.5	2.0	---	---			0.5	0.5	1.0	1.0
23	4.5	4.5	2.5	2.0	---	---			0.5	0.5	1.5	1.0
24	4.5	4.5	2.5	2.0	---	---			0.5	0.5	1.5	0.5
25	4.5	4.5	2.0	2.0	---	---			0.5	0.0	0.5	0.5
26	4.5	4.5	2.0	2.0	---	---			0.0	0.0	0.5	0.5
27	4.5	4.5	1.5	1.5	---	---			0.0	0.0	0.5	0.5
28	5.5	4.5	1.5	1.5	---	---			0.0	0.0	0.5	0.5
29	6.0	5.5	1.5	1.5	---	---			---	---	0.5	0.5
30	6.0	7.0	1.5	1.5	---	---			---	---	0.5	0.5
31	7.0	6.5	---	---	---	---			---	---	0.5	0.5
MONTH	9.0	4.5	8.0	1.5	---	---			---	---	2.0	0.0

04046000 BLACK RIVER NEAR GARNET, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	1.0	0.5	5.5	5.5	14.0	13.0	15.5	13.5	14.0	12.0	11.0	10.5
2	1.0	1.0	6.5	5.0	14.5	13.0	14.5	13.5	13.0	12.0	11.0	10.0
3	1.5	1.0	6.5	5.5	14.5	12.5	15.5	13.5	13.0	11.5	12.0	10.0
4	1.0	1.0	5.5	5.5	14.5	12.5	14.5	13.0	13.0	11.0	---	---
5	1.5	1.0	6.0	5.5	14.5	13.0	14.5	12.5	12.5	11.0	---	---
6	1.5	1.0	7.5	6.5	14.0	13.0	13.5	12.5	12.0	10.5	---	---
7	1.5	1.0	9.0	7.5	13.0	12.0	14.5	13.0	11.5	10.0	---	---
8	2.0	1.0	10.0	9.0	12.5	11.5	15.0	13.0	13.0	10.0	---	---
9	2.0	1.5	11.0	9.0	14.0	11.5	13.5	12.5	13.5	11.0	---	---
10	2.5	1.5	11.0	9.5	14.5	12.5	13.5	11.5	12.5	10.5	---	---
11	2.5	1.5	11.0	9.5	14.0	13.0	12.0	11.0	12.5	10.5	---	---
12	2.5	1.5	11.5	10.0	13.0	12.5	13.0	11.0	12.5	10.0	---	---
13	2.5	1.5	11.0	9.0	13.0	12.0	13.0	11.0	13.0	10.5	---	---
14	2.5	1.5	11.0	9.5	15.5	13.0	12.0	11.0	12.0	10.5	---	---
15	2.5	1.5	10.5	9.5	14.5	13.0	13.5	11.0	12.0	10.0	---	---
16	1.5	1.5	10.5	8.0	14.5	13.0	14.5	11.5	12.0	10.0	---	---
17	1.5	1.0	12.5	10.0	14.0	13.5	14.5	12.5	12.0	10.5	---	---
18	1.5	1.0	12.5	10.5	15.0	14.5	14.5	12.0	10.5	10.0	---	---
19	1.0	1.0	14.0	11.0	17.0	14.5	15.0	13.0	10.5	10.0	---	---
20	1.0	1.0	14.0	13.0	17.0	16.0	14.0	12.0	10.0	10.0	---	---
21	1.0	1.0	14.0	13.0	17.5	16.0	13.5	11.5	11.0	10.0	---	---
22	1.0	1.0	15.5	14.0	17.5	16.5	14.0	11.5	11.5	10.5	---	---
23	1.0	1.0	16.5	14.0	17.5	16.5	13.0	11.5	10.5	10.0	---	---
24	1.0	1.0	16.5	14.5	17.0	15.0	12.5	11.0	12.0	10.0	---	---
25	2.5	1.5	15.5	14.5	17.5	15.0	12.5	10.5	12.5	11.0	---	---
26	2.5	1.5	15.0	14.0	16.5	14.0	11.5	10.5	12.0	10.5	---	---
27	3.0	2.5	15.0	12.5	15.5	14.0	13.0	11.0	11.5	10.5	---	---
28	3.0	3.0	14.0	12.0	16.0	14.0	13.0	11.0	10.5	10.0	---	---
29	3.0	3.0	13.5	12.0	16.5	14.5	13.5	11.0	10.5	10.0	---	---
30	5.5	3.5	13.0	12.5	17.0	14.0	14.0	11.5	11.0	10.0	---	---
31	---	---	14.0	12.5	---	---	14.0	12.0	11.0	10.5	---	---
MONTH	5.5	0.5	16.5	5.0	17.5	11.5	15.5	10.5	14.0	10.0	---	---

04057005 MANISTIQUE RIVER AT MANISTIQUE, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 45°57'06", long 86°14'54", in NE¼ sec.13, T.41 N., R.16 W., Schoolcraft County, 1,400 ft (400 m) upstream from mouth, at Manistique.

DRAINAGE AREA.--1,450 mi^2 (3,760 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: December 1974 to September 1975 (discontinued).
Specific conductance: March to September 1975 (discontinued).
Water temperatures: March to September 1975 (discontinued).

REMARKS.--Intermittent ice cover during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC.												
04...	1530	1800	6.1	27	5.3	1.3	.5	76	0	62	23	1.8
JAN.												
15...	1230	E1620	7.3	27	5.5	1.5	.7	80	0	66	22	1.6
MAR.												
10...	1200	E1440	7.6	28	6.1	1.5	.6	89	0	73	20	1.7
20...	1330	1020	7.5	28	6.1	1.3	.7	90	0	74	19	2.3
APR.												
18...	1335	2280	6.8	23	5.4	1.4	.6	100	0	82	15	2.1
MAY												
22...	1300	2120	4.6	24	5.2	1.1	.7	84	0	69	20	1.6
JUNE												
24...	1200	1920	5.4	22	5.0	1.2	.6	74	0	61	15	1.5
JULY												
16...	1000	1400	6.3	29	6.3	1.8	.7	98	0	80	24	1.5
AUG.												
19...	0915	1380	6.9	30	6.4	1.8	.7	98	0	80	21	1.7
SEP.												
09...	1215	2670	6.3	20	5.0	1.5	.6	84	0	69	14	1.9

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
DEC.												
04...	1530	10	1	1	--	1	<10	0	3	1	9	8
JAN.												
15...	1230	7.1	0	0	--	1	<10	0	0	0	8	5
APR.												
18...	1335	10	0	0	3	1	<10	0	0	0	11	3
JULY												
16...	1000	11	0	0	--	2	<10	0	1	0	12	2

E--ESTIMATED VALUE

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
DEC.												
04...	.1	.55	.36	.91	.01	113	103	89	27	3	.1	125
JAN.												
15...	.2	.19	.39	.58	.01	108	106	90	24	3	.1	182
MAR.												
10...	.3	.16	.23	.39	.00	116	110	95	22	3	.1	180
20...	.1	.17	.28	.45	.01	115	109	95	21	3	.1	200
APR.												
18...	.3	.19	.36	.55	.03	108	105	80	0	4	.1	170
MAY												
22...	.2	.07	.33	.40	.01	102	99	81	12	3	.1	165
JUNE												
24...	.4	.06	1.3	1.4	.01	117	88	76	15	3	.1	135
JULY												
16...	.1	.08	.41	.49	.02	122	119	98	18	4	.1	195
AUG.												
19...	.3	.09	.48	.57	.02	137	117	100	20	4	.1	210
SEP.												
09...	.2	.08	.47	.55	.03	92	91	71	2	4	.1	140

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
DEC.												
04...	7.3	.5	5	13.9	98	6.1	B2200	--	--	8	39	100
JAN.												
15...	7.4	.0	5	14.0	98	5.1	B270	B20	B12	4	E17	89
MAR.												
10...	7.5	.5	2	11.4	80	4.5	B600	B30	B6	1	E3.9	100
20...	7.2	2.0	3	12.0	89	9.1	B360	B6	B8	2	5.5	100
APR.												
18...	7.0	5.0	7	12.3	98	16	B150	B17	B16	3	18	100
MAY												
22...	7.8	18.5	2	8.6	92	2.1	61	11	B6	5	29	100
JUNE												
24...	7.9	22.0	5	8.1	94	1.5	B860	B6	14	8	41	100
JULY												
16...	8.0	21.5	6	8.4	97	1.6	B9400	--	B3	10	38	100
AUG.												
19...	7.8	21.0	6	8.2	93	2.5	B12500	14	--	9	34	100
SEP.												
09...	7.8	13.5	10	9.9	96	2.1	3900	--	B156	13	94	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
DEC.												
04...	880	400	--	1	18	18	--	.2	0	0	110	20
JAN.												
15...	990	450	8	3	40	0	.0	.0	0	0	40	10
APR.												
18...	1500	690	90	1	70	40	.1	.1	0	0	110	10
JULY												
16...	1300	470	10	3	40	20	.1	.1	0	0	50	10

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

E--ESTIMATED VALUE

04057005 MANISTIQUE RIVER AT MANISTIQUE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
MAY 22	34	2.7	1.7	1.2	0.3	833
AUG. 19	34	6.1	3.3	5.9	1.1	474

REMARKS-- a/ Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
DEC. 04	1530	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Quadrigula	--	7
		Scenedesmaceae		
		Scenedesmus	--	13
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	30
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cymbellaceae		
		Cymbella	--	3
		Fragilariaceae		
		Asterionella	--	27
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	3
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Glenodiniaceae		
		Glenodinium	--	13
		TOTAL	230	
JAN. 15	1230	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	27
		Pennales		
		Achnanthaceae		
		Cocconeis	--	7
		Fragilariaceae		
		Asterionella	--	13
		Synedra	--	20
		Gomphonemataceae		
		Gomphonema	--	13
		Naviculaceae		
		Navicula	--	13
		Nitzschiaceae		
		Nitzschia	--	7
		TOTAL	280	
MAR. 10	1200	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Cymbellaceae		
		Cymbella	--	10
		Fragilariaceae		
		Fragilaria	--	10
		Synedra	--	20
		Gomphonemataceae		
		Gomphonema	--	30
		Naviculaceae		
		Navicula	--	10
		Nitzschiaceae		
		Nitzschia	--	20
		TOTAL	130	
MAR. 20	1330	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	56
		Fragilariaceae		
		Fragilaria	--	17
		Synedra	--	6
		Gomphonemataceae		
		Gomphonema	--	17
		Naviculaceae		
		Navicula	--	6
		TOTAL	150	
APR. 18	1335	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	6
		Cymbellaceae		
		Cymbella	--	4
		Diatomaceae		
		Diatoma	--	27
		Eunotiaceae		
		Eunotia	--	4
		Fragilariaceae		
		Asterionella	--	13
		Fragilaria		2
		Synedra	--	21
		Gomphonemataceae		
		Gomphonema	--	2
		Meridionaceae		
		Meridion	--	13
		Naviculaceae		
		Navicula	--	6
		Pinnularia	--	2
		TOTAL	480	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAY 22	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Occystis	--	13
		Scenedesmaceae		
		Scenedesmus	--	13
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	23
		Melosira	--	26
		Pennales		
		Eunotiaceae		
		Eunotia	--	3
		Fragilariaceae		
		Asterionella	--	3
		Nitzschiaceae		
		Nitzschia	--	19
		TOTAL	1,700	
JUNE 24	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	--	24
		Occystaceae		
		Ankistrodesmus	--	2
		Scenedesmaceae		
		Scenedesmus	--	9
		Tetrastrum	--	2
		Zygnematales		
		Desmidiaceae		
		Closterium	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	6
		Pennales		
		Achnanthaceae		
		Cocconeis	--	2
		Cymbellaceae		
		Epithemia	--	2
		Fragilariaceae		
		Fragilaria	--	2
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	8
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	41
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Glenodiniaceae		
		Glenodinium	--	2
		TOTAL	1,400	
JULY 16	1000	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Dictyosphaerium	4,700	44
		Scenedesmaceae		
		Scenedesmus	76	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	19	
		Melosira	210	2
		Pennales		
		Cymbellaceae		
		Cymbella	--	< 1
		Gomphonemataceae		
		Gomphonema	38	
		Naviculaceae		
		Navicula	230	2
		Nitzschiaceae		
		Nitzschia	57	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis		
		Anacystis incerta	5,300	50
AUG. 19	0915	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	37	1
		Pennales		
		Cymbellaceae		
		Cymbella	18	1
		Fragilariaceae		
		Synedra	--	< 1
		Naviculaceae		
		Navicula	18	1
		Nitzschiaceae		
		Nitzschia	74	2
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agmenellum	420	13
		Anacystis	2,600	80
		Oscillatoriales		
		Nostocaceae		
		Anabaena	110	3
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	--	< 1

04057005 MANISTIQUE RIVER AT MANISTIQUE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL	DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP. 09	1215	Chlorophyta							
		Chlorophyceae							
		Chlorococcales							
		Hydrodictyaceae	--	<1					
		Pediastrum							
		Occystaceae							
		Ankistrodesmus	27	1					
		Oocystis	--	<1					
		Scenedesmaceae							
		Scenedesmus	--	<1					
		Chrysophyta							
		Bacillariophyceae							
		Centrales							
		Coscinodiscaceae							
		Melosira	55	2					
		Pennales							
		Achnanthaceae							
		Achnanthes	110	4					
		Cocconeis	27	1					
		Cymbellaceae							
		Cymbella	--	<1					
		Fragilariaceae							
		Asterionella	--	<1					
		Fragilaria	--	<1					
		Gomphonemataceae							
		Gomphonema	27	1					
		Naviculaceae							
		Navicula	82	3					
		Nitzschiaceae							
		Nitzschia	55	2					
		Chrysophyceae							
		Chrysomonadales							
		Ochromonadaceae							
		Dinobryon	--	<1					
		Cyanophyta							
		Myxophyceae							
		Chroococcales							
		Chroococcaceae							
		Agmenellum	--	<1					
		Anacystis	--	<1					
		Gomphosphaeria	820	31					
		Oscillatoriales							
		Oscillatoriaceae							
		Oscillatoria	1,400	54					

04057005 MANISTIQUE RIVER AT MANISTIQUE, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0900 AND 1100 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	170	100	---	---	---	---
2						---	170	84	200	---	---	---
3						---	170	105	220	---	---	---
4						---	170	100	220	---	---	---
5						---	170	105	220	---	---	---
6						---	170	98	220	---	---	---
7						---	170	100	220	228	---	---
8						---	170	---	220	227	---	210
9						---	195	100	190	229	---	161
10						---	190	110	---	224	---	155
11						180	185	110	---	230	---	---
12						180	195	---	---	230	---	---
13						180	180	125	---	229	---	152
14						185	180	135	---	---	---	153
15						185	165	140	---	---	---	153
16						180	200	---	200	218	---	153
17						180	175	155	170	217	---	151
18						180	165	155	150	217	---	163
19						175	140	---	155	---	---	163
20						190	140	150	145	---	---	---
21						180	130	155	---	166	---	---
22						190	115	160	---	---	---	182
23						190	110	175	155	---	---	176
24						---	100	---	---	---	---	182
25						---	87	---	---	---	---	192
26						170	84	180	---	---	202	188
27						170	78	190	---	---	199	185
28						170	78	185	---	198	---	186
29						170	87	190	---	189	---	196
30						175	---	190	---	---	---	199
31						175	---	---	---	205	---	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0900 AND 1100 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						---	1.5	5.0	---	---	---	---
2						---	1.0	5.0	16.0	---	---	---
3						---	1.0	8.5	14.0	---	---	---
4						---	1.0	8.5	16.0	---	---	---
5						---	1.0	7.5	---	---	---	---
6						---	1.0	5.0	14.0	---	---	---
7						---	1.5	5.5	14.0	20.0	---	---
8						---	2.0	5.5	15.0	20.0	---	19.5
9						---	1.5	10.5	17.0	20.0	---	19.0
10						---	2.0	14.0	---	23.5	---	14.5
11						1.5	1.0	14.0	---	19.5	---	---
12						1.5	1.5	---	---	20.0	---	---
13						1.0	1.5	10.0	---	20.0	---	12.0
14						0.0	1.5	10.0	---	---	---	12.0
15						1.5	2.5	10.0	---	---	---	12.0
16						1.0	3.5	---	17.5	19.5	---	12.0
17						1.5	4.5	10.0	13.0	22.0	---	12.0
18						0.5	4.5	10.0	15.5	22.0	---	12.0
19						4.0	4.5	10.0	15.5	---	---	14.0
20						0.5	4.5	11.0	---	---	---	---
21						0.5	4.0	10.5	---	17.0	---	---
22						1.5	2.5	11.0	---	---	---	14.5
23						1.5	4.0	19.5	18.5	---	---	12.0
24						---	3.5	---	---	---	---	11.5
25						---	3.0	---	---	---	---	11.5
26						1.5	---	19.5	---	---	18.0	14.5
27						1.5	5.0	19.5	---	---	19.0	13.5
28						1.5	4.5	19.5	---	19.5	---	12.0
29						0.5	5.0	11.0	---	19.5	---	12.0
30						0.5	---	11.0	---	---	---	11.5
31						1.5	---	---	---	19.5	---	---

04057800 MIDDLE BRANCH ESCANABA RIVER AT HUMBOLDT, MICH.

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

DRAINAGE AREA.--46.0 mi^2 (119.1 km^2).

PERIOD OF RECORD.--Water temperatures: November 1972 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 25.5°C July 30, 31; minimum, freezing point on many days during December to March.
Period of record:
Water temperatures: Maximum, 25.5°C July 30, 31, 1975; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	7.0	5.5	7.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	7.5	5.0	7.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	7.0	4.0	7.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	8.5	5.5	4.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	9.5	8.0	4.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	8.0	7.0	3.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	7.0	5.5	4.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	7.0	5.5	4.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	8.0	6.5	5.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
10	10.0	6.5	5.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
11	11.5	8.5	5.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
12	10.5	7.5	4.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	7.5	4.5	3.0	2.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
14	7.0	6.5	2.0	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
15	7.0	5.5	1.5	1.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
16	7.5	5.5	0.5	0.5	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0
17	7.0	4.0	1.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
18	4.5	3.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	4.0	3.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
20	3.5	2.5	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
21	4.5	1.5	1.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.5
22	5.5	3.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5
23	5.5	3.0	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
24	6.0	2.5	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
25	5.5	4.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
26	6.0	3.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
27	6.0	2.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
28	8.5	5.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
29	7.5	6.5	0.5	0.5	0.0	0.0	0.0	0.0	---	---	0.5	0.5
30	8.5	7.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---	0.5	0.5
31	8.0	7.5	---	---	0.0	0.0	0.0	0.0	---	---	0.5	0.5
MONTH	11.5	1.5	7.5	0.5	0.0	0.0	0.5	0.0	0.0	0.0	1.0	0.0

04057800 MIDDLE BRANCH ESCANABA RIVER AT HUMBOLDT, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.5	0.5	6.0	4.5	15.0	11.0	24.0	19.5	24.5	21.0	15.0	13.0
2	0.5	0.5	7.5	4.0	16.5	11.5	24.0	20.0	23.5	21.5	16.0	12.5
3	0.5	0.5	7.0	6.5	16.0	12.0	23.5	19.5	22.5	18.0	14.5	12.0
4	0.5	0.5	7.0	5.5	15.0	12.0	23.0	17.5	22.5	18.0	16.0	11.5
5	0.5	0.5	7.0	6.5	15.0	12.5	22.0	17.5	20.0	17.0	15.5	12.5
6	0.5	0.5	8.5	6.0	14.5	12.0	21.0	18.0	19.5	14.5	13.0	11.0
7	1.0	0.5	10.0	6.5	12.5	10.0	22.5	16.5	20.0	14.0	13.0	11.5
8	2.0	0.5	10.0	7.5	15.5	9.5	21.5	17.5	21.0	15.5	12.5	10.5
9	2.0	0.5	12.0	7.5	15.5	11.0	20.0	16.0	22.5	17.0	12.0	8.0
10	3.5	0.5	13.0	8.5	16.0	12.5	18.5	14.5	23.0	17.5	12.0	10.5
11	3.5	0.5	13.0	10.0	15.5	13.0	16.0	13.5	22.0	16.0	12.0	11.5
12	3.5	0.5	12.5	8.0	13.0	12.5	13.5	12.0	22.0	16.0	11.5	9.5
13	4.5	0.5	13.5	8.5	15.5	12.0	16.0	11.5	21.5	17.5	10.0	8.0
14	4.5	0.5	13.0	11.5	16.5	13.5	16.5	13.5	20.0	15.5	11.5	7.0
15	4.5	0.5	11.5	9.0	16.5	12.5	20.5	14.5	19.0	15.5	12.5	9.0
16	4.5	0.5	12.5	7.0	14.5	12.0	23.0	17.0	17.0	14.5	12.5	11.0
17	2.0	0.5	15.5	9.5	15.0	14.5	23.5	19.0	18.0	13.5	13.0	10.5
18	1.0	0.5	18.0	12.5	16.5	14.5	24.0	19.5	18.0	13.0	13.0	11.5
19	1.0	0.5	17.0	13.5	19.0	14.5	23.0	20.5	16.5	13.0	13.5	11.0
20	1.0	0.5	17.0	13.5	18.5	15.5	21.0	18.5	15.0	13.5	13.5	11.0
21	1.5	0.5	18.5	16.5	21.0	16.5	21.0	16.0	15.5	14.0	11.5	10.0
22	2.0	0.5	20.0	15.5	22.0	18.5	22.5	17.5	16.5	14.0	10.5	8.5
23	1.0	0.5	22.0	18.0	22.0	18.5	21.0	17.5	15.5	15.0	10.0	8.0
24	1.0	0.5	21.0	18.5	22.0	18.0	18.0	16.5	19.5	14.5	10.0	7.0
25	3.0	0.5	21.0	17.0	21.0	17.5	19.5	14.0	19.5	17.0	10.0	6.0
26	3.5	0.5	20.5	18.0	22.5	17.5	19.5	15.5	17.5	15.0	10.0	6.5
27	4.0	1.5	18.5	15.0	22.0	18.5	21.0	16.5	18.0	13.5	10.0	6.0
28	3.5	2.0	17.5	14.5	22.5	18.0	21.0	16.0	15.5	13.0	10.5	7.0
29	2.0	1.5	17.0	14.5	22.5	18.5	23.5	17.5	13.5	13.0	10.0	7.0
30	5.5	2.0	14.5	13.0	23.0	18.0	25.5	20.0	15.5	11.0	11.0	9.0
31	---	---	14.5	12.0	---	---	25.5	20.5	15.0	12.0	---	---
MONTH	5.5	0.5	22.0	4.0	23.0	9.5	25.5	11.5	24.5	11.0	16.0	6.0
YEAR	25.5	0.0										

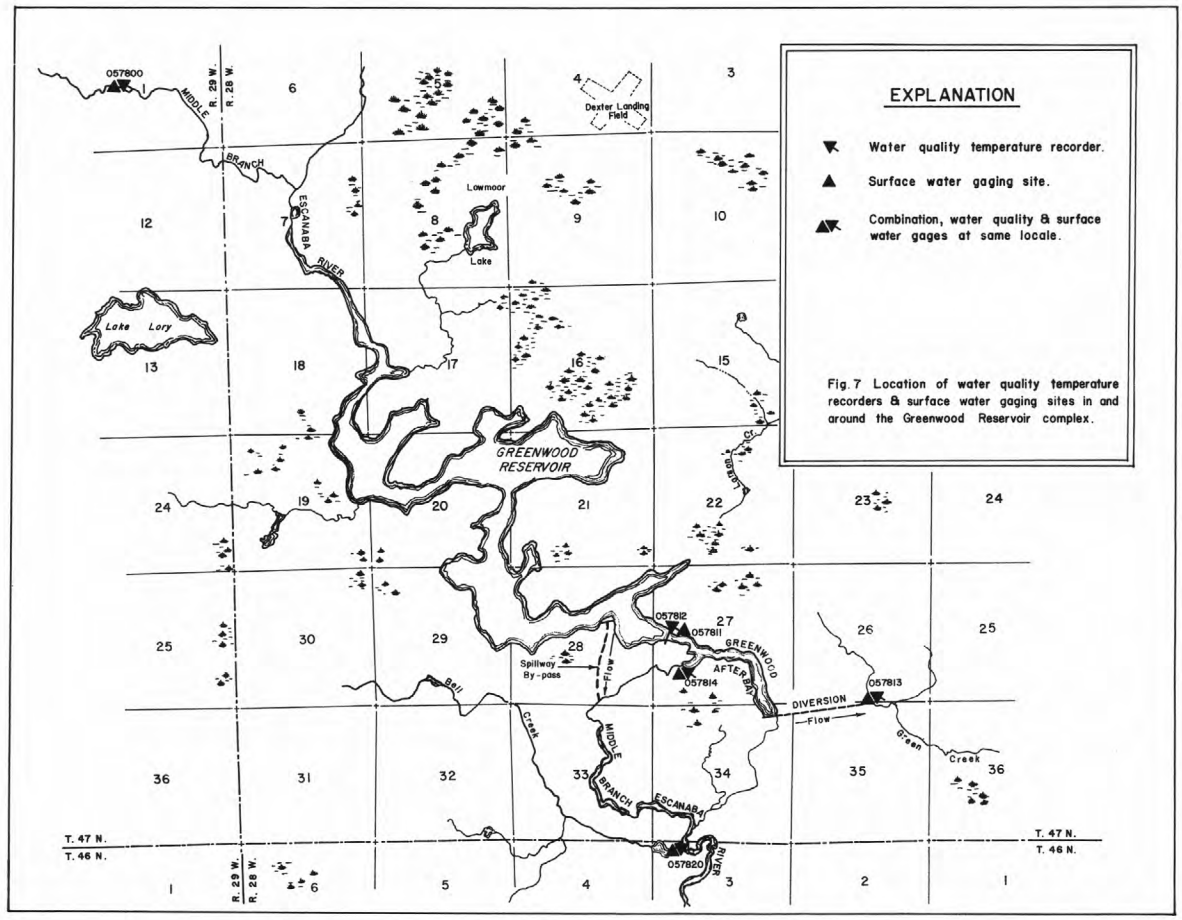

Fig. 7 Location of water quality temperature recorders & surface water gaging sites in and around the Greenwood Reservoir complex.

Greenwood Reservoir is formed by an earth/rockfill main dam (Greenwood Dam) and several earthfill dikes surrounding the storage area. Storage began Dec. 22, 1972, and the fixed-crest concrete spillway was completed in September 1973. The usable capacity of the reservoir is 23,300 acre-ft (28.7 hm^3) at a spillway elevation of 1515 ft (461.8 m). At pool elevation exceeding 1515 ft, (461.8 m), water flows over the spillway into the Middle Branch Escanaba River below Greenwood Release (04057814). At lower pool elevations, outflow from Greenwood Reservoir into Greenwood Afterbay is completely regulated by the multiport outlet of Greenwood Dam. Greenwood Afterbay has two outlets; one for diversion by pipe line into Green Creek and the second for releasing flows to Middle Branch Escanaba River. Water temperatures are measured directly below Greenwood Dam (Greenwood Afterbay, 04057813), and the gaging station below the release from the afterbay to Middle Branch Escanaba River (Greenwood Release, 04057814).

04057812 GREENWOOD AFTERBAY 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, temperature recorder in control house on downstream side of Greenwood Dam on the Middle Branch Escanaba River, 3.5 miles (5.6 km) southwest of Greenwood.

DRAINAGE AREA.--67.4 mi^2 (174.6 km^2).

PERIOD OF RECORD.--Water temperatures: January 1973 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 23.5°C July 2-4 minimum, 1.5°C Apr. 17-30.
Period of record:
Water temperatures: Maximum, 24.5°C July 14, 15, 1974; minimum, freezing point on many days during January to March 1973.

REMARKS.--Flow regulated by the multi-port outlets of Greenwood Reservoir. Altitude of outlets (revised) are: (No. 1) 1,505 ft (458.7 m), (No. 2) 1,495 ft (455.7 m), (No. 3) 1,485 ft (452.6 m), (No. 4) 1.478 ft (450.5 m) above mean sea level. Outlets open were: Oct. 1 to May 15, No. 4; May 15 to July 7, No. 1 July 7-9 Nos. 1 and 4; July 9 to Sept. 30, No. 4.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.5	11.0	7.0	7.0	3.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0
2	11.0	10.5	7.5	7.0	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
3	10.5	10.5	7.5	7.5	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
4	10.5	10.5	7.5	7.0	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
5	10.5	10.5	7.0	7.0	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
6	10.5	10.0	7.0	6.5	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
7	10.0	10.0	6.5	6.5	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
8	10.0	10.0	6.5	6.5	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
9	10.0	10.0	6.5	6.5	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0
10	10.0	10.0	6.5	6.5	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0
11	10.0	10.0	6.5	6.5	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0
12	10.0	10.0	6.5	6.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
13	10.0	10.0	6.0	5.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
14	10.0	9.5	5.5	5.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
15	9.5	9.5	5.0	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
16	9.5	9.5	4.5	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
17	9.5	8.5	4.5	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
18	8.5	8.5	4.5	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
19	8.5	8.0	4.5	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
20	8.0	8.0	4.5	4.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
21	8.0	7.5	4.0	3.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
22	7.5	7.5	3.5	3.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
23	7.5	7.5	3.5	3.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
24	7.5	7.5	3.5	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
25	7.5	7.5	3.0	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
26	7.5	7.5	3.0	2.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
27	7.5	7.0	3.0	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
28	7.0	7.0	3.0	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
29	7.0	7.0	3.0	3.0	2.5	2.5	2.5	2.5	---	---	2.0	2.0
30	7.0	7.0	3.0	3.0	2.5	2.5	2.5	2.5	---	---	2.0	2.0
31	7.0	7.0	---	---	2.5	2.5	2.5	2.5	---	---	2.0	2.0
MONTH	11.5	7.0	7.5	2.5	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0

04057812 GREENWOOD AFTERBAY NEAR GREENWOOD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.0	2.0	2.0	2.0	16.0	15.0	21.5	20.5	10.5	10.0	14.0	14.0
2	2.0	2.0	2.0	2.0	16.5	15.0	23.5	21.5	10.5	10.0	15.0	14.0
3	2.0	2.0	2.0	2.0	17.5	15.5	23.5	22.5	10.5	10.5	15.0	15.0
4	2.0	2.0	2.5	2.0	16.5	15.0	23.5	22.5	11.0	10.5	15.0	14.0
5	2.0	2.0	3.0	2.5	17.5	15.0	23.0	22.5	11.0	10.5	14.0	14.0
6	2.0	2.0	3.0	3.0	17.0	15.5	22.5	22.0	11.0	11.0	14.0	14.0
7	2.0	2.0	3.0	3.0	15.5	14.5	22.0	12.0	11.0	11.0	15.0	14.0
8	2.0	2.0	4.0	3.5	15.5	14.5	14.5	12.0	11.0	11.0	14.5	14.5
9	2.0	2.0	4.5	4.0	15.5	15.0	12.0	6.5	11.0	11.0	14.5	14.0
10	2.0	2.0	5.0	4.5	15.5	14.5	6.5	6.5	11.5	11.0	14.0	14.0
11	2.0	2.0	5.5	5.0	15.5	15.0	6.5	6.5	12.0	11.5	14.0	14.0
12	2.0	2.0	5.5	5.0	15.5	15.0	6.5	6.5	13.0	11.5	14.0	14.0
13	2.0	2.0	5.0	5.0	16.0	15.5	6.5	6.5	13.0	12.5	14.0	13.5
14	2.0	2.0	5.5	5.0	16.5	15.5	7.0	6.5	13.0	13.0	13.5	13.5
15	2.0	2.0	10.5	5.5	16.0	15.5	7.0	7.0	13.0	13.0	15.5	13.5
16	2.0	2.0	10.0	9.5	15.5	15.0	7.5	7.0	13.0	13.0	15.0	15.0
17	2.0	1.5	11.0	9.5	15.5	15.5	7.5	7.5	13.5	13.0	15.0	14.5
18	1.5	1.5	13.0	11.0	16.0	15.5	8.0	7.5	14.0	13.5	14.5	14.5
19	1.5	1.5	13.5	11.0	16.5	16.0	8.5	8.0	14.0	14.0	14.5	14.5
20	1.5	1.5	12.5	11.5	16.0	15.5	8.5	8.5	14.0	14.0	14.5	14.5
21	1.5	1.5	14.5	12.0	17.5	15.5	9.0	8.5	14.5	14.0	14.5	14.5
22	1.5	1.5	13.5	12.0	17.5	16.0	9.5	9.0	14.5	14.5	14.5	14.0
23	1.5	1.5	14.0	12.5	19.5	17.5	9.5	9.0	15.0	14.5	14.0	14.0
24	1.5	1.5	14.0	13.5	18.5	18.5	9.5	9.5	14.5	14.5	14.0	13.5
25	1.5	1.5	14.5	14.0	19.0	18.5	10.0	9.5	15.0	14.5	13.5	13.5
26	1.5	1.5	16.5	14.5	19.0	18.5	10.0	10.0	15.0	14.5	14.0	13.5
27	1.5	1.5	16.5	15.0	19.5	19.0	10.0	10.0	15.0	15.0	14.0	13.5
28	1.5	1.5	16.0	15.5	20.0	19.5	10.0	10.0	15.0	14.5	14.0	13.5
29	1.5	1.5	15.5	15.0	20.0	19.5	10.0	10.0	14.5	14.0	13.5	13.5
30	2.0	1.5	16.0	15.0	20.5	20.0	10.0	10.0	14.0	14.0	13.5	13.5
31	---	---	16.5	15.5	---	---	10.0	10.0	14.0	14.0	---	---
MONTH	2.0	1.5	16.5	2.0	20.5	14.5	23.5	6.5	15.0	10.0	15.5	13.5
YEAR	23.5	1.5										

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, temperature recorder at gaging station on left bank at downstream end of pipeline 200 ft (61 m) upstream from Green Creek, and 3.6 miles (5.8 km) south of Greenwood.

PERIOD OF RECORD.--Water temperatures: September 1973 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 22.0°C July 8, 9; minimum, 1.5°C on many days during Januaray to March.
Period of record:
Water temperatures: Maximum, 22.5°C July 18, 19, 1974; minimum, 1.5°C on many days in 1975.

REMARKS.--Flow regulated by inlet structure of pipeline from Greenwood Afterbay 0.7 mile (1.1 km) above station. Recorder stopped Apr. 25 to May 20, range in temperature 3.0°C to 10.0°C.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.5	10.5	8.0	7.5	3.0	3.0	2.0	2.0	1.5	1.5	2.0	2.0
2	10.5	10.0	8.0	8.0	2.5	2.5	2.0	2.0	2.0	1.5	2.0	2.0
3	10.0	9.5	8.0	7.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
4	9.5	9.5	7.5	7.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	1.5
5	9.5	9.5	7.0	6.5	2.5	2.5	2.0	2.0	2.0	1.5	1.5	1.5
6	9.5	9.5	7.0	6.0	2.5	2.5	2.0	2.0	2.0	1.5	1.5	1.5
7	9.5	9.5	6.0	5.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	1.5
8	9.5	9.0	5.5	5.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
9	9.0	9.0	5.5	5.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
10	9.0	9.0	5.5	5.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
11	9.0	9.0	6.0	5.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
12	10.0	9.0	6.0	6.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
13	10.0	9.5	6.0	5.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
14	9.5	9.5	5.5	5.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
15	9.5	9.0	5.0	3.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	1.5
16	8.5	8.5	4.0	3.5	2.5	2.5	2.0	2.0	2.0	2.0	1.5	1.5
17	8.5	8.0	4.0	4.0	2.5	2.5	2.0	2.0	2.0	2.0	1.5	1.5
18	8.0	7.5	4.0	4.0	2.5	2.5	2.0	2.0	2.0	2.0	1.5	1.5
19	7.5	7.5	4.0	4.0	2.5	2.5	2.0	2.0	2.0	2.0	1.5	1.5
20	7.5	7.0	4.0	4.0	2.5	2.5	2.0	2.0	2.0	2.0	1.5	1.5
21	7.0	6.0	4.0	3.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	1.5
22	6.0	6.0	3.5	3.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
23	6.0	6.0	3.5	3.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
24	6.0	6.0	3.0	3.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
25	6.5	6.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
26	6.5	6.0	3.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
27	6.0	6.0	3.0	3.0	2.5	2.0	2.0	2.0	2.0	2.0	2.0	1.5
28	6.0	6.0	3.0	3.0	2.0	2.0	2.0	2.0	2.0	2.0	1.5	1.5
29	6.5	6.0	3.0	3.0	2.0	2.0	2.0	2.0	---	---	1.5	1.5
30	7.0	6.5	3.0	3.0	2.0	2.0	2.0	2.0	---	---	2.0	1.5
31	7.5	7.0	---	---	2.0	2.0	2.0	1.5	---	---	2.0	2.0
MONTH	11.5	6.0	8.0	2.5	3.0	2.0	2.0	1.5	2.0	1.5	2.0	1.5

04057813 GREENWOOD DIVERSION NEAR GREENWOOD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.0	2.0	---	---	15.5	15.0	19.0	19.0	14.5	14.5	16.0	16.0
2	2.0	2.0	---	---	15.0	15.0	19.5	19.0	14.5	14.5	16.0	16.0
3	2.0	2.0	---	---	15.0	15.0	19.5	19.5	14.5	14.5	16.0	15.5
4	2.0	2.0	---	---	16.0	15.5	20.0	19.5	14.5	14.5	15.5	15.5
5	2.0	2.0	---	---	16.0	16.0	20.5	20.0	14.5	14.5	15.5	15.5
6	2.0	2.0	---	---	16.5	16.0	21.0	20.5	14.5	14.5	16.0	15.5
7	2.0	2.0	---	---	16.5	15.0	21.5	21.0	14.5	14.5	15.5	15.5
8	2.0	2.0	---	---	15.0	14.5	22.0	21.5	15.0	14.5	15.5	15.0
9	2.0	2.0	---	---	14.5	14.5	22.0	19.5	15.5	15.0	15.0	13.5
10	2.0	2.0	---	---	14.5	14.5	19.5	18.0	16.0	15.5	13.5	13.5
11	2.0	2.0	---	---	14.5	14.5	18.0	16.5	16.0	16.0	13.5	13.5
12	2.0	2.0	---	---	15.0	14.5	16.5	14.5	16.0	16.0	14.0	13.5
13	2.0	2.0	---	---	15.5	15.0	14.5	13.5	16.0	16.0	14.0	13.0
14	2.0	2.0	---	---	15.5	15.5	13.5	13.5	16.5	16.0	13.0	12.5
15	2.0	2.0	---	---	15.5	15.5	13.5	13.0	16.0	16.0	12.5	12.5
16	2.0	2.0	---	---	15.5	15.5	13.0	13.0	16.0	15.5	12.5	12.5
17	2.0	2.0	---	---	15.5	15.5	13.5	13.0	15.5	15.5	12.5	12.5
18	2.5	2.0	---	---	15.5	15.5	14.0	13.5	16.0	15.5	12.5	12.5
19	2.5	2.5	---	---	15.5	15.5	14.0	14.0	16.0	15.5	12.5	12.5
20	2.5	2.5	---	---	15.5	15.5	14.5	14.0	15.5	15.5	13.0	12.5
21	2.5	2.5	10.5	9.5	15.5	15.5	14.5	14.5	15.5	15.5	13.5	13.0
22	2.5	2.0	11.5	10.5	16.0	15.5	14.5	14.0	16.0	15.5	13.5	13.5
23	2.5	2.0	12.0	11.5	16.5	16.0	14.5	14.0	16.0	16.0	13.5	13.0
24	3.0	2.5	12.5	12.0	16.5	16.5	14.5	14.0	16.0	16.0	13.0	12.5
25	---	---	12.5	12.5	17.0	16.5	14.5	14.0	16.5	16.0	12.5	12.0
26	---	---	13.5	12.5	17.5	17.0	14.5	14.5	17.0	16.5	12.0	12.0
27	---	---	13.5	13.5	18.0	17.5	14.5	14.5	17.0	17.0	12.0	12.0
28	---	---	14.0	13.5	18.5	18.0	15.0	14.5	17.0	16.5	12.0	12.0
29	---	---	14.5	14.0	18.5	18.5	15.0	14.5	16.5	16.5	12.0	12.0
30	---	---	15.0	14.5	19.0	18.5	14.5	14.5	16.5	16.0	12.0	12.0
31	---	---	15.0	15.0	---	---	14.5	14.5	16.0	16.0	---	---
MONTH	3.0	2.0	---	---	19.0	14.5	22.0	13.0	17.0	14.5	16.0	12.0
YEAR	22.0	1.5										

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, temperature recorder at gaging station on left bank at 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 mi^2 (174.6 km^2) including that of Greenwood Diversion.

PERIOD OF RECORD.--Water temperatures: September 1973 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 23.0°C July 3-6, minimum, 1.0°C Mar. 24, 25.
Period of Record:
Water temperature: Maximum, 23.5°C July 14, 15, 1974; minimum, 1.0°C on many days in 1973-75.

REMARKS.--Flow regulated by valve at outlet of Greenwood Afterbay. Recorder stopped Nov. 23 to Dec. 9, range in temperature 2.5°C to 3.5°C.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	9.0	7.5	7.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0
2	10.0	9.0	7.5	7.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0
3	10.0	9.0	7.5	7.0	---	---	2.5	2.5	2.0	2.0	2.0	2.0
4	10.0	9.5	7.0	7.0	---	---	2.5	2.5	2.0	2.0	2.0	2.0
5	10.5	10.0	7.0	7.0	---	---	2.5	2.5	2.0	2.0	2.0	2.0
6	10.5	10.0	7.0	6.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0
7	10.0	9.0	6.5	6.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0
8	9.5	9.0	6.5	6.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0
9	9.5	9.0	6.5	6.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0
10	10.0	9.5	6.5	6.5	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
11	11.0	10.0	6.5	6.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0
12	11.0	9.5	6.5	6.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
13	9.5	8.5	6.0	5.0	2.5	2.5	2.5	2.0	2.0	2.0	2.0	2.0
14	9.0	9.0	5.0	4.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
15	9.0	8.5	4.0	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
16	9.0	8.5	4.0	3.0	2.5	2.5	2.5	2.5	2.0	2.0	2.0	2.0
17	9.0	7.5	4.5	4.0	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.5
18	7.5	7.5	4.5	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.5
19	7.5	7.5	4.5	4.5	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.5
20	7.5	7.0	4.5	4.0	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.5
21	7.0	6.5	4.0	3.5	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.5
22	7.5	7.0	3.5	3.5	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.0
23	7.5	7.0	---	---	2.5	2.5	2.5	2.5	2.0	2.0	2.5	2.0
24	7.5	7.0	---	---	2.5	2.5	2.5	2.5	2.0	2.0	2.0	1.0
25	7.5	7.5	---	---	2.5	2.5	2.5	2.5	2.0	2.0	1.5	1.0
26	7.5	7.0	---	---	2.5	2.5	2.5	2.0	2.0	2.0	2.5	1.5
27	7.5	7.0	---	---	2.5	2.5	2.0	2.0	2.0	2.0	2.5	2.5
28	8.0	7.5	---	---	2.5	2.5	2.0	2.0	2.0	2.0	2.5	2.0
29	8.0	7.5	---	---	2.5	2.5	2.0	2.0	---	---	2.0	2.0
30	7.5	7.5	---	---	2.5	2.5	2.0	2.0	---	---	2.0	2.0
31	7.5	7.5	---	---	2.5	2.5	2.0	2.0	---	---	2.5	2.0
MONTH	11.0	6.5	---	---	---	---	2.5	2.0	2.0	2.0	2.5	1.0

04057814 GREENWOOD RELEASE NEAR GREENWOOD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.5	2.5	4.0	3.0	17.0	15.5	22.0	21.0	14.0	13.0	14.0	14.0
2	2.5	2.5	4.5	2.5	17.5	16.0	22.5	21.5	14.5	12.5	15.0	13.5
3	2.5	2.5	4.0	3.0	17.5	16.0	23.0	22.5	14.5	12.0	15.5	14.5
4	2.5	2.5	4.0	3.0	17.0	16.0	23.0	22.0	15.0	12.5	15.5	14.0
5	2.5	2.0	4.0	3.5	17.0	15.5	23.0	22.5	14.5	12.0	15.0	14.0
6	2.5	2.0	5.0	3.5	17.0	15.5	23.0	22.5	13.5	12.0	14.0	13.5
7	2.5	2.5	5.5	4.0	15.5	15.0	22.5	19.0	13.5	12.0	14.0	13.5
8	2.5	2.5	5.5	4.5	16.5	15.0	19.0	14.5	13.0	11.5	13.5	13.0
9	2.5	2.5	7.0	4.5	16.0	15.5	14.5	13.0	15.0	12.0	14.5	13.0
10	3.0	2.5	8.0	6.0	16.0	15.5	13.0	9.0	15.0	12.0	14.0	13.5
11	3.0	2.5	8.5	6.0	15.5	15.5	9.5	8.5	14.0	11.5	14.0	13.5
12	3.0	2.5	8.5	6.0	15.5	15.0	9.0	8.0	13.0	12.0	14.0	12.5
13	3.5	2.5	8.5	6.5	16.5	15.0	10.5	8.0	15.0	13.0	13.5	12.5
14	3.5	2.5	8.0	5.0	17.5	16.0	9.5	8.5	14.5	13.0	13.5	12.5
15	3.5	2.5	8.5	6.5	17.0	16.0	11.5	8.5	13.5	13.0	14.0	12.5
16	4.0	2.5	11.0	8.5	16.5	15.5	11.5	9.5	13.5	13.0	14.0	14.0
17	3.5	2.5	12.0	10.0	16.5	16.0	11.5	10.0	14.5	13.0	14.5	14.0
18	2.5	2.0	13.5	11.5	16.5	16.0	11.5	10.5	15.5	13.5	14.5	14.0
19	2.5	2.0	15.0	12.5	18.0	16.0	13.5	11.5	14.5	13.5	15.0	14.0
20	2.5	2.0	14.0	13.0	18.0	17.0	12.5	11.5	14.5	14.5	15.0	14.0
21	3.0	2.0	14.5	13.5	18.5	17.0	13.5	10.5	15.5	14.0	14.0	13.5
22	3.0	2.0	15.0	14.0	18.5	18.0	14.5	11.0	15.0	14.5	13.5	13.0
23	2.5	2.0	16.0	15.0	19.5	18.0	12.5	11.5	15.0	14.5	13.0	12.5
24	2.5	2.0	16.0	15.5	20.0	18.5	12.0	11.5	15.5	14.5	13.0	12.5
25	4.0	2.0	16.5	15.5	20.0	19.0	13.5	11.5	16.5	15.0	13.0	12.0
26	3.5	2.0	16.5	16.0	20.0	19.5	13.0	11.0	16.0	14.5	13.5	12.0
27	3.0	2.5	17.5	15.5	21.0	19.5	13.5	11.0	16.5	14.5	13.5	12.0
28	3.0	2.5	17.5	16.0	21.0	20.0	13.5	11.0	15.5	15.0	14.0	12.5
29	2.5	2.5	17.0	16.0	21.0	20.5	14.5	11.5	15.0	14.0	13.5	12.5
30	3.5	2.5	16.5	15.5	21.5	21.0	14.0	12.5	15.0	13.5	13.0	12.5
31	---	---	16.5	15.5	---	---	14.0	13.0	15.0	14.0	---	---
MONTH	4.0	2.0	17.5	2.5	21.5	15.0	23.0	8.0	16.5	11.5	15.5	12.0
YEAR	23.0	1.0										

04057820 MIDDLE BRANCH ESCANABA RIVER NEAR GREENWOOD, MICH.

LOCATION.--Lat 46°25'12", long 87°47'50", in NW¼ sec.3, T.46 N., R.28 W., Marquette County, at gaging station on right bank 10 ft (3 m) downstream from county highway bridge, 100 ft (30 m) downstream from Bell Creek and 5 mi (8 km) southwest of Greenwood.

DRAINAGE AREA.--73.3 mi^2 (189.8 km^2).

PERIOD OF RECORD.--Chemical analyses: Water year 1975 (partial-record station). Water temperatures: August 1973 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 25.0°C July 3, 4; minimum, freezing point on several days during January and February.
Period of record:
Water temperatures: Maximum, 26.0°C July 8, 1974; minimum, freezing point on many days during winter period.

REMARKS.--Flow regulated by Greenwood Release (see sta 04057814) 2.1 mi (3.4 km) above station.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL IRON (FE) (UG/L)	DISSOLVED IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)
OCT.							
17...	1400	32	2500	1800	300	200	7.9
NOV.							
21...	0900	72	2500	1800	170	150	7.0
JAN.							
02...	1500	70	3500	1500	200	170	7.3
29...	0945	E30	2500	1400	240	220	8.8
FEB.							
27...	1125	33	2900	2700	--	350	11
APR.							
09...	1045	31	3000	2100	490	470	8.8
MAY							
07...	1100	572	1400	630	--	220	17
JUNE							
13...	0800	92	1000	590	120	120	4.8
JULY							
24...	0815	--	3100	2000	650	560	6.4
SEP.							
03...	1430	34	4000	2100	460	310	8.1
23...	1500	32	1800	1200	150	110	8.2

DATE	DISSOLVED MAGNESIUM (MG) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	HARDNESS (CA,MG) (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)
OCT.						
17...	2.1	.46	28	60	8.2	6.5
NOV.						
21...	1.6	.13	24	64	8.0	2.0
JAN.						
02...	2.3	.15	28	75	6.7	.5
29...	2.3	.18	31	80	6.7	.0
FEB.						
27...	2.5	.22	38	65	6.9	.5
APR.						
09...	2.5	.25	32	65	6.8	2.0
MAY						
07...	1.6	.27	49	50	6.9	5.0
JUNE						
13...	1.8	.09	19	45	7.4	15.0
JULY						
24...	1.8	.08	23	60	7.6	12.5
SEP.						
03...	1.7	.10	27	60	7.2	15.5
23...	2.1	.11	29	61	7.5	12.0

04057820 MIDDLE BRANCH ESCANABA RIVER NEAR GREENWOOD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	9.0	7.5	7.0	7.0	2.0	1.5	1.0	0.5	0.0	0.0	0.5	0.5
2	8.5	7.5	7.0	7.0	1.5	1.0	0.5	0.5	0.0	0.0	0.5	0.5
3	8.5	6.5	7.0	5.5	1.5	1.5	0.5	0.5	0.5	0.0	1.0	0.5
4	9.5	8.0	5.5	5.5	1.5	1.5	1.0	0.5	0.5	0.5	1.0	0.5
5	10.5	9.5	5.5	5.5	2.0	1.5	1.0	0.5	0.5	0.5	1.0	0.5
6	10.0	8.5	5.5	4.5	2.0	2.0	1.5	1.0	0.5	0.5	1.5	0.5
7	8.0	7.0	5.0	4.5	2.5	2.0	2.0	1.5	0.5	0.5	1.5	0.5
8	8.5	7.5	5.0	4.5	2.0	0.5	2.0	2.0	1.0	1.0	1.0	0.5
9	8.5	8.0	5.0	4.5	1.0	0.5	2.0	2.0	1.5	1.0	0.5	0.5
10	10.0	8.0	6.5	5.0	1.5	1.0	2.0	2.0	1.0	1.0	0.5	0.5
11	11.0	9.0	5.0	4.5	1.5	0.5	2.0	1.0	1.0	1.0	1.0	0.5
12	10.5	7.5	4.5	4.5	2.5	1.5	1.0	1.0	1.0	1.0	1.5	0.5
13	7.5	6.0	4.5	4.5	2.0	2.0	1.0	1.0	1.0	1.0	1.0	0.5
14	8.0	7.5	4.5	3.5	2.0	2.0	0.5	0.5	1.0	1.0	1.0	0.5
15	7.5	7.0	3.5	3.0	2.0	1.5	0.5	0.5	1.0	1.0	2.5	0.5
16	8.0	7.0	3.0	2.5	1.5	1.5	0.5	0.5	1.0	1.0	3.0	0.5
17	8.0	6.5	2.5	2.5	1.5	1.0	0.5	0.5	1.0	1.0	3.5	1.0
18	6.5	6.0	2.5	2.5	1.0	1.0	0.5	0.5	1.5	1.0	3.0	1.5
19	6.5	6.0	2.5	2.0	1.0	1.0	0.5	0.5	1.5	1.0	4.0	1.5
20	6.0	6.0	2.0	2.0	1.5	1.0	1.0	0.5	1.5	0.5	3.5	2.5
21	6.0	5.0	2.0	2.0	1.5	1.5	0.5	0.5	1.5	0.5	2.5	1.5
22	7.0	6.0	3.0	2.5	1.5	0.5	0.5	0.5	2.5	1.5	2.5	1.5
23	6.5	5.5	3.0	3.0	1.5	0.5	0.5	0.5	2.0	1.5	2.5	1.5
24	7.0	6.0	3.0	2.5	1.0	0.5	0.0	0.0	1.5	0.5	1.5	0.5
25	7.0	6.0	2.5	1.5	1.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5
26	7.0	5.5	1.5	1.5	1.0	0.5	0.0	0.0	0.5	0.5	1.0	0.5
27	6.5	5.0	2.0	1.5	1.0	0.5	0.0	0.0	1.0	0.5	1.5	1.0
28	8.0	6.5	2.0	1.5	1.0	0.5	0.0	0.0	1.0	0.5	1.5	1.5
29	8.0	7.0	2.0	1.5	1.5	0.5	0.0	0.0	---	---	2.5	1.5
30	8.0	7.0	2.0	1.5	0.5	0.5	0.0	0.0	---	---	2.0	2.0
31	8.0	7.0	---	---	0.5	0.5	0.0	0.0	---	---	2.0	1.0
MONTH	11.0	5.0	7.0	1.5	2.5	0.5	2.0	0.0	2.5	0.0	4.0	0.5

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.5	1.0	4.0	3.5	17.0	14.5	24.5	22.0	19.5	15.5	16.0	15.0
2	3.0	1.0	4.5	3.5	18.0	15.0	24.0	22.0	19.0	15.5	16.5	15.0
3	3.0	2.0	4.5	4.5	17.5	15.0	25.0	22.0	18.0	14.5	16.5	14.5
4	3.5	1.0	5.0	4.5	17.0	15.5	25.0	21.0	18.5	14.5	17.5	14.5
5	4.0	2.0	4.5	4.5	18.0	15.5	24.5	21.5	18.0	14.5	17.0	15.0
6	4.5	2.0	5.5	4.5	17.0	14.5	23.5	21.0	17.5	13.5	15.0	13.5
7	5.0	2.0	6.5	5.0	15.5	14.0	24.5	20.5	18.5	13.0	15.0	14.0
8	5.0	2.0	6.5	5.5	18.0	13.5	23.5	18.5	18.0	14.0	14.5	13.5
9	4.0	2.0	9.0	6.5	18.0	14.0	19.5	15.0	18.5	14.5	14.5	12.0
10	4.5	1.5	10.0	7.5	18.0	15.5	16.0	11.5	18.0	15.5	14.5	13.5
11	4.5	1.5	11.0	8.5	17.0	15.5	11.5	10.0	17.5	14.5	14.5	13.5
12	4.5	1.5	12.0	9.0	15.5	15.5	11.5	10.0	17.5	14.0	14.5	12.5
13	6.0	2.0	13.0	10.0	18.0	15.0	14.0	10.0	18.5	15.0	12.5	11.5
14	6.0	2.0	11.5	10.5	18.5	15.5	13.0	11.0	18.0	14.5	13.5	11.0
15	6.0	3.0	11.0	10.5	18.0	15.5	16.0	11.0	17.0	15.0	15.0	12.5
16	5.5	3.0	14.0	10.0	18.0	15.0	17.5	13.0	15.5	14.5	14.5	14.0
17	4.0	3.0	14.0	11.0	16.5	16.0	18.5	14.0	17.0	14.0	15.0	13.5
18	3.0	3.0	17.0	13.0	17.0	16.0	18.5	14.0	17.0	13.5	15.0	14.5
19	3.0	2.0	17.0	14.0	20.0	17.0	19.0	14.0	16.5	14.5	15.5	13.5
20	3.5	2.0	16.0	14.5	19.0	17.5	17.0	14.5	16.5	15.0	15.5	14.0
21	5.0	2.5	15.5	14.0	20.0	17.0	16.5	13.0	17.0	15.5	14.5	13.5
22	6.0	3.0	16.5	14.5	21.5	19.0	18.5	14.0	17.5	16.0	13.5	12.5
23	4.0	3.5	16.0	14.5	22.5	19.5	17.5	14.0	17.0	15.5	12.5	12.0
24	4.5	3.0	16.5	15.0	23.0	20.0	15.0	13.5	20.0	16.0	13.0	11.0
25	4.0	2.5	18.0	16.5	22.5	20.0	16.5	12.5	19.5	17.0	13.0	10.5
26	4.0	3.0	18.5	17.0	23.0	19.0	17.0	13.5	19.0	16.0	13.5	10.5
27	3.5	3.0	18.5	16.5	22.5	20.0	18.0	14.5	18.0	15.0	13.5	10.5
28	3.0	3.0	19.0	17.0	23.0	20.0	18.0	14.0	18.0	15.5	14.0	11.5
29	3.0	3.0	18.5	17.0	23.0	20.0	19.0	14.5	16.0	15.5	13.5	11.5
30	4.0	3.0	17.0	16.5	23.5	21.0	20.0	16.0	17.0	14.0	13.5	12.5
31	---	---	16.5	15.5	---	---	19.5	15.5	17.0	15.0	---	---
MONTH	6.0	1.0	19.0	3.5	23.5	13.5	25.0	10.0	20.0	13.0	17.5	10.5
YEAR	25.0	0.0										

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, temperature recorder at gaging station 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 mi^2 (332 km^2).

PERIOD OF RECORD.--Water temperatures: August 1961 to September 1975 (discontinued).

EXTREMES.--1974-75:
Water temperatures: Maximum, 23.5°C July 1, 3; minimum, freezing point on many days during February to April.
Period of record:
Water temperatures: Maximum, 25.5°C July 1, 2, 1963, July 21, 1964; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period. Some regulation and diversion 6 mi (10 km) above station since December 1972.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	9.5	8.5	7.0	7.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.0
2	8.0	7.5	7.0	7.0	1.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0
3	8.0	6.5	7.0	6.0	1.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0
4	8.5	7.5	6.0	5.5	1.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0
5	9.5	8.5	5.5	5.0	1.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0
6	9.5	8.5	5.0	4.0	1.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0
7	8.5	7.5	4.0	3.5	1.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0
8	8.0	7.5	4.0	3.5	1.0	0.5	0.5	0.5	0.0	0.0	0.0	0.0
9	8.5	8.0	4.5	4.0	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0
10	9.5	8.5	5.0	4.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0
11	10.5	9.5	4.5	4.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0
12	10.5	9.0	4.5	4.5	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.5
13	9.0	7.5	4.5	3.5	1.0	0.5	0.5	0.5	0.0	0.0	0.5	0.5
14	8.0	7.5	3.5	3.5	1.0	1.0	0.5	0.5	0.0	0.0	0.5	0.5
15	7.5	7.0	3.5	3.0	1.0	1.0	0.5	0.5	0.0	0.0	0.5	0.5
16	7.5	7.0	3.0	2.5	1.0	1.0	0.5	0.5	0.0	0.0	0.5	0.5
17	7.5	6.0	3.0	3.0	1.0	0.5	0.5	0.5	0.0	0.0	0.5	0.5
18	6.0	5.5	3.0	3.0	0.5	0.5	0.5	0.5	0.0	0.0	1.0	0.5
19	5.5	5.5	3.0	3.0	0.5	0.5	0.5	0.5	0.0	0.0	1.5	1.0
20	5.5	5.0	3.0	3.0	0.5	0.5	0.5	0.5	0.0	0.0	1.5	1.5
21	5.0	4.0	3.0	3.0	0.5	0.5	0.5	0.5	0.0	0.0	1.5	1.5
22	6.0	5.0	3.0	2.5	0.5	0.5	0.5	0.5	0.0	0.0	1.5	1.5
23	6.0	5.0	2.5	2.0	0.5	0.5	0.5	0.5	0.0	0.0	1.0	0.5
24	5.5	5.0	2.5	2.0	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.5
25	5.5	5.5	2.0	1.5	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.5
26	5.5	5.0	1.5	1.0	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.5
27	5.5	5.0	1.5	1.0	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.5
28	7.0	5.5	1.5	1.5	0.5	0.5	0.5	0.5	0.0	0.0	0.5	0.5
29	6.5	6.5	1.5	1.0	0.5	0.5	0.5	0.5	---	---	0.5	0.5
30	7.0	6.5	1.0	1.0	0.5	0.5	0.5	0.5	---	---	0.5	0.5
31	7.0	7.0	---	---	0.5	0.5	0.5	0.5	---	---	0.5	0.5
MONTH	10.5	4.0	7.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	1.5	0.0

04058000 MIDDLE BRANCH ESCANABA RIVER NEAR ISHPEMING, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.5	0.5	4.5	4.0	15.0	14.5	23.5	21.0	21.0	18.5	14.0	14.0
2	0.0	0.0	5.0	4.0	16.5	15.0	23.0	21.5	20.0	18.5	14.5	13.5
3	0.0	0.0	5.0	4.5	16.5	15.0	23.5	21.0	18.5	16.0	14.0	13.5
4	0.0	0.0	5.5	5.0	16.0	15.0	23.0	19.5	19.0	16.5	14.0	13.5
5	0.0	0.0	5.5	5.5	17.0	15.5	22.0	20.0	18.5	16.0	14.0	13.5
6	0.0	0.0	6.5	5.5	16.0	14.0	21.5	20.0	16.5	14.0	13.0	12.0
7	0.0	0.0	7.5	5.5	14.5	13.5	22.0	19.5	17.0	14.0	12.5	12.0
8	2.5	0.0	7.5	6.5	16.0	13.0	22.0	20.0	18.0	15.5	12.5	11.0
9	2.0	1.0	8.5	6.5	16.0	14.0	20.0	17.5	18.5	16.5	11.5	10.0
10	2.5	1.0	9.5	7.5	17.0	15.0	17.5	15.0	18.5	16.5	11.5	11.5
11	2.5	1.0	10.0	8.5	17.0	15.5	15.0	13.0	18.5	16.0	12.0	11.5
12	2.5	1.0	10.5	8.5	15.5	15.5	14.0	12.5	18.0	15.5	11.5	10.5
13	3.0	1.0	11.5	9.0	16.5	15.0	15.5	13.0	18.0	16.5	10.5	9.5
14	3.0	2.0	12.0	11.0	17.0	15.5	15.5	14.0	17.5	15.5	10.0	9.0
15	3.0	2.0	11.0	10.0	17.5	15.5	17.5	14.0	16.0	15.0	11.5	10.0
16	3.0	2.0	12.0	9.0	16.0	15.0	20.0	17.0	15.0	14.0	11.5	11.5
17	2.5	2.0	13.5	10.0	16.0	16.0	21.0	19.0	15.5	14.0	12.0	11.5
18	2.0	1.5	15.0	12.0	17.0	16.0	21.0	19.0	15.0	13.0	12.0	12.0
19	1.0	1.0	15.5	13.5	19.0	17.0	21.0	19.0	15.0	14.0	13.0	12.0
20	1.0	1.0	15.0	14.0	19.0	17.5	20.0	17.5	14.5	14.0	13.0	12.5
21	1.0	1.0	15.5	14.5	20.0	17.5	18.5	16.0	15.5	14.0	12.5	11.5
22	1.0	1.0	17.0	15.0	21.5	19.5	20.0	17.0	16.0	14.5	11.5	11.0
23	1.0	1.0	18.0	16.5	21.5	20.0	19.0	17.0	16.0	15.5	11.0	10.0
24	1.0	1.0	17.0	16.5	21.0	20.0	16.5	16.0	18.0	15.0	10.5	9.0
25	2.5	1.0	18.5	16.5	21.5	19.5	17.5	15.0	18.0	17.0	10.0	9.0
26	2.5	2.0	18.5	17.5	22.0	19.0	18.0	15.5	17.0	15.5	10.0	9.0
27	3.0	2.5	17.5	16.5	22.0	19.5	19.0	16.5	15.5	14.0	10.0	9.0
28	3.0	2.5	17.5	16.0	22.0	20.0	19.0	16.0	15.0	14.0	10.5	9.5
29	2.5	2.0	17.0	16.0	22.0	20.0	20.0	17.0	14.0	14.0	10.5	9.5
30	4.0	2.5	16.0	15.5	23.0	21.0	21.5	18.5	14.5	13.5	11.0	10.5
31	---	---	15.5	14.5	---	---	21.0	18.5	14.5	14.0	---	---
MONTH	4.0	0.0	18.5	4.0	23.0	13.0	23.5	12.5	21.0	13.0	14.5	9.0
YEAR	23.5	0.0										

04059000 ESCANABA RIVER AT CORNELL, MICH.
(National stream-quality accounting network station).

LOCATION.--Lat 45°54'31", long 87°12'49", in NW¼ sec.32, T.41 N., R.23 W., Delta County, at gaging station on right bank 50 ft (15 m) downstream from bridge on County Road 519, 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 mi^2 (2,253 km^2).

PERIOD OF RECORD.--Chemical analyses: December 1974 to September 1975.
Specific conductance: February to September 1975.
Water temperatures: February to September 1975.

EXTREMES.--February to September 1975.
Specific conductance: Maximum observed, 360 micromhos Sept. 10; minimum observed, 115 micromhos Apr. 24 and 25.
Water temperatures: Maximum observed, 35.0°C July 31; minimum observed, 0.5°C on many days during February and March.

REMARKS.--Samples for chemical analyses consist of a cross-sectional composite taken at the gage. Daily records are based on samples collected at the mid-stream point from the bridge on County Road 519. Complete ice cover during winter period. Diurnal fluctuation and occasional slight regulation caused by Boney Falls powerplant 7 mi (11 km) above station since 1950.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC.												
06...	1000	575	8.1	25	8.9	2.9	.8	101	0	83	11	3.0
JAN.												
17...	1400	429	9.6	28	11	3.5	1.1	125	0	103	11	3.5
FEB.												
20...	1400	311	9.7	24	10	3.9	1.2	116	0	95	9.7	2.4
MAR.												
18...	1230	452	9.5	23	10	4.3	1.2	120	0	98	10	2.3
APR.												
16...	1000	E940	8.0	24	9.6	3.7	1.0	110	0	90	9.0	3.3
MAY												
12...	1100	1760	4.5	14	5.6	1.6	.9	66	0	54	7.1	1.8
JUNE												
05...	1130	955	4.8	22	7.6	2.8	1.0	88	2	75	7.6	2.8
JULY												
08...	1100	354	7.0	24	9.9	3.4	1.0	114	4	100	10	2.5
AUG.												
11...	1000	233	7.3	24	10	4.0	1.3	132	0	108	8.2	2.8
SEP.												
10...	0955	616	8.3	21	8.3	1.8	.7	100	0	82	12	2.8

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
DEC.												
06...	1000	9.1	1	1	2	0	<10	1	--	1	21	3
JAN.												
17...	1400	6.9	0	0	1	1	10	0	0	0	9	3
APR.												
16...	1000	7.5	0	0	1	1	<10	0	0	0	6	5
JULY												
08...	1100	5.6	1	0	2	0	<10	0	0	0	5	4

E--ESTIMATED VALUE

04059000 ESCANABA RIVER AT CORNELL, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
DEC.												
06...	.2	.25	.33	.58	.02	126	110	99	16	6	.1	170
JAN.												
17...	.3	.37	.25	.62	.01	119	130	120	13	6	.1	225
FEB.												
20...	.0	.25	.37	.62	.01	123	118	100	5	8	.2	250
MAR.												
18...	.1	.25	.26	.51	.01	127	120	99	1	9	.2	220
APR.												
16...	.0	.25	.36	.61	.02	122	113	99	9	7	.2	215
MAY												
12...	.2	.13	.39	.52	.01	90	68	58	4	6	.1	125
JUNE												
05...	.2	.00	.38	.38	.02	82	92	86	11	7	.1	165
JULY												
08...	.3	.08	.51	.59	.01	121	110	100	0	7	.1	190
AUG.												
11...	.5	.08	.46	.54	.01	119	123	100	0	8	.2	205
SEP.												
10...	.2	.08	.43	.51	.01	100	104	87	5	4	.1	--

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
DEC.												
06...	7.9	1.0	3	14.4	100	2.0	B80	<1	B880	4	6.2	100
JAN.												
17...	7.8	.5	3	14.4	100	3.2	B170	<1	B23	0	.00	--
FEB.												
20...	7.9	.0	1	12.4	87	2.3	B21	B6	B2	10	8.4	100
MAR.												
18...	7.2	.0	1	13.1	92	12	B100	B5	<1	4	4.9	100
APR.												
16...	6.9	1.0	2	13.9	100	22	57	7	38	2	E5.1	100
MAY												
12...	7.3	11.5	1	10.6	99	5.3	120	12	B4	2	9.5	100
JUNE												
05...	8.4	16.0	2	10.6	110	.6	170	13	32	5	13	100
JULY												
08...	8.5	22.5	2	9.1	110	.6	66	7	60	6	5.7	100
AUG.												
11...	8.3	19.5	1	9.7	110	1.1	B16	B3	56	0	.00	--
SEP.												
10...	7.9	12.5	2	10.5	100	2.0	170	20	64	3	5.0	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
DEC.												
06...	1700	550	14	3	55	55	--	.2	0	0	40	4
JAN.												
17...	650	380	6	4	12	0	.2	.2	0	0	30	7
APR.												
16...	700	430	7	3	10	10	.2	.2	1	0	40	10
JULY												
08...	880	430	34	1	40	20	.1	.0	0	0	100	3

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

E--ESTIMATED VALUE

04059000 ESCANABA RIVER AT CORNELL, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
FEB. 20	34	1.2	0.8	0.1	0.1	4000
AUG. 11	25	5.3	3.1	7.6	1.1	289

REMARKS.-- a/ Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
DEC. 06	1000	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Pennales		
		Achnanthaceae		
		Achnanthes	--	13
		Rhoiocosphenia		
		Rhoiocosphenia curvata		2
		Cymbellaceae		
		Cymbella	--	4
		Fragilariaceae		
		Synedra	--	2
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	4
		Nitzschiaceae		
		Nitzschia	--	4
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	26
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	35
		TOTAL	770	
JAN. 17	1400	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnantheaceae		
		Achnanthes	--	6
		Diatomaceae		
		Diatoma	--	78
		Fragilariaceae		
		Synedra	--	11
		Gomphonemataceae		
		Gomphonema	--	3
		Nitzschiaceae		
		Nitzschia	--	3
		TOTAL	530	
FEB. 20	1400	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Cymbellaceae		
		Cymbella	--	8
		Diatomaceae		
		Diatoma	--	50
		Fragilariaceae		
		Synedra	--	29
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	4
		TOTAL	790	
MAR. 18	1230	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	23
		Diatomaceae		
		Diatoma	--	48
		Fragilariaceae		
		Fragilaria	--	16
		Synedra	--	3
		Gomphonemataceae		
		Gomphonema	--	3
		Nitzschiaceae		
		Nitzschia	--	6
		TOTAL	1300	

04059000 ESCANABA RIVER AT CORNELL, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
APR. 16	1000	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscus		
		Cyclotella	--	2
		Pennales		
		Achnanthaceae		
		Achnanthes	--	29
		Diatomaceae		
		Diatoma	--	38
		Eunotiaceae		
		Eunotia	--	13
		Fragilariaceae		
		Synedra	--	16
		Gomphonemataceae		
		Gomphonema	--	2
		TOTAL	520	
MAY 12	1100	Chrysophta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	53
		Diatomaceae		
		Diatoma	--	30
		Fragilariaceae		
		Fragilaria	--	3
		Synedra	--	10
		Gomphonemataceae		
		Gomphonema	--	3
		TOTAL	940	
JUNE 05	1130	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Crucigenia	--	15
		Scenedesmus	--	44
		Tetraedron	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Stephanodiscus	--	3
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Cocconeis	--	1
		Cymbellaceae		
		Cymbella	--	10
		Diatomaceae		
		Diatoma	--	5
		Fragilariaceae		
		Synedra	--	3
		Naviculaceae		
		Navicula	--	3
		Nitzschiaceae		
		Nitzschia	--	8
		Tabellariaceae		
		Tabellaria	--	1
		TOTAL	5700	
JULY 08	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	2
		Scenedesmus	--	27
		Tetrasporales		
		Palmellaceae		
		Gloeocystis	--	2
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	37
		Cocconeis	--	5
		Diatomaceae		
		Diatoma	--	5
		Gomphonemataceae		
		Gomphonema	--	10
		Naviculaceae		
		Navicula	--	5
		Nitzschiaceae		
		Nitzschia	--	7
		TOTAL	600	

04059000 ESCANABA RIVER AT CORNELL, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
AUG. 11	1000	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	13	1
		Oocystis	52	4
		Scenedesmaceae		
		Scenedesmus	100	8
		Tetrasporales		
		Palemellaceae		
		Sphaerocystis	360	27
		Zygnematales		
		Desmidiaceae		
		Closterium	13	1
		Cosmarium	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	52	4
		Cocconeis	13	1
		Cymbellaceae		
		Cymbella	26	2
		Fragilariaceae		
		Fragilaria	39	3
		Gomphonemataceae		
		Gomphonema	52	4
		Naviculaceae		
		Caloneis	13	1
		Navicula	91	7
		Nitzschiaceae		
		Nitzschia	26	2
		Chrysophyceae		
		Chrysomonadales		
		Mallomonadaceae		
		Mallomonas	13	1
		Ochromonadaceae		
		Dinobryon	13	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agmenellum	410	31
		Anacystis	52	4
SEP. 10	0955	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	<1
		Scenedesmaceae		
		Scenedesmus	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	260	52
		Cocconeis	20	4
		Cymbellaceae		
		Cymbella	20	4
		Diatomaceae		
		Opephora	--	<1
		Fragilariaceae		
		Synedra	--	<1
		Gomphonemataceae		
		Gomphonema	20	4
		Naviculaceae		
		Navicula	100	20
		Nitzschiaceae		
		Nitzschia	82	16

04059000 ESCANABA RIVER AT CORNELL, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					---	187	200	145	185	282	220	237
2					---	200	205	125	185	268	224	226
3					---	200	205	150	200	257	234	230
4					---	200	200	140	220	297	236	238
5					---	200	200	140	229	260	219	237
6					---	210	200	145	223	292	222	239
7					---	205	200	140	238	272	237	281
8					---	195	200	145	229	254	234	259
9					---	195	195	155	213	263	232	236
10					205	205	195	160	227	267	235	360
11					200	205	195	155	228	267	235	286
12					200	205	190	160	268	278	237	229
13					200	200	190	155	245	271	252	233
14					205	200	190	165	233	237	249	231
15					205	210	190	165	245	202	235	250
16					205	200	180	160	223	209	239	250
17					200	200	175	160	233	207	243	257
18					200	200	185	---	233	204	239	260
19					200	205	180	---	212	248	245	305
20					200	200	165	180	238	248	264	312
21					190	200	175	160	213	246	238	262
22					193	200	170	155	216	264	263	262
23					197	195	165	150	213	252	274	266
24					200	195	115	150	241	256	250	267
25					200	195	115	150	236	236	236	302
26					197	195	135	160	226	240	239	269
27					197	190	125	160	332	222	282	291
28					200	180	130	170	249	240	278	281
29					---	200	130	185	243	234	281	291
30					---	200	145	180	239	224	243	269
31					---	200	---	185	---	230	243	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					---	0.5	1.0	5.5	21.0	31.0	30.0	20.0
2					---	0.5	1.0	7.0	18.0	30.0	28.0	22.0
3					---	0.5	1.0	7.5	19.0	31.0	32.0	20.0
4					---	0.5	1.0	8.0	19.0	31.0	31.0	18.0
5					---	0.5	1.0	9.0	21.0	30.0	26.0	18.0
6					---	0.5	1.0	9.5	19.0	30.0	28.0	18.0
7					---	0.5	1.0	10.5	19.0	30.0	26.0	17.0
8					---	1.0	1.0	11.5	22.0	28.0	26.0	16.0
9					---	1.0	1.0	12.5	23.0	26.0	26.0	19.0
10					0.5	1.0	1.0	14.0	21.0	23.0	27.0	18.0
11					0.5	1.0	1.0	13.0	17.0	20.0	26.0	19.0
12					0.5	1.0	1.0	14.0	16.0	21.0	26.0	17.0
13					0.5	1.0	1.0	15.0	19.0	28.0	27.0	17.0
14					0.5	1.0	1.0	15.0	17.0	23.0	28.0	15.0
15					0.5	1.0	1.0	15.0	15.0	26.0	26.0	16.0
16					0.5	1.0	1.0	15.5	16.0	31.0	26.0	16.0
17					0.5	1.0	1.0	15.5	18.0	31.0	23.0	16.0
18					0.5	1.0	1.0	---	18.0	30.0	24.0	15.0
19					0.5	1.0	1.0	---	19.0	31.0	23.0	17.0
20					0.5	1.0	1.5	---	21.0	29.0	28.0	17.0
21					0.5	1.0	1.5	23.0	20.0	25.0	23.0	17.0
22					0.5	1.0	2.0	23.0	21.0	31.0	20.0	16.0
23					0.5	1.0	2.0	---	23.0	22.0	20.0	16.0
24					0.5	1.0	2.5	22.0	25.0	24.0	22.0	15.0
25					0.5	1.0	2.5	24.0	25.0	26.0	26.0	15.0
26					0.5	1.0	2.5	22.0	25.0	25.0	24.0	15.0
27					0.5	1.0	3.0	23.0	25.0	27.0	24.0	15.0
28					0.5	1.0	3.5	22.0	28.0	30.0	21.0	15.0
29					---	1.0	3.5	22.0	28.0	32.0	18.0	15.0
30					---	1.0	4.5	17.0	28.0	34.0	19.0	15.0
31					---	1.0	---	21.0	---	35.0	21.0	---

04059500 FORD RIVER NEAR HYDE, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 45°45'20", long 87°12'05", in SW¼ sec.19, T.39 N., R.23 W., Delta County, at gaging station on right bank 40 ft (12 m) downstream from bridge on County Road 533, 1.4 mi (2.3 km) downstream from Tenmile Creek, and 1.5 mi (2.4 km) north of Hyde.

DRAINAGE AREA.--450 mi^2 (1166 km^2).

PERIOD OF RECORD.--Chemical analyses: December 1974 to September 1975.
Specific conductance: December 1974 to September 1975.
Water temperatures: July 1956 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 400 micromhos Jan. 22; minimum observed, 168 micromhos Apr. 29.
Water temperatures: Maximum, 31.0°C July 31; minimum, freezing point on many days during November to April.
Period of record:
Specific conductance: Maximum observed, 400 micromhos Jan. 22, 1975, minimum observed, 168 micromhos Apr. 29, 1975.
Water temperatures: Maximum, 31.0°C July 31, 1975; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
DEC.												
03...	1200	395	8.4	40	17	.9	.5	190	0	156	8.0	2.5
JAN.												
16...	1100	195	9.7	49	17	1.2	.7	221	0	181	11	2.2
FEB.												
20...	1115	90	10	48	21	1.1	.8	233	0	191	11	1.4
MAR.												
17...	1045	105	10	49	21	1.3	.8	236	0	194	9.5	2.1
APR.												
15...	1030	E700	7.4	46	16	1.2	.8	201	0	165	6.1	2.3
MAY												
13...	0900	847	3.8	28	12	.7	.6	140	0	115	5.9	1.2
JUNE												
04...	1000	355	4.8	37	15	1.0	.6	182	0	149	6.7	2.3
JULY												
09...	1000	118	6.3	46	20	1.3	.8	224	6	194	8.3	1.9
AUG.												
12...	0930	35	7.1	43	21	1.8	1.2	226	4	192	11	2.4
SEP.												
08...	1420	292	7.6	37	15	1.1	.6	178	0	146	19	2.1

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
DEC.												
03...	1200	16	1	1	3	2	<10	0	--	2	--	3
JAN.												
16...	1100	12	0	0	--	1	<10	0	0	0	7	2
APR.												
15...	1030	11	0	0	0	0	<10	0	2	0	7	4
JULY												
09...	1000	14	0	0	1	0	<10	0	0	0	5	1

E--ESTIMATED VALUE

04059500 FORD RIVER NEAR HYDE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
DEC.												
03...	.2	.09	.35	.44	.01	153	171	170	14	1	.0	190
JAN.												
16...	.2	.22	.28	.50	.00	174	200	190	11	1	.0	335
FEB.												
20...	.0	.20	.29	.49	.00	220	208	210	19	1	.0	340
MAR.												
17...	.3	.22	.28	.50	.01	221	210	210	16	1	.0	330
APR.												
15...	.0	.15	.30	.45	.01	182	179	180	15	1	.0	390
MAY												
13...	.2	.01	.49	.50	.01	149	121	120	5	1	.0	165
JUNE												
04...	.3	.01	.36	.37	.01	130	157	150	1	1	.0	250
JULY												
09...	.3	.01	.33	.34	.00	202	201	200	6	1	.0	310
AUG.												
12...	.3	.01	.55	.56	.01	204	203	190	0	2	.1	320
SEP.												
08...	.3	.01	.56	.57	.00	179	170	150	4	2	.0	275

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
DEC.												
03...	8.5	.0	3	13.0	91	1.0	22	B2	B2	3	3.2	100
JAN.												
16...	7.7	.0	3	11.0	77	7.1	B74	7	B3	2	1.1	53
FEB.												
20...	8.0	.0	0	8.9	63	3.7	33	B4	B2	11	2.7	100
MAR.												
17...	7.4	.0	1	9.5	66	15	120	B4	B2	4	1.1	100
APR.												
15...	7.7	1.0	1	12.7	91	6.4	100	9	24	20	E40	100
MAY												
13...	7.8	10.5	1	10.0	91	3.6	57	7	57	7	16	100
JUNE												
04...	8.1	15.0	1	9.8	100	2.3	160	28	64	3	2.9	100
JULY												
09...	8.4	22.0	1	8.7	100	1.5	45	E18	16	0	.00	100
AUG.												
12...	8.4	21.0	2	8.8	100	1.5	100	--	B220	1	.09	100
SEP.												
08...	8.3	13.5	3	10.6	100	1.4	180	64	68	2	1.6	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
DEC.												
03...	260	160	--	4	14	7	.1	.1	0	0	--	10
JAN.												
16...	230	120	--	4	18	0	--	.1	0	0	30	10
APR.												
15...	260	120	1	1	40	30	.0	.0	1	1	40	4
JULY												
09...	120	70	14	2	30	20	.2	.2	0	0	50	0

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

E--ESTIMATED VALUE

04059500 FORD RIVER NEAR HYDE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
FEB. 20	35	1.4	0.9	0.1	0.0	5000
JUNE 04	22	11	2.8	3.8	0.2	2200

REMARKS.-- a/ Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JAN. 16	1100	Chlorophyta		
		Chlorophycea		
		Chlorococcales		
		Occystaceae		
		Tetraedron	--	13
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	13
		Pennales		
		Achnanthaceae		
		Achnanthes	--	38
		Diatomaceae		
		Diatoma	--	13
		Naviculaceae		
		Navicula	--	13
		Nitzschiaceae		
		Nitzschia	--	13
		TOTAL	69	
FEB. 20	1115	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	15
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	30
		Cymbellaceae		
		Cymbella	--	4
		Diatomaceae		
		Diatoma	--	4
		Fragilariaceae		
		Synedra	--	19
		Gomphonemataceae		
		Gomphonema	--	7
		Naviculaceae		
		Navicula	--	22
		TOTAL	180	
MAR. 17	1045	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	18
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	23
		Cymbellaceae		
		Cymbella	--	5
		Fragilariaceae		
		Fragilaria	--	36
		Synedra	--	5
		Naviculaceae		
		Navicula	--	9
		Nitzschiaceae		
		Nitzschia	--	5
		TOTAL	180	
APR. 15	1030	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cocconeis	--	6
		Cymbellaceae		
		Cymbella	--	3
		Diatomaceae		
		Diatoma	--	6
		Eunotiaceae		
		Eunotia	--	21
		Fragilariaceae		
		Synedra	--	29
		Gomphonemataceae		
		Gomphonema	--	29
		TOTAL	550	

04059500 FORD RIVER NEAR HYDE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAY 13	0900	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cocconeis	--	8
		Cymbellaceae		
		Cymbella		<1
		Epithemia		<1
		Eunotiaceae		
		Eunotia	--	5
		Fragilariaceae		
		Fragilaria	--	8
		Synedra	--	19
		Gomphonemataceae		
		Gomphonema		<1
		Meridionaceae		
		Meridion	--	8
		Naviculaceae		
		Navicula	--	19
		Nitzschiaceae		
		Nitzschia	--	5
		TOTAL	1,300	
JUNE 04	1000	Chlorophyta		
		Chlorophyceae		
		Tetrasporales		
		Coccomyxaceae		
		Elakatothrix	--	6
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	22
		Cymbellaceae		
		Cymbella	--	11
		Gomphonemataceae		
		Gomphonema	--	14
		Naviculaceae		
		Navicula	--	6
		Nitzschiaceae		
		Nitzschia	--	28
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	11
		Pyrrhophyta		
		Dinophyceae		
		Peridinales		
		Glenodiniaceae		
		Glenodinium	--	3
		TOTAL	780	
JULY 09	1000	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	9
		Pennales		
		Achnanthaceae		
		Achnanthes	--	15
		Cymbellaceae		
		Cymbella	--	3
		Fragilariaceae		
		Synedra	--	3
		Gomphonemataceae		
		Gomphonema	--	3
		Naviculaceae		
		Navicula	--	18
		Nitzschiaceae		
		Nitzschia	--	26
		Chrysophyceae		
		Chrysomondales		
		Ochromonadaceae		
		Dinobryon	--	24
		TOTAL	850	
AUG. 12	0930	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	26	6
		Scenedesmaceae		
		Scenedesmus	--	<1
		Zygnematales		
		Desmidiaceae		
		Cosmarium	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	<1
		Pennales		
		Achnanthaceae		
		Cocconeis	160	38
		Cymbellaceae		
		Cymbella	--	<1
		Fragilariaceae		
		Fragilaria	26	6
		Synedra	--	<1
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Navicula	130	31
		Pinnularia	--	<1
		Nitzschiaceae		
		Nitzschia	80	19

04059500 FORD RIVER NEAR HYDE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP. 08	1420	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Hydrodictyaceae		
		Pediastrum	30	4
		Oocystaceae		
		Ankistrodesmus	10	1
		Scenedesmaceae		
		Scenedesmus	81	11
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	180	25
		Cocconeis	40	6
		Cymbellaceae		
		Cymbella	50	7
		Gomphonemataceae		
		Gomphonema	20	3
		Meridionaceae		
		Meridion	20	3
		Naviculaceae		
		Navicula	110	15
		Stauroneis	10	1
		Nitzschiaceae		
		Nitzschia	160	23
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Aphanizomenon	--	<1

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			---	340	385	360	360	190	260	297	372	295
2			---	320	380	347	360	186	265	297	370	290
3			---	330	375	355	357	188	260	297	369	293
4			300	330	380	370	356	193	268	284	365	295
5			305	330	380	370	361	193	263	312	374	286
6			300	325	380	343	351	195	272	314	362	283
7			310	320	385	370	353	195	269	318	359	283
8			300	340	378	370	347	199	275	329	359	296
9			310	330	380	355	347	202	274	342	367	287
10			300	340	380	355	342	205	281	344	357	277
11			300	310	385	365	340	209	284	351	369	277
12			310	315	385	355	335	213	293	323	369	270
13			310	310	385	365	323	221	279	348	369	262
14			320	320	360	365	321	234	265	337	352	340
15			315	320	360	365	315	236	249	322	367	254
16			315	320	360	380	286	234	252	302	362	253
17			305	325	360	380	270	229	244	307	344	259
18			315	340	360	360	246	223	236	302	341	263
19			325	345	350	360	232	229	245	297	355	275
20			290	365	337	345	213	239	236	328	364	287
21			315	390	365	340	209	238	264	316	356	280
22			320	400	365	350	207	228	243	325	350	287
23			320	390	350	340	194	224	235	333	346	287
24			320	395	370	350	186	216	220	340	356	289
25			340	395	355	350	169	215	231	347	341	291
26			355	390	363	350	169	221	243	354	328	299
27			335	380	362	355	174	233	251	354	330	298
28			320	385	359	360	170	245	275	359	332	302
29			320	380	---	360	168	258	274	358	326	302
30			325	380	---	360	179	257	286	358	326	300
31			335	380	---	360	---	261	---	360	307	---

04059500 FORD RIVER NEAR HYDE, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	8.0	10.5	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	8.5	7.0	10.5	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	8.5	6.5	10.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	10.5	8.5	8.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	12.5	10.5	7.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	12.5	10.0	6.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	10.0	8.5	5.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	10.5	8.5	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	10.5	10.0	5.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	11.5	9.5	5.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	12.0	11.5	6.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	12.0	10.5	5.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	10.5	8.0	4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	10.0	8.5	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	9.0	7.5	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	10.0	8.0	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	10.0	7.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	7.0	6.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	6.5	6.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	6.5	5.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	6.0	4.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	6.0	6.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	6.0	5.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	6.5	5.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	7.5	6.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	7.0	6.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7.0	6.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	9.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	9.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
30	10.5	9.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
31	10.5	10.0	---	---	0.0	0.0	0.0	0.0	---	---	0.0	0.0
MONTH	12.5	4.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.0	0.0	8.5	6.5	17.0	14.0	26.5	23.5	30.0	25.5	18.5	17.0
2	0.0	0.0	9.5	6.5	16.5	14.0	26.5	25.0	27.0	24.5	18.0	16.0
3	0.0	0.0	9.0	8.5	16.5	14.0	27.5	25.0	27.5	22.5	18.5	16.5
4	0.0	0.0	8.5	7.5	16.5	14.5	26.0	23.5	27.0	23.0	18.0	16.0
5	0.0	0.0	8.0	7.0	19.0	15.0	26.5	24.0	24.0	21.0	18.0	16.0
6	0.0	0.0	9.5	7.0	19.0	15.0	25.5	23.5	24.0	19.5	16.0	14.5
7	0.0	0.0	10.5	8.0	15.0	13.0	26.5	22.5	24.0	19.0	15.5	15.0
8	0.0	0.0	11.5	9.0	17.5	13.0	26.0	23.5	24.5	18.5	15.5	13.5
9	0.0	0.0	13.0	9.5	18.5	16.0	24.5	22.0	27.5	21.5	14.5	12.0
10	0.5	0.5	14.0	10.5	18.5	17.5	22.0	19.0	26.5	21.5	15.5	14.0
11	0.5	0.5	14.0	11.0	18.5	16.0	19.5	15.5	26.0	20.5	15.5	15.0
12	0.5	0.5	13.5	10.5	16.0	15.0	20.5	16.0	25.0	20.5	15.0	12.0
13	1.0	1.0	14.0	10.5	18.0	14.5	21.0	17.0	26.0	21.0	13.0	11.0
14	1.0	1.0	14.0	12.0	17.0	14.5	21.0	19.5	25.0	21.0	12.0	9.5
15	1.0	1.0	13.0	11.5	17.0	14.5	23.0	18.5	24.5	20.5	13.5	10.5
16	1.0	1.0	14.0	9.5	15.5	13.5	26.0	22.5	24.0	21.0	13.5	12.5
17	1.0	1.0	15.0	10.5	15.5	15.0	27.0	24.5	22.0	20.5	14.5	12.5
18	1.0	1.0	16.5	13.0	16.5	15.0	27.5	24.5	21.5	17.0	14.0	13.0
19	1.5	1.0	18.5	14.5	19.0	16.0	27.5	24.0	19.0	17.5	14.5	13.0
20	1.5	1.5	19.5	16.5	19.0	17.5	26.5	24.0	18.5	17.0	14.5	13.0
21	2.0	1.5	20.5	17.0	21.5	18.5	25.0	21.5	22.0	17.5	13.5	12.5
22	4.0	1.5	21.0	16.0	22.5	20.0	27.5	23.0	20.5	18.5	11.5	10.0
23	4.0	3.0	21.5	18.5	23.5	21.0	25.5	22.5	19.0	18.0	10.5	8.5
24	4.0	2.5	21.5	19.0	23.0	20.5	24.0	21.5	23.0	18.5	10.0	6.0
25	5.0	3.0	21.0	19.0	23.0	20.5	24.5	20.0	24.0	21.0	11.5	5.5
26	5.5	3.5	21.0	18.5	23.0	20.5	24.0	20.5	23.0	20.0	13.0	5.5
27	5.5	5.0	20.0	17.0	22.5	20.5	26.0	21.5	22.0	18.5	11.5	5.5
28	5.5	4.5	19.5	16.5	25.5	21.5	27.0	22.0	20.0	17.5	14.5	5.5
29	5.5	4.5	19.5	16.5	25.5	22.0	28.5	23.0	17.5	17.0	14.0	6.0
30	7.0	5.0	16.5	15.0	26.0	22.5	30.5	24.5	19.0	15.5	15.5	6.5
31	---	---	17.5	14.0	---	---	31.0	25.5	19.0	17.0	---	---
MONTH	7.0	0.0	21.5	6.5	26.0	13.0	31.0	15.5	30.0	15.5	18.5	5.5
YEAR	31.0	0.0										

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, at gaging station on left bank 10 ft (3 m) downstream from bridge on County Road 607, 0.6 mi (1.0 km) downstream from West Branch, and 3.5 mi (5.6 km) northwest of Champion.

DRAINAGE AREA.--133 mi^2 (344 km^2).

PERIOD OF RECORD.--Chemical analyses: Water year 1975 (partial-record station).
Water temperatures: August 1961 to September 1975.

EXTREMES.--1974-75.
Water temperatures: Maximum 28.0°C July 30; minimum, freezing point on many days during November to April.
Period of record:
Water temperatures: Maximum, 28.5°C July 1, 1966; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period. Unpublished water temperatures for water year 1963 are available in the Escanaba suboffice.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	7.5	6.0	7.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	6.5	5.5	6.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	6.5	5.5	6.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	7.5	6.0	5.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	8.0	7.0	4.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	7.5	7.0	3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	7.0	6.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	6.5	6.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	7.0	6.5	3.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	8.0	6.5	4.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	9.5	8.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	9.0	7.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	7.0	6.0	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	7.0	6.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	6.0	5.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	6.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	6.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	5.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	4.0	4.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	4.0	3.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	3.5	2.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	4.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	4.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	4.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	6.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	6.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
30	7.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
31	7.0	7.0	---	---	0.0	0.0	0.0	0.0	---	---	0.0	0.0
MONTH	9.5	2.5	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

04062200 PESHEKEE RIVER NEAR CHAMPION, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.0	0.0	3.0	2.5	13.5	12.5	25.0	22.0	27.0	23.0	17.0	16.0
2	0.0	0.0	4.0	2.0	15.5	12.5	25.0	22.5	26.5	23.5	18.0	15.0
3	0.0	0.0	4.0	3.5	15.5	14.0	25.0	22.0	24.5	19.5	17.0	15.0
4	0.0	0.0	3.5	3.0	15.0	14.0	24.0	20.0	25.0	20.5	17.5	14.0
5	0.0	0.0	4.0	3.5	16.0	14.0	23.5	20.0	23.0	19.5	16.5	14.5
6	0.0	0.0	5.5	4.0	15.0	13.0	23.0	20.0	22.0	17.0	15.0	13.5
7	0.0	0.0	6.5	5.0	13.0	12.0	24.0	19.5	22.5	17.5	14.5	13.5
8	0.0	0.0	7.0	5.5	15.0	11.5	23.0	20.0	23.0	18.5	14.0	12.5
9	0.0	0.0	7.5	6.5	15.5	13.5	21.5	18.5	24.0	20.0	13.0	10.5
10	0.0	0.0	8.5	7.5	16.0	14.5	20.0	17.5	24.0	20.5	12.5	12.5
11	0.0	0.0	9.0	8.5	16.5	15.5	19.0	16.0	23.5	18.5	13.5	12.5
12	0.0	0.0	9.0	7.5	15.5	14.5	17.0	15.0	23.0	19.0	13.0	11.5
13	0.0	0.0	9.5	7.5	16.0	13.5	20.0	14.5	22.5	19.5	11.5	10.5
14	0.0	0.0	9.5	9.5	16.5	14.5	19.5	16.0	21.0	17.5	12.0	10.0
15	0.0	0.0	10.0	9.0	16.5	14.5	22.5	17.0	20.5	18.0	13.5	11.5
16	0.0	0.0	10.0	8.0	16.5	13.5	25.5	20.0	19.0	17.0	13.0	12.5
17	0.0	0.0	12.0	9.5	14.5	14.5	26.5	22.5	20.0	16.0	13.5	12.0
18	0.0	0.0	13.5	11.5	15.5	14.5	27.0	22.5	19.0	15.0	13.5	13.0
19	0.0	0.0	14.0	13.0	17.5	15.5	26.5	22.5	18.5	15.0	14.0	13.0
20	0.0	0.0	14.0	12.0	17.5	16.5	23.5	21.5	18.0	16.0	13.5	13.0
21	0.0	0.0	14.0	13.0	19.5	16.5	23.5	18.5	17.0	16.0	13.0	12.5
22	0.0	0.0	15.0	13.5	20.5	18.5	25.5	20.5	18.5	15.5	12.0	11.0
23	0.0	0.0	16.5	15.0	21.0	19.5	24.5	20.5	17.5	16.0	11.0	10.0
24	0.0	0.0	17.0	16.5	21.5	19.5	21.0	19.5	21.5	16.5	10.0	9.0
25	0.0	0.0	17.5	16.5	22.0	19.5	22.0	17.0	21.5	18.5	10.0	9.0
26	0.0	0.0	17.5	17.5	22.5	19.5	22.0	18.0	19.5	17.0	10.0	8.5
27	1.0	0.0	17.5	16.0	22.5	21.0	24.0	19.5	20.0	15.5	10.0	7.5
28	1.0	0.5	16.5	15.5	24.0	21.0	23.5	18.0	18.5	15.5	10.5	8.5
29	1.0	1.0	16.5	14.5	23.5	21.0	26.0	20.0	16.0	16.0	10.0	8.5
30	3.0	1.0	14.5	13.5	24.0	21.5	28.0	22.5	18.0	14.0	11.0	9.5
31	---	---	14.5	12.5	---	---	27.5	22.5	18.0	15.0	---	---
MONTH	3.0	0.0	17.5	2.0	24.0	11.5	28.0	14.5	27.0	14.0	18.0	7.5
YEAR	28.0	0.0										

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, temperature recorder at gaging station 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 mi^2 (614 km^2).

PERIOD OF RECORD.--Water temperatures: July 1956 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 28.0°C July 31, Aug. 1; minimum, freezing point on many days during November to April.
Period of record:
Water temperatures: Maximum, 30.0°C July 1, 1963; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period. Recorder stopped Jan. 11-14, Feb. 10-16, temperature at freezing point.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	8.0	10.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	9.0	7.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	8.5	6.5	10.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	9.5	7.5	7.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	12.0	9.0	6.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	11.0	10.0	5.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	10.0	8.5	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	10.5	9.0	4.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	10.0	9.5	4.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	11.5	9.0	5.0	4.5	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0
11	12.5	11.0	5.5	5.0	0.0	0.0	0.0	---	---	---	0.0	0.0
12	12.0	10.5	5.5	4.0	0.0	0.0	---	---	---	---	0.0	0.0
13	10.5	8.5	4.0	2.5	0.0	0.0	---	---	---	---	0.0	0.0
14	9.5	9.0	2.5	1.5	0.0	0.0	0.0	---	---	---	0.0	0.0
15	9.0	7.5	1.5	1.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
16	9.5	8.0	1.0	1.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
17	9.0	7.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	7.0	6.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	6.5	6.0	1.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	6.0	5.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	6.0	4.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	6.0	5.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	6.5	4.5	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	6.5	4.5	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	6.5	5.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	7.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	7.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	8.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	8.5	8.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
30	9.0	8.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
31	9.0	9.0	---	---	0.0	0.0	0.0	0.0	---	---	0.0	0.0
MONTH	12.5	4.0	10.0	0.0	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0

04065500 STURGEON RIVER NEAR FOSTER CITY, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.0	0.0	8.0	6.0	16.0	14.0	26.5	23.5	28.0	24.5	15.0	14.5
2	0.0	0.0	9.5	7.0	16.0	14.0	26.5	24.5	26.0	24.0	17.0	15.0
3	0.0	0.0	9.5	9.0	16.5	14.5	26.5	24.0	25.0	21.5	16.5	15.0
4	0.0	0.0	9.0	8.5	16.0	15.0	26.5	22.5	24.5	21.5	16.0	14.0
5	0.0	0.0	9.0	8.0	17.0	15.0	25.5	23.0	23.5	20.5	16.0	15.0
6	0.0	0.0	9.0	7.5	17.0	14.5	24.0	23.0	21.5	18.0	15.0	14.0
7	0.0	0.0	10.0	8.5	14.5	13.0	25.0	21.5	21.5	18.0	14.5	14.0
8	0.0	0.0	11.5	9.5	17.0	12.5	24.5	22.0	22.0	18.5	14.0	13.0
9	0.0	0.0	13.5	10.0	17.0	14.0	23.5	21.0	24.0	19.5	14.0	12.0
10	0.0	0.0	14.5	11.0	18.0	15.5	22.5	19.0	23.5	20.0	14.0	13.0
11	0.0	0.0	14.5	12.0	17.5	15.0	19.0	17.5	23.5	19.0	14.5	14.0
12	0.0	0.0	14.0	11.5	15.5	14.5	18.5	16.5	22.5	19.5	14.0	12.0
13	0.0	0.0	14.0	11.5	16.0	14.0	19.0	16.0	22.0	20.0	12.0	11.0
14	0.0	0.0	14.0	13.0	17.0	15.0	19.0	17.5	20.5	18.5	11.0	10.0
15	0.0	0.0	13.5	11.5	17.0	15.0	22.0	17.5	20.0	18.5	12.0	11.0
16	0.0	0.0	13.0	10.0	15.5	14.0	25.0	20.5	20.5	18.5	12.5	12.0
17	0.5	0.0	14.0	11.0	15.5	15.5	26.0	23.0	20.0	18.0	14.0	12.5
18	1.0	1.0	17.0	14.0	16.5	15.5	27.0	23.5	18.5	15.5	14.0	13.5
19	1.5	1.0	18.0	16.0	19.0	16.0	27.5	24.5	18.0	16.5	15.5	13.5
20	1.5	1.0	19.0	17.5	19.5	17.5	26.0	24.0	16.5	15.5	15.0	13.5
21	2.0	1.0	18.5	17.0	20.5	18.0	25.5	22.5	19.0	16.0	13.5	12.5
22	4.0	2.0	20.5	17.5	22.0	20.0	26.5	23.0	18.5	17.0	12.5	11.5
23	4.0	3.5	21.5	19.0	22.5	20.5	26.5	22.5	17.5	16.5	11.5	10.0
24	3.5	2.5	21.5	20.0	22.5	20.5	22.5	21.5	20.0	16.5	10.5	9.0
25	4.5	3.0	21.0	19.5	22.5	20.5	23.5	20.0	20.5	17.5	10.0	8.5
26	5.0	4.5	21.0	19.5	22.5	20.5	22.0	19.5	19.0	16.5	10.5	8.5
27	5.5	5.0	20.0	18.0	23.5	21.0	23.0	20.5	18.5	15.5	11.0	9.5
28	5.5	5.0	19.0	17.0	25.0	22.5	24.5	20.0	18.0	15.0	12.0	9.0
29	5.0	4.0	18.5	17.5	25.0	23.0	26.0	22.0	15.0	14.0	11.5	10.0
30	6.0	4.5	16.5	15.5	26.0	23.0	27.5	23.0	15.0	13.0	12.5	10.5
31	---	---	16.0	14.0	---	---	28.0	24.0	15.5	14.5	---	---
MONTH	6.0	0.0	21.5	6.0	26.0	12.5	28.0	16.0	28.0	13.0	17.0	8.5
YEAR	28.0	0.0										

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, temperature recorder at gaging station 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 mi^2 (43.5 km^2).

PERIOD OF RECORD.--Water temperatures: November 1971 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 24.0°C May 23, 24; minimum, freezing point on many days during November to April.
Period of record:
Water temperatures: Maximum, 24.0°C July 8, 9, 1973 May 23, 24, 1975; minimum, freezing point on many days during winter period.

REMARKS.--Complete ice cover during winter period. Some flow diverted into basin and some regulation.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.0	10.5	8.5	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	10.5	10.0	8.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	10.0	9.5	8.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	9.5	9.0	7.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10.0	9.0	6.5	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	10.0	10.0	6.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	10.0	9.0	3.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	9.0	9.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	9.0	9.0	3.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	9.5	9.0	3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	11.0	9.5	4.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	11.0	10.0	3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	10.0	8.5	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	9.0	8.5	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	9.0	8.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	8.0	8.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	8.0	7.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	7.5	6.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	6.0	6.0	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	6.0	5.5	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
21	5.5	4.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	5.5	4.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	5.5	4.5	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	5.0	4.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	5.0	5.0	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	5.0	4.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	5.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	6.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	7.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
30	8.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	0.0	0.0
31	8.0	8.0	---	---	0.0	0.0	0.0	0.0	---	---	0.0	0.0
MONTH	11.0	4.0	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

04065600 PINE CREEK NEAR IRON MOUNTAIN, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	0.0	0.0	10.5	9.5	16.0	14.0	23.5	22.0	23.0	21.0	15.0	15.0
2	0.0	0.0	12.0	10.0	16.0	15.0	23.5	22.5	22.0	20.0	15.0	14.0
3	0.0	0.0	12.0	11.5	16.0	14.5	23.5	22.5	20.0	17.5	14.0	13.0
4	0.0	0.0	11.5	11.0	15.5	14.5	23.0	19.5	20.0	17.0	15.0	13.5
5	0.0	0.0	11.5	11.5	16.5	14.5	22.0	20.5	18.5	16.0	15.0	15.0
6	0.0	0.0	12.0	11.0	16.5	14.5	21.0	20.5	17.0	12.5	15.0	13.5
7	0.0	0.0	13.5	11.5	14.5	12.5	20.5	19.0	17.0	12.5	14.0	13.5
8	0.0	0.0	14.5	12.5	14.0	11.0	21.0	19.5	18.0	14.0	13.5	13.0
9	0.0	0.0	16.0	13.0	14.0	12.0	20.5	18.0	20.0	17.5	13.0	10.5
10	0.0	0.0	17.0	13.5	15.5	14.0	19.0	17.0	20.0	16.0	13.0	11.5
11	0.0	0.0	16.5	15.0	15.0	13.5	17.0	15.0	19.5	15.0	13.5	13.0
12	0.0	0.0	17.0	14.0	13.5	13.5	15.0	15.0	19.0	15.5	13.5	11.5
13	0.0	0.0	18.0	14.0	16.0	13.5	16.5	14.0	19.0	18.0	11.0	10.0
14	0.0	0.0	18.0	16.0	16.5	14.0	16.5	15.0	18.0	16.0	10.0	9.0
15	0.0	0.0	16.0	14.5	16.5	15.0	19.0	15.0	17.0	16.0	11.0	10.0
16	0.0	0.0	16.0	12.0	15.5	13.5	21.5	19.0	17.5	16.0	11.5	11.0
17	1.0	0.0	18.0	13.5	15.5	15.0	23.0	21.0	17.5	16.0	12.5	11.5
18	2.5	2.5	20.5	17.0	16.0	14.5	23.5	22.5	16.0	12.0	12.5	12.0
19	3.0	3.0	21.0	18.0	18.5	16.0	23.5	23.0	14.0	13.0	12.5	12.5
20	4.5	4.0	21.0	19.0	18.5	16.5	23.5	21.0	14.5	14.0	12.5	11.5
21	5.5	4.0	21.0	19.5	20.5	17.5	21.5	19.0	17.5	14.5	11.5	11.0
22	7.0	5.0	23.0	20.0	22.0	20.5	23.0	20.0	17.5	15.5	11.5	10.5
23	7.0	5.5	24.0	21.5	22.5	20.5	23.0	20.0	16.0	15.5	10.5	9.5
24	6.0	5.5	24.0	22.0	22.5	20.0	19.5	19.0	19.0	16.0	9.0	7.5
25	8.0	6.0	23.5	21.5	22.5	20.0	18.0	16.0	19.0	18.0	8.0	7.0
26	8.0	7.0	23.0	21.5	22.5	19.5	18.0	16.0	18.0	15.5	7.5	7.0
27	8.0	8.0	22.0	18.5	22.5	20.5	19.5	18.0	16.0	13.5	8.0	7.5
28	8.5	8.0	19.5	17.5	22.5	21.0	19.5	16.0	15.5	14.0	8.5	8.0
29	8.0	7.5	19.0	17.5	22.5	20.5	22.0	18.0	15.0	14.0	8.5	8.0
30	9.5	7.5	17.5	16.5	23.5	22.0	23.5	20.0	15.0	14.0	9.5	8.5
31	---	---	16.5	15.5	---	---	23.5	20.0	15.0	15.0	---	---
MONTH	9.5	0.0	24.0	9.5	23.5	11.0	23.5	14.0	23.0	12.0	15.0	7.0
YEAR	24.0	0.0										

04096207 BAW BEESE LAKE OUTLET AT HILLSDALE, MICH.

LOCATION.--Lat 41°54'18", long 84°37'01", in NE¼ SE¼, sec.35, T.6 S., R.3 W., Hillsdale County, at bridge on Lakeview Road, 300 ft (91 m) downstream from Baw Beese Lake, 0.5 mi (0.8 km) southeast of Hillsdale.

DRAINAGE AREA.--5.10 mi^2 (13.2 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1400	E3.0	3.1	50	50	42	16	8.0	1.4	179	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
JUNE, 1975											
16...	147	18	16	.4	.01	.00	.00	198	.27	170	24

DATE	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975										
16...	9	.3	350	7.5	19.5	10	2	7.0	78	21.5

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
03...	1020	E.10	11.0	E1	--
22...	1310	E.10	9.0	E1	--
NOV.					
01...	1345	E.10	15.5	E1	--
11...	1515	E.20	10.0	2	--
DEC.					
04...	1245	E10	3.0	1	--
JAN.					
06...	0900	10	1.0	2	.06
24...	0910	9.0	1.5	E1	--
FEB.					
11...	0910	8.8	2.0	E1	--
MAR.					
03...	1040	9.4	3.0	9	.23
12...	1510	8.3	4.0	E1	--
APR.					
08...	1130	10	6.5	E1	--
25...	0830	E7.0	9.5	E1	--
MAY					
08...	1020	11	15.5	3	.09
21...	1150	10	24.0	4	.11
JUNE					
04...	1135	E11	21.0	E1	--
16...	1400	E3.0	19.5	17	--
JULY					
10...	1030	E2.0	25.5	E1	--
AUG.					
05...	0845	E1.0	25.5	E1	--
21...	0915	E1.0	21.5	E1	--
SEP.					
22...	1155	E2.0	14.5	4	--

E - ESTIMATED VALUE

04096207 BAW BEESE LAKE OUTLET AT HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
03...	1020	E.10	.00	.00	.00	.48	.48	.48	2.1
22...	1310	E.10	.01	.00	.01	.44	.45	.46	2.0
NOV.									
01...	1345	E.10	.00	.01	.00	.59	.59	.59	2.6
11...	1515	E.20	.01	.01	.01	.52	.53	.55	2.4
DEC.									
04...	1245	E10	.04	.01	.01	.49	.50	.55	2.4
JAN., 1975									
06...	0900	10	.06	.01	.09	.50	.59	.66	2.9
24...	0910	9.0	.08	.00	.07	.56	.63	.71	3.1
FEB.									
11...	0910	8.8	.09	.00	.08	.49	.57	.66	2.9
MAR.									
03...	1040	9.4	.10	.00	.07	.49	.56	.66	2.9
12...	1510	8.3	.08	.01	.06	.52	.58	.67	3.0
APR.									
08...	1130	10	.10	.01	.06	.46	.52	.63	2.8
25...	0830	E7.0	.10	.02	.04	.44	.48	.60	2.7
MAY									
08...	1020	11	.09	.01	.03	.38	.41	.51	2.3
21...	1150	10	.04	.01	.04	.49	.53	.58	2.6
JUNE									
04...	1135	E11	.02	.00	.00	.35	.35	.37	1.6
JULY									
10...	1030	E2.0	.00	.00	.01	.41	.42	.42	1.9
AUG.									
05...	0845	E1.0	.00	.00	.03	.64	.67	.67	3.0
21...	0915	E1.0	.00	.00	.01	.68	.69	.69	3.1

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
03...	.02	.00	.01	.01	7.0	11.0	7.0	65	6.0
22...	.02	.03	.01	.00	--	9.0	9.1	81	14.5
NOV.									
01...	.02	.00	--	--	--	15.5	8.0	83	21.0
11...	.02	.03	--	--	7.4	10.0	7.1	65	8.0
DEC.									
04...	.01	.01	--	--	7.3	3.0	11.2	86	-.5
JAN., 1975									
06...	.01	.01	--	--	7.1	1.0	--	--	-2.5
24...	.00	.00	--	--	--	1.5	--	--	-2.0
FEB.									
11...	.00	.01	--	--	7.0	2.0	--	--	-4.0
MAR.									
03...	.01	.00	--	--	--	3.0	--	--	-4.5
12...	.01	.00	--	--	7.1	4.0	--	--	2.0
APR.									
08...	.01	.01	--	--	8.2	6.5	--	--	5.5
25...	.01	.01	--	--	8.1	9.5	12.5	115	7.5
MAY									
08...	.02	.00	--	--	8.4	15.5	11.5	120	15.5
21...	.01	.00	--	--	8.3	24.0	9.9	120	26.5
JUNE									
04...	.06	.03	--	--	8.5	21.0	--	--	21.0
JULY									
10...	.01	.01	--	--	8.4	25.5	9.7	121	20.5
AUG.									
05...	.02	.00	--	--	7.6	25.5	3.5	44	21.5
21...	.02	.00	--	--	8.1	21.5	--	--	20.5

E - ESTIMATED VALUE

04096207 BAW BEESE LAKE OUTLET AT HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
28...	1020	7.9	.00	.0	.0	0	.00	11	.00	8.4	.00	.0

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
28...	.00	.0	.00	.2	.00	.0	.00	.0	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975											
28...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
28...	18	0	0	.00	.0	.00	0	.00	0	.13	0

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
28...	0	0	10	10	1	0	.0	0	0	0	7

04096214 KING LAKE OUTLET AT HILLSDALE, MICH.

LOCATION.--Lat 41°54'26", long 84°37'28", in NE¼ NW¼ sec.35, T.6 S., R.3 W., Hillsdale County, at bridge on Steamburg Road at Hillsdale, 0.3 mi (0.5 km) upstream from mouth.

DRAINAGE AREA.--4.19 mi^2 (10.85 km^2).

PERIOD OF RECORD.--Chemical analyses: July 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1315	E.10	8.4	150	50	72	18	5.2	1.5	271	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
JUNE, 1975											
16...	222	25	9.2	.2	1.1	.03	.09	326	.44	250	32

DATE	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975										
16...	4	.1	425	7.7	18.0	36	2	7.7	84	25.5

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
03...	0940	.40	5.0	25	.03
22...	1200	.47	5.5	9	.01
NOV.					
01...	1245	.60	15.0	9	.01
11...	1400	1.2	9.5	35	.12
DEC.					
04...	1125	1.5	.0	12	.05
11...	1040	1.6	1.5	11	.05
JAN.					
06...	1045	1.6	.5	10	.04
24...	1030	2.6	2.5	5	.04
FEB.					
11...	1045	2.0	.5	2	.01
MAR.					
03...	0915	6.4	.5	1	.02
12...	1400	7.1	2.5	13	.25
APR.					
08...	1025	7.7	4.0	E7	--
MAY					
08...	1120	10	14.0	6	.16
JUNE					
06...	1325	7.2	19.5	15	.29
16...	1315	E.10	18.0	12	--
JULY					
10...	1105	1.8	18.5	23	.11
AUG.					
05...	0915	.72	17.5	35	.07
21...	0945	.40	18.0	44	.05
SEP.					
22...	1225	2.0	13.0	14	.08

E - ESTIMATED VALUE

04096214 KING LAKE OUTLET AT HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
03...	0940	.40	2.3	.00	.00	.43	.43	2.7	12
22...	1200	.47	2.2	.00	.00	.55	.55	2.8	12
NOV.									
01...	1245	.60	1.5	.01	.00	.40	.40	1.9	8.4
11...	1400	1.2	1.1	.01	.00	.42	.42	1.5	6.7
DEC.									
04...	1125	1.5	1.1	.00	.00	.71	.71	1.8	8.0
11...	1040	1.6	1.1	.00	.01	.79	.80	1.9	8.4
JAN., 1975									
06...	1045	1.6	1.1	.01	.01	.69	.70	1.8	8.0
24...	1030	2.6	1.3	.01	.00	.98	.98	2.3	10
FEB.									
11...	1045	2.0	1.2	.00	.01	.60	.61	1.8	8.0
MAR.									
03...	0915	6.4	1.1	.00	.02	.58	.60	1.7	7.5
12...	1400	7.1	1.3	.01	.00	.90	.90	2.2	9.7
APR.									
08...	1025	7.7	1.1	.01	.01	.45	.46	1.6	6.9
MAY									
08...	1120	10	.64	.01	.00	.68	.68	1.3	5.9
JUNE									
06...	1325	7.2	.71	.01	.02	.92	.94	1.7	7.3
JULY									
10...	1105	1.8	1.2	.00	.01	.87	.88	2.1	9.2
AUG.									
05...	0915	.72	2.1	.02	.04	.70	.74	2.8	13
21...	0945	.40	2.5	.02	.09	1.0	1.1	3.6	16
SEP.									
22...	1155	--	.01	.00	.01	.55	.56	.57	2.5
22...	1225	2.0	.95	.00	.00	.83	.83	1.8	7.9

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
03...	.03	.00	.02	.01	7.0	5.0	11.8	96	4.5
22...	.01	.01	.01	.00	7.6	5.5	13.0	108	12.0
NOV.									
01...	.03	.01	--	--	7.4	15.0	8.8	90	19.5
11...	.03	.01	--	--	8.0	9.5	11.5	106	9.0
DEC.									
04...	.04	.01	.01	.02	7.3	.0	14.4	102	-1.0
11...	.03	.00	--	--	7.2	1.5	13.6	98	1.5
JAN., 1975									
06...	.03	.01	--	--	7.0	.5	--	--	-.5
24...	.03	.00	--	--	--	2.5	--	--	1.5
FEB.									
11...	.03	.00	--	--	7.1	.5	--	--	-2.5
MAR.									
03...	.03	.01	.02	.00	--	.5	--	--	-3.5
12...	.04	.00	--	--	7.2	2.5	--	--	3.0
APR.									
08...	.01	.01	--	--	8.0	4.0	13.8	110	3.5
MAY									
08...	.05	.03	--	--	7.6	14.0	10.0	100	16.5
JUNE									
06...	.06	.02	--	--	8.0	19.5	--	--	20.5
JULY									
10...	.06	.03	--	--	8.1	18.5	8.7	96	24.0
AUG.									
05...	.06	.02	--	--	8.1	17.5	7.9	85	21.0
21...	.07	.03	--	--	8.3	18.0	--	--	21.0
SEP.									
22...	.02	.01	--	--	--	14.5	--	--	12.5
22...	.05	.01	--	--	8.1	13.0	--	--	12.5

04096214 KING LAKE OUTLET AT HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
28...	1230	10	.00	.0	.0	0	.00	.4	.00	<.1	.00	.4

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
28...	.00	.0	.00	.1	.00	.0	.00	.0	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975											
28...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
28...	0	0	0	.00	.0	.00	0	.00	0	.00	0

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
28...	1	0	<10	0	2	0	.0	0	0	0	20

04096225 ST. JOSEPH RIVER AT HILLSDALE, MICH.

LOCATION.--Lat 41°55'45", long 84°38'22", in SW¼ SE¼ sec.22, T.6 S., R.3 W., Hillsdale County, at bridge on Fayette Street at Hillsdale.

DRAINAGE AREA.--12.4 mi^2 (32.1 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial record station).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
DEC., 1974											
20...	0920	--	7.6	100	130	74	22	19	2.4	266	0
JUNE, 1975											
16...	1230	12	5.9	120	60	74	21	19	2.3	272	--

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
DEC., 1974											
20...	218	43	36	.3	.56	.01	.03	352	.48	--	280
JUNE, 1975											
16...	223	31	40	.3	--	--	--	398	.54	12.9	270

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
DEC., 1974											
20...	57	13	.5	618	7.9	.5	20	2	11.8	85	-3.5
JUNE, 1975											
16...	48	13	.5	595	8.0	19.5	25	1	9.6	100	21.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
03...	0835	2.7	7.5	12	.09
22...	1015	1.7	6.5	7	.03
NOV.					
01...	1115	2.3	15.5	5	.03
11...	1230	3.1	10.0	8	.07
DEC.					
04...	0950	3.3	1.0	16	.14
JAN.					
06...	1210	14	1.5	4	.15
23...	1330	14	3.0	4	.15
FEB.					
11...	1245	12	2.5	2	.07
25...	1345	30	1.5	13	1.1
MAR.					
12...	1250	20	4.5	22	1.2
27...	0905	19	3.0	1	.05
APR.					
08...	0910	22	5.5	E1	--
24...	1215	22	11.0	6	.36
MAY					
07...	1440	42	17.5	4	.45
JUNE					
06...	1210	20	20.5	8	.44
16...	1230	12	19.5	5	.16
JULY					
10...	0905	9.4	22.0	5	.13
AUG.					
05...	0730	3.0	20.0	E1	--
21...	0845	2.4	18.0	26	.17
22...	1345	18	20.0	69	3.4
SEP.					
22...	1040	5.2	12.5	3	.04

E - ESTIMATED VALUE

04096225 ST. JOSEPH RIVER AT HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
03...	0835	2.7	.52	.01	.07	.29	.36	.89	3.9
22...	1015	1.7	.49	.01	.00	.35	.35	.85	3.8
NOV.									
01...	1115	2.3	.32	.02	.04	.42	.46	.80	3.5
11...	1230	3.1	.63	.03	.09	.54	.63	1.3	5.7
DEC.									
04...	0950	3.3	.71	.02	.07	.39	.46	1.2	5.3
20...	0920	--	--	--	--	--	--	--	--
JAN., 1975									
06...	1210	14	.28	.01	.08	.66	.74	1.0	4.6
23...	1330	14	.44	.00	.09	.62	.71	1.2	5.1
FEB.									
11...	1245	12	.39	.00	.07	.46	.53	.92	4.1
25...	1345	30	.92	.01	.20	.55	.75	1.7	7.4
MAR.									
12...	1250	20	1.3	.01	.00	1.0	1.0	2.3	10
27...	0905	19	.51	.00	.02	.44	.46	.97	4.3
APR.									
09...	0915	--	.55	.01	.01	.46	.47	1.0	4.6
09...	1025	--	1.1	.01	.01	.45	.46	1.6	6.9
24...	1215	22	.50	.01	.02	.61	.63	1.1	5.0
MAY									
07...	1440	42	.47	.01	.01	.59	.60	1.1	4.8
JUNE									
06...	1210	20	.33	.02	.08	.55	.63	.98	4.3
JULY									
10...	0905	9.4	.24	.02	.04	.59	.63	.89	3.9
AUG.									
05...	0730	3.0	.38	.07	.47	.53	1.0	1.5	6.4
21...	0845	2.4	.38	.02	.10	.50	.60	1.0	4.4
SEP.									
22...	1040	5.2	.67	.05	.39	.71	1.1	1.8	8.1

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
03...	.05	.03	.04	.00	6.9	7.5	8.8	76	-.5
22...	.04	.02	.02	.00	7.1	6.5	10.2	85	8.0
NOV.									
01...	.06	.04	--	--	6.6	15.5	6.9	72	18.5
11...	.14	.05	--	--	7.5	10.0	9.0	82	10.0
DEC.									
04...	.06	.04	--	--	7.4	1.0	13.4	98	-2.0
20...	--	.01	--	--	7.9	.5	11.8	85	-3.5
JAN., 1975									
06...	.03	.02	--	--	7.0	1.5	--	--	1.0
23...	.02	.01	--	--	--	3.0	--	--	.5
FEB.									
11...	.02	.01	--	--	7.1	2.5	--	--	-1.0
25...	.06	.03	--	--	--	1.5	--	--	.5
MAR.									
12...	.04	.00	--	--	7.0	4.5	--	--	3.5
27...	.02	.01	--	--	--	3.0	12.1	93	-4.0
APR.									
09...	.04	.01	--	--	--	5.5	--	--	--
09...	.01	.01	--	--	--	4.0	--	--	--
24...	.01	.00	--	--	7.9	11.0	10.2	95	14.5
MAY									
07...	.06	.01	--	--	8.2	17.5	11.0	120	16.5
JUNE									
06...	.05	.02	--	--	8.1	20.5	--	--	19.5
JULY									
10...	.06	.04	--	--	8.1	22.0	7.7	90	20.5
AUG.									
05...	.11	.06	--	--	7.8	20.0	3.9	44	20.0
21...	.08	.04	--	--	7.9	18.0	--	--	18.5
SEP.									
22...	.14	.11	--	--	7.9	12.5	--	--	10.5

04096225 ST. JOSEPH RIVER AT HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
28...	1345	8.7	.00	.0	.0	12	.00	5.0	.00	2.0	.00	3.5
JUNE												
16...	1230	7.5	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)	TOTAL LINDANE (UG/L)
JAN., 1975												
28...	.00	.00	1.9	.00	.0	.00	.0	.00	.0	.00	.0	.00
JUNE												
16...	.00	.00	--	.00	--	.00	--	.00	--	.00	--	.00

DATE	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975											
28...	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE											
16...	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
28...	58	0	0	.00	.0	.00	0	.00	0	.10	0
JUNE											
16...	--	0	--	.00	--	.00	--	.00	--	.01	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
28...	1	0	<10	0	2	4	.0	0	0	0	10
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096250 BEEBE CREEK NEAR NORTH ADAMS, MICH.

LOCATION.--Lat 41°56'27", long 84°33'02", NW¼ NW¼ sec.21, T.6 S., R.2 W., Hillsdale County, at bridge on State Road, 2.5 mi (4.0 km) southwest of North Adams.

DRAINAGE AREA.--20.2 mi^2 (52.3 km^2).

PERIOD OF RECORD.-Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1115	25	7.7	220	90	86	18	4.6	2.3	294	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)
JUNE, 1975										
16...	241	30	14	.1	2.0	.02	.06	390	.53	26.3

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	AIR TEMPERATURE (DEG C)
JUNE, 1975										
16...	290	48	3	.1	560	7.9	16.5	85	7	20.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
02...	1325	3.7	8.5	16	.16
22...	0845	2.0	3.5	17	.09
NOV.					
01...	1000	2.6	14.5	11	.08
11...	1115	2.8	9.0	22	.17
DEC.					
03...	1345	2.8	1.0	10	.08
JAN.					
08...	1030	9.1	3.0	18	.44
23...	1200	10	1.5	7	.20
FEB.					
18...	1200	17	1.5	16	.73
MAR.					
03...	1200	32	1.5	13	1.1
13...	0855	26	.5	8	.57
APR.					
07...	1515	35	8.0	E3	--
24...	1340	47	12.0	14	1.8
MAY					
07...	1310	67	15.5	22	4.0
22...	1120	18	18.0	36	1.8
JUNE					
10...	0940	12	16.0	47	1.5
16...	1115	25	16.5	24	1.6
30...	1145	26	20.5	35	2.5
JULY					
23...	1315	3.1	22.5	31	.26
AUG.					
07...	1130	2.2	17.5	21	.12
20...	1435	1.5	21.5	28	.12
SEP.					
19...	1230	3.3	14.5	14	.12

04096250 BEEBE CREEK NEAR NORTH ADAMS, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
02...	1325	3.7	.32	.00	.00	.33	.33	.65	2.9
22...	0845	2.0	.27	.01	.00	.41	.41	.69	3.1
NOV.									
01...	1000	2.6	.17	.01	.02	.44	.46	.64	2.8
11...	1115	2.8	.43	.01	.06	.55	.61	1.1	4.6
DEC.									
03...	1345	2.8	.49	.01	.01	.55	.56	1.1	4.7
JAN., 1975									
08...	1030	9.1	4.4	.02	.05	.85	.90	5.3	23
23...	1200	10	2.6	.02	.05	1.3	1.3	3.9	17
FEB.									
18...	1200	17	2.3	.01	.24	.96	1.2	3.5	16
MAR.									
03...	1200	32	1.6	.01	.08	1.0	1.1	2.7	12
13...	0855	26	1.8	.01	.11	1.6	1.7	3.5	16
APR.									
07...	1515	35	1.3	.01	.01	.72	.73	2.0	9.0
24...	1340	47	1.3	.01	.00	.94	.94	2.2	9.9
MAY									
07...	1310	67	1.2	.02	.01	1.1	1.1	2.3	10
22...	1120	18	.82	.04	.07	.86	.93	1.8	7.9
JUNE									
10...	0940	12	.97	.03	.05	.95	1.0	2.0	9.8
30...	1145	26	1.3	.05	.05	1.5	1.5	2.8	12
JULY									
23...	1315	3.1	.36	.02	.01	.45	.46	.84	3.7
AUG.									
07...	1130	2.2	.27	.01	.01	.54	.55	.83	3.7
20...	1435	1.5	.19	.01	.02	.63	.65	.85	3.8
SEP.									
19...	1230	3.3	.43	.01	.04	.60	.64	1.1	4.8

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
02...	.02	.01	.01	.00	--	8.5	13.3	116	7.0
22...	.02	.01	.02	.00	7.8	3.5	11.2	89	6.5
NOV.									
01...	.03	.01	--	--	7.0	14.5	8.1	81	18.5
11...	.11	.00	--	--	7.8	9.0	10.8	96	10.0
DEC.									
03...	.03	.01	--	--	7.3	1.0	11.5	82	.0
JAN., 1975									
08...	.07	.03	--	--	7.0	3.0	--	--	5.5
23...	.05	.01	--	--	--	1.5	--	--	.0
FEB.									
18...	.16	.08	--	--	7.1	1.5	--	--	-.5
MAR.									
03...	.05	.01	--	--	--	1.5	--	--	1.0
13...	.06	.01	--	--	7.1	.5	--	--	-4.5
APR.									
07...	.02	.00	--	--	8.1	8.0	12.5	110	7.0
24...	.02	.01	--	--	7.6	12.0	9.8	94	13.5
MAY									
07...	.07	.01	--	--	7.8	15.5	9.4	98	17.5
22...	.09	.04	--	--	7.8	18.0	8.4	91	20.0
JUNE									
10...	.06	.02	--	--	7.9	16.0	--	--	20.5
30...	.10	.06	--	--	8.1	20.5	7.7	88	24.0
JULY									
23...	.03	.01	--	--	8.3	22.5	12.2	144	28.5
AUG.									
07...	.02	.01	--	--	8.0	17.5	8.9	96	17.0
20...	.03	.01	--	--	8.3	21.5	--	--	19.5
SEP.									
19...	.04	.01	--	--	8.1	14.5	8.0	83	17.0

04096250 BEEBE CREEK NEAR NORTH ADAMS, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	1430	13	.00	.0	.0	0	.00	.3	.00	.0	.00	.0
JUNE												
16...	1115	20	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	.00	.0	.00	<.1	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
16...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975												
29...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
16...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
29...	0	0	0	.00	.0	.00	0	.01	0	.00	0
JUNE											
16...	--	0	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
29...	3	0	<10	1	5	4	.0	5	0	0	10
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096255 BEEBE CREEK AT LAKE PLEASANT RD. NEAR NORTH ADAMS, MICH.

LOCATION.--Lat 41°57'04", long 84°34'26", SW¼ NW¼ sec.17, T.6 S., R.2 W., Hillsdale County, at bridge on Lake Pleasant Road, 2.8 mi (4.5 km) southwest of North Adams.

DRAINAGE AREA.--24.6 mi (63.7 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1200	34	4.4	130	40	77	18	5.6	1.9	282	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)
JUNE, 1975										
16...	231	29	14	.1	.55	.01	.03	340	.46	31.2

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	AIR TEMPERATURE (DEG C)
JUNE, 1975										
16...	270	35	4	.2	530	8.2	19.5	50	2	20.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
02...	1245	1.4	13.0	2	.01
21...	1420	5.2	9.0	5	.07
NOV.					
01...	0840	5.9	14.5	3	.05
12...	0840	4.7	9.0	9	.11
DEC.					
03...	1220	4.8	.5	1	.01
JAN.					
08...	0915	6.2	2.5	2	.03
10...	1505	54	2.5	5	.74
13...	1200	77	1.5	8	1.7
23...	1035	14	1.5	5	.19
FEB.					
18...	1025	18	2.5	2	.10
MAR.					
03...	1420	34	2.0	9	.83
13...	1020	34	2.5	2	.18
26...	1415	43	5.0	2	.23
APR.					
07...	1335	40	4.0	E2	--
23...	1005	53	9.5	16	2.3
MAY					
07...	1150	85	16.0	5	1.1
22...	1000	25	22.5	12	.82
JUNE					
16...	1200	34	19.5	3	.28
30...	1020	34	25.5	6	.55
JULY					
23...	1150	2.2	26.0	18	.11
AUG.					
07...	1050	7.5	23.0	11	.22
20...	1150	2.7	23.5	9	.07
SEP.					
19...	1125	4.6	16.5	2	.02

E - ESTIMATED VALUE

04096255 BEERE CREEK AT LAKE PLEASANT RD. NEAR NORTH ADAMS, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
02...	1245	1.4	.02	.00	.03	1.4	1.4	1.4	6.3
21...	1420	5.2	.00	.00	.00	1.1	1.1	1.1	4.9
NOV.									
01...	0840	5.9	.00	.01	.03	.96	.99	.99	4.4
12...	0840	4.7	.08	.01	.10	.46	.56	.65	2.9
DEC.									
03...	1220	4.8	.21	.01	.00	.78	.78	1.0	4.4
JAN., 1975									
08...	0915	6.2	.32	.01	.07	.60	.67	1.0	4.4
09...	1725	56	.43	.00	.11	.75	.86	1.3	5.7
23...	1035	14	4.6	.02	.03	1.4	1.4	6.0	27
FEB.									
18...	1025	18	1.9	.01	.09	.75	.84	2.7	12
MAR.									
03...	1420	34	1.7	.01	.15	.95	1.1	2.8	12
13...	1020	34	.71	.02	.00	.89	.89	1.6	7.2
26...	1415	43	.99	.01	.07	.69	.76	1.8	7.8
APR.									
07...	1335	40	.98	.01	.03	.68	.71	1.7	7.5
23...	1005	53	1.1	.03	.01	.95	.96	2.1	9.1
MAY									
07...	1150	85	.67	.01	.01	.93	.94	1.6	7.2
22...	1000	25	.24	.02	.10	.63	.73	.99	4.4
JUNE									
10...	0900	E.50	.28	.04	.27	.83	1.1	1.4	6.3
30...	1020	34	.91	.09	.08	.82	.90	1.9	8.4
JULY									
23...	1150	2.2	.42	.04	.04	.91	.95	1.4	6.2
AUG.									
07...	1050	7.5	.17	.01	.07	1.1	1.2	1.4	6.1
20...	1150	2.7	.04	.00	.03	1.2	1.2	1.2	5.5
SEP.									
19...	1125	4.6	.04	.01	.05	.92	.97	1.0	4.5

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
02...	.06	.00	.04	.02	7.0	13.0	9.7	95	6.5
21...	.05	.00	.03	.02	8.0	9.0	10.7	96	10.0
NOV.									
01...	.05	.00	--	--	7.5	14.5	9.5	95	19.0
12...	.05	.01	--	--	8.0	9.0	11.1	99	8.0
DEC.									
03...	.01	.00	--	--	7.4	.5	12.2	88	-.5
JAN., 1975									
08...	.01	.01	--	--	7.1	2.5	--	--	5.5
09...	.01	.01	--	--	--	3.0	--	--	--
23...	.06	.01	--	--	--	1.5	--	--	-3.5
FEB.									
18...	.02	.01	--	--	7.2	2.5	--	--	-.5
MAR.									
03...	.08	.04	--	--	--	2.0	--	--	-.5
13...	.07	.02	--	--	7.1	2.5	--	--	-1.0
26...	.03	.00	--	--	--	5.0	--	--	3.5
APR.									
07...	.02	.00	--	--	8.2	4.0	12.3	98	5.5
23...	.02	.00	--	--	8.0	9.5	10.5	96	12.0
MAY									
07...	.05	.00	--	--	8.1	16.0	10.1	110	16.0
22...	.00	.01	--	--	8.4	22.5	8.9	105	20.5
JUNE									
10...	.05	.01	--	--	7.6	18.0	--	--	--
30...	.03	.01	--	--	8.2	25.5	8.0	99	24.0
JULY									
23...	.02	.03	--	--	8.6	26.0	--	--	26.5
AUG.									
07...	.04	.01	--	--	8.2	23.0	7.0	83	20.5
20...	.05	.00	--	--	8.5	23.5	--	--	21.5
SEP.									
19...	.05	.00	--	--	8.4	16.5	7.6	80	16.5

E - ESTIMATED VALUE

04096255 BEEBE CREEK AT LAKE PLEASANT RD. NEAR NORTH ADAMS, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	1240	11	.00	.0	.0	0	.00	.0	.00	.5	.00	.3
JUNE												
16...	1200	16	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	.00	.0	.00	.2	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
16...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975												
29...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
16...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
29...	0	0	0	.00	.0	.00	0	.00	0	.01	0
JUNE											
16...	--	0	--	.00	--	.03	--	.00	--	.56	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
29...	1	0	<10	0	1	1	.0	0	0	0	20
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096267 BEEBE CREEK TRIBUTARY NEAR HILLSDALE, MICH.

LOCATION.--Lat 41°57'49", long 84°35'48", in SE¼ NE¼ sec.12, T.6 S., R.3 W., Hillsdale County, at bridge on Ball Road, 150 ft (46 m) upstream from mouth, 3.4 mi (5.5 km) northeast of Hillsdale.

DRAINAGE AREA.--10.8 mi^2 (28.0 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1305	20	9.9	230	110	74	19	11	1.1	277	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)
JUNE, 1975										
16...	227	15	31	.2	.53	.01	.03	366	.50	19.8

DATE	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	AIR TEMPERATURE (DEG C)
JUNE, 1975										
16...	260	36	8	.3	580	7.9	17.0	55	2	20.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
02...	1200	1.9	7.0	29	.15
21...	1300	2.3	4.5	9	.06
31...	1520	3.2	17.0	17	.15
NOV.					
12...	1000	3.5	6.5	24	.23
DEC.					
03...	1030	E3.5	.0	37	--
JAN.					
07...	1045	3.5	1.5	16	.15
10...	1445	27	2.0	7	.51
FEB.					
18...	0845	12	.5	24	.78
MAR.					
13...	1145	19	1.0	3	.15
26...	1320	20	3.5	E3	--
APR.					
07...	1135	20	3.5	E3	--
23...	0845	22	9.0	E3	--
MAY					
07...	1030	30	11.5	2	.16
22...	0845	17	17.0	44	2.0
JUNE					
10...	0810	11	13.5	35	1.0
16...	1305	20	17.0	4	.22
30...	0905	4.9	16.0	44	.59
JULY					
23...	1040	2.2	16.0	46	.28
AUG.					
07...	1005	2.1	12.5	23	.13
20...	1040	2.1	15.5	50	.28
SEP.					
19...	1025	3.2	13.5	34	.30

E - ESTIMATED VALUE

04096267 BEEBE CREEK TRIBUTARY NEAR HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
02...	1200	1.9	.41	.00	.00	.45	.45	.86	3.8
21...	1300	2.3	.39	.00	.00	.30	.30	.69	3.1
31...	1520	3.2	.19	.00	.01	.57	.58	.77	3.4
NOV.									
12...	1000	3.5	.39	.01	.04	.63	.67	1.1	4.7
DEC.									
03...	1030	E3.5	.50	.01	.05	.82	.87	1.4	6.1
JAN., 1975									
07...	1045	3.5	.72	.02	.06	.45	.51	1.3	5.5
09...	1650	27	2.5	.01	.04	.83	.87	3.4	15
FEB.									
18...	0845	12	1.6	.01	.21	.89	1.1	2.7	12
MAR.									
13...	1145	19	.99	.01	.04	.69	.73	1.7	7.7
26...	1320	20	.55	.01	.01	.42	.43	.99	4.4
APR.									
07...	1135	20	.44	.01	.01	.43	.44	.89	3.9
23...	0845	22	.35	.02	.00	.52	.52	.89	3.9
MAY									
07...	1030	30	.34	.01	.00	.63	.63	.98	4.3
22...	0845	17	.27	.01	.04	.91	.95	1.2	5.4
JUNE									
10...	0810	11	.51	.00	.05	.81	.86	1.4	6.1
30...	0905	4.9	.57	.02	.03	.62	.65	1.2	5.5
JULY									
23...	1040	2.2	.48	.02	.03	.22	.25	.75	3.3
AUG.									
07...	1005	2.1	.46	.00	.02	.40	.42	.88	3.9
20...	1040	2.1	.41	.01	.01	.51	.52	.94	4.2
SEP.									
19...	1025	3.2	.52	.00	.03	.60	.63	1.2	5.1

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
02...	.04	.01	.03	.00	7.0	7.0	10.8	92	5.0
21...	.01	.01	.01	.00	--	4.5	11.3	90	9.5
31...	.05	.01	--	--	7.4	17.0	7.7	82	20.5
NOV.									
12...	.05	.02	--	--	7.9	6.5	8.0	67	7.0
DEC.									
03...	.07	.01	--	--	7.5	.0	10.5	74	-.5
JAN., 1975									
07...	.03	.01	--	--	7.0	1.5	--	--	3.0
09...	.10	.07	--	--	--	.0	--	--	--
FEB.									
18...	.09	.04	--	--	7.0	.5	--	--	.0
MAR.									
13...	.04	.01	--	--	7.2	1.0	--	--	-2.5
26...	.02	.00	--	--	--	3.5	--	--	.5
APR.									
07...	.01	.00	--	--	8.0	3.5	13.2	110	3.0
23...	.01	.00	--	--	7.8	9.0	9.7	87	14.0
MAY									
07...	.04	.01	--	--	7.7	11.5	9.0	86	14.0
22...	.04	.03	--	--	7.7	17.0	6.2	66	19.5
JUNE									
10...	.07	.03	--	--	8.0	13.5	--	--	17.0
30...	.06	.04	--	--	8.0	16.0	8.2	85	23.5
JULY									
23...	.04	.04	--	--	8.3	16.0	8.8	92	23.0
AUG.									
07...	.04	.02	--	--	8.1	12.5	9.6	93	16.0
20...	.04	.02	--	--	8.3	15.5	--	--	18.0
SEP.									
19...	.06	.02	--	--	8.2	13.5	7.4	73	15.5

E - ESTIMATED VALUE

04096267 BEEBE CREEK TRIBUTARY NEAR HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	1120	5.8	.00	.0	.0	0	.00	.6	.00	.3	.00	.0
JUNE												
16...	1305	15	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	.00	.0	.00	<.1	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
16...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975												
29...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
16...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
29...	0	0	0	.00	.0	.00	0	.00	0	.00	0
JUNE											
16...	--	0	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
29...	3	0	10	0	3	3	.0	3	0	0	30
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096272 Beebe Creek near Hillsdale, Mich.

LOCATION.--Lat 41°57'15", long 84°38'20", in NW¼ NE¼ sec.15, T.6 S., R.3 W., Hillsdale County, at gaging station on right bank, 20 ft (6 m) upstream from bridge on Moore Road, 1.2 mi (1.9 km) northwest of Hillsdale, and 1.0 mi (1.6 km) upstream from mouth.

DRAINAGE AREA.--42.4 mi^2 (109.8 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Water temperatures: October 1974 to September 1975.
Sediment records: October 1974 to September 1975.

EXTREMES.--1974-75:
Sediment concentrations: Maximum daily, 65 mg/l May 21; minimum daily, 1 mg/l Apr. 7, May 1.
Sediment discharges: Maximum daily, 7.7 tons (7.0 tonnes) June 5; minimum daily, 0.08 ton (0.07 tonne) Oct. 11.

REMARKS.--Occasional regulation by Lake Belair about 5 mi (8 km) upstream from station. Flow affected by ice Jan. 13-17, 19-20; Feb. 5-12.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
DEC., 1974											
20...	1145	15	7.3	10	40	78	23	9.4	1.9	291	0
JUNE, 1975											
16...	1345	62	8.8	150	80	79	18	7.3	1.5	279	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
DEC., 1974											
20...	239	42	25	.4	--	--	--	364	.50	14.7	290
JUNE, 1975											
16...	229	22	19	.6	.72	.02	.06	313	.43	52.4	270

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
DEC., 1974											
20...	51	7	.2	625	8.1	1.0	20	1	14.2	104	-1.0
JUNE, 1975											
16...	43	6	.2	600	7.9	17.5	50	3	--	--	21.0

04096272 BEEBE CREEK NEAR HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
02...	1055	E8.5	.63	.00	.00	.53	.53	1.2	5.1
21...	1110	12	.29	.00	.00	.76	.76	1.1	4.6
31...	1355	16	.17	.00	.00	.81	.81	.98	4.3
NOV.									
11...	0935	11	.56	.00	.03	.42	.45	1.0	4.5
DEC.									
03...	0840	8.3	.70	.01	.02	.51	.53	1.2	5.5
20...	1145	15	--	--	--	--	--	--	--
JAN., 1975									
07...	0855	10	.81	.01	.06	.55	.61	1.4	6.3
21...	1510	31	2.9	.02	.05	1.2	1.2	4.1	18
FEB.									
14...	1150	19	1.6	.01	.05	.54	.59	2.2	9.7
25...	0845	247	.85	.01	.17	.79	.96	1.8	8.1
MAR.									
13...	1400	51	1.2	.01	.00	.86	.86	2.1	9.1
19...	1450	E50	.91	.01	.00	.74	.74	1.7	7.3
26...	1050	74	.79	.00	.00	.53	.53	1.3	5.8
APR.									
08...	0945	66	.76	.01	.01	.62	.63	1.4	6.2
19...	1525	121	.70	.01	.02	.79	.81	1.5	6.7
22...	1200	114	.88	.00	.00	.72	.72	1.6	7.1
MAY									
07...	0855	124	.47	.00	.02	.71	.73	1.2	5.3
21...	0815	26	.52	.03	.08	.84	.92	1.5	6.5
JUNE									
05...	1400	62	.39	.01	.00	.79	.79	1.2	5.3
27...	1310	67	.61	.03	.01	1.5	1.5	2.1	9.5
JULY									
23...	0900	10	.87	.02	.00	.65	.65	1.5	6.8
AUG.									
07...	0910	6.0	.80	.00	.01	.60	.61	1.4	6.2
20...	0920	8.0	.68	.00	.01	.58	.59	1.3	5.6
SEP.									
19...	0850	11	.70	.00	.01	.51	.52	1.2	5.4

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
02...	.02	.00	.01	.01	6.9	9.0	10.6	95	4.0
21...	.03	.00	.02	.01	6.6	6.5	10.7	91	4.5
31...	.06	.00	--	--	6.8	16.0	9.4	98	21.0
NOV.									
11...	.08	.00	--	--	7.9	8.5	10.2	89	11.0
DEC.									
03...	.02	.00	--	--	7.4	.5	11.0	80	-3.0
20...	--	.00	--	--	8.1	1.0	14.2	104	-1.0
JAN., 1975									
07...	.01	.01	--	--	7.1	1.0	--	--	.5
21...	.04	.01	--	--	--	1.0	--	--	.5
FEB.									
14...	.02	.01	--	--	7.1	.5	--	--	-3.5
25...	.09	.04	--	--	--	.5	--	--	-.5
MAR.									
13...	.04	.04	--	--	6.9	2.5	--	--	.5
19...	.03	.01	--	--	--	6.0	--	--	9.5
26...	.02	.00	--	--	--	2.0	--	--	.5
APR.									
08...	.02	.00	--	--	8.0	9.0	11.9	89	.0
19...	.06	.01	--	--	7.9	11.0	--	--	8.5
22...	.03	.00	--	--	7.9	9.0	9.8	88	14.5
MAY									
07...	.04	.00	--	--	7.8	13.0	7.8	76	15.0
21...	.01	.03	--	--	7.8	21.0	5.6	64	24.0
JUNE									
05...	.03	.01	--	--	8.0	19.5	--	--	22.0
27...	.06	.01	--	--	8.3	24.0	5.7	70	27.5
JULY									
23...	.05	.04	--	--	8.1	21.0	7.8	90	23.0
AUG.									
07...	.04	.02	--	--	8.0	17.0	7.4	79	16.0
20...	.05	.01	--	--	8.2	18.5	--	--	16.5
SEP.									
19...	.03	.01	--	--	8.2	14.5	5.3	55	15.5

E - ESTIMATED VALUE

04096272 BEEHE CREEK NEAR HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	1000	8.0	.00	.0	.0	0	.00	.0	.00	.0	.00	.0
JUNE												
16...	1345	13	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
29...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
16...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975												
29...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
16...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
29...	0	0	0	.00	.0	.00	0	.01	0	.01	0
JUNE											
16...	--	0	--	.00	--	.00	--	.98	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
29...	2	0	20	13	3	3	.0	3	0	0	30
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096272 BEEBE CREEK NEAR HILLSDALE, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1500 AND 1800 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	16.5	1.0	---	---	0.5	---	16.0	---	---	---	20.0
2	---	15.5	---	---	---	---	---	14.0	---	---	22.0	---
3	---	13.0	---	---	1.0	0.5	---	14.0	---	---	---	---
4	---	10.5	0.5	---	1.0	1.5	3.0	---	16.0	---	---	---
5	---	8.0	0.5	---	2.0	2.0	---	12.0	---	---	---	---
6	---	7.5	0.5	0.5	1.5	2.5	---	11.5	17.0	---	---	---
7	14.0	7.5	---	2.0	0.5	1.5	5.0	12.0	16.0	---	---	---
8	12.5	7.5	---	3.0	---	1.5	5.0	---	17.5	---	22.0	---
9	13.0	8.0	---	---	---	---	4.0	---	---	---	---	---
10	13.0	8.0	---	2.0	---	1.5	4.5	---	---	---	---	---
11	14.0	8.5	0.5	1.5	0.5	2.0	5.5	---	---	---	25.0	---
12	---	7.5	2.0	0.0	0.5	2.5	---	6.5	---	---	24.0	---
13	13.0	5.5	2.5	0.0	0.5	2.5	---	9.5	---	---	---	---
14	13.0	3.0	3.0	0.0	0.5	1.0	4.5	---	21.0	---	---	---
15	---	2.0	---	0.0	---	---	6.0	---	---	21.0	---	---
16	11.0	2.0	2.0	0.5	---	---	6.5	7.5	---	---	---	---
17	11.5	5.0	1.5	0.0	---	---	8.5	9.0	---	---	---	---
18	10.5	5.5	0.5	0.0	1.0	5.0	10.0	---	---	20.0	21.5	---
19	8.0	6.5	0.5	0.0	1.5	5.0	11.0	10.0	---	21.0	---	---
20	7.5	7.0	0.5	0.0	2.0	5.5	---	22.5	---	---	21.5	---
21	6.5	4.0	---	0.5	2.5	5.5	9.0	21.5	---	---	---	---
22	8.0	4.0	---	---	---	6.5	8.5	19.5	---	---	---	---
23	9.5	5.0	---	1.5	---	---	8.5	21.0	---	---	---	13.5
24	11.0	---	---	1.5	0.5	---	10.0	---	---	19.0	22.0	---
25	12.5	---	2.0	2.0	0.5	---	8.5	---	---	---	23.5	---
26	11.5	2.0	---	1.0	1.0	3.5	11.0	---	---	---	23.0	---
27	---	---	---	1.0	1.0	---	8.0	23.0	---	---	---	---
28	11.5	---	---	1.5	1.5	0.5	7.5	21.0	---	21.0	---	---
29	10.5	---	---	1.0	---	2.5	12.0	22.0	---	22.0	---	---
30	14.0	---	3.0	---	---	2.0	12.5	22.0	---	---	20.0	---
31	16.0	---	1.5	1.5	---	---	---	---	---	22.0	19.5	---

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV.				
19...	1430	14	3	.11
JAN.				
09...	0850	47	12	1.5
29...	0850	36	47	4.6
APR.				
19...	1500	121	22	7.2

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM
NOV.										
19...	1430	47	58	68	78	88	92	94	98	100
JAN.										
09...	0850	40	58	68	76	82	86	87	96	100
29...	0850	65	88	94	97	98	99	99	99	100
APR.										
19...	1500	15	64	77	85	88	90	91	95	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAMPLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
NOV.											
19...	1430	1	1	3	12	61	75	84	92	97	100

04096272 BEEBE CREEK NEAR HILLSDALE, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	7.7	E 6	.12	13	8	.28	10	8	.21
2	7.0	E 5	.09	11	5	.15	12	13	.39
3	6.6	E 5	.09	12	19	.62	11	9	.24
4	7.0	E 5	.09	18	7	.32	11	11	.30
5	7.0	E 5	.09	23	4	.24	10	16	.41
6	6.6	E 5	.09	20	5	.27	9.7	9	.22
7	7.4	5	.10	16	6	.26	11	18	.48
8	7.4	6	.12	13	6	.21	17	10	.43
9	7.4	8	.16	12	4	.13	16	7	.28
10	7.4	6	.12	11	9	.27	14	6	.21
11	7.0	4	.08	11	7	.21	12	9	.29
12	7.0	5	.10	11	8	.24	13	8	.28
13	7.4	8	.16	11	6	.18	13	8	.28
14	8.8	13	.31	12	22	.71	14	6	.23
15	17	14	.64	12	9	.29	16	7	.30
16	20	5	.27	11	7	.21	19	6	.31
17	14	5	.19	13	11	.39	19	5	.26
18	11	5	.15	15	15	.61	17	7	.32
19	9.7	5	.13	14	9	.34	16	7	.30
20	12	8	.26	14	7	.26	15	6	.24
21	12	4	.12	14	11	.42	16	15	.61
22	9.2	7	.18	14	9	.32	16	7	.28
23	8.8	8	.19	13	6	.21	15	8	.30
24	8.5	9	.20	13	10	.35	16	21	.85
25	8.1	24	.53	13	9	.29	17	17	.73
26	8.1	21	.46	12	12	.36	16	E 13	.53
27	7.7	14	.30	11	10	.30	15	8	.32
28	7.7	8	.17	11	E 8	.22	15	23	.87
29	16	3	.13	11	6	.16	14	13	.49
30	21	8	.45	11	8	.22	16	5	.22
31	16	7	.30	---	---	---	17	3	.14
MONTH	308.5	---	6.39	396	---	9.04	448.7	---	11.32

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	18	26	1.3	53	4	.56	81	8	1.7
2	9.7	9	.23	44	5	.59	66	4	.71
3	8.1	28	.63	37	7	.70	55	2	.30
4	8.5	22	.50	34	7	.62	48	6	.79
5	8.1	50	1.1	30	8	.67	43	4	.46
6	9.7	41	1.1	26	6	.49	41	2	.22
7	11	7	.21	24	5	.35	51	13	1.8
8	19	23	1.2	22	10	.68	64	10	1.7
9	50	9	1.2	20	11	.68	58	3	.48
10	86	11	2.6	19	10	.54	54	5	.73
11	160	3	1.2	17	8	.39	48	3	.39
12	192	9	4.3	16	8	.37	46	2	.24
13	130	5	2.0	16	15	.65	52	14	2.0
14	100	7	2.1	16	4	.17	53	12	1.7
15	68	3	.62	16	14	.60	47	3	.38
16	50	13	1.9	16	9	.39	46	5	.63
17	40	1	.11	21	14	.79	45	3	.36
18	34	38	3.6	34	9	.83	48	11	1.4
19	33	4	.37	36	8	.78	55	6	.89
20	31	2	.20	34	8	.73	61	4	.67
21	29	9	.68	33	14	1.2	63	6	1.0
22	26	E 7	.49	45	E 18	2.2	66	4	.71
23	24	4	.26	139	22	7.8	66	2	.36
24	23	4	.25	268	14	9.2	72	5	.97
25	28	26	2.0	264	5	3.2	82	1	.22
26	31	2	.17	194	16	7.6	74	1	.20
27	29	4	.31	136	1	.35	64	3	.52
28	18	4	.18	102	5	1.4	56	1	.15
29	41	58	6.4	---	---	---	62	3	.50
30	64	5	.86	---	---	---	66	1	.18
31	60	1	.16	---	---	---	61	14	2.3
MONTH	1439.1	---	38.23	1712	---	44.53	1794	---	24.66

E - ESTIMATED VALUE

04096272 BEEBE CREEK NEAR HILLSDALE, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE	
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	58	E 15	2.3	83	1	.22	61	17	2.8
2	55	3	.45	74	4	.80	59	23	3.7
3	57	5	.77	66	4	.71	54	46	6.6
4	63	6	1.0	60	6	.97	50	34	4.6
5	67	4	.72	56	5	.76	58	49	7.7
6	66	2	.36	95	8	2.1	64	28	4.8
7	67	1	.18	127	5	1.6	77	35	7.3
8	73	7	1.4	112	4	1.2	69	35	6.5
9	78	5	1.1	93	E 4	1.0	48	34	4.4
10	77	4	.83	76	4	.83	34	48	4.3
11	72	3	.58	64	6	1.0	24	63	4.3
12	67	E 3	.54	66	5	.89	35	31	2.9
13	60	2	.33	66	5	.89	27	54	3.9
14	55	3	.45	59	20	3.2	33	43	3.7
15	52	3	.42	54	41	6.0	44	59	7.0
16	48	3	.39	48	51	6.7	60	E 45	7.4
17	46	6	.73	44	48	5.8	55	E 35	5.1
18	50	7	.95	40	51	5.5	46	29	3.6
19	110	18	5.2	24	48	3.2	40	41	4.4
20	149	15	5.6	19	51	2.8	38	42	4.3
21	136	10	3.5	30	65	5.4	37	46	4.6
22	115	7	2.1	54	40	5.9	40	51	5.4
23	95	5	1.3	63	24	4.1	35	51	4.8
24	89	8	1.9	57	36	5.5	42	40	4.5
25	85	5	1.1	46	44	5.7	74	18	3.6
26	77	E 6	1.2	43	40	4.8	91	15	3.7
27	69	8	1.5	39	49	5.2	68	26	4.8
28	71	6	1.2	33	E 46	4.1	50	24	3.2
29	85	7	1.6	29	40	3.0	42	47	5.3
30	85	7	1.6	37	35	3.5	43	20	2.4
31	---	---	---	65	19	3.3	---	---	---
MONTH	2277	---	41.30	1822	---	96.67	1498	---	141.6

	JULY			AUGUST			SEPTEMBER	
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	39	18	1.9	8.1	32	.72	46	7	.91
2	32	24	2.1	8.8	24	.58	35	8	.82
3	27	37	2.7	11	25	.74	28	9	.73
4	29	28	2.3	8.8	44	1.1	22	14	.91
5	28	18	1.5	8.8	36	.86	19	15	.85
6	24	20	1.4	10	40	1.1	19	35	2.1
7	21	27	1.5	8.5	26	.60	16	25	1.2
8	13	28	1.1	7.7	45	.97	13	36	1.5
9	8.8	22	.59	7.4	56	1.2	12	20	.76
10	9.7	47	1.3	7.4	19	.38	12	17	.60
11	9.7	E 42	1.2	7.7	26	.55	12	27	.87
12	12	38	1.2	7.7	22	.46	13	25	1.0
13	12	33	1.2	7.4	52	1.1	12	36	1.3
14	13	28	1.1	7.4	44	.88	12	20	.59
15	12	48	1.7	9.7	29	.74	11	14	.42
16	12	44	1.4	11	23	.68	11	12	.36
17	12	49	1.6	8.8	9	.22	11	13	.39
18	12	E 41	1.3	8.5	24	.56	12	41	1.2
19	12	41	1.3	8.5	25	.58	12	26	.84
20	12	28	.91	8.1	28	.61	15	29	1.3
21	11	34	1.1	12	23	.81	13	17	.69
22	11	54	1.6	39	19	2.2	12	35	1.2
23	10	19	.51	32	10	.95	12	16	.52
24	14	18	.87	25	26	2.0	12	16	.48
25	12	32	1.2	30	11	.95	11	54	1.5
26	12	31	1.0	19	7	.42	11	16	.43
27	11	24	.71	16	23	1.1	11	12	.32
28	12	20	.59	12	22	.83	10	19	.50
29	10	18	.49	19	33	1.9	10	24	.64
30	9.2	22	.56	26	15	1.2	12	22	.77
31	8.5	47	1.1	47	10	1.4	---	---	---
MONTH	470.9	---	39.13	448.3	---	28.39	457	---	25.70
YEAR	13071.5		506.96						

E--ESTIMATED VALUE

04096273 ST. JOSEPH RIVER NEAR HILLSDALE, MICH.

LOCATION.--Lat 41°57'23", long 84°39'31", in SW¼ SE¼ sec.9, T.6 S., R.3 W., Hillsdale County, at bridge on Moore Road, 0.9 mi (1.4 km) downstream from Beebe Creek, 2.7 mi (4.3 km) northwest of Hillsdale.

DRAINAGE AREA.--62.4 mi² (161.6 km²).

PERIOD OF RECORD.--Chemical analyses. June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1520	E90	8.9	90	20	78	19	10	1.6	273	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
JUNE, 1975											
16...	224	23	23	.3	.51	.09	.28	348	.47	270	49

DATE	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975										
16...	7	.3	505	7.4	19.5	37	1	5.3	58	28.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
01...	0945	E16	10.5	2	--
21...	0900	19	4.5	E5	--
31...	1210	25	16.0	5	.34
NOV.					
12...	1125	19	8.0	6	.31
DEC.					
02...	0910	20	1.5	1	.05
JAN.					
06...	1350	33	1.5	5	.45
FEB.					
11...	1445	40	1.5	2	.22
MAR.					
12...	1025	72	3.0	4	.78
MAR.					
26...	0915	109	2.0	1	.29
APR.					
24...	1025	133	11.5	5	1.8
MAY					
08...	0845	170	14.5	16	7.3
21...	0945	59	21.5	6	.96
JUNE					
16...	1520	E90	19.5	3	--
27...	1100	102	23.0	5	1.4
AUG.					
05...	1205	15	21.0	5	.21
19...	1235	20	19.5	E5	--

E - ESTIMATED VALUE

04096273 ST. JOSEPH RIVER NEAR HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
01...	0945	E16	.69	.13	1.1	.90	2.0	2.8	12
21...	0900	19	.58	.05	.77	.93	1.7	2.3	10
31...	1210	25	.33	.07	.69	.61	1.3	1.7	7.5
NOV.									
12...	1125	19	.80	.08	.79	.31	1.1	2.0	8.8
DEC.									
02...	0910	20	.82	.05	.80	.70	1.5	2.4	11
JAN., 1975									
06...	1350	33	.68	.02	.52	.78	1.3	2.0	8.9
FEB.									
11...	1445	40	1.2	.01	.46	.74	1.2	2.4	11
MAR.									
12...	1025	72	.95	.01	.18	.64	.82	1.8	7.9
26...	0915	109	.69	.01	.14	.49	.63	1.3	5.9
APR.									
24...	1025	133	.62	.02	.04	.63	.67	1.3	5.8
MAY									
08...	0845	170	.34	.02	.05	.85	.90	1.3	5.6
21...	0945	59	.41	.06	.18	.61	.79	1.3	5.6
JUNE									
27...	1100	102	.49	.02	.04	1.3	1.3	1.8	8.0
AUG.									
05...	1205	15	.90	.20	.29	.59	.88	2.0	8.8
19...	1235	20	.79	.14	.36	.56	.92	1.9	8.2

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
01...	.82	.72	.81	.00	7.0	10.5	4.0	37	7.5
21...	.68	.60	.38	.00	8.2	4.5	7.3	58	3.0
31...	.50	.41	--	--	6.7	16.0	5.5	57	20.5
NOV.									
12...	.59	.46	--	--	7.6	8.0	9.5	83	6.0
DEC.									
02...	.49	.43	--	--	7.5	1.5	10.6	80	2.0
JAN., 1975									
06...	.32	.28	--	--	7.1	1.5	--	--	1.5
FEB.									
11...	.24	.18	--	--	7.0	1.5	--	--	8.5
MAR.									
12...	.12	.08	--	--	7.0	3.0	--	--	4.5
26...	.08	.04	--	--	--	2.0	--	--	-3.5
APR.									
24...	.07	.01	--	--	7.7	11.5	8.2	79	13.5
MAY									
08...	.13	.04	--	--	7.7	14.5	5.2	53	15.5
21...	.21	.14	--	--	7.5	21.5	3.6	42	25.5
JUNE									
27...	.16	.11	--	--	8.1	23.0	2.5	30	24.5
AUG.									
05...	.50	.49	--	--	7.6	21.0	2.4	28	20.5
19...	.50	.44	--	--	7.9	19.5	--	--	24.5

E - ESTIMATED VALUE

04096273 ST. JOSEPH RIVER NEAR HILLSDALE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
31...	0920	9.3	.00	.0	.0	6	.00	1.0	.00	.0	.00	.0
JUNE												
16...	1520	12	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
31...	.00	.0	.00	.8	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
16...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975												
31...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
16...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
31...	0	0	0	.00	.0	.00	0	.00	0	.00	0
JUNE											
16...	--	0	--	.00	--	.02	--	.00	--	.55	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
31...	1	0	<10	0	4	1	.1	1	0	0	0
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096276 ST. JOSEPH RIVER AT JONESVILLE, MICH.

LOCATION.--Lat 41°58'58", long 84°39'52", in NE¼ NW¼ sec.4, T.6 S., R.3 W., Hillsdale County, at bridge on Chicago Street at Jonesville.

DRAINAGE AREA.--66.5 mi^2 (172.2 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial record station).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
17...	0840	102	8.4	60	20	72	19	12	1.5	277	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
JUNE, 1975											
17...	227	23	25	.2	.41	.12	.37	360	.49	99.1	260

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975											
17...	31	9	.3	517	7.6	19.0	32	1	6.2	67	21.5

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
01...	1110	22	12.0	1	.06
16...	1340	30	13.0	13	1.1
29...	1255	26	12.0	7	.49
NOV.					
08...	1410	29	9.5	6	.47
DEC.					
02...	1140	23	2.5	2	.12
JAN.					
07...	1410	30	3.0	6	.49
23...	0900	50	.5	1	.13
FEB.					
14...	0915	34	.5	1	.09
MAR.					
12...	0900	78	2.5	4	.84
APR.					
08...	1330	117	7.0	E10	--
APR.					
24...	0855	148	11.5	8	3.2
MAY					
08...	1320	174	16.5	8	3.8
20...	1325	54	23.5	4	.58
JUNE					
10...	1235	79	19.5	2	.43
17...	0840	102	19.0	5	1.4
27...	0910	126	23.0	12	4.1
JULY					
17...	1350	30	24.5	8	.65
AUG.					
06...	0820	33	20.0	29	2.6
19...	1320	20	22.5	7	.38
SEP.					
22...	0855	29	12.5	13	1.0

E - ESTIMATED VALUE

04096276 ST. JOSEPH RIVER AT JONESVILLE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
01...	1110	22	.95	.15	.63	.87	1.5	2.6	12
16...	1340	30	.98	.12	.53	1.6	2.1	3.2	14
29...	1255	26	1.1	.07	.38	.72	1.1	2.3	10
NOV.									
08...	1410	29	.88	.05	.60	.36	.96	1.9	8.4
DEC.									
02...	1140	23	1.2	.04	.72	.38	1.1	2.3	10
JAN., 1975									
07...	1410	30	.94	.02	.45	.40	.85	1.8	8.0
23...	0900	50	2.2	.02	.42	.78	1.2	3.4	15
FEB.									
14...	0915	34	1.3	.02	.47	.53	1.0	2.3	10
MAR.									
12...	0900	78	1.1	.01	.29	.81	1.1	2.2	9.7
APR.									
24...	0855	148	.66	.02	.16	.69	.85	1.5	6.8
MAY									
08...	1320	174	.34	.02	.04	.76	.80	1.2	5.1
20...	1325	54	.47	.06	.07	.84	.91	1.4	6.4
JUNE									
10...	1235	79	.16	.00	.01	.62	.63	.79	3.5
27...	0910	126	.52	.05	.08	1.3	1.4	2.0	8.7
JULY									
17...	1350	30	.98	.12	.12	.56	.68	1.8	7.9
AUG.									
06...	0820	33	.87	.08	.26	.94	1.2	2.2	9.5
19...	1320	20	.91	.09	.17	.81	.98	2.0	8.8
SEP.									
22...	0855	29	1.1	.08	.14	.64	.78	2.0	8.8

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
01...	.41	.31	.41	.00	7.2	12.0	7.5	72	9.5
16...	.72	.52	.71	.00	7.2	13.0	8.1	79	13.0
29...	.53	.42	--	--	7.2	12.0	7.9	76	15.0
NOV.									
08...	.42	.40	--	--	7.1	9.5	10.8	99	15.5
DEC.									
02...	.46	.39	--	--	7.4	2.5	10.8	81	2.0
JAN., 1975									
07...	.31	.27	--	--	7.1	3.0	--	--	5.5
23...	.19	.16	--	--	--	.5	--	--	-8.0
FEB.									
14...	.22	.19	--	--	7.2	.5	--	--	-9.0
MAR.									
12...	.15	.12	--	--	7.1	2.5	--	--	3.5
APR.									
24...	.06	.01	--	--	7.8	11.5	8.6	83	16.0
MAY									
08...	.12	.06	--	--	7.7	16.5	8.2	86	16.5
20...	.17	.12	--	--	8.0	23.5	9.0	110	27.5
JUNE									
10...	.08	.05	--	--	8.0	19.5	--	--	24.5
27...	.19	.15	--	--	8.0	23.0	4.2	50	21.5
JULY									
17...	.22	.15	--	--	7.9	24.5	7.7	95	26.5
AUG.									
06...	.40	.25	--	--	7.7	20.0	--	--	15.0
19...	.33	.23	--	--	8.0	22.5	--	--	23.5
SEP.									
22...	.25	.19	--	--	7.9	12.5	--	--	9.5

04096276 ST. JOSEPH RIVER AT JONESVILLE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
31...	1325	8.1	.00	.0	.0	4	.00	2.4	.00	.5	.00	.0

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
31...	.00	.0	.00	.3	.00	.0	.00	.0	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975											
31...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
31...	10	0	0	.00	.0	.00	0	.00	0	.03	0

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
31...	2	0	<10	1	3	2	.0	1	0	<1	2

04096288 ST. JOSEPH RIVER AT LITCHFIELD, MICH.

LOCATION.--Lat 42°02'37", long 84°45'52", in NW¼ NW¼ sec.15, T.5 S., R.4 W., Hillsdale County, at bridge on Litchfield Road at Litchfield.

DRAINAGE AREA.--81.0 mi^2 (209.8 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
DEC., 1974											
19...	1530	7.3	0	25	84	23	30	2.4	286	0	235
JUNE, 1975											
17...	0945	7.2	40	170	74	20	14	1.4	283	0	232

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)
DEC., 1974										
19...	42	55	.3	--	--	--	428	.58	300	70
JUNE, 1975										
17...	24	29	.2	.77	.11	.34	362	.49	270	35

DATE	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	AIR TEMPER-ATURE (DEG C)
DEC., 1974										
19...	18	.7	704	8.2	2.0	20	1	15.2	114	-1.0
JUNE, 1975										
17...	10	.4	570	7.9	18.5	39	1	--	--	20.5

04096288 ST. JOSEPH RIVER AT LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
02...	0850	22	2.0	.07	.00	.50	.50	2.6	12
16...	0840	24	1.6	.03	.00	.64	.64	2.2	9.9
30...	1440	33	1.4	.03	.01	.43	.44	1.8	8.1
NOV.									
08...	0845	35	1.5	.04	.14	.63	.77	2.3	10
27...	0850	29	1.8	.02	.17	.18	.35	2.2	9.5
DEC.									
13...	0855	34	1.8	.02	.25	.75	1.0	2.8	12
19...	1530	--	--	--	--	--	--	--	--
JAN., 1975									
22...	0915	70	2.5	.01	.32	.78	1.1	3.6	16
FEB.									
13...	1045	44	1.7	.01	.42	.50	.92	2.6	12
26...	0850	261	1.2	.01	.14	.74	.88	2.1	9.2
MAR.									
11...	0850	96	1.4	.01	.13	.54	.67	2.1	9.2
25...	0915	125	.83	.01	.03	.51	.54	1.4	6.1
APR.									
21...	1605	201	.71	.01	.00	.66	.66	1.4	6.1
MAY									
06...	0855	145	.79	.03	.04	.83	.87	1.7	7.5
20...	0745	75	.76	.03	.08	.92	1.0	1.8	7.9
JUNE									
09...	0920	120	.56	.01	.03	.64	.67	1.2	5.5
26...	0915	136	.80	.05	.08	1.3	1.4	2.3	10
JULY									
17...	0920	46	1.7	.04	.01	1.8	1.8	3.5	16
AUG.									
01...	0825	26	1.5	.01	.03	.63	.66	2.2	9.6
18...	1325	30	1.7	.03	.00	.65	.65	2.4	10
SEP.									
18...	0900	38	2.0	.03	.03	.48	.51	2.5	11

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
02...	.27	.24	.26	.00	6.9	8.5	10.2	89	2.0
16...	.30	.26	.29	.00	7.2	9.5	9.0	82	4.0
30...	.30	.26	--	--	--	15.0	10.7	109	21.0
NOV.									
08...	.31	.29	--	--	7.9	6.0	12.3	102	3.0
27...	.29	.30	--	--	7.6	.5	13.8	104	-3.0
DEC.									
13...	.28	.24	--	--	7.2	2.0	12.2	92	2.5
19...	--	.21	--	--	8.2	2.0	15.2	114	-1.0
JAN., 1975									
22...	.16	.12	--	--	--	.5	--	--	-4.5
FEB.									
13...	.18	.16	--	--	7.1	.5	--	--	-9.0
26...	.12	.07	--	--	--	.0	--	--	-.5
MAR.									
11...	.12	.09	--	--	7.0	1.5	--	--	-.5
25...	.10	.05	--	--	--	6.0	--	--	-.5
APR.									
21...	.09	.05	--	--	8.1	12.0	12.8	123	10.0
MAY									
06...	.12	.08	--	--	7.8	14.5	7.8	79	13.0
20...	.19	.09	--	--	8.0	21.0	6.7	77	20.5
JUNE									
09...	.11	.08	--	--	7.9	15.5	--	--	17.0
26...	.24	.19	--	--	7.8	20.5	6.4	73	23.5
JULY									
17...	.15	.09	--	--	8.2	20.5	8.0	91	23.0
AUG.									
01...	.15	.11	--	--	8.0	22.5	--	--	24.5
18...	.17	.16	--	--	8.3	20.5	--	--	23.5
SEP.									
18...	.16	.13	--	--	8.1	15.0	4.5	46	15.5

04096288 ST. JOSEPH RIVER AT LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
03...	0920	6.2	.00	.0	.0	0	.00	.4	.00	.0	.00	.0

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
03...	.00	.0	.00	.1	.00	.0	.00	.0	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
FEB., 1975											
03...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
FEB., 1975											
03...	0	0	0	.00	.0	.00	0	.00	0	.04	0

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
FEB., 1975											
03...	0	0	<10	0	1	1	.0	0	0	0	10

04096288 ST. JOSEPH RIVER AT LITCHFIELD, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
02...	0850	22	8.5	1	.06
16...	0840	24	9.5	4	.26
30...	1440	33	15.0	2	.18
NOV.					
08...	0845	35	6.0	5	.48
21...	1240	E36	--	1	E.10
27...	0850	29	.5	4	.31
DEC.					
13...	0855	34	2.0	2	.18
JAN.					
22...	0915	70	.5	1	.19
FEB.					
13...	1045	44	.5	2	.24
26...	0850	261	.0	13	9.2
MAR.					
11...	0850	96	1.5	3	.78
25...	0915	125	6.0	4	1.3
APR.					
21...	1605	201	12.0	6	3.3
MAY					
06...	0855	145	14.5	13	5.1
20...	0745	75	21.0	18	3.7
JUNE					
09...	0920	120	15.5	7	2.3
17...	1300	96	20.0	5	1.3
26...	0915	136	20.5	15	5.5
JULY					
17...	0920	46	20.5	10	1.2
AUG.					
01...	0825	26	22.5	E6	--
18...	1325	30	20.5	4	.32
SEP.					
18...	0900	38	15.0	2	.21

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
NOV.											
21...	1315	0	40	48	65	74	82	84	99	99	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAMPLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
NOV.											
21...	1315	1	1	2	8	32	42	51	64	95	100

E - ESTIMATED VALUE

04096300 SAND CREEK NEAR JONESVILLE, MICH.

LOCATION.--Lat 41°55'21", long 84°41'55", in NW¼ SW¼ sec.18, T.6 S., R.3 W., Hillsdale County, at bridge on Sand Lake Road, 400 ft (122m) downstream from North Sand Lake, 3.6 mi (5.8 km) southwest of Jonesville.

DRAINAGE AREA.--9.44 mi^2 (24.45 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
17...	1130	11	6.2	10	0	56	17	3.9	.9	227	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA+MG) (MG/L)
JUNE, 1975											
17...	186	25	6.3	.3	.27	.00	.00	250	.34	7.42	210

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975											
17...	24	4	.1	415	8.4	21.5	12	0	9.8	110	24.0

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
01...	0845	12	13.5	E2	--
16...	1200	3.8	14.0	2	.02
31...	1055	4.2	15.0	3	.03
NOV.					
08...	1300	6.4	12.0	3	.05
27...	1250	4.8	3.0	3	.04
DEC.					
11...	0905	5.3	2.5	1	.01
JAN.					
08...	1200	5.7	2.0	4	.06
22...	1330	7.8	2.0	E4	--
FEB.					
02...	1510	17	2.5	7	.32
18...	1345	7.2	2.5	1	.02
25...	1510	16	2.5	7	.31
MAR.					
11...	1325	12	4.0	E5	--
25...	1330	13	5.5	3	.11
APR.					
22...	1035	18	9.5	E8	--
MAY					
06...	1320	20	16.0	3	.16
20...	1130	14	23.0	1	.04
JUNE					
06...	1445	21	21.5	E9	--
17...	1130	11	21.5	2	.06
27...	0750	18	25.5	6	.30
JULY					
17...	1220	9.0	26.5	6	.15
AUG.					
05...	1050	7.6	25.5	12	.25
19...	1135	7.6	23.0	11	.23
SEP.					
19...	1410	11	17.5	1	.03

E - ESTIMATED VALUE

04096300 SAND CREEK NEAR JONESVILLE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
01...	0845	12	.20	.01	.02	.36	.38	.59	2.6
16...	1200	3.8	.22	.00	.04	.44	.48	.70	3.1
31...	1055	4.2	.22	.01	.05	.51	.56	.79	3.5
NOV.									
08...	1300	6.4	.23	.01	.08	.29	.37	.61	2.7
27...	1250	4.8	.28	.00	.09	.41	.50	.78	3.5
DEC.									
11...	0905	5.3	.30	.00	.10	.40	.50	.80	3.5
JAN., 1975									
08...	1200	5.7	.39	.01	.11	.38	.49	.89	3.9
09...	1500	5.9	--	--	.09	.38	.47	.81	3.6
22...	1330	7.8	.50	.00	.10	.48	.58	1.1	4.8
FEB.									
18...	1345	7.2	.45	.01	.09	.31	.40	.86	3.8
25...	1510	16	.73	.01	.17	.65	.82	1.6	6.9
MAR.									
11...	1325	12	.58	.00	.06	.39	.45	1.0	4.6
25...	1330	13	.55	.01	.04	.31	.35	.91	4.0
APR.									
22...	1035	18	.52	.01	.01	.40	.41	.94	4.2
MAY									
06...	1320	20	.42	.01	.01	.35	.36	.79	3.5
20...	1130	14	.32	.01	.04	.46	.50	.83	3.7
JUNE									
06...	1445	21	.28	.01	.04	.33	.37	.66	2.9
27...	0750	18	.24	.01	.03	1.1	1.1	1.4	6.0
JULY									
17...	1220	9.0	.28	.01	.01	.48	.49	.78	3.5
AUG.									
05...	1050	7.6	.26	.01	.02	.45	.47	.74	3.3
19...	1135	7.6	.30	.00	.03	.36	.39	.69	3.1
SEP.									
19...	1410	11	.24	.01	.02	.34	.36	.61	2.7

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
01...	.01	.01	.01	.00	7.0	13.5	8.9	89	7.0
16...	.01	.01	.00	.00	7.1	14.0	10.9	109	13.0
31...	.02	.00	--	--	--	15.0	11.3	115	18.5
NOV.									
08...	.00	.02	--	--	7.2	12.0	12.2	117	11.0
27...	.00	.00	--	--	7.9	3.0	13.5	104	.0
DEC.									
11...	.01	.00	--	--	7.1	2.5	14.2	107	-1.5
JAN., 1975									
08...	.00	.00	--	--	7.2	2.0	--	--	5.5
09...	.00	.01	--	--	--	2.0	--	--	1.0
22...	.01	.00	--	--	--	2.0	--	--	-4.0
FEB.									
18...	.01	.00	--	--	7.1	2.5	--	--	.5
25...	.05	.01	--	--	--	2.5	--	--	.5
MAR.									
11...	.03	.00	--	--	--	4.0	--	--	-.5
25...	.01	.00	--	--	--	5.5	--	--	-.5
APR.									
22...	.01	.00	--	--	8.2	9.5	11.5	106	9.5
MAY									
06...	.01	.01	--	--	8.0	16.0	10.9	110	18.0
20...	.01	.00	--	--	8.2	23.0	8.6	100	24.0
JUNE									
06...	.01	.00	--	--	8.2	21.5	--	--	20.5
27...	.01	.00	--	--	8.1	25.5	7.1	89	20.5
JULY									
17...	.01	.01	--	--	8.4	26.5	10.8	138	25.0
AUG.									
05...	.01	.00	--	--	8.2	25.5	9.0	112	22.0
19...	.00	.00	--	--	8.4	23.0	--	--	21.5
SEP.									
19...	.01	.00	--	--	8.3	17.5	7.0	75	18.0

04096300 SAND CREEK NEAR JONESVILLE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
31...	1040	3.9	.00	.0	.0	0	.00	.4	.00	.2	.00	.0
JUNE												
17...	1130	7.8	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
JAN., 1975												
31...	.00	.0	.00	<.1	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
17...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
JAN., 1975												
31...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
17...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
JAN., 1975											
31...	0	0	0	.00	.0	.02	0	.00	0	.04	0
JUNE											
17...	--	0	--	.00	--	.00	--	.07	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
JAN., 1975											
31...	0	1	<10	0	1	2	.0	0	0	0	4
JUNE											
17...	--	--	--	--	--	--	--	--	--	--	--

04096312 SAND CREEK AT LITCHFIELD, MICH.

LOCATION.--Lat 42°01'45", long 84°46'47", in NE¼ NW¼ sec.21, T.5 S., R.4 W., Hillsdale County, at gaging station on right bank 20 ft (6 m) upstream from bridge on Herring Road, 1.0 m (1.6 km) southwest of Litchfield, and 3.0 mi (4.8 km) upstream from mouth.

DRAINAGE AREA.--20.6 mi^2 (53.4 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Water temperatures: August 1974 to September 1975.
Sediment records: August 1974 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum observed, 21.5°C June 23, 24; minimum observed, freezing point on several days during December to February.
Sediment concentrations: Maximum daily, 157 mg/l May 30; minimum daily 2 mg/l Jan. 20, Feb. 2.
Sediment discharges: Maximum daily, 21 tons (19 tonnes) May 30; minimum daily, 0.07 ton (0.06 tonne) Oct. 9.

REMARKS.--Flow affected by ice Feb. 11, 12.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
17...	1200	38	7.6	80	50	70	19	4.3	.9	251	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
JUNE, 1975											
17...	206	37	9.7	.1	1.1	.00	.00	280	.38	28.7	250

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975											
17...	47	4	.1	470	7.9	17.0	15	2	9.0	97	27.5

04096312 SAND CREEK AT LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
02...	0940	E8.5	1.1	.00	.03	.30	.33	1.4	6.3
16...	1015	9.1	1.1	.01	.00	.34	.34	1.4	6.4
31...	0845	13	.94	.01	.01	.41	.42	1.4	6.1
NOV.									
08...	1010	13	.90	.00	.03	.23	.26	1.2	5.1
27...	1025	12	1.0	.00	.07	.02	.09	1.1	4.8
DEC.									
13...	1025	13	1.1	.01	.03	.43	.46	1.6	6.9
JAN., 1975									
08...	1430	19	1.2	.02	.06	.66	.72	1.9	8.5
09...	1050	30	--	--	.04	.49	.53	2.0	9.0
22...	1040	16	1.2	.01	.07	.47	.54	1.7	7.7
FEB.									
13...	1225	12	1.2	.00	.06	.24	.30	1.5	6.6
24...	1040	68	1.2	.01	.19	.78	.97	2.2	9.6
MAR.									
11...	1020	22	1.2	.00	.03	.29	.32	1.5	6.7
19...	1420	E20	1.3	.01	.00	.35	.35	1.7	7.3
25...	1030	32	1.2	.01	.02	.37	.39	1.6	7.0
APR.									
19...	1100	75	1.2	.02	.05	1.2	1.2	2.4	11
21...	1440	40	1.3	.00	.05	.39	.44	1.7	7.7
MAY									
06...	1030	80	.95	.01	.07	.93	1.0	2.0	8.7
20...	0910	27	.99	.01	.03	.57	.60	1.6	7.1
JUNE									
05...	1010	50	1.1	.01	.01	.79	.80	1.9	8.4
26...	1050	43	1.0	.00	.03	1.3	1.3	2.3	10
JULY									
17...	1010	25	1.2	.02	.02	.58	.60	1.8	8.0
AUG.									
01...	0950	E17	1.3	.01	.04	.75	.79	2.1	9.3
19...	0905	15	1.3	.00	.03	.45	.48	1.8	7.9
SEP.									
18...	1030	24	1.2	.00	.02	.41	.43	1.6	7.2

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
02...	.01	.00	.00	.01	--	7.5	10.5	91	3.5
16...	.01	.01	.01	.00	--	8.5	9.5	83	12.0
31...	.01	.00	--	--	--	14.5	8.4	84	19.0
NOV.									
08...	.01	.01	--	--	7.8	6.0	12.4	103	8.5
27...	.00	.01	--	--	7.6	2.5	13.0	98	-1.5
DEC.									
13...	.02	.00	--	--	7.1	4.5	--	--	2.5
JAN., 1975									
08...	.04	.02	--	--	7.2	5.0	--	--	6.0
09...	.02	.01	--	--	--	3.5	--	--	3.5
22...	.01	.00	--	--	--	1.5	--	--	-6.0
FEB.									
13...	.01	.01	--	--	7.1	1.5	--	--	-5.5
24...	.09	.04	--	--	7.1	3.0	--	--	4.5
MAR.									
11...	.01	.00	--	--	7.1	4.0	--	--	.0
19...	.01	.01	--	--	--	8.5	--	--	10.5
25...	.01	.00	--	--	--	5.0	--	--	-1.5
APR.									
19...	.15	.02	--	--	7.6	9.5	--	--	9.0
21...	.02	.00	--	--	7.9	11.0	11.1	104	10.5
MAY									
06...	.06	.00	--	--	7.7	13.0	8.4	82	11.5
20...	.03	.00	--	--	7.9	17.5	7.9	86	23.5
JUNE									
05...	.02	.00	--	--	8.0	17.0	--	--	18.5
26...	.03	.01	--	--	7.9	18.5	7.2	79	23.0
JULY									
17...	.03	.00	--	--	8.2	17.5	8.6	92	24.5
AUG.									
01...	.02	.00	--	--	8.1	18.5	--	--	25.0
19...	.01	.00	--	--	8.1	16.5	--	--	17.0
SEP.									
18...	.01	.00	--	--	8.1	14.0	5.4	54	16.0

E - ESTIMATED VALUE

04096312 SAND CREEK AT LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
03...	1035	12	.00	.0	.0	0	.00	.5	.00	.2	.00	.0
JUNE												
17...	1200	5.9	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
03...	.00	.0	.00	<.1	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
17...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
FEB., 1975												
03...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
17...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
FEB., 1975											
03...	0	0	0	.00	.0	.02	0	.00	0	.03	0
JUNE											
17...	--	0	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
FEB., 1975											
03...	0	0	<10	0	1	1	.1	0	0	0	6
JUNE											
17...	--	--	--	--	--	--	--	--	--	--	--

04096312 SAND CREEK AT LITCHFIELD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE DAILY MEASUREMENT BETWEEN 0700 AND 0900 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1											---	15.5
2											---	16.0
3											---	14.0
4											---	14.0
5											---	13.0
6											---	---
7											---	13.0
8											---	14.0
9											---	14.0
10											---	---
11											---	16.0
12											---	18.0
13											---	18.5
14											---	18.5
15											---	---
16											18.0	18.0
17											18.0	15.0
18											17.0	---
19											18.0	16.0
20											18.0	16.0
21											18.0	16.0
22											17.0	14.0
23											18.0	9.0
24											16.0	10.0
25											16.5	12.0
26											17.5	12.0
27											17.0	13.0
28											17.0	16.0
29											15.5	15.0
30											16.0	12.0
31											17.5	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0700 AND 0900 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	---	2.0	---	3.5	1.5	---	12.5	15.5	19.5	19.5	18.5
2	7.0	---	2.0	0.0	2.5	1.5	---	10.5	14.5	19.5	20.0	18.0
3	7.0	---	2.0	2.5	1.5	---	---	12.5	14.0	20.0	19.5	17.5
4	8.0	10.0	0.0	3.5	2.5	2.5	1.5	12.5	15.0	18.5	14.5	18.5
5	12.0	5.5	2.0	1.5	4.0	2.5	2.0	10.5	17.5	18.0	20.0	17.5
6	16.0	---	2.0	4.5	3.5	4.5	3.0	13.5	17.5	18.5	16.5	16.0
7	14.0	5.0	3.0	4.5	0.0	5.0	3.5	10.5	15.5	20.0	15.5	15.0
8	8.0	5.0	4.0	5.5	0.5	3.5	3.5	12.5	17.5	19.5	15.5	16.5
9	10.0	5.0	2.0	4.0	0.0	---	5.0	13.5	14.5	18.0	16.5	14.5
10	8.0	5.5	2.0	4.5	0.0	3.5	5.0	13.0	15.5	17.5	18.0	14.0
11	10.0	10.0	2.0	5.5	0.5	4.0	4.5	13.5	17.0	16.5	18.0	16.5
12	10.5	5.5	4.0	0.0	0.5	4.5	---	14.5	16.5	17.0	18.0	14.5
13	10.5	5.0	5.0	0.5	0.0	2.5	7.5	12.5	16.0	17.0	20.0	14.5
14	10.5	3.0	5.0	0.5	0.0	2.5	5.5	13.5	17.0	16.5	18.0	---
15	10.5	3.0	4.0	0.5	2.5	2.0	6.0	14.5	18.5	16.5	18.5	14.5
16	10.0	2.0	4.0	1.5	2.5	4.5	6.0	13.0	16.0	16.5	16.5	14.5
17	5.5	5.0	4.0	0.5	3.5	4.5	7.5	13.5	---	18.5	18.0	14.5
18	---	5.0	2.0	1.5	3.5	6.0	---	15.0	18.0	18.0	19.0	15.0
19	---	5.5	2.0	2.5	3.0	---	8.0	15.5	20.0	18.5	19.0	14.5
20	---	5.5	2.0	0.5	2.5	6.0	8.0	17.5	20.5	19.5	19.0	13.5
21	---	5.0	3.0	0.5	3.5	7.0	7.5	17.5	20.0	18.5	21.0	13.0
22	---	5.0	3.0	2.5	5.0	7.5	9.5	17.5	20.5	17.5	20.0	13.5
23	---	5.0	3.0	1.5	2.0	5.0	9.5	17.0	21.5	18.0	18.5	10.5
24	---	10.0	4.5	2.5	3.0	7.5	---	17.5	21.5	20.0	20.5	12.0
25	---	6.0	3.0	---	2.5	5.5	9.5	20.0	20.0	17.5	20.5	12.5
26	---	2.0	1.5	2.0	2.5	3.5	7.5	18.5	19.0	16.5	20.5	12.0
27	---	2.0	2.5	2.0	2.0	4.0	10.0	18.5	19.5	17.5	18.5	12.0
28	---	3.0	3.5	3.5	3.5	3.5	8.5	16.5	20.5	17.0	18.0	10.5
29	---	3.0	3.5	---	---	4.5	8.5	17.5	20.0	17.5	20.0	12.0
30	---	3.0	4.5	3.5	---	3.5	12.5	18.5	18.5	18.5	20.0	12.5
31	---	---	3.5	3.5	---	2.5	---	18.0	---	19.0	20.0	---

04096312 SAND CREEK AT LITCHFIELD, MICH.--CONTINUED

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV. 21...	1110	13	3	.11
JAN. 09...	1100	30	20	1.6
APR. 19...	1015	91	61	15

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
NOV. 21...	1110	15	27	43	56	86	96	96	99	99	100
JAN. 09...	1100	38	48	62	73	78	82	83	93	98	100
APR. 19...	1015	47	67	78	85	91	93	94	97	99	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAMPLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
NOV. 21...	1110	1	2	9	41	70	75	79	86	95	100

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	24			12	---	---	8.9	16	.38
2	23			13	---	---	8.7	15	.35
3	23			12	---	---	11	15	.45
4	23			12	---	---	9.9	27	.72
5	23			12	---	---	9.7	19	.50
6	22			11	---	---	9.8	E 23	.61
7	21			11	---	---	9.8	27	.71
8	21			11	---	---	9.9	21	.56
9	20			12	---	---	8.8	41	.97
10	20			11	---	---	8.6	E 30	.70
11	19			12	---	---	8.5	19	.44
12	18			12	---	---	13	56	2.0
13	18			11	---	---	13	44	1.5
14	17			11	---	---	12	17	.55
15	16			10	---	---	11	E 17	.50
16	16			10	40	1.1	11	16	.48
17	15			12	61	2.0	11	24	.71
18	15			12	61	2.0	10	E 19	.51
19	14			11	63	1.9	9.8	13	.34
20	13			9.7	46	1.2	9.5	17	.44
21	14			10	42	1.1	9.4	10	.25
22	13			9.6	45	1.2	9.1	29	.71
23	14			9.4	37	.94	8.9	11	.26
24	14			9.5	34	.87	8.9	23	.55
25	13			9.7	29	.76	8.7	14	.33
26	13			9.0	34	.83	8.5	E 15	.34
27	12			8.9	42	1.0	8.4	7	.16
28	12			8.8	33	.78	9.1	12	.29
29	14			9.3	24	.60	9.3	15	.38
30	13			8.6	31	.72	9.2	9	.22
31	13			9.2	30	.75	---	---	---
MONTH	526			329.7	---	---	293.4	---	16.91

E - ESTIMATED VALUE

04096312 SAND CREEK AT LITCHFIELD, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	9.1	11	.27	9.8	5	.13	12	7	.23
2	8.9	7	.17	9.7	6	.16	12	14	.45
3	8.9	9	.22	11	6	.18	11	5	.15
4	8.9	10	.24	14	6	.23	11	12	.36
5	8.8	9	.21	17	11	.50	11	5	.15
6	8.7	10	.23	16	9	.39	11	5	.15
7	8.7	8	.19	14	10	.38	12	26	.84
8	8.8	11	.26	13	9	.32	14	68	2.6
9	9.1	3	.07	12	8	.26	14	8	.30
10	8.9	9	.22	12	8	.26	13	7	.25
11	8.9	6	.14	12	9	.29	13	7	.25
12	8.8	8	.19	12	15	.49	13	11	.39
13	9.0	12	.29	12	6	.19	13	7	.25
14	9.7	13	.34	13	7	.25	14	9	.34
15	9.8	8	.21	12	11	.36	15	15	.61
16	9.5	7	.18	12	7	.23	17	57	2.6
17	9.3	10	.25	13	31	1.1	17	31	1.4
18	9.1	5	.12	12	10	.32	15	101	4.1
19	9.1	7	.17	13	13	.46	15	8	.32
20	9.2	7	.17	13	20	.70	14	8	.30
21	9.0	5	.12	13	10	.35	14	12	.45
22	9.2	6	.15	13	11	.39	14	12	.45
23	9.0	6	.15	13	9	.32	14	E 15	.57
24	9.1	6	.15	13	34	1.2	14	19	.72
25	9.1	7	.17	13	11	.39	14	11	.42
26	8.9	E 9	.22	12	11	.36	13	7	.25
27	9.0	11	.27	12	8	.26	13	15	.53
28	8.9	8	.19	12	8	.26	13	15	.53
29	9.2	10	.25	12	6	.19	13	11	.39
30	10	7	.19	11	7	.21	13	11	.39
31	9.9	E 6	.16	---	---	---	14	51	1.9
MONTH	282.5	---	6.16	376.5	---	11.13	416	---	22.64

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	14	9	.34	19	21	1.1	29	6	.45
2	13	9	.32	18	2	.10	27	8	.58
3	13	32	1.1	17	8	.37	26	4	.28
4	12	10	.32	17	12	.55	25	17	1.1
5	12	29	.94	17	9	.41	24	18	1.1
6	12	4	.13	16	9	.39	24	E 17	1.1
7	12	18	.58	16	E 8	.35	29	15	1.1
8	18	15	.73	15	6	.24	28	7	.51
9	28	24	1.8	14	19	.72	26	3	.20
10	27	21	1.5	14	4	.15	25	7	.45
11	34	26	2.4	14	10	.41	24	9	.56
12	26	16	1.1	13	4	.15	26	8	.54
13	24	6	.39	13	4	.14	27	9	.63
14	23	7	.43	13	17	.60	25	7	.45
15	21	12	.68	13	20	.70	23	5	.31
16	20	13	.70	13	5	.18	23	6	.37
17	19	14	.72	16	12	.52	23	5	.31
18	19	17	.87	19	19	.97	23	8	.50
19	18	13	.63	17	E 16	.73	25	6	.41
20	17	2	.09	16	11	.48	24	5	.34
21	17	10	.46	17	3	.14	24	5	.32
22	16	11	.48	24	37	2.4	29	83	6.5
23	16	13	.56	65	50	8.9	28	7	.55
24	16	19	.82	58	20	3.2	33	32	2.9
25	17	30	1.4	39	6	.63	30	15	1.3
26	17	18	.83	34	9	.83	28	16	1.2
27	16	22	.95	32	4	.35	26	12	.87
28	15	21	.85	31	10	.81	25	15	1.1
29	26	156	11	---	---	---	34	22	2.0
30	21	24	1.4	---	---	---	30	19	1.5
31	20	19	1.0	---	---	---	28	14	1.0
MONTH	579	---	35.52	610	---	26.52	822	---	30.53

E - ESTIMATED VALUE

04096312 SAND CREEK AT LITCHFIELD, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DAY	APRIL MEAN DISCHARGE (CFS)	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL SEDIMENT DISCHARGE (TONS/DAY)	MAY MEAN DISCHARGE (CFS)	MAY MEAN CONCEN-TRATION (MG/L)	MAY SEDIMENT DISCHARGE (TONS/DAY)	JUNE MEAN DISCHARGE (CFS)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE SEDIMENT DISCHARGE (TONS/DAY)
1	28	20	1.4	43	21	2.5	50	38	5.2
2	28	16	1.1	37	22	2.3	48	50	6.6
3	31	18	1.4	36	23	2.2	45	44	5.3
4	29	20	1.5	35	31	2.9	45	38	4.7
5	29	15	1.1	34	22	2.0	51	45	6.4
6	29	14	.98	63	49	8.6	47	41	5.2
7	31	15	1.1	47	18	2.3	41	43	4.9
8	34	21	1.8	41	23	2.6	39	37	3.9
9	35	17	1.4	39	24	2.5	37	46	4.6
10	33	21	1.6	36	21	2.1	35	50	4.7
11	32	17	1.2	35	34	3.2	47	39	4.9
12	31	E 21	1.5	40	30	3.2	54	25	3.7
13	30	28	1.8	38	22	2.3	44	47	5.6
14	28	21	1.3	36	25	2.4	39	52	5.5
15	28	14	.83	34	26	2.4	44	47	5.7
16	27	39	2.2	32	15	1.3	45	45	5.5
17	27	33	1.8	31	19	1.6	38	E 48	4.9
18	31	32	2.1	30	22	1.8	36	50	4.9
19	78	58	11	29	24	1.9	34	E 58	5.3
20	46	23	2.6	28	22	1.7	34	62	5.5
21	40	30	3.3	29	23	1.8	33	49	4.2
22	38	29	3.0	34	16	1.5	31	64	5.2
23	38	5	.53	34	E 45	4.1	31	61	4.9
24	41	23	2.5	32	71	6.1	41	50	5.5
25	38	25	2.6	33	60	5.2	61	33	5.5
26	36	15	1.5	42	55	6.2	43	33	3.8
27	34	28	2.6	35	75	7.1	38	33	3.3
28	41	32	3.5	32	49	4.2	39	89	9.4
29	44	22	2.7	31	44	3.6	44	32	3.8
30	39	26	2.8	48	157	21	35	48	4.5
31	---	---	---	68	41	7.7	---	---	---
MONTH	1054	---	64.74	1162	---	120.3	1249	---	153.1

DAY	JULY MEAN DISCHARGE (CFS)	JULY MEAN CONCEN-TRATION (MG/L)	JULY SEDIMENT DISCHARGE (TONS/DAY)	AUGUST MEAN DISCHARGE (CFS)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST SEDIMENT DISCHARGE (TONS/DAY)	SEPTEMBER MEAN DISCHARGE (CFS)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER SEDIMENT DISCHARGE (TONS/DAY)
1	33	48	4.1	15	56	2.3	65	15	2.6
2	31	45	3.8	19	58	3.0	51	26	3.4
3	33	85	7.6	20	58	3.1	46	22	2.6
4	38	99	10	19	57	2.9	42	E 25	2.7
5	33	70	6.2	18	60	2.9	41	30	3.2
6	31	74	6.0	19	53	2.7	41	31	3.3
7	30	68	5.5	16	44	1.9	36	36	3.3
8	34	54	5.0	15	55	2.2	33	33	2.8
9	29	72	5.6	14	40	1.5	31	44	3.6
10	27	66	4.8	14	44	1.7	29	52	3.9
11	26	69	4.8	15	54	2.2	29	40	3.0
12	26	66	4.6	14	55	2.1	29	41	3.1
13	25	62	4.2	14	58	2.2	27	47	3.3
14	25	76	5.3	13	45	1.6	26	26	1.8
15	24	54	3.5	16	60	2.6	25	34	2.2
16	24	72	4.9	17	55	2.5	24	36	2.3
17	25	56	3.9	16	28	1.2	24	23	1.5
18	24	58	3.9	15	22	.89	24	30	1.9
19	25	66	4.6	15	22	.89	24	34	2.2
20	24	73	4.7	14	30	1.1	25	43	2.9
21	22	60	3.7	26	23	1.6	23	23	1.4
22	21	59	3.5	71	28	5.4	23	29	1.8
23	21	73	4.1	39	42	4.0	22	21	1.2
24	24	71	4.6	35	37	3.1	22	28	1.7
25	21	57	3.4	35	28	2.3	21	19	1.1
26	20	58	3.3	33	29	2.3	21	18	1.0
27	19	73	3.7	31	36	2.6	21	17	.96
28	19	70	3.6	28	26	1.8	20	21	1.1
29	17	61	3.0	33	35	2.7	20	24	1.3
30	17	72	3.3	37	27	2.5	22	13	.77
31	16	E 64	2.8	106	41	---	---	---	---
MONTH	784	---	142.0	792	---	70	887	---	67.93
YEAR	9014.0		750.35						

E--ESTIMATED VALUE

04096314 SAND CREEK NEAR LITCHFIELD, MICH.

LOCATION.--Lat 42°03'04", long 84°48'22", in SW¼ NW¼ sec.8, T.5 S., R.4 W., Hillsdale County, at bridge on Storms Road, 2.6 mi (4.2 km) west of Litchfield.

DRAINAGE AREA.--23.2 mi^2 (60.1 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)
DEC., 1974										
19...	1430	8.6	360	85	77	21	5.0	1.2	255	0

DATE	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM
DEC., 1974									
19...	209	51	11	.2	312	.42	280	70	4

DATE	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	AIR TEMPER-ATURE (DEG C)
DEC., 1974									
19...	.1	536	7.8	2.5	10	1	12.8	97	.0

DATE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS)	TEMPER-ATURE (DEG C)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)
OCT.					
08...	1410	9.4	10.5	7	.18
15...	1410	11	12.0	2	.06
30...	1325	12	14.0	4	.13
NOV.					
07...	1330	15	8.5	6	.24
26...	1415	13	3.0	4	.14
DEC.					
12...	0925	15	3.5	8	.33
JAN.					
20...	1345	22	.5	10	.59
FEB.					
12...	0900	18	.5	4	.19
MAR.					
10...	1445	32	5.0	3	.26
24...	1430	46	10.0	14	1.7
APR.					
22...	0800	45	9.5	12	1.5
MAY					
05...	1400	41	13.0	12	1.3
JUNE					
09...	1050	44	14.0	18	2.2
17...	1030	45	16.5	28	3.4
JULY					
16...	1340	23	18.5	31	1.9
31...	1205	7.9	19.0	14	.30
AUG.					
18...	1225	16	17.5	26	1.2
SEP.					
17...	1340	28	14.5	9	.68

04096314 SAND CREEK NEAR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
01...	1435	9.3	1.2	.01	.00	.32	.32	1.5	6.7
15...	1410	11	1.1	.01	.00	.39	.39	1.5	6.6
30...	1325	12	1.1	.00	.00	.45	.45	1.6	6.9
NOV.									
07...	1330	15	.99	.01	.02	.27	.29	1.3	5.7
26...	1415	13	1.1	.01	.06	.01	.07	1.2	5.2
DEC.									
12...	0925	15	1.2	.01	.05	.44	.49	1.7	7.5
19...	1430	--	--	--	--	--	--	--	--
JAN., 1975									
20...	1345	22	1.2	.01	.06	.36	.42	1.6	7.2
FEB.									
12...	0900	18	1.3	.01	.05	.22	.27	1.6	7.0
MAR.									
10...	1445	32	1.3	.00	.02	.27	.29	1.6	7.0
24...	1430	46	1.3	.00	.01	.49	.50	1.8	8.0
APR.									
22...	0800	45	1.3	.01	.02	.42	.44	1.7	7.7
MAY									
05...	1400	41	1.3	.01	.00	.34	.34	1.6	7.3
JUNE									
09...	1050	44	1.2	.01	.00	.28	.28	1.5	6.6
JULY									
16...	1340	23	1.4	.01	.01	.74	.75	2.2	9.5
31...	1205	7.9	1.5	.01	.02	.44	.46	2.0	8.7
AUG.									
18...	1225	16	1.5	.01	.00	.41	.41	1.9	8.5
SEP.									
17...	1340	28	1.4	.00	.00	.35	.35	1.8	7.7

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
01...	.02	.01	.01	.00	7.0	11.0	10.6	100	8.0
15...	.01	.01	.01	.00	8.0	12.0	9.6	92	12.5
30...	.01	.01	--	--	7.4	14.0	8.8	88	20.5
NOV.									
07...	.01	.01	--	--	7.9	8.5	11.5	100	10.0
26...	.00	.01	--	--	7.3	3.0	11.8	91	.5
DEC.									
12...	.01	.01	--	--	7.2	3.5	12.4	93	3.5
19...	--	.00	--	--	7.8	2.5	12.8	97	.0
JAN., 1975									
20...	.01	.00	--	--	--	.5	--	--	-5.5
FEB.									
12...	.01	.00	--	--	--	.5	--	--	-10.0
MAR.									
10...	.02	.01	--	--	7.2	5.0	--	--	-1.0
24...	.03	.00	--	--	--	10.0	--	--	17.5
APR.									
22...	.02	.00	--	--	7.9	9.5	9.9	91	11.0
MAY									
05...	.01	.00	--	--	8.1	13.0	10.2	100	18.0
JUNE									
09...	.01	.00	--	--	8.0	14.0	--	--	17.5
JULY									
16...	.03	.00	--	--	8.2	18.5	7.9	87	27.5
31...	.01	.00	--	--	8.3	19.0	--	--	26.5
AUG.									
18...	.01	.00	--	--	8.2	17.5	--	--	21.0
SEP.									
17...	.01	.00	--	--	8.2	14.5	9.5	96	16.0

04096314 SAND CREEK NEAR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLORDANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DIAZINON (UG/L)	TOTAL DIELDRIN (UG/L)	TOTAL ENDRIN (UG/L)
FEB., 1975										
03...	1200	5.6	.00	.0	.00	.00	.00	.00	.00	.00

DATE	TOTAL ETHION (UG/L)	TOTAL HEPTACHLOR (UG/L)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALATHION (UG/L)	TOTAL METHYL PARATHION (UG/L)	TOTAL METHYL TRITHION (UG/L)	TOTAL PARATHION (UG/L)	TOTAL PCB (UG/L)	TOTAL TOXAPHENE (UG/L)
FEB., 1975										
03...	.00	.00	.00	.00	.00	.00	.00	.00	.0	0

DATE	TOTAL TRITHION (UG/L)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)
FEB., 1975									
03...	.00	.01	0	.00	0	.02	0	0	0

DATE	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
FEB., 1975									
03...	<10	0	1	0	.0	0	0	0	10

04096320 SOAP CREEK AT MCLAIN RD. NEAR LITCHFIELD, MICH.

LOCATION.--Lat 42°00'32", long 84°47'15", in SW¼ NW¼ sec.28, T.5 S., R.4 W., Hillsdale County, at bridge on McLain Road, 3.0 mi (4.8 km) southwest of Litchfield, Mich.

DRAINAGE AREA.--4.66 mi² (12.07 km²).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partial-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
17...	1100	E6.0	8.0	10	80	90	22	7.7	1.1	281	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)
JUNE, 1975											
17...	230	63	19	.2	1.9	.00	.00	398	.54	320	85

DATE	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975										
17...	5	.2	595	7.9	14.5	9	1	10.5	100	25.5

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV.					
08...	1200	E.20	4.0	10	--
27...	1155	E.20	.5	11	--
JAN.					
08...	1315	1.4	5.0	13	.05
22...	1220	1.7	3.0	6	.03
FEB.					
13...	1410	2.1	.5	3	.02
26...	1440	7.7	6.0	5	.10
MAR.					
11...	1150	4.2	6.0	3	.03
25...	1145	7.0	5.0	7	.13
APR.					
22...	0930	9.2	7.5	11	.27
MAY					
06...	1200	25	12.5	45	3.0
20...	1020	5.5	13.5	13	.19
JUNE					
09...	1340	7.0	17.0	3	.06
17...	1100	E6.0	14.5	12	--
26...	1225	9.7	17.0	26	.68
JULY					
17...	1135	1.3	15.0	22	.08
AUG.					
19...	1030	.75	17.5	36	.07
SEP.					
18...	1155	2.8	13.5	7	.05

E - ESTIMATED VALUE

04096320 SOAP CREEK AT MCLAIN RD. NEAR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)
NOV., 1974								
08...	1200	E.20	1.0	.00	.01	.19	.20	1.2
27...	1155	E.20	1.4	.01	.01	.00	.00	1.4
JAN., 1975								
08...	1315	1.4	1.5	.01	.00	.25	.25	1.8
09...	1440	4.8	4.1	.01	.01	.47	.48	4.6
22...	1220	1.7	1.4	.01	.00	.31	.31	1.7
FEB.								
13...	1410	2.1	1.4	.00	.00	.20	.20	1.6
26...	1440	7.7	2.0	.00	.00	.29	.29	2.3
MAR.								
11...	1150	4.2	1.7	.00	.00	.21	.21	1.9
25...	1145	7.0	2.2	.01	.00	.28	.28	2.5
APR.								
22...	0930	9.2	2.1	.01	.00	.29	.29	2.4
MAY								
06...	1200	25	1.8	.02	.04	.74	.78	2.6
20...	1020	5.5	1.5	.02	.02	.32	.34	1.8
JUNE								
09...	1340	7.0	1.6	.00	.00	.23	.23	1.8
26...	1225	9.7	2.2	.02	.05	1.3	1.3	3.5
JULY								
17...	1135	1.3	1.4	.01	.00	.28	.28	1.7
AUG.								
19...	1030	.75	.95	.01	.00	.37	.37	1.3
SEP.								
18...	1155	2.8	1.6	.00	.00	.32	.32	1.9

DATE	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
NOV., 1974								
08...	5.3	.01	.01	8.0	4.0	14.9	118	11.0
27...	6.2	.00	.01	7.5	.5	14.4	105	.5
JAN., 1975								
08...	7.7	.01	.00	8.2	5.0	--	--	5.5
09...	20	.01	.01	--	--	--	--	--
22...	7.6	.00	.00	--	3.0	--	--	-6.0
FEB.								
13...	7.1	.00	.00	--	.5	--	--	-6.0
26...	10	.02	.01	--	6.0	--	--	-.5
MAR.								
11...	8.5	.01	.00	7.1	6.0	--	--	-1.0
25...	11	.01	.00	--	5.0	--	--	-1.5
APR.								
22...	11	.01	.00	7.7	7.5	9.6	83	8.0
MAY								
06...	11	.06	.01	7.6	12.5	9.3	90	15.5
20...	8.1	.01	.00	7.8	13.5	9.5	95	23.5
JUNE								
09...	8.1	.01	.00	8.1	17.0	--	--	20.0
26...	16	.03	.01	7.9	17.0	8.3	88	24.0
JULY								
17...	7.4	.01	.01	8.2	15.0	10.9	111	23.5
AUG.								
19...	5.9	.00	.00	8.2	17.5	--	--	18.0
SEP.								
18...	8.5	.01	.00	8.1	13.5	8.3	82	15.5

E - ESTIMATED VALUE

04096325 SOAP CREEK AT LITCHFIELD RD NR LITCHFIELD, MICH.

LOCATION.--Lat 42°02'38", long 84°50'10", in SE¼ SW¼ sec.12, T.5 S., R.5 W., Branch County, at gaging station on left bank 10 ft (3 m) downstream from bridge on Litchfield Road, 2.3 mi (3.7 km) upstream from mouth, and 3.5 mi (5.6 km) west of Litchfield

DRAINAGE AREA.--10.9 mi^2 (28.2 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Water temperatures: December 1974 to September 1975.
Sediment records: December 1974 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum observed, 20.0°C Aug. 25; minimum observed, 2.0°C Jan. 12-14.
Sediment concentrations: Maximum daily, 90mg/l Feb. 23; minimum daily; 3 mg/l Dec. 22, 27, Jan. 1, Sept. 2.
Sediment discharges: Maximum daily, 13 tons (12 tonnes) Feb. 23, Apr. 19; minimum daily, 0.03 ton (.03 tonne) Jan. 1.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
JUNE, 1975											
16...	1340	24	8.8	10	180	96	23	5.2	11	306	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
JUNE, 1975											
16...	251	78	13	.5	1.1	.00	.00	434	.59	28.1	330

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
JUNE, 1975											
16...	83	3	.1	687	7.8	16.5	11	4	10.2	100	27.5

04096325 SOAP CREEK AT LITCHFIELD RD NR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
01...	1450	E4.0	.17	.00	.00	.32	.32	.49	2.2
15...	1250	2.9	.15	.01	.01	.31	.32	.48	2.1
30...	1200	3.3	.15	.01	.04	.40	.44	.60	2.7
NOV.									
07...	1225	3.8	.24	.00	.04	.19	.23	.47	2.1
26...	1250	3.6	.26	.00	.07	.00	.07	.33	1.5
DEC.									
12...	1050	3.6	.26	.01	.05	.21	.26	.53	2.3
JAN., 1975									
09...	1030	14	1.4	.01	.04	.88	.92	2.3	10
20...	1220	8.5	.72	.00	.05	.27	.32	1.0	4.6
FEB.									
12...	1035	7.0	.61	.00	.04	.17	.21	.82	3.6
24...	0910	58	2.2	.02	.19	.91	1.1	3.3	15
MAR.									
10...	1320	14	1.1	.00	.01	.25	.26	1.4	6.0
19...	1355	E13	1.3	.01	.00	.38	.38	1.7	7.4
24...	1320	25	1.6	.00	.00	.35	.35	2.0	8.6
APR.									
19...	1300	62	2.4	.04	.08	1.6	1.7	4.1	18
21...	1320	32	1.5	.01	.03	.43	.46	2.0	8.7
MAY									
05...	1245	22	.98	.01	.01	.32	.33	1.3	5.8
19...	1255	19	.84	.01	.01	.31	.32	1.2	5.2
JUNE									
05...	1145	27	1.2	.01	.00	.23	.23	1.4	6.3
25...	1220	32	2.5	.03	.05	1.4	1.4	3.9	17
JULY									
16...	1230	10	.59	.01	.00	.23	.23	.83	3.7
31...	1045	6.7	.35	.01	.01	.40	.41	.77	3.4
AUG.									
18...	1120	7.4	.29	.01	.00	.33	.33	.63	2.8
SEP.									
17...	1230	13	.76	.00	.00	.29	.29	1.1	4.6

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
01...	.01	.00	.01	.00	--	11.5	9.6	92	10.0
15...	.01	.02	.01	.00	7.2	12.0	9.3	89	13.5
30...	.02	.01	--	--	--	14.5	7.7	77	19.5
NOV.									
07...	.01	.01	--	--	7.6	9.0	10.1	90	9.5
26...	.01	.01	--	--	7.1	4.5	10.4	82	-1.0
DEC.									
12...	.01	.01	--	--	7.1	5.5	9.7	80	2.0
JAN., 1975									
09...	.04	.01	--	--	--	4.0	--	--	3.0
20...	.02	.00	--	--	--	1.5	--	--	-4.0
FEB.									
12...	.02	.00	--	--	7.1	2.5	--	--	-1.5
24...	.14	.05	--	--	--	2.5	--	--	4.5
MAR.									
10...	.01	.01	--	--	7.1	7.0	--	--	.5
19...	.01	.02	--	--	--	10.0	--	--	11.5
24...	.04	.01	--	--	--	11.5	--	--	15.5
APR.									
19...	.23	.04	--	--	7.6	10.0	--	--	9.5
21...	.03	.00	--	--	7.7	11.5	10.6	102	8.0
MAY									
05...	.01	.00	--	--	7.8	13.0	11.6	110	16.0
19...	.01	.01	--	--	8.0	16.5	--	--	26.5
JUNE									
05...	.01	.01	--	--	7.9	14.5	--	--	20.5
25...	.06	.01	--	--	8.0	18.0	6.9	75	22.5
JULY									
16...	.01	.00	--	--	8.1	15.5	8.4	86	26.0
31...	.00	.00	--	--	8.1	15.0	--	--	26.0
AUG.									
18...	.01	.00	--	--	7.8	15.0	--	--	22.5
SEP.									
17...	.01	.00	--	--	7.7	14.0	8.8	88	18.0

04096325 SOAP CREEK AT LITCHFIELD RD NR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
04...	1200	4.8	.00	.0	.0	0	.00	7.3	.00	1.5	.00	.8
JUNE												
16...	1340	6.8	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
04...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
16...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
FEB., 1975												
04...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
16...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
FEB., 1975											
04...	0	0	0	.00	.0	.00	0	.00	0	.00	0
JUNE											
16...	--	0	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
FEB., 1975											
04...	0	0	<10	0	1	0	.0	0	0	0	6
JUNE											
16...	--	--	--	--	--	--	--	--	--	--	--

04096325 SOAP CREEK AT LITCHFIELD RD NR LITCHFIELD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1500 AND 1700 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1			3.0	4.0	6.0	6.0	10.5	15.5	14.5	18.0	19.0	18.0
2			6.0	4.5	5.5	6.0	5.5	14.5	---	18.5	16.0	17.0
3			4.5	5.0	6.0	6.5	5.5	12.5	15.0	18.5	18.5	15.5
4			4.5	5.0	4.5	6.5	10.0	11.5	14.0	15.0	19.5	15.5
5			6.0	5.0	5.0	8.0	10.0	15.0	18.0	16.5	15.5	14.0
6			5.0	4.5	5.0	8.0	11.5	13.5	17.5	17.0	18.0	15.0
7			---	5.5	4.5	4.5	11.5	15.5	12.5	17.0	17.0	15.0
8			4.5	6.5	4.5	7.0	11.5	---	15.5	19.0	---	14.0
9			4.5	5.0	3.5	---	---	15.5	16.5	17.0	19.5	14.0
10			---	6.5	3.0	---	---	16.0	18.0	17.0	19.0	15.5
11			5.0	4.0	5.5	7.0	---	15.0	13.0	17.0	19.5	14.0
12			6.0	2.0	5.5	7.0	---	10.0	17.0	17.0	19.0	13.0
13			5.5	2.0	5.5	7.5	---	14.5	17.0	14.5	17.0	12.5
14			6.0	2.0	7.0	6.5	---	12.0	16.5	14.5	19.0	13.0
15			---	3.5	5.0	10.5	9.5	14.0	14.0	17.0	15.0	13.0
16			5.0	4.5	5.5	9.0	10.5	15.0	17.0	18.0	17.5	13.5
17			---	4.5	5.5	10.5	12.0	15.5	17.0	18.5	18.0	13.0
18			4.5	4.5	5.0	10.5	11.0	18.0	19.0	15.5	16.0	13.0
19			4.0	5.0	5.5	10.0	9.0	19.0	18.0	18.0	16.5	13.0
20			4.5	3.5	8.0	12.0	---	17.5	17.0	19.0	17.0	13.0
21			4.0	5.0	8.5	10.5	11.0	---	19.0	19.5	18.5	13.0
22			5.5	5.0	6.0	7.0	---	14.5	19.0	19.5	19.5	13.0
23			6.5	6.0	3.0	10.5	9.0	17.5	18.5	18.0	19.5	---
24			6.5	6.5	4.0	12.0	10.0	18.5	19.0	19.5	19.0	12.0
25			---	6.0	4.5	6.5	11.0	17.0	16.5	19.0	20.0	11.0
26			4.5	4.5	6.0	9.5	11.5	17.5	19.0	18.5	19.0	13.0
27			4.5	5.0	6.5	5.5	9.5	18.5	18.0	19.5	17.5	13.0
28			---	6.0	6.5	5.5	7.0	17.0	17.0	18.0	18.0	13.0
29			7.0	4.0	---	7.0	14.0	18.0	19.0	19.0	17.0	12.0
30			7.5	5.0	---	5.5	---	18.0	19.0	19.5	16.0	---
31			5.0	6.5	---	10.5	---	16.0	---	---	17.0	---

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV. 21...	0840	4.1	--	10	.11
JAN. 09...	1030	14	4.0	26	.98

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
NOV. 21...	0840	17	21	28	39	66	81	90	100	--	--
JAN. 09...	1030	39	50	57	69	79	84	86	96	98	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAMPLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
NOV. 21...	0840	1	1	5	20	56	69	75	80	96	100

04096325 SOAP CREEK AT LITCHFIELD RD NR LITCHFIELD, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	2.9			3.2			3.4	32	.35
2	2.9			3.2			3.4	30	.32
3	2.9			3.7			3.4	20	.22
4	2.9			4.5			3.4	31	.33
5	2.9			5.6			3.4	26	.28
6	2.9			4.3			3.4	22	.24
7	2.9			3.8			3.6	16	.19
8	3.0			3.7			3.9	16	.20
9	3.0			3.6			3.9	18	.22
10	3.0			3.5			3.9	17	.21
11	2.9			3.5			3.6	13	.15
12	2.9			3.5			3.6	16	.18
13	2.9			3.5			3.5	16	.18
14	2.9			3.8			3.8	9	.11
15	2.9			3.6			4.6	25	.36
16	3.0			3.6			5.0	16	.25
17	3.0			3.9			4.7	15	.22
18	3.0			3.6			4.7	16	.23
19	3.0			3.8			4.4	15	.21
20	3.0			3.8			4.3	17	.23
21	3.0			3.8			4.6	14	.20
22	3.0			3.9			4.3	3	.04
23	3.0			3.9			4.0	22	.28
24	2.9			3.9			4.1	15	.19
25	2.9			3.8			4.1	11	.14
26	2.9			3.5			4.1	8	.10
27	2.9			3.6			3.9	3	.04
28	2.9			3.6			4.0	9	.11
29	3.0			3.5			4.0	9	.11
30	3.2			3.4			4.0	7	.09
31	3.2			---			4.4	8	.11
MONTH	91.7			112.6			123.4	---	6.09

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	4.3	3	.03	10	21	.57	20	23	1.2
2	4.4	8	.10	9.7	12	.31	18	24	1.2
3	4.5	10	.12	9.1	12	.29	17	27	1.2
4	4.4	27	.32	8.8	6	.14	16	27	1.2
5	4.3	60	.70	8.8	16	.38	15	32	1.3
6	4.1	34	.38	8.5	9	.21	14	33	1.2
7	4.2	37	.42	8.1	11	.24	18	8	.39
8	6.5	39	.68	7.8	20	.42	18	14	.68
9	14	7	.26	7.4	8	.16	16	14	.60
10	14	20	.76	6.9	20	.37	15	13	.53
11	19	30	1.5	7.1	18	.35	14	19	.72
12	15	30	1.2	7.1	35	.67	16	22	.95
13	13	36	1.3	6.9	30	.56	17	28	1.3
14	12	31	1.0	6.7	23	.42	16	11	.48
15	10	36	.97	6.8	25	.46	15	28	1.1
16	11	28	.83	6.6	28	.50	15	12	.49
17	9.8	28	.74	7.9	25	.53	14	20	.76
18	9.7	32	.84	10	13	.35	15	19	.77
19	9.4	32	.81	9.4	12	.30	16	12	.52
20	9.0	43	.99	8.7	32	.75	15	11	.45
21	8.7	39	.92	8.5	27	.62	15	18	.73
22	8.5	30	.69	14	35	1.3	22	24	1.4
23	8.3	32	.72	53	90	13	21	17	.96
24	8.3	38	.85	54	39	5.7	23	20	1.2
25	8.7	13	.31	38	13	1.3	21	17	.96
26	8.6	29	.67	31	14	1.2	19	19	.97
27	8.0	15	.32	28	26	2.0	18	18	.87
28	7.8	28	.59	24	18	1.2	18	26	1.3
29	14	50	1.9	---	---	---	23	12	.75
30	13	14	.49	---	---	---	21	20	1.1
31	11	9	.27	---	---	---	19	18	.92
MONTH	287.5	---	21.68	412.8	---	34.30	540	---	28.20

04096325 SOAP CREEK AT LITCHFIELD RD NR LITCHFIELD, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	18	16	.78	28	33	2.5	33	22	1.9
2	18	19	.92	25	40	2.7	30	8	.63
3	19	11	.56	23	32	2.0	27	12	.84
4	17	11	.50	23	40	2.5	25	12	.78
5	17	9	.41	22	39	2.3	27	24	1.7
6	18	6	.29	48	22	2.9	25	14	.95
7	21	8	.45	37	22	2.2	22	13	.77
8	25	9	.61	31	39	3.3	21	8	.41
9	26	5	.35	28	25	1.9	19	65	3.2
10	24	12	.78	26	28	2.0	18	69	3.0
11	22	7	.42	24	66	4.3	23	77	4.6
12	21	52	2.9	28	27	2.0	28	41	3.0
13	20	46	2.5	27	25	1.8	24	43	2.6
14	19	41	2.1	25	24	1.6	21	54	2.8
15	19	57	2.9	24	38	2.5	24	68	4.0
16	18	54	2.6	22	38	2.3	26	74	4.8
17	18	42	2.0	21	36	2.0	22	76	4.1
18	20	37	2.0	20	26	1.4	20	87	4.2
19	65	67	13	19	55	2.8	18	58	2.5
20	40	32	3.5	19	48	2.5	18	60	2.4
21	33	35	3.1	19	35	1.8	17	43	1.6
22	29	46	3.6	21	36	1.9	15	23	.75
23	28	43	3.3	20	29	1.5	15	64	2.1
24	28	38	2.9	18	40	1.9	19	45	1.9
25	26	35	2.5	18	38	1.7	34	57	5.2
26	24	48	3.1	20	40	2.1	25	60	3.9
27	23	47	2.9	18	39	1.8	22	67	3.4
28	29	34	2.7	17	30	1.2	20	44	2.1
29	29	30	2.3	16	21	.85	22	55	3.0
30	26	40	2.8	29	30	2.2	19	61	2.8
31	---	---	---	42	28	3.1	---	---	---
MONTH	740	---	68.77	758	---	67.55	679	---	75.93

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	18	21	.85	6.6	47	.82	56	5	.78
2	16	26	.98	7.4	31	.61	41	3	.35
3	17	34	1.4	7.4	11	.22	32	13	1.2
4	22	8	.45	6.8	39	.72	27	22	1.7
5	19	15	.69	6.8	48	.88	25	26	1.9
6	17	27	1.2	6.8	22	.40	25	27	1.9
7	16	15	.57	6.4	63	1.1	22	25	1.6
8	15	45	1.7	6.0	49	.79	20	20	1.1
9	14	22	.77	6.0	36	.57	18	14	.72
10	13	20	.70	5.8	31	.49	18	35	1.7
11	13	40	1.3	6.0	37	.59	17	24	1.1
12	12	47	1.5	5.6	16	.25	17	55	2.5
13	12	38	1.1	5.6	11	.17	15	60	2.6
14	12	28	.83	5.6	11	.17	15	65	2.6
15	11	50	1.5	5.8	8	.13	14	58	2.2
16	11	40	1.2	5.8	14	.22	14	47	1.6
17	10	31	.84	5.6	6	.09	13	27	.95
18	10	47	1.3	5.4	19	.28	13	46	1.6
19	10	48	1.3	5.4	13	.19	13	47	1.5
20	9.8	56	1.5	5.3	36	.52	12	26	.84
21	9.3	65	1.6	7.4	39	.78	12	E 35	1.1
22	9.1	58	1.4	45	15	1.9	12	49	1.6
23	8.8	36	.85	27	8	.63	11	E 40	1.2
24	9.8	27	.70	20	11	.62	11	32	.95
25	8.6	4	.09	18	6	.31	11	28	.83
26	8.1	24	.52	16	10	.43	11	21	.57
27	7.9	50	1.1	14	26	.98	10	20	.54
28	7.4	47	.94	13	11	.36	9.8	21	.55
29	7.2	60	1.2	13	11	.39	9.6	22	.56
30	7.0	38	.71	16	28	1.2	9.8	50	1.3
31	6.8	---	---	77	11	2.4	---	---	---
MONTH	367.8	---	30.79	388.5	---	19.21	534.2	---	39.64
YEAR	5035.5		392.16						

E--ESTIMATED VALUE

04096326 SOAP CREEK AT ELY RD. NEAR LITCHFIELD, MICH.

LOCATION.--Lat 42°04'07", long 84°50'04", in NW¼ NE¼ sec.1, T.5 S., R.5 W., Branch County, at bridge on Ely Road, 4.3 mi (6.9 km) west of Litchfield.

DRAINAGE AREA.--13.1 mi^2 (33.9 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Sediment records: Water years 1974 and 1975 (partical-record station).

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
DEC., 1974											
19...	1315	--	8.6	170	40	91	24	4.8	1.3	283	0
JUNE, 1975											
17...	1200	23	3.4	10	40	89	22	5.9	1.2	278	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
DEC., 1974											
19...	232	80	11	.2	--	--	--	376	.51	--	330
JUNE, 1975											
17...	228	68	12	.0	.73	.00	.00	378	.51	23.5	310

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
DEC., 1974											
19...	94	3	.1	600	8.0	2.5	10	1	12.9	96	.0
JUNE, 1975											
17...	85	4	.1	620	8.2	19.5	15	2	--	--	22.5

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
OCT.					
08...	1115	3.3	10.5	17	.15
15...	1105	3.4	12.0	6	.06
30...	1040	4.2	13.5	16	.18
NOV.					
07...	1105	5.3	8.5	10	.14
26...	1120	4.5	3.0	8	.10
DEC.					
12...	1220	5.2	3.5	17	.24
JAN.					
20...	1040	13	.5	13	.47
FEB.					
12...	1215	9.4	2.5	6	.15
MAR.					
10...	1145	19	3.5	E20	--
24...	1150	25	7.5	2	.13
APR.					
21...	1130	80.	9.0	18	3.9
MAY					
05...	1115	26	13.0	21	1.5
19...	1130	22	19.0	24	1.4
JUNE					
09...	1205	22	18.0	9	.53
17...	1200	23	19.5	21	1.3
25...	1045	20	23.0	35	1.9
JULY					
16...	1145	12	21.0	33	1.1
31...	0945	9.3	23.0	12	.30
AUG.					
18...	1045	6.7	19.5	19	.34
SEP.					
17...	1110	15	16.5	6	.24

E - ESTIMATED VALUE

04096326 SOAP CREEK AT ELY RD. NEAR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
15...	1105	3.4	.01	.00	.00	.60	.60	.61	2.7
30...	1040	4.2	.01	.00	.00	.46	.46	.47	2.1
NOV.									
07...	1105	5.3	.16	.00	.07	.52	.59	.75	3.3
26...	1120	4.5	.10	.01	.09	.16	.25	.36	1.6
DEC.									
12...	1220	5.2	.11	.01	.06	.41	.47	.59	2.6
19...	1315	--	--	--	--	--	--	--	--
JAN., 1975									
20...	1040	13	.72	.00	.13	.62	.75	1.5	6.5
FEB.									
12...	1215	9.4	.66	.00	.12	.34	.46	1.1	5.0
MAR.									
10...	1145	19	1.0	.00	.09	.46	.55	1.6	6.9
24...	1150	25	.99	.01	.04	.42	.46	1.5	6.5
APR.									
21...	1130	80	.95	.00	.00	.83	.83	1.8	7.9
MAY									
05...	1115	26	.95	.01	.01	.60	.61	1.6	7.0
19...	1130	22	.76	.01	.02	.54	.56	1.3	5.9
JUNE									
09...	1205	22	.66	.01	.00	.58	.58	1.3	5.5
25...	1045	20	.66	.01	.06	1.1	1.2	1.9	8.3
JULY									
16...	1145	12	.60	.00	.03	.43	.46	1.1	4.7
31...	0945	9.3	.31	.01	.05	.42	.47	.79	3.5
AUG.									
18...	1045	6.7	.06	.01	.01	.47	.48	.55	2.4
SEP.									
17...	1110	15	.50	.01	.07	.50	.57	1.1	4.8

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
15...	.04	.01	.03	.00	7.2	12.0	6.6	63	13.5
30...	.03	.00	--	--	7.4	13.5	6.8	68	18.5
NOV.									
07...	.02	.01	--	--	7.9	8.5	8.7	76	8.0
26...	.01	.01	--	--	--	3.0	9.8	75	-.5
DEC.									
12...	.02	.02	--	--	7.2	3.5	11.7	91	2.0
19...	--	.00	--	--	8.0	2.5	12.9	96	.0
JAN., 1975									
20...	.02	.00	--	--	--	.5	--	--	-7.0
FEB.									
12...	.01	.00	--	--	7.1	2.5	--	--	-1.5
MAR.									
10...	.02	.00	--	--	7.0	3.5	--	--	-.5
24...	.01	.00	--	--	--	7.5	--	--	14.5
APR.									
21...	.06	.01	--	--	8.0	9.0	10.6	95	8.5
MAY									
05...	.01	.00	--	--	8.0	13.0	10.0	98	14.5
19...	.02	.00	--	--	8.1	19.0	8.9	98	25.5
JUNE									
09...	.02	.00	--	--	8.2	18.0	--	--	21.0
25...	.01	.00	--	--	8.1	23.0	7.0	83	21.5
JULY									
16...	.02	.00	--	--	8.2	21.0	7.3	84	26.0
31...	.01	.00	--	--	7.9	23.0	--	--	25.0
AUG.									
18...	.02	.00	--	--	8.0	19.5	--	--	21.0
SEP.									
17...	.01	.00	--	--	8.2	16.5	7.4	78	17.0

04096326 SOAP CREEK AT ELY RD. NEAR LITCHFIELD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
04...	1050	4.9	.00	.0	.0	0	.00	.3	.00	<.1	.00	.0

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
04...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
FEB., 1975											
04...	.00	.0	.00	.0	.00	.0	.00	.0	.00	.0	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
FEB., 1975											
04...	0	0	0	.00	.0	.00	0	.00	0	.00	0

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
FEB., 1975											
04...	0	0	<10	0	1	0	.0	0	0	0	6

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.

LOCATION.--Lat 42°07'51", long 84°51'56", in SW¼ SW¼ sec.11, T.4 S., R.5 W., Calhoun County, at gaging staiont on left bank 5 ft (2 m) upstream from bridge on 22 Mile Road at Clarendon, 0.4 mi (0.6 km) upstream from Andrus Drain, and at mile 171 (275 km).

DRAINAGE AREA.--144 mi^2 (373 km^2).

PERIOD OF RECORD.--Chemical analyses: June 1974 to September 1975.
Water temperatures: July 1974 to September 1975.
Sediment records: July 1974 to September 1975.

EXTREMES.--1974-75:
Sediment concentrations: Maximum daily, 45 mg/l Aug. 13, 1975; 1 mg/l on many days during 1974 and 1975.
Sediment discharges: Maximum daily, 17 tons (15 tons) June 10; minimum daily, 0.11 ton (0.10 tonne) Sept. 6, 1974, Oct. 23-26.

REMARKS.--Flow affected by ice Dec. 2-6, 9, 10, Jan. 14-27, Feb. 9-15.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
DEC., 1974											
19...	1230	74	7.9	240	60	81	22	21	1.8	271	0
JUNE, 1975											
17...	1045	193	8.1	80	100	75	20	9.0	1.2	275	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED ORTHO. PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (PO4) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	DISSOLVED SOLIDS (TONS PER DAY)	HARDNESS (CA,MG) (MG/L)
DEC., 1974											
19...	222	51	39	.3	--	--	--	348	.47	69.5	290
JUNE, 1975											
17...	226	32	20	.7	.83	.03	.09	362	.49	189	270

DATE	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
DEC., 1974											
19...	71	13	.5	630	8.0	2.0	20	1	12.6	95	-1.0
JUNE, 1975											
17...	44	7	.2	550	7.9	19.0	32	30	--	--	22.5

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)
OCT., 1974									
15...	0910	38	.82	.01	.00	.53	.53	1.4	6.0
30...	0835	42	.76	.00	.00	.46	.46	1.2	5.4
NOV.									
07...	0910	77	.99	.01	.07	.37	.44	1.4	6.4
26...	0910	55	1.2	.01	.01	.39	.40	1.6	7.1
DEC.									
12...	1350	64	1.3	.02	.06	.31	.37	1.7	7.4
19...	1230	74	--	--	--	--	--	--	--
JAN., 1975									
09...	1250	119	1.1	.01	.09	.63	.72	1.8	8.1
21...	1000	109	1.7	.01	.10	.62	.72	2.4	11
FEB.									
12...	1420	88	1.4	.01	.18	.56	.74	2.1	9.5
26...	1200	355	.99	.01	.09	.59	.68	1.7	7.4
MAR.									
10...	0915	181	1.1	.00	.04	.48	.52	1.6	7.2
19...	1520	E150	.82	.00	.00	.55	.55	1.4	6.2
24...	0930	220	.74	.01	.02	.52	.54	1.3	5.7
APR.									
21...	0925	251	.63	.00	.01	.64	.65	1.3	5.7
MAY									
05...	0910	233	.58	.02	.10	.59	.69	1.3	5.7
19...	0910	181	.60	.04	.10	.74	.84	1.5	6.6
JUNE									
06...	0910	234	.57	.02	.05	.57	.62	1.2	5.4
25...	0805	150	.90	.02	.06	1.3	1.4	2.3	10
JULY									
16...	0935	92	1.4	.01	.01	1.2	1.2	2.6	12
31...	0810	58	.99	.01	.01	.47	.48	1.5	6.6
AUG.									
18...	0915	59	1.2	.00	.01	.55	.56	1.8	7.8
SEP.									
17...	0920	102	1.4	.00	.00	.52	.52	1.9	8.5

DATE	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	AIR TEMPERATURE (DEG C)
OCT., 1974									
15...	.11	.08	.10	.00	7.6	11.5	8.3	80	11.0
30...	.08	.05	--	--	7.3	12.5	7.6	73	17.0
NOV.									
07...	.17	.15	--	--	7.8	6.5	9.7	81	4.0
26...	.06	.10	--	--	7.7	1.5	11.5	86	-2.0
DEC.									
12...	.12	.09	--	--	7.0	2.0	12.3	92	2.0
19...	--	.09	--	--	8.0	2.0	12.6	95	-1.0
JAN., 1975									
09...	.11	.08	--	--	--	3.0	--	--	--
21...	.07	.05	--	--	--	.5	--	--	-1.0
FEB.									
12...	.08	.06	--	--	7.1	.5	--	--	-1.5
26...	.09	.06	--	--	--	.5	--	--	.0
MAR.									
10...	.05	.03	--	--	7.0	.5	--	--	1.0
19...	.05	.04	--	--	--	7.0	--	--	11.5
24...	.06	.02	--	--	--	7.0	--	--	12.0
APR.									
21...	.05	.01	--	--	7.8	8.0	9.8	85	5.5
MAY									
05...	.07	.04	--	--	7.9	12.0	7.5	72	10.5
19...	.10	.06	--	--	7.7	19.5	5.7	64	23.0
JUNE									
06...	.09	.05	--	--	7.8	18.5	--	--	16.5
25...	.19	.10	--	--	8.2	22.0	6.0	70	18.5
JULY									
16...	.10	.05	--	--	8.2	19.0	6.9	76	22.5
31...	.08	.04	--	--	8.1	22.0	--	--	21.5
AUG.									
18...	.11	.07	--	--	8.3	19.0	--	--	18.5
SEP.									
17...	.08	.05	--	--	8.2	14.5	7.4	75	14.5

E - ESTIMATED VALUE

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	ALDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL CHLORDANE (UG/L)	CHLORDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDD (UG/L)	DDD IN BOTTOM MATERIAL (UG/KG)	TOTAL DDE (UG/L)	DDE IN BOTTOM MATERIAL (UG/KG)	TOTAL DDT (UG/L)	DDT IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
04...	0915	5.1	.00	.0	.0	0	.00	.8	.00	.3	.00	.0
JUNE												
17...	1045	7.7	.00	--	.0	--	.00	--	.00	--	.00	--

DATE	TOTAL DIAZINON (UG/L)	DIAZINON IN BOTTOM MATERIAL (UG/KG)	TOTAL DIELDRIN (UG/L)	DIELDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ENDRIN (UG/L)	ENDRIN IN BOTTOM MATERIAL (UG/KG)	TOTAL ETHION (UG/L)	ETHION IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR (UG/L)	HEPTACHLOR IN BOTTOM MATERIAL (UG/KG)	TOTAL HEPTACHLOR EPOXIDE (UG/L)	HEPTACHLOR EPOXIDE IN BOTTOM MATERIAL (UG/KG)
FEB., 1975												
04...	.00	.0	.00	.2	.00	.0	.00	.0	.00	.0	.00	.0
JUNE												
17...	.00	--	.00	--	.00	--	.00	--	.00	--	.00	--

DATE	TOTAL LINDANE (UG/L)	LINDANE IN BOTTOM MATERIAL (UG/KG)	TOTAL MALATHION (UG/L)	MALATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	METHYL PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL METHYL TRITHION (UG/L)	METHYL TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PARATHION (UG/L)	PARATHION IN BOTTOM MATERIAL (UG/KG)	TOTAL PCB (UG/L)
FEB., 1975												
04...	.00	.0	.00	.0	--	.00	.0	.00	.0	.00	.0	.0
JUNE												
17...	.00	--	.00	--	.00	.00	--	.00	--	.00	--	.0

DATE	PCB IN BOTTOM MATERIAL (UG/KG)	TOTAL TOXAPHENE (UG/L)	TOXAPHENE IN BOTTOM MATERIAL (UG/KG)	TOTAL TRITHION (UG/L)	TRITHION IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4-D (UG/L)	2,4-D IN BOTTOM MATERIAL (UG/KG)	TOTAL 2,4,5-T (UG/L)	2,4,5-T IN BOTTOM MATERIAL (UG/KG)	TOTAL SILVEX (UG/L)	SILVEX IN BOTTOM MATERIAL (UG/KG)
FEB., 1975											
04...	32	0	0	.00	.0	.00	0	.00	0	.03	0
JUNE											
17...	--	0	--	.00	--	.02	--	.00	--	.00	--

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	TOTAL SILVER (AG) (UG/L)	TOTAL ZINC (ZN) (UG/L)
FEB., 1975											
04...	0	1	<10	0	1	0	.0	1	0	0	6
JUNE											
17...	--	--	--	--	--	--	--	--	--	--	--

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1900 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1										---	20.5	20.0
2										---	20.5	15.0
3										---	22.5	16.0
4										---	19.5	17.0
5										---	21.0	---
6										---	22.0	17.5
7										---	22.0	18.0
8										---	23.5	19.0
9										---	24.0	20.0
10										---	23.5	21.0
11										---	23.0	22.0
12										---	24.5	23.0
13										---	25.0	20.0
14										---	24.0	18.0
15										---	23.5	17.5
16										---	23.0	18.0
17										---	22.5	19.0
18										---	23.0	---
19										---	24.0	19.0
20										---	25.0	18.0
21										---	25.0	17.0
22										---	25.5	14.5
23										---	24.5	13.0
24										---	22.0	13.0
25										---	22.0	15.5
26										---	23.5	16.0
27										25.0	23.0	17.0
28										24.0	20.5	18.0
29										24.5	21.0	16.0
30										22.5	22.0	12.0
31										22.0	22.0	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1900 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	17.5	0.5	2.0	---	---	7.5	19.0	---	25.0	26.0	21.5
2	9.0	16.5	1.5	1.0	1.5	---	4.5	17.0	15.5	---	24.0	21.5
3	8.5	14.0	---	---	1.0	0.5	3.0	17.0	17.0	24.0	---	19.5
4	---	11.0	0.0	2.0	1.5	1.0	5.0	15.0	17.0	24.5	---	---
5	14.0	9.0	0.0	1.0	2.0	1.5	7.0	17.0	20.5	---	22.5	23.5
6	10.5	8.0	0.5	1.0	2.0	---	5.5	17.0	20.0	24.0	22.0	---
7	---	8.5	0.5	---	0.5	2.0	8.0	17.0	---	24.0	---	18.5
8	12.0	8.0	---	---	1.0	2.0	9.0	16.5	---	27.0	---	18.0
9	13.0	8.0	1.0	3.5	1.0	2.0	7.0	19.0	---	23.0	---	17.0
10	14.0	8.5	---	---	0.0	2.0	7.0	---	---	22.5	24.5	17.5
11	14.0	9.0	1.0	3.0	0.5	3.0	7.0	20.0	21.0	---	24.5	18.0
12	---	7.0	---	---	0.0	3.0	8.5	16.0	---	21.0	25.5	---
13	13.0	6.0	3.0	0.0	0.0	---	10.0	18.0	20.5	---	---	---
14	13.5	3.0	3.0	0.0	0.0	3.0	8.0	17.0	21.5	---	29.0	---
15	13.0	---	2.0	3.5	0.0	4.0	8.5	18.5	20.0	---	---	---
16	11.5	2.5	2.5	0.0	0.5	4.5	9.0	18.0	20.0	23.0	---	---
17	12.0	5.0	2.0	0.0	---	6.0	12.0	19.0	22.0	24.0	24.0	16.0
18	9.5	6.5	2.0	0.0	---	7.0	8.0	22.0	23.0	---	---	16.0
19	8.5	7.5	---	0.0	1.0	8.0	12.0	23.5	24.0	---	---	16.0
20	9.0	7.5	1.0	0.0	2.0	9.0	9.0	---	24.5	---	22.0	15.0
21	7.0	5.5	1.0	0.0	---	9.0	11.5	23.0	25.0	---	---	14.0
22	8.5	5.0	1.5	0.0	3.5	8.0	10.0	20.5	26.0	---	22.0	13.0
23	10.0	6.0	2.0	0.5	1.5	8.5	12.0	---	---	25.0	---	13.0
24	11.0	---	3.0	---	1.5	---	13.0	---	---	---	---	13.5
25	12.5	5.5	3.0	0.0	---	5.5	---	---	---	---	---	12.0
26	11.0	2.5	1.0	0.0	0.0	5.5	14.0	---	28.0	---	24.0	12.0
27	11.0	1.5	1.5	0.0	---	---	11.0	22.5	---	---	22.5	13.0
28	11.5	---	---	---	---	---	9.0	21.0	26.0	---	23.5	13.0
29	11.5	3.0	3.0	---	---	---	16.0	22.0	25.5	24.0	---	---
30	15.0	2.0	4.5	1.0	---	3.0	17.0	---	25.0	---	---	---
31	17.0	---	2.0	---	---	5.0	---	19.0	---	---	22.0	---

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.--CONTINUED

SUSPENDED SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
NOV. 20...	0910	62	--	2	.33
JAN. 09...	1250	193	3.0	14	7.3
JUNE 17...	1045	193	19.0	20	10

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
NOV. 20...	0910	67	71	77	84	86	92	94	98	100	--
JAN. 09...	1250	58	59	64	68	73	77	80	91	100	--
JUNE 17...	1045	50	57	66	78	84	88	89	94	97	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	NUMBER OF SAMPLING POINTS	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
NOV. 20...	0910	1	1	1	8	46	62	71	79	94	100

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1973 TO SEPTEMBER 1974

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	120	---	---	52	9	1.3	37	16	1.6
2	110	---	---	56	7	1.1	37	5	.50
3	105	---	---	55	4	.59	40	8	.86
4	102	---	---	53	2	.29	42	14	1.6
5	106	---	---	55	8	1.2	41	6	.66
6	104	---	---	52	6	.84	40	1	.11
7	100	---	---	49	6	.79	39	3	.32
8	95	---	---	48	5	.65	38	2	.21
9	89	---	---	48	5	.65	38	7	.72
10	84	---	---	48	5	.65	37	4	.40
11	81	---	---	50	4	.54	37	4	.40
12	78	---	---	52	3	.42	42	16	1.8
13	76	---	---	49	15	2.0	56	36	5.4
14	73	---	---	47	28	3.6	61	6	.99
15	70	---	---	45	6	.73	54	8	1.2
16	66	---	---	45	6	.73	48	8	1.0
17	63	---	---	53	4	.57	45	9	1.1
18	62	---	---	54	20	2.9	43	4	.46
19	60	---	---	52	13	1.8	42	3	.34
20	59	---	---	48	11	1.4	41	5	.55
21	58	---	---	45	3	.36	40	5	.54
22	56	---	---	43	4	.46	39	3	.32
23	58	---	---	42	4	.45	39	2	.21
24	60	---	---	42	8	.91	38	2	.21
25	58	---	---	41	17	1.9	38	2	.21
26	56	32	4.8	40	6	.65	37	3	.30
27	54	15	2.2	40	5	.54	37	12	1.2
28	53	11	1.6	39	19	2.0	39	9	.95
29	55	8	1.2	39	14	1.5	41	5	.55
30	56	17	2.5	39	10	1.1	42	4	.45
31	55	10	1.5	38	7	.72	---	---	---
MONTH	2322	---	---	1459	---	33.34	1248	---	25.16

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	42	E 3	.34	52	E 2	.28	51	3	.41
2	40	E 3	.32	50	2	.27	51	2	.29
3	39	E 3	.32	50	2	.27	50	4	.56
4	38	E 3	.31	61	2	.33	51	4	.63
5	37	2	.20	77	1	.21	52	5	.85
6	35	3	.28	84	1	.23	54	15	2.6
7	35	E 3	.28	78	1	.21	56	6	.91
8	34	E 3	.28	70	E 2	.38	61	3	.49
9	34	E 3	.28	65	1	.18	64	4	.71
10	34	E 3	.28	62	E 5	.84	64	3	.57
11	34	4	.37	60	2	.32	64	5	.86
12	35	E 4	.38	58	E 2	.31	63	3	.51
13	34	5	.45	57	E 2	.31	64	4	.69
14	36	2	.19	59	1	.16	65	5	.88
15	38	5	.51	58	1	.16	68	3	.55
16	39	E 4	.42	57	1	.15	77	2	.42
17	42	3	.34	59	4	.64	80	E 2	.43
18	45	2	.24	61	1	.16	77	E 3	.62
19	44	E 2	.24	62	1	.17	74	3	.60
20	43	2	.23	62	2	.33	70	E 3	.57
21	41	E 2	.22	61	1	.16	70	E 3	.57
22	42	E 2	.23	59	E 2	.32	73	E 2	.39
23	42	E 1	.11	59	1	.16	74	1	.20
24	42	1	.11	60	E 2	.32	75	E 2	.41
25	41	E 1	.11	58	3	.47	77	E 2	.42
26	40	1	.11	55	2	.30	76	1	.21
27	40	3	.32	53	4	.57	75	E 2	.41
28	39	E 2	.21	53	5	.72	74	E 2	.40
29	40	E 2	.22	51	8	1.1	73	2	.39
30	43	E 2	.23	51	5	.69	74	3	.60
31	50	1	.14	---	---	---	76	E 2	.41
MONTH	1218	---	8.28	1802	---	10.72	2073	---	18.56

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	78	1	.21	156	2	.84	401	E 5	5.4
2	73	1	.20	148	3	1.2	369	E 5	5.0
3	77	1	.21	135	2	.73	331	5	4.5
4	71	8	1.5	121	11	3.6	266	3	2.2
5	64	18	3.1	114	9	2.8	216	E 3	1.7
6	68	E 20	3.7	109	11	3.2	193	2	1.0
7	68	20	3.7	103	12	3.3	191	E 2	1.0
8	76	9	1.8	88	17	4.0	191	1	.52
9	116	7	2.2	95	11	3.3	192	1	.52
10	146	10	3.9	94	11	3.5	183	2	.99
11	180	16	7.8	92	13	3.5	179	3	1.4
12	184	10	5.0	88	15	4.1	175	1	.47
13	161	10	4.3	86	10	2.6	172	1	.46
14	150	5	2.3	86	9	2.1	169	1	.46
15	140	14	7.7	85	2	.46	168	3	1.4
16	130	4	2.2	86	6	1.4	171	2	.92
17	120	8	4.7	91	9	2.2	172	2	.93
18	115	2	1.1	112	9	2.7	175	3	1.4
19	110	6	2.9	120	7	2.3	181	4	2.0
20	110	2	.99	113	5	1.5	183	2	.99
21	110	2	.73	110	3	.89	182	2	.98
22	110	E 2	.70	117	4	1.3	191	2	1.0
23	110	2	.73	181	10	4.9	201	4	2.2
24	115	3	1.1	277	7	5.2	217	4	2.3
25	120	4	1.5	308	4	3.3	225	2	1.2
26	125	4	1.6	357	2	1.9	226	3	1.8
27	120	3	1.0	403	E 4	4.4	221	3	1.8
28	113	3	.92	417	E 4	4.5	217	E 3	1.8
29	126	5	1.7	---	---	---	220	2	1.2
30	144	7	2.7	---	---	---	218	E 2	1.2
31	154	4	1.7	---	---	---	214	E 2	1.2
MONTH	3584	---	73.39	4292	---	75.72	6610	---	49.94

E - ESTIMATED VALUE

04096340 ST. JOSEPH RIVER AT CLARENDON, MICH.--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE (TONS/DAY), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	208	2	1.1	247	4	2.7	211	14	8.0
2	202	2	1.1	249	5	3.4	234	9	5.7
3	201	1	.54	247	8	5.3	231	9	5.6
4	204	1	.55	242	6	3.9	229	18	11
5	201	2	1.1	236	6	3.8	228	16	9.8
6	198	1	.53	251	5	3.4	221	16	9.5
7	197	2	1.1	259	6	4.2	215	23	13
8	199	6	3.2	276	8	6.0	210	E 20	11
9	203	4	2.2	283	9	6.9	202	18	9.8
10	208	3	1.7	285	E 9	6.9	196	32	17
11	209	5	2.8	277	9	6.7	193	20	10
12	207	8	4.5	275	10	7.4	198	11	5.9
13	204	3	1.7	268	10	7.2	204	14	7.7
14	195	7	3.7	255	14	9.6	200	8	4.4
15	188	8	4.1	241	7	4.6	192	19	10
16	178	10	4.8	225	10	6.1	193	11	5.8
17	166	10	4.5	209	10	5.6	193	22	12
18	163	8	3.5	194	12	6.3	193	18	9.5
19	196	10	5.3	179	13	6.3	186	16	8.2
20	228	7	4.3	167	E 12	5.4	180	24	12
21	252	6	4.1	174	12	5.6	171	16	7.6
22	266	4	2.9	182	12	5.9	161	34	15
23	277	1	.75	183	9	4.4	150	30	13
24	284	2	1.5	190	8	4.1	144	33	13
25	281	2	1.5	191	E 9	4.6	151	17	7.2
26	270	3	2.2	192	10	5.2	179	9	4.4
27	254	2	1.4	191	9	4.6	199	E 9	4.9
28	245	1	.66	182	13	6.4	204	9	5.1
29	243	6	3.9	162	18	7.9	205	9	5.1
30	243	4	2.6	157	E 15	6.4	204	12	6.7
31	---	---	---	179	11	5.3	---	---	---
MONTH	6570	---	73.83	6848	---	172.1	5877	---	267.9

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	186	21	11	49	12	1.6	273	6	4.4
2	163	31	14	54	9	1.3	289	6	4.7
3	153	28	12	54	15	2.6	275	7	5.2
4	157	18	7.8	64	10	1.7	244	6	4.0
5	161	20	8.8	60	8	1.3	215	6	3.5
6	151	20	8.2	59	10	1.6	201	6	3.3
7	137	15	5.6	58	10	1.6	184	10	5.0
8	134	24	8.7	53	E 10	1.4	164	9	4.0
9	128	24	8.4	50	10	1.4	143	11	4.2
10	116	22	6.9	48	15	1.9	129	12	4.2
11	104	24	6.8	49	12	1.6	120	15	4.9
12	98	18	4.8	49	12	1.6	117	13	4.1
13	94	E 21	5.4	47	45	5.7	112	9	2.7
14	97	24	6.3	46	18	2.2	104	8	2.2
15	95	21	5.4	46	E 15	1.9	95	13	3.3
16	82	22	5.5	53	10	1.4	90	14	3.4
17	75	16	3.2	55	12	1.8	88	6	1.4
18	73	23	4.5	51	6	.83	86	8	1.9
19	75	26	5.3	50	4	.54	86	9	2.1
20	75	E 22	4.5	49	6	.79	88	8	1.9
21	70	17	3.2	54	E 16	2.8	90	7	1.7
22	65	14	2.5	204	25	14	89	7	1.7
23	61	12	2.0	221	9	5.4	86	6	1.4
24	71	12	2.3	210	9	5.1	82	4	.89
25	73	16	3.2	186	28	14	79	3	.64
26	70	20	3.8	170	12	5.5	78	4	.84
27	63	12	2.0	147	8	3.2	77	2	.42
28	58	15	2.3	122	10	3.3	75	1	.20
29	55	20	3.0	111	13	3.9	74	2	.40
30	53	9	1.3	139	E 12	4.5	76	2	.41
31	51	16	2.2	227	12	7.4	---	---	---
MONTH	3044	---	170.9	2855	---	103.86	3909	---	79.00
YEAR	48642.0		1104.70						

E--ESTIMATED VALUE

04106000 KALAMAZOO RIVER AT COMSTOCK, MICH.

LOCATION.--Lat 42°17'05", long 85°50'50", in NE¼ sec.19, T.2 S., R.10 W., Kalamazoo County, temperature recorder at gaging station 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 mi^2 (2,620 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: August 1964 to September 1971 (partial-record station), October 1971 to December 1974 (discontinued).
Water temperatures: December 1968 to September 1975 (discontinued).

EXTREMES.--1974-75:
Water temperatures: Maximum 33.0°C July 30 to Aug. 1; minimum, freezing point on Jan. 25, 27, Feb. 20, 21.
Period of record:
Water temperatures: Maximum, 32.0°C July 15, 17, Aug. 29, 1969; minimum, freezing point on many days during winter period.

REMARKS.--Chemical analyses for year published in Water Resources Data for Michigan, 1974, Part 2, Water Quality Records. No temperature record Oct. 10-21, Oct. 25 to Nov. 21, Dec. 26, Jan. 2, 4, 5, 23, Feb. 7-14. Flow regulated by powerplant above station. A listing of periodic temperature measurements for this station is on page 536.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	6.0	---	---	6.5	6.0	2.5	0.5	6.5	5.0	2.0	2.0
2	8.5	5.0	---	---	10.0	6.0	---	---	6.5	5.0	2.5	2.0
3	13.0	4.0	---	---	6.5	3.0	2.5	2.0	6.0	4.5	3.0	2.0
4	15.0	7.0	---	---	6.5	2.0	---	---	6.0	4.5	3.0	2.0
5	15.0	10.0	---	---	8.0	2.5	---	---	6.0	4.0	3.5	2.0
6	15.5	9.5	---	---	7.5	2.0	3.5	1.0	5.0	1.5	3.5	2.0
7	10.0	6.0	---	---	7.5	5.5	5.5	2.5	---	---	4.0	2.5
8	11.5	5.0	---	---	6.0	3.0	6.0	4.0	---	---	4.0	2.5
9	12.0	8.0	---	---	4.5	2.0	5.5	4.0	---	---	2.5	2.0
10	---	---	---	---	6.0	1.5	6.0	5.0	---	---	4.0	2.0
11	---	---	---	---	6.5	2.5	6.5	6.0	---	---	4.0	2.0
12	---	---	---	---	5.5	5.0	6.0	4.5	---	---	4.0	3.0
13	---	---	---	---	5.0	5.0	5.0	4.5	---	---	5.0	3.0
14	---	---	---	---	5.0	4.5	5.5	4.5	---	---	5.0	2.5
15	---	---	---	---	4.5	3.5	5.5	5.5	2.0	1.0	4.5	2.5
16	---	---	---	---	5.0	4.5	6.0	5.0	2.5	2.0	4.5	3.5
17	---	---	---	---	5.0	4.5	5.5	5.0	3.0	2.5	6.5	3.5
18	---	---	---	---	4.5	3.5	5.5	5.5	3.5	3.0	5.5	4.0
19	---	---	---	---	4.0	3.5	5.5	4.5	4.0	2.0	6.5	5.0
20	---	---	---	---	3.5	1.5	5.5	4.5	5.5	0.0	6.0	5.0
21	---	---	---	---	2.5	1.5	4.5	3.5	7.0	0.0	7.0	6.0
22	16.5	7.5	10.5	8.0	2.0	0.5	4.5	2.5	4.5	2.5	6.5	5.5
23	16.0	11.0	14.5	8.0	4.0	1.5	---	---	3.5	3.0	5.5	5.5
24	17.5	10.0	14.5	9.5	4.0	2.0	6.5	3.0	4.5	3.5	6.5	5.5
25	---	---	9.5	6.0	2.0	0.0	6.0	3.5	4.5	3.5	7.0	6.0
26	---	---	8.5	3.5	---	---	4.0	3.5	3.5	3.0	6.0	5.0
27	---	---	8.5	6.0	3.0	0.0	5.5	2.5	3.0	2.5	6.0	4.5
28	---	---	7.5	6.5	3.0	0.5	6.5	3.0	2.5	2.0	4.5	4.0
29	---	---	10.5	6.5	4.0	2.0	6.0	4.0	---	---	4.0	4.0
30	---	---	7.5	5.5	4.5	1.0	6.0	6.0	---	---	4.0	3.5
31	---	---	---	---	3.0	1.0	6.5	5.0	---	---	4.5	3.5
MONTH	---	---	---	---	10.0	0.0	6.5	0.5	---	---	7.0	2.0

04106000 KALAMAZOO RIVER AT COMSTOCK, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	5.5	4.0	14.5	14.0	20.0	19.5	28.0	19.0	33.0	23.0	20.0	19.5
2	5.5	4.0	16.5	15.0	19.5	19.0	27.0	19.0	26.5	24.0	20.5	19.5
3	5.0	3.5	16.0	16.0	19.5	19.0	25.5	20.0	28.5	24.5	20.5	20.0
4	5.0	3.5	16.5	16.0	19.5	18.5	30.0	19.0	31.5	22.5	20.0	19.5
5	4.0	4.0	17.0	16.0	20.0	19.0	30.0	19.0	27.5	23.5	20.0	19.5
6	5.0	4.0	17.5	16.0	20.0	19.0	28.0	19.5	28.0	22.5	19.5	18.0
7	7.0	5.0	18.5	17.0	19.5	18.5	28.0	21.0	31.0	19.5	18.0	18.0
8	7.5	5.5	18.0	17.5	18.5	18.0	27.0	19.5	31.0	20.0	19.0	18.0
9	7.0	6.5	18.5	17.5	20.0	18.0	26.5	17.0	31.0	21.0	19.0	18.0
10	6.5	6.5	18.5	18.0	20.5	18.0	23.5	18.0	30.0	23.0	19.0	18.0
11	7.0	6.5	18.5	18.0	20.5	19.0	25.5	15.0	31.0	22.0	19.0	18.0
12	7.0	6.5	19.0	18.5	20.5	19.0	26.0	15.0	30.5	22.5	19.0	17.5
13	7.0	6.5	19.5	18.0	21.5	19.0	26.0	15.5	27.0	23.0	17.5	16.0
14	8.5	7.0	19.0	18.0	20.0	19.5	20.5	15.0	30.0	20.0	16.0	15.0
15	8.5	7.0	19.0	18.0	20.5	20.0	26.5	17.0	24.0	21.0	18.0	16.0
16	8.5	7.5	19.0	17.0	20.5	20.0	28.0	17.5	29.5	19.5	19.0	15.5
17	8.5	7.5	19.0	17.5	20.5	20.0	28.0	18.0	27.5	21.5	19.5	16.0
18	9.5	9.0	19.0	18.0	21.5	20.5	24.0	19.0	26.0	20.0	19.0	16.0
19	9.5	9.0	22.5	18.0	22.0	21.5	24.0	20.0	26.5	19.5	19.0	15.0
20	9.5	9.0	23.0	19.0	24.0	22.0	26.0	19.5	27.0	20.0	17.5	13.0
21	10.0	9.5	22.0	21.0	23.0	22.5	28.0	18.0	28.0	21.0	15.5	14.0
22	10.5	9.5	22.0	21.0	24.0	22.5	28.0	17.5	24.0	22.0	17.0	13.0
23	11.5	11.5	22.0	20.5	26.0	23.5	29.0	19.5	23.5	22.5	17.5	11.5
24	12.0	12.0	22.0	21.0	24.5	21.0	24.5	19.0	24.0	23.0	17.0	13.0
25	12.0	12.0	21.5	21.0	23.5	23.0	26.5	17.5	24.5	23.5	14.5	13.0
26	12.0	11.5	21.5	21.5	23.0	21.5	29.0	16.5	24.0	23.0	16.5	13.5
27	12.5	12.0	21.5	21.0	23.0	22.0	27.0	19.0	24.0	22.5	19.5	11.0
28	13.0	12.5	21.5	21.0	24.0	22.0	29.0	18.5	24.0	22.0	20.5	10.5
29	14.0	13.0	21.5	21.0	24.0	22.0	32.5	19.5	23.5	21.5	18.0	12.0
30	14.0	14.0	21.0	20.0	25.5	22.5	33.0	21.0	23.0	21.0	19.5	13.0
31	---	---	21.0	20.0	---	---	33.0	22.0	21.0	20.5	---	---
MONTH	14.0	3.5	23.0	14.0	26.0	18.0	33.0	15.0	33.0	19.5	20.5	10.5
YEAR	33.0	0.0										

04108690 KALAMAZOO RIVER AT SAUGATUCK, MICH.
(National stream-quality accounting network and pesticide station)

LOCATION.--Lat 42°38'50" long 86°11'53", in NE¼ sec.16, T.3N., R.16 W., Allegan County, at bridge on Old US-31 between Saugatuck and Douglas, 7.9 mi (12.7 km) downstream from Rabbit River, 17.6 mi (28.3 km) downstream from gaging station near Fennville and 2.9 mi (4.7 km) upstream from mouth.

DRAINAGE AREA.--2,020 mi^2 (5,230 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1973 to September 1975.
Specific conductance: February 1974 to September 1975.
Water temperature: May to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 590 micromhos Sept. 30; minimum observed, 321 micromhos Apr. 22.
Water temperatures: Maximum observed, 29.0°C Aug. 1.
Period of record:
Specific conductance: Maximum observed 590 micromhos on several days during 1974 and 1975; minimum observed, 321 micromhos Apr. 22, 1975.

REMARKS.--Temperature reported to nearest 1.0°C. Water discharge measurements are made at time of monthly sampling.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
02...	1145	1410	2.8	73	22	25	2.3	286	0	235	52	37
NOV.												
08...	1000	1540	8.1	67	22	21	2.6	325	0	266	48	32
DEC.												
03...	1330	1870	9.6	76	21	19	2.0	270	0	221	55	31
JAN.												
06...	1430	1290	8.4	73	22	18	2.0	260	0	213	50	33
FEB.												
03...	1300	2620	8.0	62	17	14	2.2	200	0	164	49	26
MAR.												
10...	1300	2460	6.6	61	18	14	2.9	210	0	172	45	23
31...	1300	--	5.6	65	19	12	2.0	230	0	189	47	22
MAY												
05...	1500	3560	5.6	61	17	12	2.3	216	0	177	41	19
JUNE												
02...	1330	2940	6.6	66	19	13	1.7	244	0	200	34	23
JULY												
07...	1400	1340	5.3	65	20	18	1.7	268	0	220	37	29
AUG.												
04...	1330	1090	5.7	56	20	21	2.0	236	0	194	39	34
SEP.												
08...	1300	2920	10	63	17	12	2.2	216	0	177	41	21

DATE	TOTAL IRON (FE) (UG/L)	DISSOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	TOTAL SELENIUM (SE) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
OCT.												
02...	360	290	35	35	68	63	.0	.0	0	0	20	10
JAN.												
06...	400	10	11	2	60	50	.1	.1	0	0	20	0
MAR.												
31...	530	10	5	2	50	20	.1	.0	0	0	30	20
JULY												
07...	420	20	18	6	60	30	.2	.2	0	0	70	10

04108690 KALAMAZOO RIVER AT SAUGATUCK, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
02...	.2	.58	.86	1.4	.10	466	356	270	35	16	.7	610
NOV.												
08...	.3	.69	1.1	1.8	.09	352	361	260	0	15	.6	582
DEC.												
03...	.2	.91	.77	1.7	.08	342	347	280	59	13	.5	580
JAN.												
06...	.2	1.1	.56	1.7	.06	351	334	270	57	12	.5	592
FEB.												
03...	.1	1.3	.84	2.1	.07	278	277	220	56	12	.4	510
MAR.												
10...	.3	1.1	.87	2.0	.07	306	274	230	58	12	.4	500
31...	.1	.85	.72	1.6	.07	313	286	240	51	10	.3	494
MAY												
05...	.2	.74	.90	1.6	.11	274	264	220	43	10	.4	450
JUNE												
02...	.3	.77	1.4	2.2	.13	314	284	240	40	10	.4	540
JULY												
07...	.3	.59	.59	1.2	.13	331	308	240	20	14	.5	510
AUG.												
04...	.3	.32	.99	1.3	.14	329	294	220	26	17	.6	491
SEP.												
08...	.2	.67	.95	1.6	.12	306	273	230	53	10	.3	448

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
02...	7.9	10.5	7	7.6	69	5.8	B9800	220	580	6	23	50
NOV.												
08...	8.0	11.0	8	9.0	82	5.2	2700	340	90	12	50	100
DEC.												
03...	8.0	3.0	6	12.8	96	4.3	310	B26	B21	6	30	100
JAN.												
06...	8.0	2.0	5	13.4	98	4.2	B160	B16	B2	1	3.5	100
FEB.												
03...	8.3	.5	6	13.2	93	1.6	B980	B180	B220	13	92	100
MAR.												
10...	7.6	1.0	5	13.3	96	8.4	240	B10	B10	8	53	100
31...	8.1	2.5	4	13.2	98	2.9	230	B15	B16	7	--	100
MAY												
05...	7.9	13.0	15	7.3	70	4.4	2300	B1000	B15	23	221	100
JUNE												
02...	7.8	19.0	10	5.6	61	6.2	B63	B31	69	16	127	100
JULY												
07...	7.9	26.0	4	4.9	61	5.4	4100	114	130	10	36	100
AUG.												
04...	7.8	25.0	1	6.6	80	6.0	37000	B220	600	6	18	100
SEP.												
08...	7.6	18.0	4	6.0	65	8.7	1400	110	150	13	102	100

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
OCT.												
02...	1145	8.6	--	2	4	0	<10	3	2	2	--	9
JAN.												
06...	1430	5.3	1	0	1	0	<10	4	1	1	12	3
MAR.												
31...	1300	8.4	1	0	--	1	<10	0	1	0	--	8
JULY												
07...	1400	9.0	1	1	0	0	<10	0	0	0	6	1

B--RESULTS BASED ON COLONY COUNTY OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04108690 KALAMAZOO RIVER AT SAUGATUCK, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
NOV 08	1000	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Scenedesmaceae		
		Scenedesmus	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	16
		Melosira	--	67
		Pennales		
		Achnanthaceae		
		Achnanthes	--	1
		Fragilariaceae		
		Synedra	--	4
		Meridionaceae		
		Meridion	--	1
		Naviculaceae		
		Navicula	--	5
		Nitzscheaceae		
		Nitzschia	--	1
		TOTAL	7,000	
DEC 03	1330	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	<1
		Scenedesmaceae		
		Scenedesmus	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Coscinodiscus	--	1
		Cyclotella	--	2
		Melosira	--	3
		Fragilariaceae		
		Synedra	--	<1
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	<1
		Surirellaceae		
		Surirella	--	<1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	88
		TOTAL	12,000	
JAN 06	1430	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotello	--	1
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	1
		Fragilariaceae		
		Synedra	--	2
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	<1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	33
		Oscillatoria	--	60
		TOTAL	7,000	
FEB 03	1430	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Scenedesmaceae		
		Scenedesmus	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Melosira	--	10
		Pennales		
		Achnanthaceae		
		Cocconeis	--	1
		Fragilariaceae		
		Asterionella	--	6
		Synedra	--	5
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	2
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	8
		Oscillatoria	--	59
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Glenodiniaceae		
		Glenodinium	--	1
		TOTAL	2,100	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAR 10	1300	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Chlorococcales		
		Occystaceae		
		Scenedesmus	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Melosira	--	6
		Pennales		
		Achnanthaceae		
		Achnanthes	--	<1
		Cocconeis	--	<1
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	<1
		Chrysophyceae		
		Chrysomonadales		
		Chromulinaceae		
		Chromulina	--	1
		Ochromonadaceae		
		Dinobryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	50
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	5
		Oscillatoria	--	27
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Phacus	--	<1
		Trachelomonas	--	2
		TOTAL	8,400	
MAR 31	1300	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	11
		Melosira	--	19
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Fragilariaceae		
		Asterionella	--	5
		Fragilaria	--	12
		Synedra	--	6
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Amphiprora	--	1
		Navicula	--	12
		Stauroneis	--	1
		Nitzschiaceae		
		Nitzschia	--	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	8
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	7
		Nostocaceae		
		Anabaena	--	8
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	1
		Trachelomonas	--	1
		TOTAL	3,100	
MAY 05	1500	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Scenedesmaceae		
		Scenedesmus	--	7
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	25
		Melosira	--	23
		Pennales		
		Achnanthaceae		
		Achnanthes	--	5
		Cocconeis	--	1
		Fragilariaceae		
		Asterionella	--	1
		Synedra	--	1
		Gomphonemataceae		
		Gomphonema	--	2
		Naviculaceae		
		Navicula	--	19
		Pinnularia	--	1
		Nitzschiaceae		
		Nitzschia	--	7
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	4
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	1
		Trachelomonas	--	1
		TOTAL	6,600	
JUNE 02	1330	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Selenastrum	--	3
		Scenedesmaceae		
		Scenedesmus	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	41
		Melosira	--	25
		Pennales		
		Achnanthaceae		
		Achnanthes	--	1
		Fragilariaceae		
		Synedra	--	1
		Naviculaceae		
		Navicula	--	7
		Nitzschiaceae		
		Nitzschia	--	4
		Surirellaceae		
		Cymatopleura	--	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	7
		TOTAL	18,000	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JULY 07	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Micractiniaceae		
		Micractinum	--	2
		Occystaceae		
		Ankistrodesmus	--	2
		Kirchneriella	--	2
		Scenedesmaceae		
		Crucigenia	--	2
		Scenedesmus	--	12
		Tetrastrum	--	6
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	17
		Melosira	--	37
		Pennales		
		Diatomaceae		
		Diatoma	--	1
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	2
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	15
		TOTAL	16,000	
AUG 04	1330	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Chlorococcaceae	1,300	7
		Occystaceae		
		Ankistrodesmus	270	1
		Tetraedron	--	<1
		Scenedesmaceae		
		Scenedesmus	3,600	18
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	10,000	50
		Melosira	4,700	23
		Pennales		
		Naviculaceae		
		Amphiprora	130	1
		Navicula	--	<1
		Nitzschiaceae		
		Nitzschia	--	<1
SEP 08	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	73	1
		Scenedesmaceae		
		Scenedesmus	1,700	27
		Tetrastrum	290	4
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	580	9
		Melosira	3,100	48
		Pennales		
		Achnanthaceae		
		Achnanthes	73	1
		Cocconeis	--	<1
		Cymbellaceae		
		Cymbella	73	1
		Fragilariaceae		
		Synedra	73	1
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Navicula	210	3
		Nitzschiaceae		
		Nitzschia	210	3
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	73	1

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a/]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 08	25	1.5	.80	3.0	.4	233
FEB. 03	35	31.0	31.0	.1	0.0	0
MAR. 31	35	7.2	5.2	37	2.3	54
JULY 07	28	24	17	120	23	58

REMARKS-- [a/] Sampling Method by Polyethylene Strip.

04108690 KALAMAZOO RIVER AT SAUGATUCK, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1000 AND 1200 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	553	565	554	530	510	474	490	377	504	505	579	424
2	569	556	548	530	505	474	490	444	514	489	568	468
3	571	561	548	530	490	474	490	342	525	544	562	468
4	571	551	554	530	500	474	490	408	525	533	531	466
5	581	547	554	530	505	448	490	423	514	541	547	464
6	575	537	554	530	510	453	490	434	509	544	545	452
7	571	547	559	541	515	448	490	439	525	550	561	460
8	571	547	548	520	515	443	490	449	525	550	564	468
9	566	558	554	520	510	469	500	459	479	553	568	475
10	565	547	554	520	510	474	500	459	490	559	570	485
11	571	526	565	494	520	484	490	459	490	559	564	491
12	571	537	565	499	520	494	500	469	490	568	556	513
13	555	537	548	515	525	505	490	479	490	553	564	520
14	558	537	548	459	525	505	490	474	490	549	564	537
15	526	526	543	447	525	566	500	479	469	549	563	547
16	543	526	532	459	525	541	510	494	459	566	559	556
17	543	526	548	490	525	541	520	488	459	570	554	567
18	570	537	548	490	525	525	510	504	479	570	554	564
19	572	537	---	515	530	525	430	504	484	565	554	565
20	572	537	538	515	520	500	450	514	464	536	565	573
21	569	537	532	515	520	503	470	536	474	538	564	570
22	573	547	538	515	520	489	321	525	464	546	559	571
23	566	547	530	520	520	494	337	546	484	556	555	570
24	572	547	530	520	515	494	347	536	494	551	572	575
25	565	547	530	515	510	489	362	525	494	550	561	569
26	566	547	541	510	515	489	347	525	494	558	550	553
27	573	547	541	510	489	494	337	525	484	526	550	573
28	573	558	546	515	469	484	347	525	505	568	540	580
29	572	---	541	510	---	480	357	525	505	570	521	580
30	565	553	541	484	---	480	377	514	505	582	497	590
31	566	---	541	510	---	490	---	504	---	566	486	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1000 AND 1200 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1								14.0	20.0	25.0	29.0	20.0
2								15.0	20.0	28.0	28.0	23.0
3								15.0	20.0	28.0	26.0	24.0
4								14.0	21.0	26.0	26.0	24.0
5								14.0	21.0	26.0	25.0	22.0
6								15.0	18.0	27.0	23.0	19.0
7								15.0	20.0	27.0	21.0	20.0
8								16.0	18.0	27.0	23.0	20.0
9								16.0	21.0	26.0	25.0	16.0
10								17.0	21.0	25.0	24.0	17.0
11								20.0	23.0	24.0	25.0	20.0
12								19.0	23.0	24.0	25.0	15.0
13								17.0	22.0	24.0	24.0	15.0
14								19.0	23.0	23.0	24.0	15.0
15								15.0	24.0	23.0	24.0	16.0
16								16.0	22.0	23.0	21.0	16.0
17								17.0	23.0	24.0	25.0	15.0
18								20.0	24.0	25.0	25.0	15.0
19								20.0	25.0	25.0	21.0	16.0
20								23.0	25.0	23.0	22.0	16.0
21								24.0	26.0	25.0	23.0	15.0
22								24.0	27.0	25.0	24.0	15.0
23								23.0	27.0	25.0	22.0	15.0
24								25.0	26.0	25.0	25.0	15.0
25								25.0	25.0	25.0	25.0	15.0
26								25.0	25.0	25.0	25.0	13.0
27								22.0	26.0	24.0	25.0	15.0
28								22.0	27.0	25.0	25.0	15.0
29								22.0	27.0	27.0	24.0	16.0
30								24.0	27.0	27.0	25.0	16.0
31								25.0	---	27.0	24.0	---

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, temperature recorder at gaging station on right bank, 500 ft (152 m) downstream from bridge on U.S. Highway 10 in Evart, 0.4 mi (0.6 km) upstream from Twin Creek, and at mile 123.9 (199.4 km).

DRAINAGE AREA.--1,450 mi^2 (3,760 km^2) approximately.

PERIOD OF RECORD.--Water temperatures: November 1956 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 25.5°C July 31 to Aug. 2; minimum, freezing point on many days during December to March.
Period of record:
Water temperatures: Maximum, 28.0°C July 1, 1963; minimum, freezing point on many days during winter period.

REMARKS,--Intermittent ice cover during the winter period.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.0	9.5	12.0	11.0	0.5	0.5	0.5	0.0	1.0	0.5	1.0	0.5
2	9.5	8.5	12.0	11.5	0.5	0.5	0.0	0.0	0.5	0.5	1.0	0.5
3	9.0	7.0	11.5	10.0	0.5	0.5	0.0	0.0	0.5	0.5	1.0	0.5
4	9.5	8.5	10.0	9.0	0.5	0.5	0.0	0.0	0.5	0.5	1.0	0.5
5	10.5	9.5	9.0	8.0	0.5	0.5	0.0	0.0	0.5	0.5	0.5	0.5
6	10.5	10.5	8.0	7.0	0.5	0.5	0.0	0.0	0.5	0.0	0.5	0.5
7	10.5	10.0	7.0	6.5	0.5	0.5	0.5	0.0	0.5	0.0	0.5	0.0
8	10.0	9.0	6.5	6.0	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.0
9	9.0	9.0	6.5	5.5	0.5	0.5	1.0	0.5	0.0	0.0	0.5	0.0
10	10.0	8.5	6.0	6.0	0.5	0.5	1.0	1.0	0.0	0.0	0.5	0.0
11	10.0	9.0	6.5	6.0	0.5	0.5	1.0	0.0	0.0	0.0	0.5	0.0
12	10.0	10.0	6.5	6.0	1.0	0.5	0.0	0.0	0.0	0.0	0.5	0.0
13	10.0	9.0	6.0	5.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0
14	9.0	9.0	5.0	4.0	1.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0
15	9.5	9.0	4.0	3.0	1.0	0.5	0.0	0.0	0.0	0.0	1.5	0.0
16	9.0	8.5	3.0	2.0	0.5	0.5	0.0	0.0	0.0	0.0	2.0	0.5
17	9.5	9.0	3.5	2.0	0.5	0.5	0.0	0.0	0.0	0.0	3.0	1.0
18	9.0	7.0	4.0	3.5	0.5	0.5	0.0	0.0	0.0	0.0	2.0	1.5
19	7.0	5.5	4.0	4.0	0.5	0.0	0.0	0.0	0.0	0.0	2.0	1.5
20	5.5	5.0	4.5	4.0	0.5	0.0	0.0	0.0	0.5	0.0	3.0	1.5
21	5.5	5.0	4.5	3.5	0.5	0.5	0.0	0.0	0.5	0.5	3.0	1.5
22	6.5	5.0	4.0	3.5	0.5	0.0	0.0	0.0	0.5	0.5	1.5	1.0
23	8.5	6.5	3.5	3.5	0.0	0.0	0.0	0.0	0.5	0.5	1.5	1.0
24	8.0	7.0	3.5	3.5	0.0	0.0	0.0	0.0	0.5	0.5	1.5	1.0
25	9.0	8.0	3.5	2.0	0.0	0.0	0.0	0.0	0.5	0.5	1.0	1.0
26	8.5	7.0	2.0	1.0	0.0	0.0	0.5	0.0	0.5	0.5	1.0	0.5
27	8.0	6.5	1.0	1.0	0.0	0.0	0.5	0.5	1.0	0.5	1.0	0.5
28	8.5	7.0	1.0	1.0	0.0	0.0	0.5	0.5	1.0	0.5	0.5	0.5
29	8.5	8.5	1.0	0.5	0.5	0.0	0.5	0.5	---	---	0.5	0.5
30	10.0	8.5	0.5	0.5	1.0	0.5	0.5	0.5	---	---	1.0	0.5
31	11.0	10.0	---	---	1.0	0.5	0.5	0.5	---	---	1.0	0.5
MONTH	11.0	5.0	12.0	0.5	1.0	0.0	1.0	0.0	1.0	0.0	3.0	0.0

04121500 MUSKEGON RIVER AT EVART, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	1.5	0.5	11.5	9.5	19.0	17.0	23.5	21.5	25.5	23.5	16.5	16.0
2	1.5	1.0	12.0	11.5	18.5	16.5	23.5	22.0	25.5	23.5	17.0	16.5
3	1.0	0.5	12.0	12.0	18.0	16.0	24.5	23.0	24.5	23.0	17.0	16.0
4	2.0	1.0	12.0	11.0	16.5	15.0	24.5	22.0	24.5	21.5	16.0	15.5
5	3.0	1.5	11.0	10.5	16.5	14.5	24.0	21.5	24.5	22.0	15.5	15.5
6	3.5	2.0	11.0	10.5	16.5	15.5	23.5	21.5	23.5	20.5	15.5	15.0
7	4.0	3.0	12.0	11.0	15.5	14.5	23.5	20.5	21.5	18.5	15.0	14.5
8	4.5	3.5	13.0	12.0	14.5	13.5	23.5	21.0	21.5	18.5	14.5	14.0
9	4.5	4.0	14.5	12.0	16.0	13.5	23.0	19.5	21.5	19.5	14.0	13.5
10	4.5	4.0	15.5	14.0	16.5	15.0	21.0	19.0	21.5	20.0	13.5	13.0
11	5.0	4.0	15.5	14.5	16.5	15.5	19.0	16.5	23.0	20.5	14.0	13.5
12	5.0	4.0	16.0	14.5	15.5	15.5	19.0	16.5	23.5	20.5	14.0	13.5
13	4.5	3.5	16.5	15.0	18.0	15.0	20.0	16.5	23.5	21.5	13.5	12.0
14	4.5	4.0	16.5	15.5	19.5	16.5	20.0	18.0	23.0	20.0	12.0	11.5
15	5.0	4.0	16.0	15.0	19.5	17.0	20.0	17.0	22.0	19.5	12.0	11.5
16	5.0	4.5	16.0	14.0	17.0	16.0	22.0	19.0	22.0	19.5	11.5	11.5
17	5.5	5.0	17.0	15.0	17.0	16.5	23.5	20.5	23.0	20.0	13.0	11.5
18	7.0	5.5	18.5	16.0	18.5	16.5	23.5	21.5	22.0	19.5	14.0	13.0
19	7.0	7.0	19.5	18.0	19.5	18.5	22.0	21.0	21.0	18.5	14.0	14.0
20	8.0	7.0	20.5	19.0	20.5	19.5	23.0	21.5	20.0	18.5	14.0	14.0
21	7.0	6.5	21.0	20.5	21.0	20.5	23.0	21.0	18.5	18.0	14.0	13.5
22	8.0	7.0	21.0	19.5	22.0	21.0	23.0	21.0	18.0	18.0	13.5	13.0
23	8.0	8.0	21.5	20.0	22.0	22.0	23.0	21.5	18.0	17.0	13.0	12.0
24	8.0	8.0	22.0	21.0	22.0	21.0	21.5	21.0	19.5	17.0	12.0	11.5
25	8.0	7.0	23.0	21.0	21.5	20.5	21.0	20.0	20.0	19.5	12.0	11.0
26	8.5	7.0	22.0	21.5	21.5	20.0	21.0	19.0	20.0	20.0	11.0	10.5
27	8.5	8.5	21.5	20.0	21.5	20.5	21.5	19.5	20.0	19.5	11.5	10.5
28	8.5	8.0	21.0	19.0	22.0	20.5	21.5	19.5	20.0	18.5	13.0	11.5
29	8.5	7.0	20.0	19.0	23.0	21.5	23.0	20.0	18.5	18.5	13.0	11.5
30	9.5	8.5	20.0	19.0	23.5	21.5	24.0	21.0	18.5	18.0	13.5	12.0
31	---	---	19.5	18.0	---	---	25.5	23.0	18.0	16.5	---	---
MONTH	9.5	0.5	23.0	9.5	23.5	13.5	25.5	16.5	25.5	16.5	17.0	10.5
YEAR	25.5	0.0										

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, temperature recorder at gaging station 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 mi^2 (357 km^2).

PERIOD OF RECORD.--Water temperatures: November 1966 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 24.5°C May 25, July 3, July 30 to Aug. 2; minimum, freezing point on many days during January, February and April.
Period of record:
Water temperatures: Maximum, 28.0°C Aug. 23, 1968, June 28, 1971; minimum, freezing point on many days during winter period.

REMARKS.--Recorder stopped, Sept. 12-31, range in temperature, 10.0°C to 15.5°C. Intermittent ice cover during the winter period. Some regulation from dams above station.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	8.0	13.5	12.0	2.0	1.5	2.0	1.0	2.0	0.5	2.0	0.5
2	8.0	7.0	12.0	10.5	2.5	1.0	1.0	0.5	1.5	0.0	2.5	0.5
3	8.5	5.5	11.0	9.0	1.5	1.0	1.0	0.5	1.5	0.0	2.5	0.5
4	10.0	7.0	9.0	7.5	1.0	0.5	2.5	1.0	1.0	0.0	3.5	1.0
5	12.5	9.5	7.5	6.5	2.0	1.0	2.0	1.5	2.0	1.0	2.5	1.0
6	12.0	10.5	7.0	6.0	2.0	0.5	1.5	1.0	1.5	0.5	3.0	1.5
7	10.5	9.0	6.5	5.0	3.0	2.0	3.0	1.5	0.5	0.0	3.5	1.5
8	9.5	8.0	7.0	5.0	2.0	1.5	3.0	2.5	0.0	0.0	3.0	1.0
9	10.0	9.0	7.0	5.5	1.5	0.5	3.0	2.5	0.0	0.0	2.0	0.5
10	11.0	7.5	7.0	6.5	2.0	0.5	2.5	2.0	0.0	0.0	3.5	1.0
11	11.5	9.0	7.0	7.0	2.0	0.5	2.0	0.0	0.0	0.0	4.0	0.5
12	11.5	10.5	7.0	6.0	3.5	2.0	0.0	0.0	0.0	0.0	3.0	1.5
13	10.5	8.5	6.0	4.5	3.0	2.5	0.0	0.0	0.0	0.0	4.0	0.5
14	10.0	9.5	4.5	3.5	2.5	2.5	0.0	0.0	0.0	0.0	4.0	0.5
15	10.0	9.0	3.5	2.5	2.5	1.0	0.0	0.0	0.0	0.0	4.5	0.5
16	10.0	7.5	3.0	2.0	2.0	1.0	0.0	0.0	0.0	0.0	5.5	1.5
17	10.5	8.5	4.5	3.0	2.5	1.5	0.0	0.0	0.0	0.0	6.0	2.5
18	8.5	6.5	6.5	4.5	1.5	0.5	0.0	0.0	1.0	0.0	4.5	2.5
19	6.5	4.5	6.5	5.5	1.0	0.5	0.0	0.0	2.5	1.0	5.0	3.0
20	6.0	3.5	6.5	5.5	1.5	0.5	0.0	0.0	2.0	1.0	6.0	3.0
21	5.5	3.0	5.5	4.0	1.5	1.0	0.0	0.0	3.5	0.5	4.0	2.0
22	7.5	4.0	4.0	3.0	2.0	1.5	0.0	0.0	3.0	2.0	2.5	1.5
23	9.5	7.5	5.0	3.5	2.0	1.0	0.0	0.0	3.0	2.0	3.5	1.5
24	8.5	6.5	5.5	5.0	2.0	1.5	1.5	0.0	2.0	1.0	3.0	2.0
25	9.5	8.0	5.0	2.5	2.0	1.5	1.5	1.0	1.0	0.5	2.5	1.5
26	8.5	6.5	2.5	0.5	1.5	0.5	1.0	0.5	1.5	0.5	3.5	0.5
27	8.0	5.5	2.0	1.0	2.0	1.0	0.5	0.0	2.0	0.5	2.5	1.5
28	9.5	7.0	2.5	2.0	2.5	2.0	1.5	0.5	3.0	1.0	2.0	1.5
29	9.0	8.5	2.5	1.5	3.0	2.5	1.5	1.0	---	---	2.5	1.5
30	11.5	9.0	1.5	1.0	3.0	1.5	1.0	0.0	---	---	3.5	1.5
31	12.5	11.0	---	---	1.5	1.0	1.0	0.5	---	---	3.5	0.5
MONTH	12.5	3.0	13.5	0.5	3.5	0.5	3.0	0.0	3.5	0.0	6.0	0.5

04121900 LITTLE MUSKEGON RIVER NEAR MORLEY, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	6.0	2.0	15.0	10.5	20.0	15.5	24.0	18.5	24.5	21.5	17.5	17.0
2	4.0	0.0	14.0	11.0	17.5	14.0	23.5	19.0	24.5	21.0	18.5	17.5
3	2.5	0.0	13.5	11.5	17.5	13.5	24.5	20.0	23.0	19.5	18.0	16.5
4	4.5	0.0	12.0	10.5	15.5	14.0	23.5	19.5	23.0	19.0	17.0	16.0
5	5.5	0.5	11.0	9.5	17.0	14.0	22.5	19.0	22.5	19.5	17.0	15.5
6	6.0	1.5	13.0	10.5	17.0	16.0	21.5	19.0	21.0	18.0	15.5	15.0
7	6.5	2.0	15.0	10.0	16.0	14.5	22.5	18.5	20.5	15.5	15.5	14.5
8	6.5	2.5	15.0	12.0	16.0	13.0	23.0	19.0	20.5	16.0	15.0	14.0
9	5.0	3.0	17.0	12.0	18.5	13.5	21.5	17.5	21.5	17.0	14.0	12.5
10	6.5	3.0	18.0	12.5	20.5	15.5	20.0	16.0	22.0	18.5	15.0	13.5
11	7.5	3.0	17.0	13.0	18.5	16.0	17.5	15.0	22.5	19.0	16.0	15.0
12	6.5	3.0	16.5	14.0	17.0	15.0	18.0	15.0	22.0	18.5	---	---
13	7.5	3.0	19.0	13.0	20.0	15.0	20.0	15.5	22.0	19.5	---	---
14	6.0	4.0	17.0	13.5	20.5	16.5	19.0	16.5	20.5	17.5	---	---
15	9.0	4.5	16.0	14.0	19.0	16.5	20.5	15.5	21.0	18.0	---	---
16	8.0	5.5	18.5	12.0	17.5	15.5	22.5	18.0	21.5	17.5	---	---
17	9.5	5.0	20.0	13.5	18.0	16.5	23.0	19.0	22.0	18.5	---	---
18	10.5	8.0	21.5	15.5	19.5	17.5	22.0	19.5	20.5	17.0	---	---
19	10.5	6.5	22.5	17.0	21.5	19.5	20.5	19.0	19.5	16.5	---	---
20	8.5	5.5	22.5	18.5	22.0	20.5	22.0	19.5	18.0	16.0	---	---
21	8.5	5.0	21.0	18.5	23.0	20.0	22.0	19.0	17.0	16.0	---	---
22	10.0	6.0	21.5	17.0	24.0	21.5	23.0	18.0	16.5	16.5	---	---
23	9.0	8.0	23.5	18.0	24.0	22.0	22.5	19.5	17.5	16.5	---	---
24	9.0	7.5	24.0	19.0	23.0	20.0	22.0	19.0	20.0	17.0	---	---
25	9.0	7.0	24.5	20.0	22.0	19.5	21.5	18.0	21.5	20.0	---	---
26	11.0	6.5	22.0	20.0	22.0	18.5	20.0	16.5	21.5	20.0	---	---
27	10.5	8.0	22.5	18.0	22.5	19.5	22.5	17.5	21.0	18.5	---	---
28	8.0	6.5	21.5	16.0	24.0	19.5	22.5	18.0	20.0	18.0	---	---
29	10.5	6.0	21.0	17.5	24.0	20.0	23.0	18.0	19.5	18.5	---	---
30	11.5	9.5	19.5	18.0	24.0	19.0	24.5	19.5	18.5	18.0	---	---
31	---	---	20.5	16.5	---	---	24.5	20.5	18.0	17.0	---	---
MONTH	11.5	0.0	24.5	9.5	24.0	13.0	24.5	15.0	24.5	15.5	---	---
YEAR	24.5	0.0										

04122030 MUSKEGON RIVER NEAR BRIDGETON, MICH.
(National stream-quality acccounting network station)

LOCATION.--Lat 43°19'05", long 86°02'11", in SW¼ NW¼ sec.30, T.11 N., R.14 W., Newago County, at bridge on Maple Island Rd., 5 mi (8 km) southwest of Bridgeton, 13 mi (21 km) upstream from Muskegon Lake, and 20 mi (32 km) downstream from gaging station at Newago.

DRAINAGE AREA.--2,420 mi^2 (6,270 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: July 1974 to September 1975.
Specific conductance: November 1974 to September 1975.
Water temperatures: November 1974 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 397 micromhos Dec. 27; minimum observed, 282 micromhos Sept. 11, 12.
Water temperatures: Maximum observed, 25.0°C July 31, Aug. 2, 3; minimum observed, freezing point on several days during January to February.

REMARKS.--Monthly water discharge measurements are made at time of sampling.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
03...	0855	1790	4.1	48	14	11	.9	242	0	198	22	20
NOV.												
07...	1400	2000	5.5	47	14	10	2.4	240	0	197	21	20
DEC.												
04...	1130	1920	5.4	51	14	11	1.1	192	0	157	21	20
JAN.												
07...	1130	1820	5.8	48	15	11	1.2	194	0	159	19	19
FEB.												
04...	1145	1840	7.4	48	15	11	1.3	178	0	146	20	19
MAR.												
11...	1100	1870	8.0	52	15	12	1.4	188	0	154	22	24
APR.												
02...	1115	2670	7.8	50	14	12	1.4	188	0	154	23	21
MAY												
06...	1100	3040	5.8	40	11	8.6	1.5	150	0	123	16	17
JUNE												
03...	1200	2320	4.6	41	11	8.0	1.3	154	0	126	15	16
JULY												
08...	1100	1750	5.6	43	13	9.3	1.2	178	0	146	17	16
AUG.												
05...	1100	1240	5.7	46	13	9.7	1.2	180	0	148	19	18
SEP.												
09...	1300	5730	7.5	3.3	10	6.5	1.6	146	0	120	15	12

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
03...	0855	6.8	1	1	0	0	<10	0	3	0	5	0
JAN.												
07...	1130	12	2	1	--	2	<10	0	3	0	11	0
APR.												
02...	1115	5.5	0	0	3	2	20	1	--	2	6	0
JULY												
08...	1100	8.2	1	1	1	0	<10	0	0	0	7	2

04122030 MUSKEGON RIVER NEAR BRIDGETON, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
03...	.1	.09	.36	.45	.04	230	239	180	0	12	.4	380
NOV.												
07...	.2	.20	.27	.47	.02	242	238	180	0	11	.3	403
DEC.												
04...	.2	.26	.16	.42	.02	226	218	190	33	11	.4	393
JAN.												
07...	.1	.31	.29	.60	.01	243	215	180	21	12	.4	402
FEB.												
04...	.2	.44	.39	.83	.01	223	210	180	34	12	.4	390
MAR.												
11...	.4	.44	.30	.74	.03	212	226	190	36	12	.4	410
APR.												
02...	.0	.36	.26	.62	.03	243	222	180	26	12	.4	396
MAY												
06...	.2	.20	.43	.63	.03	193	173	150	27	11	.3	310
JUNE												
03...	.2	.14	.28	.42	.02	174	172	150	24	10	.3	274
JULY												
08...	.3	.17	.56	.73	.02	217	193	160	14	11	.3	335
AUG.												
05...	.3	.07	.53	.60	.03	211	202	170	22	11	.3	343
SEP.												
09...	.2	.25	.52	.77	.05	172	128	49	0	22	.4	244

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
03...	8.3	12.0	200	8.6	81	1.9	B1100	B21	31	18	87	37
NOV.												
07...	8.0	11.0	2	9.4	86	3.8	289	35	--	8	43	100
DEC.												
04...	7.9	3.0	3	13.4	100	3.9	76	B9	B17	15	78	100
JAN.												
07...	8.3	3.0	6	13.5	100	1.6	B27	B4	B3	14	69	100
FEB.												
04...	8.3	1.0	2	13.8	99	1.4	40	B2	B8	20	99	100
MAR.												
11...	8.3	2.0	1	13.8	100	1.5	54	B2	B2	16	81	100
APR.												
02...	8.1	2.0	34	13.3	98	2.4	86	B6	B1	24	173	100
MAY												
06...	7.7	10.0	1	10.8	97	4.8	560	100	B13	30	246	100
JUNE												
03...	8.2	17.0	1	8.8	93	1.6	260	48	83	24	150	100
JULY												
08...	8.3	23.5	2	8.2	98	1.4	310	40	92	25	118	100
AUG.												
05...	8.1	23.0	2	6.4	75	2.3	3700	46	150	12	40	100
SEP.												
09...	7.8	17.0	6	8.2	86	3.7	214	52	62	40	619	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
03...	130	10	--	6	35	0	.1	.0	0	0	4	4
JAN.												
07...	170	20	12	0	22	10	.0	.0	0	0	4	0
APR.												
02...	310	140	10	9	40	40	.1	.1	0	0	10	5
JULY												
08...	200	20	16	3	20	10	.5	.2	0	0	70	20

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04122030 MUSKEGON RIVER NEAR BRIDGETON, MICH.--CONTINUED

QUALTIATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
NOV 07	1400	Chlorophyta		
		Chlorophyceae		
		Scenedesmaceae		
		Occystaceae		
		Scenedesmus	--	7
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	12
		Melosira	--	30
		Pennales		
		Achnanthaceae		
		Cocconeis	--	2
		Rhoiocosphenia	--	2
		Cymbellaceae		
		Amphora	--	2
		Diatomaceae		
		Diatoma	--	9
		Fragilariaceae		
		Fragilaria	--	2
		Synedra	--	1
		Gomphonemataceae		
		Gomphonema	--	2
		Naviculaceae		
		Navicula	--	20
		Pinnularia	--	1
		Nitzschiaceae		
		Nitzschia	--	4
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	2
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	1
		TOTAL	1,400	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
DEC 04	1130	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotello	--	9
		Melosira	--	1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Cocconeis	--	2
		Rhoiocosphenia	--	1
		Cymbellaceae		
		Cymbella	--	11
		Diatomaceae		
		Diatoma	--	2
		Eunotiaceae		
		Eunotia	--	1
		Fragilariaceae		
		Asterionella	--	3
		Fragilaria	--	3
		Synedra	--	1
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Gyrosigma	--	1
		Navicula	--	43
		Nitzcshiaceae		
		Nitzschia	--	9
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	6
		TOTAL	1,100	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JAN 07	1130	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	12
		Pennales		
		Achnanthaceae		
		Achnanthes	--	12
		Cocconeis	--	6
		Cymbellaceae		
		Amphora	--	3
		Cymbella	--	3
		Diatomaceae		
		Diatoma	--	15
		Fragilariaceae		
		Synedra	--	3
		Gomphonemataceae		
		Gomphonema	--	21
		Naviculaceae		
		Navicula	--	15
		Nitzschiaceae		
		Nitzschia	--	6
		Naviculaceae		
		Stauroneis	--	3
		TOTAL	240	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB 04	1145	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	5
		Pennales		
		Achnanthaceae		
		Achnanthes	--	5
		Cocconeis	--	3
		Cymbellaceae		
		Cymbella	--	2
		Diatomaceae		
		Diatoma	--	8
		Fragilariaceae		
		Synedra	--	2
		Gomphonemataceae		
		Gomphonema	--	5
		Naviculaceae		
		Navicula	--	11
		Nitzcshiaceae		
		Nitzschia	--	8
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	38
		Oscillatoria	--	9
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Peridiniaceae		
		Peridinium	--	2
		TOTAL	680	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAR 11	1100	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Melosira	--	25
		Pennales		
		Cymbellaceae		
		Cymbella	--	4
		Diatomaceae		
		Diatoma	--	8
		Fragilariaceae		
		Asterionella	--	2
		Synedra	--	10
		Gomphonemataceae		
		Gomphonema	--	21
		Naviculaceae		
		Navicula	--	21
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	2
		Euglenophyta		
		Cryptophyceae		
		Cryptomonidales		
		Cryptomonodaceae		
		Cryptomonas	--	2
		TOTAL	1,200	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAY 06	1100	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	26
		Melosira	--	7
		Stephanodiscus	--	3
		Pennales		
		Achnanthaceae		
		Cocconeis	--	2
		Rhoiocosphenia	--	2
		Cymbellaceae		
		Cymbella	--	3
		Diatomaceae		
		Diatoma	--	7
		Fragilariaceae		
		Asterionella	--	15
		Synedra	--	2
		Gomphonemataceae		
		Gomphonema	--	5
		Naviculaceae		
		Navicula	--	15
		Nitzschiaceae		
		Nitzschia	--	7
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	3
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	2
		TOTAL	2,200	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
APR 02	1115	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	4
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	2
		Scenedesmus	--	9
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Melosira	--	2
		Pennales		
		Achnanthaceae		
		Cocconeis	--	2
		Cymbellaceae		
		Cymbella	--	7
		Diatomaceae		
		Diatoma	--	22
		Gomphonemataceae		
		Gomphonema	--	13
		Naviculaceae		
		Navicula	--	20
		Nitzschiaceae		
		Nitzschia	--	13
		TOTAL	1,100	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JUNE 03	1200	Chlorophyta		
		Chlorophyceae		
		Scenedesmaceae		
		Occystaceae		
		Ankistrodesmus	--	4
		Scenedesmus	--	8
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Melosira	--	28
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Cocconeis	--	5
		Rhoiocosphenia	--	1
		Cymbellaceae		
		Cymbello	--	7
		Diatomaceae		
		Diatoma	--	1
		Fragilariaceae		
		Asterionella	--	1
		Fragilaria	--	9
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	17
		Pinnularia	--	1
		Nitzschiaceae		
		Nitzschia	--	5
		Euglenophyta		
		Cryptophyceae		
		Cryptomonidales		
		Cryptomonodaceae		
		Cryptomonas	--	1
		TOTAL	2,000	

04122030 MUSKEGON RIVER NEAR BRIDGETON, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JULY 08	1100	Chlorophyta		
		Chlorophyceae		
		Scenedesmaceae		
		Occystaceae		
		Scenedesmus	--	7
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Melosira	--	5
		Pennales		
		Achnanthaceae		
		Cocconeis	--	9
		Rhoiocosphenia	--	4
		Chmbellaceae		
		Cymbella	--	5
		Diatomaceae		
		Diatoma	--	4
		Fragilariaceae		
		Synedra	--	2
		Gomphonemataceae		
		Gomphonema	--	5
		Naviculaceae		
		Navicula	--	20
		Nitzschiaceae		
		Nitzschia	--	7
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinabryon	--	2
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agmenellum	--	29
		TOTAL	1,800	
AUG 05	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	<1
		Scenedesmaceae		
		Crucigenia	--	<1
		Scenedesmus	460	10
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	170	4
		Melosira	930	20
		Pennales		
		Achnanthaceae		
		Achnanthes	--	<1
		Cocconeis	58	1
		Cymbellaceae		
		Amphora	58	1
		Cymbella	58	1
		Diatomaceae		
		Diatoma		
		Eunotiaceae		
		Eunotia	--	<1
		Fragilariaceae		
		Fragilaria	--	<1
		Gomphonemataceae		
		Gomphonema	170	4
		Naviculaceae		
		Navicula	350	7
		Nitzschiaceae		
		Nitzschia	58	1
		Tabellariaceae		
		Tabellaria	460	10
		Chrysophyceae		
		Chrysomonadales		
		Mallomonadaceae		
		Mallomonas	110	2
		Ochromonadaceae		
		Dinobryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	<1
		Oscillatoriales		
		Nostiocaceae		
		Anabaena	170	4
		Oscillatoriaceae		
		Oscillatoria	1,500	32
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium	110	2

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a/]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 07	27	1.5	.80	.3	.2	2330
FEB. 04	35	11.0	10.0	21.0	1.8	48
APR. 02	34	12	7.5	3.4	.2	1320

REMARKS-- [a/] Sampling Method by Polyethylene Strip.

04122030 MUSKEGON RIVER NEAR BRIDGETON, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1000 AND 1200 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	379	385	359	354	381	328	328	315	352	336
2		---	390	380	364	359	381	316	328	331	351	326
3		---	385	359	374	364	380	332	312	336	337	323
4		---	386	380	374	364	380	316	312	336	350	320
5		---	380	369	369	369	380	316	296	336	349	317
6		---	390	385	369	364	370	296	296	336	365	306
7		---	390	374	364	369	370	306	302	336	365	306
8		368	368	369	364	369	370	294	312	347	368	299
9		379	380	359	379	394	360	309	296	323	367	288
10		374	378	369	384	396	360	297	307	347	354	286
11		363	389	348	374	396	360	306	291	337	356	282
12		374	379	385	379	396	360	291	291	335	366	282
13		363	378	369	384	391	350	314	296	358	367	298
14		368	380	359	384	386	350	316	291	356	366	292
15		379	371	343	379	386	350	301	312	335	378	290
16		379	393	354	384	391	350	321	317	334	358	295
17		368	374	354	389	396	355	332	302	346	368	287
18		379	382	359	384	386	360	321	286	351	367	297
19		374	387	359	374	386	340	327	307	325	355	292
20		374	378	374	374	391	350	286	291	337	367	308
21		368	378	369	369	386	350	291	291	354	356	321
22		368	380	364	369	371	350	286	291	339	356	318
23		374	391	364	364	381	350	296	291	333	348	321
24		363	388	364	364	371	320	291	291	327	338	310
25		368	---	359	379	371	350	286	286	349	337	316
26		368	---	364	379	376	340	291	296	322	344	312
27		379	397	369	364	376	314	317	299	329	340	318
28		379	374	369	354	381	311	296	326	329	338	309
29		374	385	354	---	381	306	296	331	347	335	314
30		379	385	364	---	381	306	296	304	353	343	317
31		---	374	364	---	381	---	291	---	348	294	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1000 AND 1200 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	3.5	---	0.5	0.5	3.0	12.0	17.0	22.5	24.5	20.0
2		---	3.0	---	0.5	1.0	3.0	11.0	17.5	22.0	25.0	20.0
3		---	1.5	---	0.5	1.0	3.0	11.5	17.0	23.0	25.0	20.0
4		---	1.5	---	0.5	1.0	3.0	11.5	17.0	22.5	23.0	19.5
5		---	3.0	---	1.5	1.0	3.0	---	16.0	23.0	23.0	19.5
6		---	2.0	---	1.0	1.0	3.0	10.0	16.0	23.0	22.5	18.5
7		---	3.0	3.0	0.0	1.0	5.0	---	15.5	22.0	21.5	18.0
8		8.5	1.5	---	0.0	0.5	4.5	12.0	16.0	23.0	21.5	17.0
9		9.0	1.5	---	0.0	1.0	4.5	13.5	16.0	23.0	21.5	17.0
10		9.0	2.0	---	0.0	1.0	4.5	13.0	18.5	22.0	22.0	17.0
11		9.0	1.5	---	0.0	1.0	4.0	14.0	18.0	20.0	23.5	17.0
12		7.0	3.0	---	0.0	1.5	5.0	14.5	18.0	21.0	23.0	16.0
13		7.0	3.0	---	0.0	0.5	4.5	14.0	18.5	21.5	23.5	15.0
14		6.5	3.0	---	0.0	2.0	5.0	14.5	19.0	20.0	22.0	15.0
15		5.5	2.0	---	0.5	1.5	4.5	13.5	18.5	20.5	22.0	15.0
16		6.0	1.5	---	0.5	1.5	5.0	13.0	17.0	21.5	23.0	15.0
17		6.5	2.0	0.5	0.5	2.0	5.0	15.5	18.0	21.5	22.5	15.0
18		6.5	1.5	0.5	1.0	2.0	7.0	15.5	17.0	23.0	22.0	15.5
19		7.0	1.5	0.5	1.0	3.0	7.0	18.5	19.0	22.0	21.0	16.0
20		7.0	1.5	0.0	1.0	3.0	6.0	18.0	19.0	22.5	21.0	15.0
21		6.0	1.5	0.0	0.5	3.0	7.0	17.0	19.0	23.0	21.0	15.5
22		6.0	1.5	0.5	1.5	2.0	7.0	19.0	19.5	23.5	21.0	15.0
23		6.0	1.5	0.5	1.5	1.5	7.5	18.0	20.0	22.5	21.0	14.0
24		7.0	1.5	0.5	1.5	1.5	7.0	18.5	20.0	22.5	21.5	14.0
25		6.0	1.5	1.0	1.0	1.5	8.0	18.0	21.0	21.0	21.5	14.0
26		4.5	1.5	0.5	1.0	1.0	9.0	19.0	21.0	21.0	21.0	14.0
27		4.0	1.5	0.5	0.5	1.0	9.0	18.5	21.0	22.0	21.0	13.5
28		4.5	1.5	1.0	1.0	1.0	8.5	18.5	21.0	23.0	21.0	14.0
29		4.0	2.0	1.0	---	1.0	9.0	18.5	22.5	23.0	21.0	14.0
30		3.5	1.5	0.5	---	1.0	10.0	18.0	23.0	23.5	20.5	14.0
31		---	1.5	1.0	---	0.5	---	17.5	---	25.0	19.0	---

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, temperature recorder at gaging station on right bank 20 ft (6 m) upstream from highway bridge on south edge of Scottville, 1.4 mi (2.3 km) upstream from India Creek, 5.6 mi (9.0 km) downstream from Big South Branch.

DRAINAGE AREA.--709 mi^2 (1,836 km^2).

PERIOD OF RECORD.--Water temperatures: May 1968 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 23.0°C Aug. 1, 2; minimum, freezing point on many days during January to March.
Period of record:
Water temperatures: Maximum, 24.5°C June 29, 30, 1971; minimum, freezing point on many days during winter period.

REMARKS.--Intermittent ice cover during winter period. Some regulation during low flow from dams above station. A listing of periodic measurements of specific conductance and temperature for this station is on page 539.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	9.5	8.0	11.5	11.0	1.5	1.0	1.5	1.5	0.5	0.5	0.5	0.5
2	8.0	7.0	11.5	11.0	1.5	1.5	1.5	1.0	0.5	0.5	1.0	0.0
3	7.0	6.0	11.0	10.0	1.5	1.5	1.0	0.5	0.5	0.5	1.0	0.0
4	8.5	7.0	10.0	8.5	1.5	1.0	1.0	0.5	1.0	0.5	1.0	0.0
5	9.5	8.5	8.5	7.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	0.5
6	10.0	9.5	7.5	7.0	1.5	1.5	1.0	0.5	1.0	1.0	1.0	0.5
7	10.0	9.5	7.0	6.0	1.5	1.5	1.5	0.5	1.0	0.5	2.0	1.0
8	9.5	8.0	6.0	5.5	1.5	1.5	2.0	1.5	0.5	0.5	2.0	1.5
9	8.0	8.0	6.0	5.5	1.5	1.0	2.5	2.0	0.5	0.5	2.0	0.5
10	8.5	7.5	6.0	6.0	1.0	1.0	2.5	2.5	0.5	0.0	1.5	0.5
11	9.0	8.5	6.0	6.0	1.0	0.5	2.5	0.5	0.0	0.0	1.5	1.0
12	9.5	9.0	6.0	6.0	2.0	0.5	0.5	0.0	0.0	0.0	1.5	1.0
13	9.5	8.5	6.0	4.5	2.0	2.0	0.0	0.0	0.0	0.0	1.5	0.5
14	8.5	8.5	4.5	3.5	2.0	2.0	0.0	0.0	0.0	0.0	1.5	0.5
15	8.5	8.5	3.5	2.5	2.0	2.0	0.0	0.0	0.0	0.0	2.5	1.0
16	8.5	7.5	2.5	2.0	2.0	2.0	0.0	0.0	0.0	0.0	3.5	1.5
17	8.5	8.5	3.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	4.5	2.5
18	8.5	7.0	4.5	3.0	2.0	1.5	0.0	0.0	0.0	0.0	4.5	3.5
19	7.0	5.5	5.5	4.5	1.5	1.0	0.0	0.0	0.5	0.0	4.5	4.0
20	5.5	5.0	5.5	5.5	1.0	1.0	0.0	0.0	1.0	0.5	5.0	4.0
21	5.0	5.0	5.5	5.0	1.0	1.0	0.0	0.0	1.5	1.0	5.0	3.0
22	6.5	5.0	5.0	4.5	1.0	1.0	0.0	0.0	2.0	1.5	3.0	0.5
23	7.5	6.5	4.5	4.0	1.5	1.0	0.0	0.0	3.0	2.0	0.5	0.5
24	7.5	7.0	4.5	4.5	1.5	1.5	0.0	0.0	3.0	2.5	1.0	0.5
25	7.5	7.5	4.5	3.5	1.5	1.0	0.0	0.0	2.5	1.5	1.0	1.0
26	7.5	7.0	3.5	2.0	1.0	1.0	0.0	0.0	1.5	1.0	1.0	0.5
27	7.0	6.0	2.0	1.5	1.5	1.0	0.0	0.0	1.0	0.5	1.0	1.0
28	8.5	7.0	1.5	1.5	2.0	1.5	0.0	0.0	0.5	0.5	1.0	0.5
29	8.5	8.5	1.5	1.5	2.0	1.5	0.0	0.0	---	---	1.0	0.5
30	10.0	8.5	1.5	1.0	1.5	1.5	0.0	0.0	---	---	1.5	1.0
31	11.0	10.0	---	---	1.5	1.5	0.5	0.0	---	---	1.5	0.5
MONTH	11.0	5.0	11.5	1.0	2.0	0.5	2.5	0.0	3.0	0.0	5.0	0.0

04122500 PERE MARQUETTE RIVER AT SCOTTVILLE, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	3.5	1.5	13.0	11.0	17.5	15.5	22.0	20.5	23.0	22.0	16.5	16.5
2	3.5	2.0	13.5	11.5	17.5	15.5	22.0	20.5	23.0	21.5	17.0	16.5
3	2.0	1.0	13.5	12.5	17.5	15.5	22.0	21.0	21.5	20.5	17.0	17.0
4	3.0	1.0	12.5	11.5	16.0	15.0	22.0	20.5	21.5	20.0	17.0	17.0
5	4.0	2.0	11.5	10.5	17.0	15.0	21.5	20.5	21.5	20.5	17.0	16.5
6	4.5	2.5	12.0	10.0	17.0	16.0	21.5	20.5	21.0	19.5	16.5	16.0
7	5.5	3.0	13.5	10.5	16.0	14.5	20.5	19.5	20.0	18.0	16.0	15.5
8	6.0	4.0	16.0	12.5	16.0	14.0	20.5	19.5	19.0	17.5	15.5	14.5
9	6.0	4.5	15.0	12.5	16.5	15.0	20.5	18.5	19.0	19.0	14.5	13.5
10	6.5	4.5	15.5	13.0	18.0	16.0	19.5	18.5	19.0	18.5	14.0	13.5
11	6.5	5.0	16.0	13.5	18.0	16.0	18.5	16.5	19.5	18.5	15.0	14.0
12	6.5	4.5	16.0	14.0	16.0	15.5	17.5	16.5	19.5	18.5	15.0	13.5
13	7.0	4.5	16.0	14.0	17.5	15.0	18.0	16.0	20.5	19.5	13.5	12.5
14	7.0	5.5	16.0	14.5	18.0	16.5	18.0	16.5	20.5	19.0	12.5	11.5
15	8.0	5.5	15.5	13.5	18.0	17.0	18.5	16.5	19.5	18.5	12.5	12.0
16	10.0	7.0	15.0	12.0	17.0	16.0	20.0	17.5	20.0	18.5	12.5	12.5
17	10.0	8.0	16.0	13.5	16.5	16.0	20.5	19.5	20.5	19.5	13.0	12.5
18	11.0	9.5	17.5	14.5	17.5	16.0	20.5	19.5	20.5	19.0	14.5	13.0
19	11.5	10.0	19.5	17.0	18.5	17.5	21.5	19.5	19.0	17.0	14.5	14.5
20	10.5	8.5	20.0	19.0	19.5	18.5	21.5	20.5	17.0	17.0	14.5	13.5
21	10.0	7.5	20.0	19.5	20.5	19.5	21.5	20.0	17.0	16.5	13.5	13.0
22	10.5	7.5	20.5	18.5	21.5	20.5	21.5	20.0	17.0	17.0	13.0	12.5
23	10.5	9.0	21.0	19.0	22.0	21.5	21.5	20.0	17.0	16.5	12.5	12.0
24	9.0	8.5	21.0	19.5	22.0	21.0	21.0	20.5	18.5	16.5	12.0	11.5
25	10.5	8.5	21.5	20.0	21.0	20.0	21.0	20.0	19.5	18.5	12.0	11.0
26	11.0	8.5	21.5	20.0	21.0	19.5	20.5	18.5	19.5	19.5	11.5	11.0
27	11.0	9.5	20.0	19.0	20.0	19.5	21.0	19.5	19.5	19.5	11.5	10.5
28	9.5	8.0	20.0	17.5	21.0	19.5	21.0	19.5	19.5	18.5	11.5	11.0
29	10.5	7.5	18.5	18.0	22.0	20.5	21.5	20.0	18.5	17.5	11.5	11.0
30	11.0	9.5	18.5	17.0	22.0	21.0	22.0	20.5	17.5	17.0	13.0	11.5
31	---	---	17.5	16.0	---	---	22.5	21.5	17.0	16.5	---	---
MONTH	11.5	1.0	21.5	10.0	22.0	14.0	22.5	16.0	23.0	16.5	17.0	10.5
YEAR	23.0	0.0										

04123500 MANISTEE RIVER NEAR GRAYLING, MICH.

LOCATION.--Lat 44°41'35", long 84°50'50", in SW¼ NW¼ sec.31, T.27 N., R.4 W., Crawford County, temperature recorder at gaging station on right bank 25 ft (7.6 m) upstream from bridge on State Highway 72, 3.3 mi (5.3 km) downstream from Goose Creek, and 6.8 mi (10.9 km) northwest of Grayling.

DRAINAGE AREA.--159 mi^2 (412 km^2).

PERIOD OF RECORD.--Water temperatures: May 1957 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 24.0°C July 3, 4; minimum, freezing point on several days during January.
Period of record:
Water temperatures: Maximum, 24.0°C July 1, 1963, July 22, 23, 1972, July 3, 4, 1975; minimum, freezing point on many days during winter period.

REMARKS.--Intermittent ice cover during winter period. Recorder stopped, Apr. 14 to May 7, range in temperature, 2.5°C to 12.0°C.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	9.5	8.5	11.0	10.0	2.0	1.5	1.0	0.5	1.5	0.5	1.5	0.5
2	8.5	7.5	11.0	10.0	2.0	2.0	1.0	0.5	1.0	0.5	0.5	0.5
3	8.5	6.5	10.0	8.0	2.0	2.0	1.0	0.5	0.5	0.5	1.5	0.5
4	9.5	8.0	8.0	7.0	2.0	1.0	1.5	1.0	0.5	0.5	2.0	1.5
5	11.0	9.5	7.0	6.5	2.0	1.0	1.5	1.0	1.5	0.5	2.0	1.0
6	11.0	10.5	6.5	6.5	2.0	1.5	1.5	1.0	1.5	1.0	2.5	1.5
7	10.5	9.0	6.5	5.5	2.0	1.5	2.0	1.5	1.0	1.0	3.0	2.5
8	9.0	7.5	6.0	4.5	2.0	1.5	2.0	2.0	1.0	0.5	3.0	1.5
9	8.0	8.0	6.0	5.0	1.5	1.0	2.5	2.0	0.5	0.5	2.0	1.0
10	10.5	8.0	6.5	6.0	1.5	1.0	2.5	2.5	0.5	0.5	1.5	1.0
11	10.5	9.0	6.5	6.5	2.5	1.5	3.0	1.0	0.5	0.5	3.5	1.5
12	10.5	10.0	6.5	6.0	3.0	2.5	1.0	0.5	0.5	0.5	3.5	2.5
13	10.0	7.5	6.0	5.0	3.0	3.0	0.5	0.5	0.5	0.5	3.0	1.5
14	9.0	8.5	5.0	4.0	3.0	3.0	0.5	0.5	0.5	0.5	3.0	1.0
15	9.0	8.5	4.0	3.0	3.0	1.5	0.5	0.5	1.0	0.5	3.5	1.0
16	9.0	7.0	3.0	2.5	2.0	1.5	0.5	0.5	1.5	1.0	5.5	2.5
17	8.5	7.5	4.5	3.0	2.0	2.0	0.5	0.0	1.5	1.5	6.0	3.5
18	7.5	6.0	5.5	4.5	2.0	2.0	0.0	0.0	1.5	1.0	6.0	4.0
19	6.5	5.5	5.5	5.5	2.0	2.0	0.0	0.0	1.0	1.0	5.0	4.5
20	6.0	4.5	5.5	5.5	2.0	2.0	0.0	0.0	2.0	1.0	6.5	4.5
21	6.5	5.5	5.5	4.5	2.0	2.0	0.0	0.0	3.0	2.0	6.5	3.5
22	7.5	6.5	4.5	4.0	2.0	2.0	0.0	0.0	3.0	3.0	3.5	2.5
23	8.0	7.0	5.0	4.0	2.5	2.0	0.0	0.0	4.0	3.0	3.5	2.5
24	8.0	6.0	5.5	5.0	2.5	1.5	0.0	0.0	4.0	3.0	3.5	3.0
25	8.0	8.0	5.0	2.5	1.5	1.5	1.0	0.0	3.0	2.0	3.5	3.0
26	8.0	6.5	2.5	2.0	1.5	1.5	1.0	1.0	2.0	1.0	3.5	1.0
27	7.5	6.0	2.0	2.0	2.0	1.5	1.0	0.5	1.0	0.5	4.5	2.5
28	9.0	7.5	3.0	1.5	2.0	1.5	1.0	0.5	1.5	1.0	4.0	2.5
29	9.0	9.0	2.5	1.5	2.0	1.5	1.0	1.0	---	---	3.5	2.5
30	10.5	9.0	1.5	1.5	2.0	2.0	1.0	0.5	---	---	3.5	2.5
31	10.5	10.0	---	---	2.0	0.5	1.5	0.5	---	---	3.0	1.0
MONTH	11.0	4.5	11.0	1.5	3.0	0.5	3.0	0.0	4.0	0.5	6.5	0.5

04123500 MANISTEE RIVER NEAR GRAYLING, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	5.5	3.0	---	---	16.0	12.5	23.0	18.0	21.0	18.0	13.0	12.0
2	5.5	4.0	---	---	16.0	12.0	23.0	18.5	20.0	16.5	15.0	13.0
3	4.5	3.5	---	---	15.0	12.0	24.0	19.5	19.5	15.5	15.0	11.0
4	4.5	1.5	---	---	14.0	12.0	24.0	18.5	19.5	15.0	13.5	11.0
5	4.5	2.0	---	---	15.0	11.5	22.5	18.0	19.5	16.0	13.5	11.5
6	5.5	2.5	---	---	15.0	12.5	21.0	18.5	18.0	14.0	12.5	11.0
7	7.0	3.0	---	---	12.5	10.5	20.5	18.0	16.5	12.5	12.5	10.5
8	7.5	4.0	14.5	11.5	13.5	10.5	22.0	18.0	17.0	13.0	10.5	10.0
9	7.0	4.5	15.0	11.0	14.0	11.0	22.0	17.0	18.0	15.0	11.5	9.0
10	8.0	5.0	15.5	12.0	15.5	11.5	21.0	16.5	18.0	15.0	11.5	10.0
11	7.5	5.0	15.5	12.0	15.5	13.0	16.5	14.0	17.5	13.5	12.0	11.5
12	7.0	4.5	15.5	12.0	13.5	13.0	18.0	14.5	17.5	14.5	11.5	9.5
13	8.5	4.5	15.5	11.0	16.0	12.5	19.0	15.5	18.5	15.5	10.0	9.0
14	---	---	15.5	12.0	18.5	14.5	19.0	16.5	18.0	14.5	10.0	8.0
15	---	---	12.0	10.5	18.5	15.0	20.5	14.5	17.5	14.0	11.0	9.0
16	---	---	15.5	9.5	15.5	13.0	22.5	18.0	18.0	14.5	11.0	10.5
17	---	---	17.0	12.0	16.0	15.0	23.5	19.0	18.0	15.0	12.5	10.5
18	---	---	17.0	13.0	19.0	14.5	23.0	19.0	17.5	13.5	13.5	12.0
19	---	---	19.0	15.0	21.0	17.0	22.0	18.0	15.5	12.5	13.5	12.0
20	---	---	21.0	16.5	21.0	17.0	22.0	19.0	14.0	12.5	12.0	10.5
21	---	---	20.5	16.5	22.0	17.0	22.0	18.0	13.5	12.5	10.5	10.5
22	---	---	18.0	15.0	22.5	19.0	21.5	17.0	14.0	13.5	10.5	10.0
23	---	---	20.0	15.0	22.5	19.0	21.5	17.0	14.0	12.5	10.5	9.5
24	---	---	19.5	16.0	21.5	17.5	19.0	16.5	15.5	12.5	10.0	8.5
25	---	---	19.0	15.5	21.0	16.0	18.5	16.0	18.0	15.5	9.0	8.0
26	---	---	18.0	16.0	21.0	16.0	18.5	14.5	17.0	14.5	9.5	9.0
27	---	---	18.0	14.0	21.0	16.5	20.0	16.5	16.5	13.0	10.5	9.0
28	---	---	17.5	13.0	21.0	17.0	19.5	16.0	16.0	12.0	10.5	8.5
29	---	---	17.5	14.5	22.5	18.5	21.0	16.0	12.0	12.0	10.5	8.5
30	---	---	17.5	14.5	22.5	17.5	21.5	17.0	12.0	12.0	11.5	10.0
31	---	---	16.0	12.5	---	---	22.0	17.5	12.0	12.0	---	---
MONTH	---	---	---	---	22.5	10.5	24.0	14.0	21.0	12.0	15.0	8.0
YEAR	24.0	0.0										

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, temperature recorder at gaging station 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 (14.5 km) southeast of Manistee.

DRAINAGE AREA.-200 mi^2 (518 km^2).

PERIOD OF RECORD.--Water temperatures: October 1956 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum 21.5°C June 22; minimum, 0.5°C Mar. 26.
Period of record:
Water temperatures: Maximum, 22.5°C June 28, 29, 1971, July 22, 1972; minimum, freezing point on many days during winter period.

REMARKS.--Some regulation above station. A listing of periodic measurements of specific conductance and temperature for this station is on page 539.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.5	8.5	11.5	10.5	3.5	2.5	3.0	3.0	3.0	2.5	3.0	2.0
2	8.5	8.0	10.5	9.5	3.5	3.0	3.0	2.5	3.0	2.5	3.0	1.5
3	8.5	7.5	10.0	8.5	3.0	3.0	3.0	2.5	3.5	2.5	2.5	2.0
4	10.0	8.0	8.5	7.5	3.0	2.0	3.5	2.5	3.5	2.5	3.0	1.5
5	11.5	10.0	7.5	7.0	4.0	3.0	3.5	3.0	4.0	3.0	2.5	1.5
6	11.0	10.5	7.0	6.5	4.0	3.5	3.0	2.5	4.0	2.5	3.5	2.5
7	10.5	9.0	6.5	5.5	4.5	4.0	3.5	3.0	2.5	2.0	4.5	3.0
8	9.0	8.5	6.5	5.0	4.0	3.0	4.0	3.5	2.0	1.5	4.0	3.0
9	9.0	8.5	6.5	5.0	3.0	3.0	4.5	4.0	1.5	1.5	3.0	1.5
10	10.0	8.0	6.5	6.0	3.0	2.5	5.0	4.5	2.0	1.5	4.0	2.0
11	10.0	8.5	7.0	6.5	3.0	2.5	5.0	2.0	2.0	1.5	3.5	2.0
12	10.5	9.0	7.0	6.0	4.5	3.0	2.0	1.0	1.5	1.0	3.5	3.0
13	9.0	8.0	6.0	4.5	4.5	4.0	1.0	1.0	1.5	1.0	4.0	2.0
14	9.0	8.5	4.5	4.0	4.5	4.5	1.0	1.0	2.0	1.0	4.5	2.0
15	9.0	8.5	4.5	3.5	4.5	3.5	1.0	1.0	1.5	1.0	5.0	2.0
16	9.0	7.5	4.0	3.0	4.0	3.5	1.0	1.0	2.0	1.0	6.0	3.0
17	9.0	8.0	5.5	4.0	4.0	3.5	1.5	1.0	2.5	2.0	6.5	4.0
18	8.0	6.5	6.5	5.5	3.5	3.5	1.0	1.0	3.5	2.5	5.5	4.5
19	6.5	6.0	7.0	6.5	3.5	3.0	1.0	1.0	4.0	3.0	6.0	4.5
20	6.0	5.5	7.5	6.0	3.5	3.0	1.5	1.0	4.0	3.0	7.0	4.5
21	6.5	5.0	6.0	5.5	3.5	3.5	1.5	1.0	4.5	2.5	6.0	4.0
22	7.5	6.0	5.5	5.0	3.5	3.5	1.5	1.0	5.0	4.0	4.0	2.0
23	9.0	7.5	6.0	5.0	4.0	3.5	1.5	1.0	6.0	4.5	2.5	1.5
24	8.0	7.0	6.0	6.0	3.5	3.0	2.5	1.5	5.5	4.5	2.5	2.0
25	8.5	7.5	6.0	4.0	3.0	3.0	3.5	2.5	4.5	3.0	2.5	1.5
26	8.0	6.5	4.0	3.0	3.0	2.5	3.5	2.5	3.5	2.5	2.5	0.5
27	7.5	6.0	3.0	3.0	4.0	3.0	2.5	2.0	3.0	2.0	2.0	1.5
28	9.0	7.5	3.5	3.0	4.0	4.0	2.5	1.5	3.0	2.0	2.0	1.5
29	9.0	8.5	3.5	3.0	4.5	4.0	3.5	2.5	---	---	2.5	2.0
30	10.5	9.0	3.0	2.5	4.0	3.0	3.5	2.5	---	---	2.5	1.5
31	11.0	9.5	---	---	3.0	2.5	3.5	3.0	---	---	2.0	1.0
MONTH	11.5	5.0	11.5	2.5	4.5	2.0	5.0	1.0	6.0	1.0	7.0	0.5

04126200 LITTLE MANISTEE RIVER NEAR FREESOIL, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	4.5	2.0	13.0	10.5	16.0	13.0	20.5	17.5	20.0	18.0	17.5	16.0
2	4.0	2.5	13.0	10.5	15.5	13.0	20.5	17.5	19.5	17.0	18.0	17.0
3	3.0	2.0	12.5	11.0	14.5	13.0	20.5	18.0	19.5	16.5	17.0	16.0
4	4.0	1.5	11.0	10.5	13.5	12.5	20.0	17.0	19.5	16.5	16.0	15.5
5	5.0	2.0	10.5	9.5	16.5	12.5	19.5	17.0	19.5	17.5	15.5	15.0
6	5.5	3.0	11.5	9.5	15.0	14.0	18.0	17.0	18.0	16.0	15.0	14.0
7	6.5	3.0	13.0	9.5	14.0	12.5	19.0	16.0	17.5	14.5	14.5	13.5
8	6.5	3.5	13.0	11.0	15.0	11.0	19.5	16.5	17.5	14.5	13.5	12.5
9	5.5	4.0	14.5	10.5	15.5	12.5	18.0	15.5	17.0	16.0	13.0	11.5
10	7.0	4.5	15.0	11.0	17.0	13.5	16.5	15.0	16.5	15.5	13.5	12.5
11	7.0	4.0	15.5	12.0	15.5	14.5	15.5	13.5	18.0	15.0	14.0	13.5
12	6.5	3.5	15.5	12.5	14.5	13.5	16.0	13.5	17.5	15.0	13.5	12.0
13	7.0	3.5	15.0	11.0	16.5	13.0	16.5	14.0	19.0	16.5	12.0	11.0
14	6.0	4.0	14.5	12.0	17.0	14.5	15.5	14.5	18.0	15.5	12.0	10.0
15	8.0	5.0	13.5	11.0	16.0	14.5	17.5	14.0	17.5	15.0	12.0	11.0
16	9.0	6.0	14.0	9.5	16.0	14.0	19.0	15.5	18.5	15.5	12.5	12.0
17	9.0	6.0	15.5	11.0	15.5	15.0	20.0	17.0	18.5	16.0	13.0	11.5
18	10.0	8.5	17.0	12.5	17.0	14.5	18.5	17.0	17.5	15.0	14.5	13.0
19	9.5	7.5	18.5	15.0	19.0	17.0	20.5	17.5	15.5	13.5	14.0	13.5
20	9.0	7.0	19.5	16.5	20.0	18.0	20.5	18.0	15.0	14.5	13.5	12.5
21	9.0	6.0	18.5	17.5	21.0	18.5	20.0	17.5	15.0	14.5	12.5	12.0
22	9.5	6.0	19.0	16.0	21.5	19.5	20.5	17.5	16.0	15.0	12.0	11.0
23	8.5	8.0	19.5	16.0	21.0	19.5	19.0	17.5	16.0	15.0	11.5	10.5
24	8.0	7.5	20.0	17.0	20.0	18.5	19.5	17.5	17.5	15.0	11.5	10.0
25	9.5	7.0	19.5	17.0	20.0	18.0	18.5	16.0	20.0	17.0	11.0	9.5
26	10.5	7.0	18.5	16.5	19.0	17.0	18.0	15.0	20.0	18.5	11.0	10.0
27	10.0	8.5	18.5	15.0	19.0	17.5	19.5	16.0	19.5	18.0	11.0	9.5
28	8.5	7.5	17.0	14.0	20.0	17.0	19.5	16.0	18.5	16.0	11.5	9.5
29	10.5	7.0	16.5	15.0	20.5	18.0	20.0	16.5	16.5	16.0	11.0	10.0
30	11.5	9.5	16.0	14.0	21.0	18.5	20.5	17.0	17.0	16.5	12.5	11.0
31	---	---	16.0	13.0	---	---	20.5	17.5	16.5	16.0	---	---
MONTH	11.5	1.5	20.0	9.5	21.5	11.0	20.5	13.5	20.0	13.5	18.0	9.5
YEAR	21.5	0.5										

04126520 MANISTEE RIVER AT MANISTEE, MICH.
(National Stream-quality accounting network and pesticide station)

LOCATION.--Lat 44°14'54" long 86°19'25", in NW¼ NW¼ sec.12, T.21 N., R.17 W., Manistee County, at upstream side of bridge on Main Street in Manistee and 1.0 mi upstream from mouth.

DRAINAGE AREA.--2,000 mi^2 (5,180 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: December 1974 to September 1975.
Specific Conductance: November 1974 to September 1975.
Water Temperatures: November 1974 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed,1680 micromhos Nov. 18; minimum observed, 290 micromhos May 2.
Water temperatures: Maximum observed, 24.5°C Aug. 1-3; minimum observed, 0.5°C on many days during January and February.

REMARKS.--Water discharge measurements are made at time of monthly sampling.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
09...	1500	2350	7.4	54	13	18	1.5	213	0	175	15	45
NOV.												
06...	1400	2480	7.9	98	13	21	2.9	219	0	180	14	120
DEC.												
05...	1300	2470	8.4	84	14	20	2.5	189	0	155	14	100
JAN.												
08...	1130	1140	8.6	87	12	15	2.6	188	0	154	13	99
FEB.												
05...	1130	1290	8.9	77	12	18	2.1	164	0	134	14	84
MAR.												
12...	1130	2110	8.7	88	13	18	2.6	185	0	152	17	100
APR.												
03...	1100	2160	8.1	70	12	23	2.0	174	0	143	16	90
MAY												
07...	1200	2870	6.4	77	9.8	13	2.4	152	0	125	12	92
JUNE												
04...	1300	--	6.6	70	12	13	2.0	176	0	144	9.7	71
JULY												
09...	1100	2690	8.1	98	13	18	3.0	188	0	154	12	130
AUG.												
05...	1430	2660	6.9	68	13	14	1.8	192	0	157	12	63
SEP.												
10...	1130	2710	7.6	67	11	15	2.2	162	0	133	13	77

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
09...	1500	7.1	1	1	0	0	<10	0	0	0	5	2
JAN.												
08...	1130	10	0	0	1	0	10	0	0	1	14	1
APR.												
03...	1100	4.7	1	0	0	0	20	0	--	1	2	1
JULY												
09...	1100	4.8	1	1	0	0	<10	0	0	0	4	2

04126520 MANISTEE RIVER AT MANISTEE, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
09...	.0	.17	.24	.41	.03	286	259	190	15	17	.6	715
NOV.												
06...	.2	.20	.22	.42	.01	504	385	300	120	13	.5	729
DEC.												
05...	.2	.27	.29	.56	.01	380	336	270	115	14	.5	685
JAN.												
08...	.1	.33	.22	.55	.01	336	330	270	116	11	.4	670
FEB.												
05...	.1	.35	.41	.76	.01	316	297	240	106	14	.5	549
MAR.												
12...	.1	.34	.20	.54	.01	428	339	270	118	12	.5	654
APR.												
03...	.0	.32	.26	.58	.04	405	306	220	77	18	.7	602
MAY												
07...	.2	.18	.40	.58	.02	454	285	230	105	11	.4	549
JUNE												
04...	.1	.14	.26	.40	.03	339	270	220	76	11	.4	423
JULY												
09...	.1	.13	.45	.58	.01	586	375	300	146	11	.5	689
AUG.												
05...	.4	.03	.39	.42	.02	318	274	220	63	12	.4	485
SEP.												
10...	.2	.12	.45	.57	.03	359	273	210	77	13	.4	499

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
09...	8.1	10.5	5	10.0	91	2.7	3900	B160	60	5	32	100
NOV.												
06...	7.0	10.0	5	9.3	84	35	B1600	130	24	5	33	100
DEC.												
05...	8.1	3.0	4	13.6	100	2.4	180	31	B5	5	33	100
JAN.												
08...	8.2	3.0	4	13.2	99	1.9	--	B13	B3	4	12	100
FEB.												
05...	7.8	.5	5	13.0	94	4.2	220	45	B5	11	38	100
MAR.												
12...	8.0	.5	3	13.4	94	3.0	210	52	B6	3	17	100
APR.												
03...	7.8	1.5	6	14.5	110	4.4	220	55	20	7	41	100
MAY												
07...	7.9	11.5	3	8.4	78	3.1	320	43	B6	8	62	100
JUNE												
04...	8.1	17.5	4	8.6	91	2.2	250	38	B78	11	--	100
JULY												
09...	7.9	23.0	3	6.8	80	3.8	400	140	140	8	58	100
AUG.												
05...	8.3	25.0	3	3.6	44	1.5	370	100	90	0	.00	--
SEP.												
10...	7.7	15.5	6	8.5	86	5.2	140	82	49	5	37	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
09...	160	60	2	2	26	0	.0	.0	0	0	8	8
JAN.												
08...	310	10	10	3	10	0	.2	.2	0	0	20	0
APR.												
03...	480	140	34	0	30	30	.1	.0	0	0	20	10
JULY												
09...	260	30	6	0	40	40	.3	.1	0	0	30	8

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT).

04126520 MANISTEE RIVER AT MANISTEE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
OCT. 09	28	22.3	21	.6	.6	2170
JAN. 08	28	.8	.8	.5	0.0	0
APR. 03	33	9.8	7.5	25	2.1	92
JULY 09	27	12	9.2	16	1.8	175

REMARKS-- [a] Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT 09	1500	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Kirchneriella	--	4
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Coscinodiscus	--	1
		Cyclotella	--	12
		Melosira	--	60
		Pennales		
		Achnanthaceae		
		Cocconeis	--	4
		Cymbellaceae		
		Amphora	--	1
		Fragilariaceae		
		Synedra	--	5
		Gomphonemataceae		
		Gomphonema	--	4
		Nitzschiaceae		
		Nitzschia	--	9
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium	--	1
		TOTAL	1,700	
NOV 06	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	--	3
		Hydrodictyaceae		
		Pediastrum	--	20
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	21
		Melosira	--	36
		Pennales		
		Diatomaceae		
		Diatoma	--	6
		Fragilariaceae		
		Synedra	--	5
		Gomphonemataceae		
		Gomphonema	--	5
		Naviculaceae		
		Navicula	--	5
		TOTAL	750	
DEC 05	1300	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Coscinodiscus	--	40
		Melosira	--	38
		Pennales		
		Diatomaceae		
		Diatoma	--	2
		Gomphonemataceae		
		Gomphonema	--	7
		Naviculaceae		
		Navicula	--	4
		Nitzschiaceae		
		Nitzschia	--	10
		TOTAL	500	
JAN 08	1180	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	29
		Pennales		
		Cymbellaceae		
		Cymbella	--	29
		Diatomaceae		
		Diatoma	--	14
		Naviculaceae		
		Navicula	--	29
		TOTALS	67	

04126520 MANISTEE RIVER AT MANISTEE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB 05	1130	Chrysophyta		
		Bacilldriophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	10
		Pennales		
		Achnanthaceae		
		Achnanthes	--	20
		Cocconeis	--	5
		Cymbellaceae		
		Amphora	--	5
		Cymbella	--	5
		Fragilariaceae		
		Asterionella	--	5
		Naviculaceae		
		Navicula	--	30
		Nitzschiaceae		
		Nitzschia	--	20
		TOTAL	200	
MAR 12	1130	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	6
		Pennales		
		Achnanthaceae		
		Achnanthes	--	38
		Cocconeis	--	6
		Cymbellaceae		
		Cymbella	--	6
		Diatomaceae		
		Diatoma	--	3
		Gomphonemataceae		
		Gomphonema	--	6
		Naviculaceae		
		Navicula	--	25
		Nitzschiaceae		
		Nitzschia	--	9
		TOTAL	310	
APR 03	1100	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	17
		Melosira	--	5
		Pennales		
		Achnanthaceae		
		Achnanthes	--	5
		Cocconeis	--	2
		Cymbellaceae		
		Amphora	--	2
		Cymbella	--	5
		Diatomaceae		
		Diatoma	--	2
		Eunotiaceae		
		Eunotia	--	2
		Fragilariaceae		
		Synedra	--	2
		Gomphonemataceae		
		Gomphonema	--	12
		Naviculaceae		
		Navicula	--	17
		Nitzschiaceae		
		Nitzschia	--	15
		Chrysophyta		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	12
		TOTAL	800	
MAY 07	1200	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	33
		Melosira	--	10
		Pennales		
		Achnanthaceae		
		Achnanthes	--	8
		Cocconeis	--	3
		Cymbellaceae		
		Amphora	--	3
		Cymbella	--	5
		Diatomaceae		
		Diatoma	--	3
		Fragilariaceae		
		Fragilaria	--	10
		Synedra	--	5
		Gomphonemataceae		
		Gomphonema	--	5
		Naviculaceae		
		Navicula	--	13
		Nitzschiaceae		
		Nitzschia	--	5
		TOTAL	1,300	

04126520 MANISTEE RIVER AT MANISTEE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JUNE 04	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Scenedesmus	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	14
		Melosira	--	43
		Rhizosoleniaceae		
		Rhizosolenia	--	2
		Pennales		
		Achnanthaceae		
		Achnanthes	--	8
		Cocconeis	--	2
		Cymbellaceae		
		Amphora	--	2
		Cymbella	--	3
		Fragilariaceae		
		Asterionella	--	6
		Fragilaria	--	8
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	5
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	2
		TOTAL	2,200	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JULY 09	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Micractiniaceae		
		Micractinium	33	5
		Scenedesmaceae		
		Scenedesmus	88	14
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	22	4
		Melosira	11	2
		Rhizosoleniaceae		
		Rhizosolenia	11	2
		Pennales		
		Achnanthaceae		
		Achnanthes	11	2
		Cocconeis	77	13
		Diatomaceae		
		Diatoma	11	2
		Gomphonemataceae		
		Gomphonema	22	4
		Naviculaceae		
		Navicula	99	16
		Neidium	11	2
		Nitzschiaceae		
		Nitzschia	66	11
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Epipyxis	11	2
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	88	14

04126520 MANISTEE RIVER AT MANISTEE, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
AUG 05	1430	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	250	2
		Oocystis	--	<1
		Tetraedron	--	<1
		Treubaria	--	<1
		Scenedesmaceae		
		Scenedesmus	--	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	51	<1
		Melosira	250	2
		Rhizosoleniaceae		
		Rhizosolenia	51	<1
		Pennales		
		Achnanthaceae		
		Cocconeis	100	1
		Cymbellaceae		
		Amphora		
		Cymbella		
		Fragilariaceae		
		Fragilaria	--	<1
		Synedra	--	<1
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Diploneis	--	<1
		Navicula ,	100	1
		Nitzschiaceae		
		Nitzschia	250	2
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	200	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	3,100	23
		Oscillatoriales		
		Nostocaceae		
		Anabaena	510	4
		Aphanizomenon	8,500	61
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	51	<1
		Phrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium	--	<1

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP 10	1130	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	29	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	88	1
		Melosira	820	5
		Pennales		
		Achnanthaceae		
		Cocconeis	88	1
		Fragilariaceae		
		Fragilaria	320	2
		Synedra	29	
		Gomphonemataceae		
		Gomphonema	29	<1
		Naviculaceae		
		Navicula		
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	<1
		Anacystis Incerta	13,000	85
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	880	6
		Euglenophyta		
		Cryptophyceae		
		Cryptomonidales		
		Cryptomonodaceae		
		Cryptomonas	29	<1

04126520 MANISTEE RIVER AT MANISTEE, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	745	530	612	745	440	349	498	493	549	596
2		---	643	676	418	571	410	290	610	371	374	441
3		---	510	530	510	734	570	555	488	371	416	380
4		---	653	510	632	673	490	454	466	498	547	408
5		---	393	499	479	566	410	500	413	742	370	483
6		589	394	624	673	824	640	380	848	955	795	398
7		579	405	530	490	1030	590	349	466	864	718	308
8		526	561	499	510	427	490	552	482	578	867	839
9		368	505	572	765	515	680	369	556	422	1040	467
10		832	612	437	602	721	590	375	350	371	450	334
11		421	473	385	592	618	680	400	329	746	515	376
12		537	467	624	520	618	680	510	583	545	733	497
13		758	355	520	520	695	420	395	636	403	501	646
14		684	385	530	449	453	380	332	488	379	1040	518
15		884	694	676	398	850	400	452	413	439	798	535
16		758	622	541	510	592	440	500	450	411	722	535
17		684	602	---	836	381	470	500	1010	373	775	686
18		1680	592	---	423	500	530	500	445	374	762	386
19		453	633	469	581	798	390	519	435	371	562	329
20		474	505	541	592	695	370	419	387	387	440	344
21		526	525	423	413	541	330	329	636	838	606	433
22		821	476	469	683	340	510	387	371	432	692	534
23		1180	471	382	520	366	320	329	339	577	698	378
24		516	723	857	357	361	340	742	329	469	481	515
25		768	572	561	444	366	412	387	509	405	587	515
26		358	624	382	520	721	575	392	472	435	485	678
27		358	458	454	561	618	342	392	848	457	426	517
28		1040	458	520	444	566	300	392	636	562	452	459
29		758	624	530	---	---	560	387	403	426	416	762
30		551	603	408	---	---	349	382	392	496	619	423
31		---	489	372	---	---	---	376	---	667	536	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1400 AND 1600 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	3.5	2.0	1.0	1.5	2.0	10.0	18.5	23.5	24.5	19.5
2		---	4.0	1.5	1.0	1.5	2.5	10.5	18.5	24.0	24.5	19.0
3		---	4.0	2.0	1.0	1.0	2.5	11.0	18.5	24.0	24.5	19.0
4		---	3.5	2.0	1.0	1.5	2.5	11.0	18.5	23.5	24.0	18.5
5		---	3.0	1.5	1.0	1.5	2.5	11.0	18.5	23.5	23.0	18.0
6		9.5	3.0	1.5	1.5	1.5	3.0	11.0	18.5	23.5	22.5	17.5
7		9.5	3.0	2.0	1.0	1.5	3.5	12.0	17.5	23.5	22.5	17.0
8		9.5	2.0	2.0	0.5	1.5	3.5	12.0	17.5	23.5	22.5	16.5
9		9.0	1.5	2.0	0.5	1.5	4.0	12.5	17.5	23.5	23.0	16.5
10		9.0	2.0	2.5	0.5	1.5	4.5	13.0	18.0	22.5	23.0	17.0
11		9.0	2.0	2.0	0.5	1.5	5.0	13.5	18.5	22.5	23.0	17.0
12		9.0	2.0	0.5	0.5	2.0	5.0	14.0	18.5	22.5	23.0	16.0
13		8.0	2.0	0.5	0.5	2.0	5.5	14.0	18.5	21.5	23.0	15.5
14		7.0	2.0	0.5	0.5	1.5	5.5	15.0	19.0	20.5	23.0	15.0
15		6.5	2.5	0.5	0.5	1.5	6.0	15.0	19.0	21.0	23.0	14.5
16		6.5	2.5	0.5	0.5	2.0	6.5	14.5	18.0	22.5	23.0	15.0
17		6.0	2.5	0.5	1.0	2.5	7.0	15.0	19.0	23.0	23.0	15.5
18		6.5	2.0	0.5	1.0	2.5	7.5	15.5	19.0	23.0	23.0	15.5
19		7.5	2.0	0.5	1.0	3.0	8.0	16.5	19.5	23.5	22.0	16.5
20		7.0	2.0	0.5	1.0	3.5	8.0	17.5	20.5	23.0	22.0	16.0
21		6.0	2.0	1.0	1.0	3.5	8.0	18.5	21.0	23.0	21.5	15.0
22		6.5	2.0	0.5	1.0	3.5	8.0	19.0	22.0	23.5	21.0	15.0
23		6.5	2.0	0.5	1.5	3.0	8.5	19.0	23.0	23.5	21.0	14.5
24		6.0	2.0	0.5	1.5	3.0	8.5	19.0	23.0	23.0	21.0	14.5
25		5.0	2.0	1.0	2.0	2.5	9.0	19.5	23.0	22.5	21.5	14.0
26		4.5	2.5	0.5	1.5	2.0	9.0	19.5	23.0	22.0	21.5	14.0
27		4.0	2.0	1.0	1.0	2.0	9.0	19.5	23.0	22.0	21.5	14.0
28		4.0	2.0	1.0	1.5	1.5	9.0	19.5	22.5	22.5	21.0	14.0
29		4.5	2.0	1.0	---	2.0	9.5	20.0	23.0	23.0	21.0	14.0
30		3.5	2.0	1.0	---	2.0	10.0	20.0	23.5	23.5	20.5	14.0
31		---	2.0	1.0	---	2.0	---	18.0	---	24.0	20.0	---

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, temperature recorder at gaging station 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 Browns 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 mi^2 (578 km^2).

PERIOD OF RECORD.--Water temperatures: June 1961 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 21.0°C August 5, 6; minimum, 1.0°C January 15-24.
Period of record:
Water temperatures: Maximum 23.0°C July 2, 1963; minimum, freezing point on many days during winter period.

REMARKS.--A listing of periodic measurements of specific conductance and temperature for this station is on page 539.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.0	10.5	9.0	8.5	3.0	2.5	2.5	2.5	2.0	1.5	3.0	3.0
2	10.5	9.5	10.5	9.0	2.5	2.0	2.5	2.5	2.0	2.0	3.0	3.0
3	9.5	8.5	10.5	10.5	2.0	2.0	2.5	2.5	2.0	2.0	3.0	3.0
4	8.5	8.5	10.5	10.0	2.0	2.0	2.5	2.0	2.0	2.0	3.0	3.0
5	8.5	8.0	10.0	9.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
6	8.5	8.5	9.0	8.5	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
7	8.5	8.5	8.5	8.0	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
8	8.5	8.5	8.0	7.5	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
9	8.5	8.5	7.5	7.5	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
10	8.5	8.5	7.5	7.5	2.0	2.0	2.0	2.0	2.0	2.0	3.0	3.0
11	8.5	8.5	7.5	7.5	2.0	2.0	2.0	2.0	2.0	1.5	3.0	3.0
12	9.5	8.5	7.5	7.5	2.0	2.0	2.0	2.0	1.5	1.5	3.0	3.0
13	9.5	9.5	7.5	7.0	2.0	2.0	2.0	1.5	1.5	1.5	3.0	3.0
14	9.5	9.0	7.0	6.0	2.0	2.0	1.5	1.5	1.5	1.5	3.0	3.0
15	9.0	9.0	6.0	5.0	2.0	2.0	1.5	1.0	1.5	1.5	3.0	3.0
16	9.0	9.0	5.0	5.0	2.5	2.0	1.0	1.0	1.5	1.5	3.0	3.0
17	9.0	9.0	5.0	4.5	2.5	2.5	1.0	1.0	1.5	1.5	3.0	3.0
18	9.0	8.5	4.5	4.5	2.5	2.5	1.0	1.0	1.5	1.5	3.0	3.0
19	8.5	8.5	4.5	4.5	2.5	2.5	1.0	1.0	1.5	1.5	3.5	3.0
20	8.5	7.0	4.5	4.5	2.5	2.5	1.0	1.0	2.0	1.5	3.5	3.5
21	7.0	7.0	4.5	4.5	2.5	2.5	1.0	1.0	2.0	2.0	3.5	3.5
22	7.0	7.0	4.5	4.5	2.5	2.5	1.0	1.0	2.0	2.0	3.5	3.5
23	7.0	7.0	4.5	4.5	2.5	2.5	1.0	1.0	2.5	2.0	3.5	3.5
24	7.0	7.0	4.5	4.5	2.5	2.5	1.5	1.0	2.5	2.5	3.5	3.5
25	7.0	7.0	4.5	4.5	2.5	2.5	1.5	1.5	2.5	2.5	3.5	3.5
26	7.0	7.0	4.5	4.5	2.5	2.5	1.5	1.5	2.5	2.5	3.5	3.5
27	7.0	7.0	4.5	4.0	2.5	2.5	1.5	1.5	3.0	2.5	3.5	3.5
28	7.0	7.0	4.0	4.0	2.5	2.5	1.5	1.5	3.0	3.0	3.5	3.5
29	7.5	7.0	4.0	3.0	2.5	2.5	1.5	1.5	---	---	3.5	3.5
30	7.5	7.0	3.0	3.0	2.5	2.5	1.5	1.5	---	---	3.5	3.5
31	8.5	7.5	---	---	2.5	2.5	1.5	1.5	---	---	3.5	3.5
MONTH	11.0	7.0	10.5	3.0	3.0	2.0	2.5	1.0	3.0	1.5	3.5	3.0

04127000 BOARDMAN RIVER NEAR MAYFIELD, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	3.5	3.5	9.5	9.0	16.5	15.5	19.0	19.0	20.5	20.0	16.0	14.5
2	3.5	3.5	11.0	9.5	16.5	15.0	19.0	19.0	20.5	19.0	16.5	14.5
3	3.5	3.5	11.5	11.0	15.5	15.0	20.5	19.0	20.0	19.0	16.0	14.5
4	3.5	3.5	11.5	11.5	15.5	15.0	20.5	19.5	20.0	19.0	14.5	14.5
5	3.5	3.5	11.5	11.0	15.5	13.0	20.0	19.5	21.0	19.5	15.0	14.5
6	3.5	3.5	11.5	11.0	14.5	13.5	20.0	18.0	21.0	19.5	14.5	14.5
7	3.5	3.5	12.5	11.0	14.5	14.0	19.5	18.5	19.5	19.0	14.5	14.0
8	4.0	3.5	12.5	12.0	15.5	14.0	20.0	18.5	19.0	17.5	14.0	14.0
9	4.0	4.0	13.0	12.0	15.5	15.0	18.5	18.0	18.0	17.5	14.0	13.5
10	4.0	4.0	14.0	12.5	16.0	15.0	18.5	18.0	18.5	18.0	13.5	13.0
11	4.5	4.0	13.5	13.0	16.0	16.0	18.0	15.5	19.0	18.0	13.5	12.5
12	5.0	4.0	15.0	13.5	16.0	13.5	16.0	15.5	19.0	17.5	13.5	13.0
13	5.0	5.0	14.5	13.0	14.5	14.0	16.5	16.0	18.0	17.5	13.0	12.5
14	5.0	5.0	13.5	12.0	16.5	14.5	16.5	16.0	18.5	18.0	12.5	12.5
15	5.5	5.0	13.5	13.0	16.5	15.0	16.0	15.5	19.0	18.5	12.5	12.5
16	5.5	5.5	14.5	13.0	15.5	15.0	17.0	16.0	19.0	17.5	12.5	12.5
17	6.0	5.5	14.0	13.5	15.5	15.5	18.0	17.0	18.5	17.5	12.5	12.5
18	6.0	6.0	15.0	13.5	16.5	15.5	18.5	18.0	18.5	17.5	13.5	12.5
19	6.0	6.0	15.5	14.5	17.5	16.0	19.5	17.5	18.5	17.5	13.5	13.5
20	6.5	6.0	17.5	15.5	18.0	17.0	19.5	18.5	18.0	17.0	13.5	12.5
21	7.0	6.5	18.0	16.5	17.5	17.0	20.5	19.5	17.0	16.0	12.5	12.5
22	7.0	6.5	19.5	18.0	18.5	17.5	20.5	18.5	17.5	16.0	12.5	12.5
23	8.0	6.5	19.5	19.0	19.0	18.5	20.0	19.5	17.0	16.5	12.5	12.5
24	7.0	6.5	19.5	19.0	19.5	19.0	19.5	17.5	16.5	15.0	12.5	12.5
25	8.0	7.0	19.5	18.5	20.0	19.0	19.0	18.0	16.5	15.5	12.5	12.5
26	9.5	8.0	18.5	17.0	19.5	18.5	19.0	17.0	17.0	16.5	12.5	12.0
27	9.5	9.5	18.5	17.5	18.5	18.5	19.0	17.0	17.0	16.5	12.0	11.0
28	9.5	9.0	18.5	17.0	19.5	18.5	20.0	18.5	17.0	17.0	12.0	11.5
29	9.0	8.0	18.0	17.0	20.0	19.0	19.0	18.5	17.0	17.0	11.5	11.0
30	9.0	8.0	17.5	16.5	20.0	19.0	19.0	18.5	17.0	16.5	11.0	10.0
31	---	---	16.5	15.5	---	---	20.0	19.0	16.5	16.0	---	---
MONTH	9.5	3.5	19.5	9.0	20.0	13.0	20.5	15.5	21.0	15.0	16.5	10.0
YEAR	21.0	1.0										

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, temperature recorder at gaging station 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 mi^2 (175 km^2).

PERIOD OF RECORD.--Water temperature: October 1966 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 18.5°C July 3,4; minimum, 0.5°C on several days during January and February.
Period of record:
Water temperatures: Maximum, 19.5°C June 28, 29, 1971, July 22-24, 1972, July 15, 1974; minimum, freezing point on many days during winter periods.

REMARKS.--Intermittent ice cover during winter period. A listing of periodic measurements of specific conductance and temperature for this station is on page 540.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.0	10.0	9.5	8.5	2.0	1.5	1.5	1.5	1.0	0.5	2.0	2.0
2	10.0	8.5	9.5	9.5	2.0	2.0	1.5	1.5	1.0	0.5	2.0	1.5
3	8.5	7.0	9.5	8.5	2.0	2.0	1.5	1.5	1.0	1.0	1.5	1.5
4	9.0	7.0	8.5	7.5	2.0	1.5	2.0	1.5	1.0	1.0	2.0	1.5
5	10.0	8.5	7.5	7.0	2.5	1.5	2.0	1.5	1.5	1.0	2.0	1.5
6	10.0	10.0	7.0	7.0	2.5	2.0	1.5	1.5	1.5	1.0	2.0	1.5
7	10.0	9.0	7.0	5.5	2.5	2.0	2.0	1.5	1.0	1.0	3.0	2.0
8	9.0	8.0	5.5	4.5	2.5	2.0	2.5	2.0	1.0	1.0	3.0	2.0
9	8.0	8.0	4.5	4.5	2.5	2.0	2.5	2.5	1.0	1.0	2.0	1.0
10	9.0	8.0	5.0	4.5	2.5	2.0	2.5	2.5	1.0	1.0	1.5	1.0
11	9.0	9.0	5.5	5.0	2.5	2.5	2.5	1.5	1.0	1.0	1.5	1.0
12	9.5	9.0	5.5	5.0	3.0	2.5	1.5	0.5	1.0	1.0	1.5	1.5
13	9.5	7.5	5.0	4.0	3.0	3.0	0.5	0.5	1.0	1.0	2.0	1.5
14	8.5	7.5	4.0	3.0	3.0	3.0	0.5	0.5	1.0	1.0	2.0	1.0
15	8.5	8.0	3.0	2.5	3.0	3.0	0.5	0.5	1.5	1.0	2.0	1.5
16	8.0	7.0	2.5	2.5	3.0	3.0	0.5	0.5	1.5	1.5	3.5	2.0
17	7.5	7.0	3.5	2.5	3.0	3.0	0.5	0.5	1.5	1.5	4.0	3.5
18	7.0	6.5	3.5	3.5	3.0	3.0	1.0	0.5	2.0	1.5	4.0	4.0
19	6.5	6.0	4.0	3.5	3.0	2.5	1.0	0.5	2.0	2.0	4.0	4.0
20	6.0	5.0	4.5	4.0	2.5	2.5	0.5	0.5	2.0	2.0	4.5	4.0
21	5.0	5.0	4.0	4.0	2.5	2.5	0.5	0.5	2.5	2.0	4.5	4.5
22	6.0	5.0	4.5	4.0	2.5	2.5	0.5	0.5	3.0	2.5	4.5	2.5
23	6.0	6.0	5.0	4.5	2.5	2.5	0.5	0.5	3.5	3.0	3.0	2.5
24	6.5	5.5	5.0	5.0	2.5	2.5	1.0	0.5	3.5	3.5	3.0	2.5
25	6.5	6.5	5.0	3.5	2.5	2.5	1.0	1.0	3.5	3.5	2.5	2.5
26	6.5	5.5	3.5	2.0	2.5	2.5	1.0	1.0	3.5	2.5	2.5	1.5
27	5.5	5.0	2.0	2.0	2.5	2.5	1.0	0.5	2.5	2.0	2.5	1.5
28	7.5	5.0	2.5	2.0	2.5	2.5	1.0	0.5	2.0	2.0	2.5	2.5
29	7.0	7.0	2.5	2.0	3.0	2.5	1.0	1.0	---	---	2.5	2.5
30	8.0	7.0	2.0	1.5	3.0	3.0	1.0	1.0	---	---	2.5	2.5
31	8.5	8.0	---	---	3.0	1.5	1.0	1.0	---	---	2.5	2.0
MONTH	11.0	5.0	9.5	1.5	3.0	1.5	2.5	0.5	3.5	0.5	4.5	1.0

04127800 JORDAN RIVER NEAR EAST JORDAN, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	3.5	2.0	11.0	10.0	13.0	11.5	17.5	15.5	17.0	15.5	13.5	13.0
2	3.0	2.5	11.0	9.5	13.0	11.0	17.5	16.0	17.0	15.0	14.5	13.5
3	3.0	2.5	10.5	9.5	13.0	11.5	18.5	16.5	16.5	14.5	14.5	11.5
4	3.0	2.0	9.5	9.0	12.0	11.0	18.5	15.5	16.5	14.5	13.5	12.5
5	2.5	2.0	9.5	9.0	13.0	11.0	17.0	15.5	16.5	14.5	13.5	13.0
6	3.0	2.0	10.0	9.0	13.0	11.0	17.0	15.5	15.5	13.0	13.0	12.5
7	3.5	2.0	11.0	8.5	11.0	10.0	17.0	15.5	14.0	12.0	13.0	12.5
8	4.0	2.5	11.0	9.5	11.5	10.0	17.0	15.5	14.5	12.5	13.0	12.5
9	4.0	3.0	12.0	9.5	12.0	10.0	17.0	14.0	15.0	14.0	13.0	11.5
10	4.5	3.5	11.5	9.5	13.0	11.0	15.0	14.0	15.0	14.0	12.5	11.5
11	4.5	3.5	11.5	9.5	13.0	12.0	14.0	12.5	15.0	13.5	12.5	12.5
12	4.5	3.0	11.0	9.5	12.0	12.0	14.5	12.5	15.0	13.5	12.5	11.5
13	4.5	3.0	11.0	8.5	13.0	12.0	14.5	13.0	15.5	14.5	11.5	11.0
14	5.0	3.5	10.5	9.0	15.0	13.0	14.0	13.5	15.5	13.5	11.0	10.0
15	6.0	4.5	9.0	9.0	15.0	13.5	15.0	12.0	15.0	13.5	12.5	11.0
16	6.0	5.0	10.5	7.5	13.5	13.0	17.0	14.5	15.0	13.5	12.5	12.5
17	6.0	5.0	12.5	9.0	13.5	13.5	17.5	15.5	15.0	14.0	13.0	12.5
18	6.0	5.0	13.0	10.5	13.5	13.0	17.5	15.5	15.0	13.0	14.0	13.0
19	5.0	5.0	14.0	12.5	16.0	13.0	18.0	16.0	13.5	12.0	14.0	13.5
20	5.5	5.0	15.5	13.5	16.0	14.0	18.0	17.0	12.5	12.0	13.5	12.5
21	6.0	4.5	15.5	13.5	17.0	14.0	17.0	16.0	13.0	12.0	12.5	12.0
22	7.0	5.0	15.0	13.0	18.0	15.5	16.5	14.5	13.0	13.0	12.0	12.0
23	7.0	7.0	15.0	13.0	18.0	16.5	16.5	14.5	13.0	12.0	12.0	11.5
24	7.0	6.5	15.0	13.5	17.0	15.5	15.5	14.5	13.5	12.0	11.5	11.0
25	7.5	6.0	15.5	13.5	16.5	14.5	15.5	14.0	15.0	13.5	11.0	10.0
26	8.5	6.5	14.5	13.5	16.5	14.0	15.0	13.5	15.5	14.5	11.0	10.0
27	8.5	7.5	14.0	12.0	17.0	14.5	16.5	14.0	15.0	13.5	11.5	10.0
28	8.0	7.5	13.5	11.5	17.0	15.0	16.5	14.0	14.5	12.5	11.5	10.5
29	9.0	7.5	13.5	12.0	17.0	15.5	16.5	14.0	13.0	12.5	11.0	10.0
30	10.0	9.0	13.5	12.0	17.5	15.0	17.0	15.0	13.0	13.0	12.0	11.0
31	---	---	13.0	11.5	---	---	17.0	15.5	13.0	13.0	---	---
MONTH	10.0	2.0	15.5	7.5	18.0	10.0	18.5	12.0	17.0	12.0	14.5	10.0
YEAR	18.5	0.5										

04128000 STURGEON RIVER NEAR WOLVERINE, MICH.

LOCATION.--Lat 45°17'56", long 84°36'40", in SE¼ NE¼ sec.36, T.34 N., R.3 W., Cheboygan County, temperature recorder at gaging station 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 mi^2 (440 km^2), approximately.

PERIOD OF RECORD.--Water temperatures: October 1958 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 20.5°C July 3; minimum, freezing point on several days during January.
Period of record:
Water temperatures: Maximum, 24.0°C June 30, 1964; minimum, freezing point on many days during winter period.

REMARKS.--Recorder stopped, Oct. 13-22, range in temperature, 6.0°C to 8.0°C, and Nov. 9-14, range in temperature 3.0°C to 4.0°C. Intermittent ice cover during winter period.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	9.0	10.0	9.0	1.5	1.0	1.0	1.0	1.0	1.0	2.5	2.0
2	9.0	8.0	9.5	8.5	1.5	1.0	1.0	1.0	1.0	0.5	2.5	2.0
3	8.0	7.0	8.5	7.0	1.0	1.0	1.0	1.0	0.5	0.5	2.0	2.0
4	8.5	7.0	7.0	6.0	1.5	1.0	1.5	1.0	0.5	0.5	2.5	2.0
5	10.5	8.5	6.0	5.5	2.0	1.5	1.5	1.0	1.0	0.5	2.5	2.0
6	10.5	10.0	5.5	5.5	2.0	1.5	1.0	1.0	1.0	1.0	3.0	2.0
7	10.0	8.5	5.5	4.5	2.5	1.5	1.5	1.0	1.0	1.0	3.5	3.0
8	8.5	7.5	4.5	4.0	2.5	1.5	1.5	1.5	1.0	1.0	3.5	2.0
9	7.5	7.5	---	---	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0
10	9.5	7.5	---	---	1.5	1.0	1.5	1.5	1.0	1.0	2.0	2.0
11	10.0	9.0	---	---	2.0	1.5	1.5	0.5	1.0	1.0	2.0	2.0
12	10.0	9.5	---	---	3.0	2.0	0.5	0.0	1.0	1.0	2.5	2.0
13	---	---	---	---	3.0	2.5	0.0	0.0	1.0	1.0	3.5	2.0
14	---	---	---	---	2.5	2.5	0.0	0.0	1.5	1.0	3.0	2.0
15	---	---	3.0	2.5	2.5	2.5	0.0	0.0	1.5	1.5	2.5	2.0
16	---	---	2.5	1.5	2.5	2.0	0.0	0.0	1.5	1.5	4.5	2.5
17	---	---	2.0	1.5	2.0	2.0	0.0	0.0	2.0	1.5	4.0	2.5
18	---	---	3.0	2.0	2.0	2.0	0.0	0.0	2.5	2.0	4.0	3.5
19	---	---	3.0	3.0	2.0	1.5	0.0	0.0	3.0	2.5	4.0	4.0
20	---	---	3.5	3.0	1.5	1.0	0.0	0.0	3.5	2.5	4.5	3.5
21	---	---	3.5	3.0	1.5	1.0	0.0	0.0	3.5	2.5	4.5	3.0
22	---	---	3.0	2.5	1.5	1.5	0.0	0.0	3.5	3.5	3.0	1.5
23	5.5	5.5	3.0	2.5	2.0	1.5	0.0	0.0	4.5	3.5	3.5	1.5
24	6.0	5.5	3.0	3.0	1.5	1.0	0.0	0.0	4.5	4.5	3.5	2.5
25	6.0	6.0	3.0	2.5	1.0	1.0	0.0	0.0	4.5	3.5	3.0	2.5
26	6.0	5.0	3.0	1.5	1.0	1.0	0.0	0.0	3.5	3.0	2.5	1.5
27	5.5	5.5	1.5	1.5	1.5	1.0	0.5	0.5	3.0	2.0	3.5	1.5
28	6.5	5.5	2.0	1.5	1.5	1.5	1.0	0.5	2.5	2.0	3.0	2.5
29	6.5	6.5	2.0	1.0	2.0	1.5	1.0	0.5	---	---	3.0	2.5
30	8.0	6.5	1.0	1.0	2.0	1.5	1.0	0.5	---	---	3.0	2.5
31	9.0	7.5	---	---	1.5	1.0	1.0	1.0	---	---	3.0	2.0
MONTH	---	---	10.0	1.0	3.0	1.0	1.5	0.0	4.5	0.5	4.5	1.5

04128000 STURGEON RIVER NEAR WOLVERINE, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	4.0	2.5	11.0	8.0	15.5	13.0	19.5	16.0	20.0	17.0	13.5	13.0
2	3.5	2.5	10.0	7.5	16.0	13.0	20.0	17.0	19.5	17.0	14.5	13.0
3	3.5	2.5	9.0	8.0	15.5	13.0	20.5	17.5	18.0	15.5	14.5	12.5
4	3.0	2.5	8.0	7.5	14.0	13.0	19.5	16.5	18.0	15.0	13.5	12.0
5	3.5	2.0	9.5	8.0	15.5	13.0	19.5	16.5	18.0	15.0	13.5	12.5
6	3.5	2.0	9.5	8.5	15.5	13.0	19.0	16.0	16.0	14.0	12.5	12.0
7	4.0	2.0	11.5	8.0	13.0	11.5	18.5	16.0	15.5	13.5	12.5	12.0
8	4.5	2.5	12.0	9.0	14.0	11.5	19.0	16.0	16.5	13.5	12.0	11.5
9	4.5	2.5	13.5	9.0	14.0	11.5	18.5	15.5	17.0	14.5	11.5	10.0
10	4.5	3.0	13.5	10.0	14.0	12.0	17.0	14.5	17.0	14.5	12.0	10.5
11	4.5	3.0	14.0	10.0	14.0	12.0	14.5	13.5	17.0	14.5	12.0	12.0
12	4.5	3.0	14.0	10.5	13.0	12.5	15.0	13.0	17.0	14.5	12.0	10.0
13	5.0	3.0	13.5	9.5	14.0	12.0	15.5	13.0	17.5	15.0	10.5	9.5
14	6.0	3.5	12.5	10.5	16.5	13.0	15.5	14.0	16.5	14.0	10.0	9.0
15	6.5	5.0	11.5	10.5	16.0	13.5	17.0	13.0	16.0	13.5	11.5	9.0
16	6.0	5.0	13.5	9.5	15.0	13.0	19.0	15.0	16.0	13.5	11.0	10.5
17	6.0	5.0	15.5	10.5	14.5	13.5	19.5	16.5	16.5	14.0	12.0	10.5
18	5.0	3.0	16.0	12.0	14.0	13.5	19.5	16.5	16.0	13.0	13.0	11.0
19	3.0	2.0	17.5	13.5	17.5	14.0	19.0	17.5	14.0	13.0	13.0	12.0
20	3.5	2.0	18.0	15.0	17.0	15.0	19.5	18.0	13.5	12.5	12.0	11.0
21	4.5	2.0	18.0	15.5	18.0	14.5	19.5	17.0	13.5	12.0	11.0	10.5
22	5.5	3.0	18.0	14.5	19.5	16.0	19.0	16.0	14.0	13.0	10.5	10.0
23	5.5	4.5	18.0	14.5	19.0	17.0	18.5	15.5	14.0	12.0	11.0	10.0
24	4.5	4.5	18.0	15.0	19.0	16.0	17.0	15.5	14.0	12.0	10.5	9.5
25	6.5	4.5	17.5	15.5	18.5	15.0	17.0	15.5	16.0	14.0	10.0	9.0
26	7.0	5.0	17.0	15.0	18.0	14.5	16.5	14.0	16.0	14.0	10.0	9.0
27	6.5	5.5	16.5	13.0	17.5	14.5	18.0	15.5	15.5	13.0	10.5	9.5
28	6.5	5.5	16.0	13.0	18.5	15.5	18.0	15.0	14.5	12.0	10.5	9.5
29	8.5	5.5	16.0	13.5	19.5	15.5	18.5	15.0	13.0	12.0	10.5	9.5
30	8.5	7.0	16.0	14.0	19.5	16.0	19.5	16.5	13.5	13.0	11.5	10.5
31	---	---	15.5	13.0	---	---	19.5	16.5	13.5	13.0	---	---
MONTH	8.5	2.0	18.0	7.5	19.5	11.5	20.5	13.0	20.0	12.0	14.5	9.0
YEAR	20.5	0.0										

04132052 CHEBOYGAN RIVER AT CHEBOYGAN, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 45°38'02", long 84°28'52". in NW¼ NE¼ sec.6, T.37 N., R.1 W., Cheboygan County, upstream side of bridge on Lincoln Avenue in Cheboygan, 1.75 mi (2.8 km) upstream from mouth.

DRAINAGE AREA.--1,500 mi^2 (3,900 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1974 to September 1975.
Specific conductance: October 1974 to September 1975
Water temperatures: October 1974 to September 1975

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
10...	1000	1680	7.8	44	13	3.0	.9	212	1	174	11	2.7
NOV.												
11...	1500	1570	7.7	45	11	3.2	.9	186	0	153	11	2.4
DEC.												
17...	1240	--	7.8	48	13	2.4	.9	184	0	151	10	3.3
JAN.												
09...	1100	1280	8.1	48	12	3.5	.8	189	0	155	10	3.9
FEB.												
11...	1400	--	8.2	46	13	3.4	1.0	190	0	156	12	3.7
MAR.												
31...	1430	1870	8.4	48	14	3.4	.8	180	0	148	13	3.4
APR.												
29...	1400	3250	7.0	43	11	2.7	.9	176	0	144	10	2.6
MAY												
27...	1600	2120	6.4	48	12	3.0	.8	188	10	162	10	3.7
JULY												
01...	0930	E1560	6.8	44	13	3.4	.8	182	0	149	11	3.4
AUG.												
06...	1400	1700	7.6	42	12	3.2	.9	188	0	154	11	3.6
SEP.												
04...	1545	1450	7.7	42	12	2.9	.7	180	4	151	9.7	3.3

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
10...	1000	6.8	1	1	0	0	<10	0	0	0	5	1
JAN.												
09...	1100	8.9	0	0	2	0	<10	0	1	0	8	5
APR.												
29...	1400	5.4	1	0	0	0	<10	0	1	0	9	0
AUG.												
06...	1400	5.4	0	0	0	0	<10	--	0	0	7	1

E--ESTIMATED VALUE

04132052 CHEBOYGAN RIVER AT CHEBOYGAN, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
10...	.1	.03	.26	.29	.01	164	187	160	0	4	.1	300
NOV.												
11...	.1	.04	.38	.42	.02	166	173	160	7	4	.1	190
DEC.												
17...	.3	.07	.29	.36	.08	172	176	170	19	3	.1	260
JAN.												
09...	.3	.07	.16	.23	.00	167	180	170	15	4	.1	305
FEB.												
11...	.4	.08	.20	.28	.00	178	181	170	14	4	.1	295
MAR.												
31...	.3	.09	.20	.29	.00	177	180	180	32	4	.1	255
APR.												
29...	.2	.09	.23	.32	.00	173	164	150	6	4	.1	265
MAY												
27...	.2	.04	.21	.25	.00	200	187	170	8	4	.1	275
JULY												
01...	.2	.02	.22	.24	.00	178	176	160	11	4	.1	290
AUG.												
06...	.4	.01	.35	.36	.01	173	173	150	0	4	.1	283
SEP.												
04...	.2	.01	.23	.24	.00	180	167	150	0	4	.1	285

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
10...	8.4	15.5	3	9.7	98	1.4	B770	B140	B14	1	4.5	100
NOV.												
11...	8.4	8.0	3	--	--	1.2	660	44	50	1	4.2	100
DEC.												
17...	8.5	1.5	2	13.7	100	.9	120	20	B3	3	--	100
JAN.												
09...	8.1	2.0	2	13.4	99	2.4	B120	B21	B62	4	14	100
FEB.												
11...	8.1	1.0	0	13.3	95	2.4	B230	B42	B34	--	--	--
MAR.												
31...	7.9	1.0	1	13.6	97	3.6	--	20	--	1	5.0	100
APR.												
29...	7.8	4.5	1	12.7	100	4.5	B45	20	B6	4	35	100
MAY												
27...	8.5	18.0	1	9.9	110	1.1	390	100	100	5	29	100
JULY												
01...	8.4	25.0	1	8.3	100	1.2	650	88	29	4	E17	100
AUG.												
06...	8.3	24.0	4	7.3	88	1.5	300	B20	36	9	41	100
SEP.												
04...	8.4	18.5	1	9.0	98	1.2	140	60	20	2	7.8	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
10...	150	40	0	0	15	10	.0	.0	0	0	20	0
JAN.												
09...	90	0	24	4	0	0	.0	.0	0	0	30	10
APR.												
29...	120	10	17	0	20	10	.3	.2	0	0	40	2
AUG.												
06...	130	0	20	5	0	--	.1	.1	0	0	20	--

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

E--ESTIMATED VALUE

04132052 CHEBOYGAN RIVER AT CHEBOYGAN, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 11	32	8.5	4.6	0.6	0.2	6500
MAY 27	28	9.2	7.5	3.6	0.4	472
SEP. 04	29	0.1	0.1	0.1	0.0	0

REMARKS.-- a/ Sampling Method Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 10	1000	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Oocystis	--	4
		Scenedesmaceae		
		Scenedesmus	--	3
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Anaulaceae		
		Terpsinoe	--	1
		Coscinodiscaceae		
		Cyclotella	--	7
		Pennales		
		Fragilariaceae		
		Asterionella	--	11
		Synedra	--	11
		Gomphonemataceae		
		Gomphonema	--	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Gomphosphaeria	--	50
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	12
		TOTAL	2,100	
NOV. 11	1500	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Actinastrum	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	5
		Melosira	--	23
		Pennales		
		Achnanthaceae		
		Achnanthes	--	1
		Fragilariaceae		
		Asterionella	--	16
		Synedra	--	6
		Naviculaceae		
		Navicula	--	1
		Tabellariaceae		
		Tabellaria	--	1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	45
		TOTAL	1,300	
DEC. 17	1240	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Trochiscia	--	3
		Scenedesmaceae		
		Scenedesmus	--	10
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	15
		Pennales		
		Achnanthaceae		
		Achnanthes	--	8
		Cymbellaceae		
		Cymbella	--	3
		Diatomaceae		
		Diatoma	--	3
		Fragilariaceae		
		Asterionella	--	54
		Nitzschiaceae		
		Nitzschia	--	5
		TOTAL	210	
JAN. 09	1100	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Fragilariaceae		
		Asterionella	--	33
		Fragilaria	--	50
		Tabellariaceae		
		Tabellaria	--	17
		TOTAL	33	

04132052 CHEBOYGAN RIVER AT CHEBOYGAN, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB. 11	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Tetraedron	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Pennales		
		Fragillariaceae		
		Asterionella	--	3
		Fragilaria	--	15
		Synedra	--	3
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	2
		Ochromonas	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Gloeocapsa	--	14
		Gomphosphaeria	--	49
		Oscillatoriales		
		Oscillatroiaceae		
		Lyngbya	--	6
		Euglenophyta		
		Cryptophyceae		
		Cryptomonidales		
		Cryptomonadaceae		
		Cryptomonas	--	1
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Glenodiniaceae		
		Glenodinium	--	1
		TOTAL	1,400	
MAR. 31	1430	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	12
		Diatomaceae		
		Diatoma	--	6
		Gomphonemataceae		
		Gomphonema	--	29
		Naviculaceae		
		Navicula	--	35
		Nitzschiaceae		
		Nitzschia	--	18
		TOTAL	140	
APR. 29	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Chlorella	--	2
		Tetrasporales		
		Coccomyxaceae		
		Elakatothrix	--	5
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	5
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	7
		Pennales		
		Achnanthaceae		
		Achnanthes	--	2
		Eunotiaceae		
		Eunotia	--	2
		Fragilariaceae		
		Fragilaria	--	5
		Synedra	--	7
		Naviculaceae		
		Navicula	--	2
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	61
		TOTAL	360	
MAY 27	1600	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	8
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Pennales		
		Cymbellaceae		
		Cymbella	--	8
		Fragilariaceae		
		Synedra	--	4
		Naviculaceae		
		Navicula	--	8
		Nitzschiaceae		
		Nitzschia	--	35
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	35
		TOTAL	2,500	

04132052 CHEBOYGAN RIVER AT CHEBOYGAN, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JULY 01	0930	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	<1
		Pennales		
		Cymbellaceae		
		Cymbella	--	2
		Fragilariaceae		
		Fragilaria	--	<1
		Synedra	--	<1
		Gomphonemataceae		
		Gomphonema	--	2
		Naviculaceae		
		Navicula	--	<1
		Nitzschiaceae		
		Nitzschia	--	11
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	<1
		Rhizochrysidales		
		Rhizochrysidaceae		
		Diceras	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agmenellum	--	40
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	16
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Glenodiniaceae		
		Glenodinium	--	2
AUG. 06	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	22	2
		Scenedesmaceae		
		Scenedesmus	44	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	88	6
		Pennales		
		Achnanthaceae		
		Cocconeis	--	<1
		Cymbellaceae		
		Amphora	22	2
		Fragilariaceae		
		Synedra	--	<1
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Navicula	22	2
		Nitzschiaceae		
		Denticula	--	<1
		Nitzschia	150	11
		Chrysophyceae		
		Chrysomonadales		
		Och omonadaceae		
		Dinobryon	22	2
		Cyanophyia		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Gomphosphaeria	1,000	73
SEP. 04	1545	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Kirchneriella	--	<1
		Quadrigula	--	<1
		Scenedesmaceae		
		Scenedesmus	73	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	18	1
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	<1
		Cymbellaceae		
		Cymbella	--	<1
		Fragilariaceae		
		Fragilaria	--	<1
		Naviculaceae		
		Navicula	--	<1
		Pinnularia	--	<1
		Nitzschiaceae		
		Nitzschia	91	3
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	1,100	41
		Anacystis Incerta	1,500	53
		Gomphosphaeria		
		Oscillatoriales		
		Nostocaceae		
		Aphantzomenon	--	<1

04132052 CHEBOYGAN RIVER AT CHEBOYGAN, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0900 AND 1100 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	285	280	---	270	310	320	315	309	286	298
2	---	---	285	320	---	270	310	320	313	294	286	301
3	---	---	265	305	---	270	310	320	303	302	289	296
4	---	---	260	320	---	260	---	320	308	294	288	299
5	---	---	280	322	---	275	---	---	308	295	296	296
6	---	---	270	320	---	270	340	340	308	306	287	300
7	---	---	270	320	---	280	880	---	311	304	286	300
8	---	---	285	322	---	140	850	320	311	299	281	299
9	---	---	280	321	---	285	380	---	303	296	282	300
10	---	---	280	---	---	---	380	---	285	304	286	315
11	---	---	275	---	---	---	380	320	290	304	283	315
12	---	300	280	---	---	---	320	---	300	303	292	317
13	---	300	280	---	---	---	320	380	295	302	280	309
14	---	300	285	---	300	---	320	---	295	302	281	---
15	---	300	280	---	290	---	320	---	295	297	281	305
16	---	300	285	---	290	---	260	309	290	304	286	315
17	---	300	280	---	295	---	320	307	300	294	292	300
18	---	275	315	---	295	---	450	320	300	298	287	312
19	---	265	305	---	295	---	450	320	300	292	291	309
20	---	---	310	---	300	---	450	302	290	291	280	315
21	---	225	300	---	295	---	320	309	275	287	282	310
22	---	280	305	---	295	---	310	305	285	290	280	316
23	---	280	305	---	300	---	310	309	290	296	279	305
24	---	280	300	---	300	---	900	309	300	294	283	305
25	---	275	303	---	300	---	900	307	285	299	284	319
26	---	275	303	---	300	---	310	312	280	286	283	320
27	---	250	303	---	300	---	310	309	295	286	283	321
28	---	280	300	---	240	---	310	307	280	293	294	317
29	---	280	315	---	---	---	310	312	295	283	296	315
30	---	---	320	---	---	---	310	311	290	283	302	319
31	---	---	320	---	---	---	---	309	---	287	299	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0900 AND 1100 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	4.0	3.0	---	0.5	5.0	9.0	19.0	26.0	23.5	20.0
2	---	---	5.0	3.5	---	0.5	5.0	---	18.5	26.0	24.0	20.0
3	---	---	5.0	2.0	---	1.0	---	---	18.5	26.0	24.0	19.0
4	---	---	4.0	3.0	---	0.5	---	9.0	19.0	26.0	24.0	19.0
5	---	---	4.0	2.5	---	0.5	---	---	19.0	26.5	24.0	18.0
6	---	---	5.0	2.0	---	1.0	6.0	---	18.5	26.5	24.0	18.5
7	---	---	5.0	3.0	---	1.0	6.0	---	18.5	26.5	24.0	18.0
8	---	---	4.0	3.0	---	1.0	6.0	---	19.0	25.5	24.0	18.0
9	---	---	3.0	3.0	---	1.0	6.5	9.0	18.5	22.5	24.5	18.0
10	11.0	---	3.0	---	---	---	6.0	---	19.0	22.5	24.5	18.0
11	11.0	---	3.0	---	---	---	6.0	9.0	19.0	22.5	24.5	17.5
12	11.5	9.0	4.0	---	---	---	---	---	19.5	21.5	24.0	17.0
13	11.0	8.0	4.0	---	---	---	6.0	---	19.5	22.5	24.0	17.0
14	12.0	7.0	4.0	---	0.5	---	6.0	---	19.5	22.5	24.0	---
15	12.0	7.0	4.0	---	0.5	---	7.0	---	19.5	22.5	24.5	16.5
16	11.0	7.0	3.0	---	0.5	---	7.0	18.5	19.0	22.5	24.0	16.5
17	---	6.0	3.0	---	0.5	---	7.0	18.5	19.0	23.0	24.5	16.0
18	---	10.0	3.0	---	0.5	---	7.0	14.0	19.5	23.0	24.0	16.0
19	---	8.0	3.0	---	0.5	---	7.0	14.0	19.5	23.0	24.0	16.0
20	---	---	4.0	---	0.5	---	7.0	19.0	23.5	23.5	24.0	16.0
21	---	8.0	4.0	---	1.0	---	7.0	19.5	23.5	24.0	24.0	16.0
22	---	8.0	3.0	---	1.0	---	7.5	19.0	23.5	24.0	24.0	16.0
23	---	9.0	3.0	---	---	---	8.0	19.5	23.5	24.5	23.0	16.0
24	---	9.0	3.0	---	1.0	---	8.0	19.0	24.0	23.5	23.5	16.0
25	---	6.0	2.0	---	0.5	---	8.0	19.5	24.0	23.5	23.5	16.0
26	---	12.0	2.0	---	1.0	---	8.0	19.5	24.0	23.5	23.0	16.0
27	---	12.0	3.0	---	1.0	---	8.0	19.5	24.5	23.5	22.5	16.0
28	---	3.0	3.5	---	1.0	---	---	18.5	24.5	23.5	22.0	16.0
29	---	3.0	3.0	---	---	---	7.5	18.5	25.0	23.5	21.5	16.0
30	---	4.0	3.0	---	---	---	8.0	18.5	25.0	23.0	21.0	16.5
31	---	---	3.5	---	---	---	---	18.5	---	23.5	21.0	---

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, temperature recorder at gaging station 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 mi^2 (285 km^2).

PERIOD OF RECORD.--Water temperatures: March 1953 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 25.5°C July 31, Aug. 1; minimum, freezing point on many days during December to March.
Period of record:
Water temperatures: Maximum, 28.0°C July 1, 2, 1963; minimum, freezing point on many days during winter period.

REMARKS.--No temperature record Mar. 3 to April 7, due to malfunction of recorder. Recorder stopped Sept. 1-16, range in temperature from 9.5°C to 17.5°C. A listing of periodic measurements of specific conductance and temperature for this station is on page 540.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	10.0	8.5	12.5	11.5	1.0	1.0	0.0	0.0	0.5	0.5	0.0	0.0
2	8.5	7.0	12.5	11.5	1.0	1.0	0.0	0.0	0.5	0.5	0.0	0.0
3	8.0	5.5	11.5	9.5	1.0	0.5	0.0	0.0	0.5	0.5	---	---
4	8.5	7.0	9.5	8.0	0.5	0.5	0.0	0.0	0.5	0.5	---	---
5	10.5	8.5	8.5	7.0	0.5	0.5	0.0	0.0	0.5	0.5	---	---
6	10.5	10.5	7.0	6.0	0.5	0.5	0.0	0.0	0.5	0.5	---	---
7	10.5	9.0	6.0	5.5	0.5	0.5	0.0	0.0	0.5	0.5	---	---
8	9.0	7.5	6.0	4.5	0.5	0.5	0.0	0.0	0.5	0.5	---	---
9	7.5	7.5	6.0	5.0	0.5	0.5	0.0	0.0	0.5	0.5	---	---
10	10.5	7.5	6.5	6.0	0.5	0.5	0.0	0.0	0.5	0.5	---	---
11	10.5	9.0	6.0	6.0	0.5	0.5	1.0	0.0	0.5	0.0	---	---
12	10.5	10.5	6.0	6.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---
13	10.5	8.0	6.0	4.5	0.5	0.5	0.0	0.0	0.0	0.0	---	---
14	9.0	9.0	4.5	3.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---
15	9.0	8.0	3.0	2.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---
16	9.0	7.5	2.0	1.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---
17	9.0	7.5	3.0	2.0	0.5	0.5	0.0	0.0	0.0	0.0	---	---
18	7.5	5.5	4.5	3.0	0.5	0.0	0.0	0.0	0.0	0.0	---	---
19	6.5	5.0	4.5	4.5	0.0	0.0	0.5	0.5	0.0	0.0	---	---
20	5.5	3.0	4.5	4.5	0.0	0.0	0.5	0.5	0.0	0.0	---	---
21	5.0	3.5	4.5	4.0	0.0	0.0	0.5	0.5	0.0	0.0	---	---
22	6.0	4.5	4.0	3.0	0.0	0.0	0.5	0.5	0.0	0.0	---	---
23	7.5	6.0	4.0	3.0	0.0	0.0	0.5	0.5	0.5	0.0	---	---
24	8.0	6.0	4.0	4.0	0.0	0.0	0.5	0.5	0.5	0.5	---	---
25	8.5	7.5	4.0	1.5	0.0	0.0	0.5	0.5	0.5	0.5	---	---
26	7.5	6.0	1.5	1.0	0.0	0.0	0.5	0.5	0.5	0.0	---	---
27	7.5	6.0	1.0	1.0	0.0	0.0	0.5	0.5	0.0	0.0	---	---
28	9.0	9.0	1.0	1.0	0.0	0.0	0.5	0.5	0.0	0.0	---	---
29	9.0	8.5	1.0	1.0	0.0	0.0	0.5	0.5	---	---	---	---
30	10.5	8.5	1.0	1.0	0.0	0.0	0.5	0.5	---	---	---	---
31	11.5	10.5	---	---	0.0	0.0	0.5	0.5	---	---	---	---
MONTH	11.5	3.0	12.5	1.0	1.0	0.0	1.0	0.0	0.5	0.0	---	---

04135500 AU SABLE RIVER AT GRAYLING, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	12.0	11.0	18.0	15.0	23.5	20.0	25.5	23.5	---	---
2	---	---	12.0	11.5	18.0	15.5	23.5	20.5	25.0	23.0	---	---
3	---	---	11.5	11.0	18.0	15.5	23.5	20.5	22.0	20.0	---	---
4	---	---	11.0	11.0	16.5	15.0	23.5	20.0	22.0	19.0	---	---
5	---	---	11.0	11.0	16.5	13.5	23.0	20.0	22.0	19.0	---	---
6	---	---	11.0	11.0	16.0	14.5	21.5	19.0	20.5	18.0	---	---
7	---	---	12.0	11.0	14.5	12.5	20.0	18.0	19.0	16.5	---	---
8	7.5	4.5	13.5	12.0	14.5	11.5	20.5	18.0	19.0	17.0	---	---
9	7.5	5.0	18.0	13.5	16.5	13.0	20.5	16.5	20.0	18.0	---	---
10	7.5	5.0	18.0	15.5	18.0	14.5	18.5	16.0	20.0	18.5	---	---
11	7.5	5.5	17.5	15.0	18.0	15.5	16.0	14.0	19.5	17.5	---	---
12	7.5	5.5	17.5	14.5	15.5	15.0	18.0	13.5	20.5	18.0	---	---
13	9.0	5.0	18.0	14.5	17.0	14.5	19.5	15.5	20.5	19.0	---	---
14	10.0	7.0	18.0	15.5	20.0	16.0	19.5	17.0	20.0	18.0	---	---
15	11.5	8.5	15.5	14.0	20.0	18.0	19.5	15.5	20.0	18.0	---	---
16	11.5	9.0	17.5	12.0	18.0	15.5	21.5	18.0	20.5	18.0	---	---
17	11.5	9.0	19.0	15.0	17.5	16.5	21.5	20.0	20.5	19.5	14.0	12.0
18	11.5	9.5	19.5	16.5	22.0	13.5	21.5	19.5	20.5	17.5	15.0	13.5
19	9.5	9.0	21.0	18.5	23.5	21.0	21.5	18.5	19.0	16.5	15.0	14.5
20	9.0	8.5	22.5	19.5	23.5	21.0	22.5	21.0	17.0	15.5	14.5	13.5
21	8.5	7.5	22.5	21.0	23.5	21.0	22.5	19.5	16.0	15.0	13.5	12.5
22	10.0	8.0	22.5	20.5	23.5	22.0	22.0	19.5	16.0	15.5	12.5	11.5
23	10.0	9.5	22.5	20.5	23.5	21.5	22.5	20.0	16.0	15.0	11.5	11.0
24	9.5	9.0	22.5	20.5	22.5	20.5	20.0	19.5	16.5	15.0	11.5	11.0
25	9.0	9.0	22.5	20.0	22.0	19.0	20.0	18.0	19.0	16.5	11.5	10.0
26	10.0	9.0	21.5	20.0	22.0	18.5	19.0	17.5	19.0	18.0	10.0	10.0
27	10.0	10.0	20.0	17.5	22.0	19.0	20.5	18.5	19.0	17.0	12.0	10.0
28	10.0	10.0	19.0	16.0	22.5	20.0	22.5	20.0	19.0	16.0	12.5	10.5
29	11.0	9.0	18.5	17.0	23.0	20.0	24.0	20.5	16.0	15.0	12.5	11.0
30	12.0	11.0	18.5	17.5	23.5	20.0	24.5	21.5	15.0	15.0	13.0	12.0
31	---	---	17.0	15.0	---	---	25.5	23.5	15.0	14.5	---	---
MONTH	---	---	22.5	11.0	23.5	11.5	25.5	13.5	25.5	14.5	---	---
YEAR	25.5	0.0										

04135700 SOUTH BRANCH AU SABLE RIVER NEAR LUZERNE, MICH.

LOCATION.--Lat 44°36'53", long 84°27'20", in SE¼ SE¼ sec.29, T.26 N., R.1 W., Crawford County, temperature recorder at gaging station 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, 9.1 mi (14.6 km) west of Luzerne.

DRAINAGE AREA.--401 mi^2 (1,039 km^2).

PERIOD OF RECORD.--Water temperatures: November 1966 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 23.0°C June 22; minimum, freezing point on many days during December to March.
Period of record:
Water temperatures: Maximum, 24.0°C July 16, 1968; minimum, freezing point on many days during winter period.

REMARKS.--Intermittent ice cover during the winter period. Occasional regulation at low flow from dams above station.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	9.5	8.5	11.5	10.5	2.0	2.0	1.0	1.0	1.0	0.0	1.0	0.0
2	8.5	7.5	11.0	10.0	2.0	1.5	1.0	0.0	0.5	0.0	1.0	0.0
3	8.0	6.5	10.0	9.0	1.5	1.5	0.5	0.0	0.5	0.0	1.5	0.0
4	8.5	7.5	9.0	8.0	1.5	1.0	1.0	0.5	0.5	0.0	1.0	0.5
5	10.0	8.5	8.0	7.0	2.0	1.0	1.0	0.5	1.0	0.5	1.0	0.0
6	10.0	9.0	7.0	6.5	2.0	1.5	1.0	0.5	1.0	0.5	1.5	0.5
7	9.0	8.0	6.5	5.5	2.0	2.0	1.5	1.0	0.5	0.5	1.5	1.5
8	8.0	7.0	6.0	5.0	2.0	1.5	1.5	1.5	0.5	0.5	1.5	0.5
9	8.0	7.5	6.0	5.0	1.5	1.0	1.5	1.5	0.5	0.5	1.0	0.0
10	9.5	7.5	6.5	6.0	1.5	1.0	1.5	1.5	0.5	0.5	1.0	0.0
11	9.5	8.0	7.0	6.5	2.0	1.5	2.0	0.5	0.5	0.5	2.0	0.5
12	10.0	9.0	7.0	6.5	2.5	1.5	0.5	0.0	0.5	0.5	2.0	1.5
13	9.0	7.0	6.5	5.0	2.0	2.0	0.0	0.0	0.5	0.5	2.0	0.5
14	8.5	8.5	5.0	4.0	2.0	1.5	0.0	0.0	1.0	0.5	2.0	0.0
15	8.5	8.0	4.0	3.5	1.5	1.0	0.0	0.0	1.5	1.0	2.5	0.0
16	8.5	7.0	4.0	3.0	1.5	1.0	0.0	0.0	1.5	1.0	3.0	1.0
17	8.5	7.5	4.5	3.5	2.0	1.5	0.0	0.0	1.0	0.5	3.5	1.5
18	7.5	6.5	5.0	4.5	1.5	1.5	0.5	0.0	1.0	0.5	3.0	2.0
19	6.5	5.5	5.5	5.0	1.5	1.0	0.5	0.0	1.0	1.0	3.5	2.5
20	6.0	5.0	5.5	5.5	1.5	1.0	0.0	0.0	1.5	0.5	4.5	2.5
21	6.0	5.0	5.5	4.5	1.5	1.0	0.0	0.0	2.0	1.0	4.5	3.0
22	7.0	6.0	4.5	4.5	1.5	1.5	0.0	0.0	2.0	2.0	3.0	2.5
23	7.5	6.5	5.0	4.5	1.5	1.5	0.0	0.0	2.5	1.5	3.0	2.5
24	7.5	6.0	5.0	5.0	1.5	1.0	0.5	0.0	2.5	2.0	3.0	2.5
25	8.0	7.5	5.0	3.0	1.5	1.0	1.0	0.5	2.0	1.0	2.5	2.5
26	8.0	6.5	3.0	2.0	1.5	0.5	1.0	0.5	1.0	0.5	2.5	1.0
27	7.5	6.0	2.0	1.5	1.0	0.5	0.5	0.0	1.0	0.5	3.0	2.0
28	8.5	7.0	2.5	2.0	1.0	1.0	1.0	0.0	1.0	0.5	3.0	2.0
29	8.5	8.0	2.5	1.5	1.5	1.0	1.0	1.0	---	---	2.5	2.5
30	9.5	8.0	2.0	1.5	1.5	1.0	1.0	0.5	---	---	2.5	2.0
31	10.5	9.5	---	---	1.0	0.0	1.0	0.5	---	---	2.0	1.0
MONTH	10.5	5.0	11.5	1.5	2.5	0.0	2.0	0.0	2.5	0.0	4.5	0.0

04135700 SOUTH BRANCH AU SABLE RIVER NEAR LUZERNE, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	4.0	1.5	12.5	10.0	18.5	14.5	21.0	17.5	22.5	19.0	15.0	14.0
2	3.5	2.5	12.0	10.5	18.0	14.0	21.0	18.0	22.5	19.5	16.5	15.0
3	3.5	1.5	11.0	10.5	17.0	14.5	21.5	18.0	20.5	18.0	16.5	14.5
4	3.5	1.5	10.5	10.0	16.0	14.0	21.0	17.5	20.5	16.5	15.0	14.0
5	4.0	1.5	10.5	10.0	16.5	14.0	20.5	17.0	20.5	17.0	15.0	14.0
6	4.5	2.0	11.5	10.5	16.5	15.0	20.5	17.0	19.0	15.5	15.0	14.0
7	5.0	2.5	12.5	10.0	15.0	13.5	19.0	16.5	18.0	13.5	15.0	13.5
8	5.5	3.0	13.5	11.5	14.5	12.5	20.0	16.5	18.0	14.0	13.5	13.0
9	5.0	3.5	14.0	11.5	16.0	12.5	19.5	15.5	18.0	15.5	13.0	11.5
10	5.5	3.5	15.5	12.5	17.0	13.0	17.5	14.5	18.0	16.0	13.0	11.5
11	5.0	3.0	15.0	13.5	17.0	14.0	15.0	13.0	19.0	15.0	13.5	13.0
12	5.0	3.5	15.5	13.5	14.5	14.0	16.0	13.0	18.0	15.5	13.5	12.5
13	5.5	3.0	15.5	13.0	16.0	13.5	17.0	14.0	19.0	16.5	12.5	11.5
14	5.5	3.5	15.5	14.0	18.5	14.5	17.0	15.0	18.0	15.0	12.0	10.0
15	6.0	4.5	15.0	13.5	18.5	15.5	18.0	14.0	17.5	15.0	11.5	10.0
16	5.5	4.5	15.5	12.5	16.0	15.0	20.0	16.0	18.5	15.5	11.5	11.0
17	6.0	4.0	17.5	13.5	16.0	15.5	20.5	17.0	19.0	16.0	13.0	11.0
18	6.5	6.0	18.5	15.0	19.0	16.0	20.5	17.5	18.0	14.0	14.0	12.5
19	6.5	6.5	20.0	17.0	20.5	18.0	20.0	17.0	16.5	13.5	13.5	13.0
20	6.5	6.0	21.5	18.5	21.0	18.5	20.0	17.5	15.0	13.5	13.0	12.5
21	6.5	5.5	22.0	20.0	21.5	18.5	20.0	17.5	14.0	13.5	13.0	12.0
22	8.0	6.0	22.0	19.0	23.0	20.0	19.5	17.0	15.0	14.0	12.5	11.5
23	8.0	8.0	21.5	18.0	22.5	20.5	19.5	17.0	15.0	13.0	12.0	11.0
24	8.0	7.5	21.5	18.5	21.0	19.0	19.0	17.5	15.5	13.5	11.5	10.5
25	8.0	7.0	21.0	18.5	20.0	17.0	18.5	16.5	17.5	15.5	11.5	10.0
26	9.5	7.0	21.0	19.0	20.0	16.0	18.5	14.5	18.0	16.0	10.5	10.5
27	9.5	8.5	19.5	16.5	19.5	16.5	19.0	16.5	17.5	15.0	11.5	10.5
28	9.0	7.5	18.5	15.0	20.0	17.5	19.0	16.0	17.5	14.0	11.5	10.0
29	9.0	7.0	18.5	16.0	21.0	17.5	20.0	16.0	14.5	14.0	11.5	10.0
30	10.5	9.0	18.5	16.5	21.0	17.0	21.5	17.5	14.5	14.0	12.5	11.0
31	---	---	17.5	15.0	---	---	22.0	18.5	14.5	14.0	---	---
MONTH	10.5	1.5	22.0	10.0	23.0	12.5	22.0	13.0	22.5	13.0	16.5	10.0
YEAR	23.0	0.0										

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 E., Ogemaw County, temperature recorder at gaging station 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 mi^2 (303 km^2).

PERIOD OF RECORD.--Water temperatures: October 1950 to September 1975.

EXTREMES.--1974-75:
Water temperatures: Maximum, 19.0°C June 23, August 1-4; minimum, freezing point on many days during December to February.
Period of record:
Water temperatures: Maximum, 26.0°C Aug. 1, 1955; minimum, freezing point on many days during winter period

REMARKS.--Intermittent ice cover during the winter period. Some regulation from dams above station. A listing of periodic measurements of specific conductance and temperature for this station is on page 541.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	11.5	10.5	9.0	8.0	1.5	1.5	1.5	1.5	0.0	0.0	1.0	0.5
2	10.5	9.5	9.0	9.0	1.5	1.5	1.5	1.0	0.0	0.0	0.5	0.5
3	9.5	7.5	9.0	8.5	1.5	1.0	1.5	1.0	0.0	0.0	0.5	0.5
4	8.0	7.5	8.5	7.5	1.0	0.5	1.5	1.5	0.0	0.0	0.5	0.5
5	9.5	8.0	7.5	7.0	0.5	0.5	1.5	1.5	0.0	0.0	0.5	0.5
6	9.5	9.5	7.0	6.5	0.5	0.5	1.5	1.5	0.0	0.0	1.0	0.5
7	9.5	9.5	6.5	5.0	0.5	0.5	2.0	1.5	0.0	0.0	1.5	1.0
8	9.5	8.0	5.0	4.0	0.5	0.5	2.0	2.0	0.0	0.0	1.5	1.5
9	8.5	8.0	4.5	4.0	0.5	0.5	2.5	2.0	0.5	0.0	1.5	1.0
10	9.0	8.5	5.0	4.5	0.5	0.0	2.5	2.0	0.5	0.5	1.0	1.0
11	9.5	9.0	5.5	5.0	0.0	0.0	2.0	1.5	0.5	0.0	1.5	1.0
12	10.0	9.5	5.5	5.5	0.5	0.0	1.5	1.0	0.0	0.0	1.5	1.5
13	10.0	8.5	5.5	5.0	1.0	0.5	1.0	0.5	0.0	0.0	2.0	1.5
14	9.0	8.0	5.0	4.0	1.0	1.0	0.5	0.0	0.0	0.0	2.0	1.5
15	8.5	8.5	4.0	3.5	1.5	1.0	0.0	0.0	0.0	0.0	2.0	1.5
16	8.5	8.0	3.5	2.5	1.5	1.5	0.0	0.0	0.0	0.0	2.0	2.0
17	8.5	8.0	3.0	2.5	1.5	1.5	0.0	0.0	0.0	0.0	2.0	2.0
18	8.5	7.5	3.5	3.0	1.5	1.5	0.0	0.0	0.0	0.0	2.0	2.0
19	7.5	6.5	4.0	3.5	1.5	1.5	0.0	0.0	0.5	0.0	2.0	2.0
20	6.5	5.5	4.5	4.0	1.5	1.0	0.5	0.0	0.5	0.5	2.0	2.0
21	5.5	4.5	4.5	4.5	1.0	0.5	0.0	0.0	0.5	0.5	2.0	2.0
22	5.5	4.5	4.5	3.5	0.5	0.5	0.0	0.0	1.0	0.5	2.5	2.0
23	6.5	5.5	3.5	3.0	1.0	0.5	0.0	0.0	1.0	1.0	2.5	2.5
24	6.5	6.0	4.0	3.5	1.0	1.0	0.0	0.0	1.0	1.0	2.5	2.5
25	7.0	6.5	4.0	3.5	1.5	1.0	0.0	0.0	1.0	1.0	2.5	2.5
26	7.0	6.0	3.5	2.5	1.5	1.0	0.0	0.0	1.0	1.0	2.5	2.5
27	6.5	6.0	2.5	2.0	1.0	1.0	0.0	0.0	1.0	1.0	2.5	2.5
28	6.5	6.0	2.0	1.5	1.0	1.0	0.0	0.0	1.0	1.0	2.5	2.5
29	6.5	6.5	1.5	1.5	1.5	1.0	0.0	0.0	---	---	2.5	2.5
30	7.5	6.5	1.5	1.5	1.5	1.5	0.0	0.0	---	---	2.5	2.5
31	8.0	7.5	---	---	1.5	1.5	0.0	0.0	---	---	2.5	2.5
MONTH	11.5	4.5	9.0	1.5	1.5	0.0	2.5	0.0	1.0	0.0	2.5	0.5

04140500 RIFLE RIVER AT SELKIRK, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.5	2.5	11.5	9.5	17.5	17.0	18.0	17.5	19.0	18.0	15.0	14.5
2	2.5	2.5	11.5	11.0	17.0	16.5	18.0	18.0	19.0	19.0	16.0	15.0
3	2.5	2.5	11.5	10.5	16.5	15.5	18.5	17.5	19.0	19.0	16.0	13.5
4	2.5	2.5	11.0	10.5	15.5	15.5	18.0	18.0	19.0	18.5	14.0	12.5
5	2.5	2.5	12.0	10.5	15.5	15.5	18.0	17.5	18.5	18.0	14.0	13.5
6	3.0	2.5	12.0	11.5	15.5	15.5	18.0	17.5	18.0	17.5	14.0	13.0
7	3.0	3.0	12.5	11.5	15.5	15.5	18.0	18.0	17.5	16.0	13.5	12.5
8	3.0	3.0	12.5	12.0	15.5	15.0	18.0	18.0	16.5	16.0	12.5	12.0
9	3.5	3.0	13.0	12.5	15.0	14.5	18.0	17.0	16.5	16.0	12.0	10.0
10	3.5	3.5	13.5	13.0	15.0	14.5	17.5	16.5	17.0	16.5	12.0	10.5
11	3.5	3.5	14.0	13.5	15.5	15.0	16.5	15.5	17.5	17.0	13.0	12.0
12	3.5	3.5	14.0	13.5	15.5	15.5	15.5	15.5	17.5	17.0	13.0	11.0
13	3.5	3.5	14.0	13.5	15.5	14.5	15.5	15.5	18.0	17.5	11.0	10.0
14	3.5	3.0	14.5	14.0	15.5	14.5	16.0	15.5	18.0	17.5	10.0	8.0
15	4.0	3.0	14.5	14.5	15.5	15.5	16.0	15.5	17.5	17.0	10.5	9.5
16	4.5	4.0	14.5	13.5	15.5	15.0	17.0	15.5	17.5	17.5	11.0	10.5
17	4.5	4.5	15.0	14.5	15.5	15.0	18.0	17.0	17.5	17.5	13.0	11.0
18	5.0	4.5	16.0	15.0	16.0	15.5	18.0	18.0	17.5	16.5	13.0	13.0
19	5.5	5.0	16.5	16.0	16.5	16.0	18.0	18.0	16.5	15.5	13.5	13.0
20	5.5	5.5	17.5	16.5	17.0	16.5	18.0	18.0	15.5	15.5	13.5	13.0
21	5.5	5.5	18.5	17.5	17.5	17.0	18.0	18.0	15.5	15.0	13.0	12.5
22	6.0	5.5	18.5	18.5	18.5	17.5	18.0	18.0	15.0	14.5	12.5	11.5
23	6.5	6.5	18.5	18.5	19.0	18.0	18.0	18.0	14.5	14.5	13.0	11.5
24	6.5	6.5	18.5	18.5	18.5	18.0	18.0	18.0	14.5	14.5	13.0	11.5
25	7.0	6.5	18.5	18.5	18.0	17.5	18.0	17.0	15.0	14.5	12.0	10.0
26	7.5	7.0	18.5	18.5	17.5	17.0	17.0	16.5	15.0	14.5	11.5	10.0
27	7.5	7.5	18.5	18.0	17.0	17.0	16.5	16.5	15.0	15.0	13.0	11.0
28	8.5	8.5	18.0	17.5	18.0	17.0	17.0	16.5	15.0	15.0	12.5	10.5
29	9.0	8.0	17.5	17.5	18.0	18.0	17.0	16.5	15.0	14.5	12.5	10.5
30	9.5	8.0	17.5	17.5	18.5	17.5	17.5	17.0	14.5	14.5	13.5	12.0
31	---	---	17.5	17.5	---	---	18.0	17.5	14.5	14.5	---	---
MONTH	9.5	2.5	18.5	9.5	19.0	14.5	18.5	15.5	19.0	14.5	16.0	8.0
YEAR	19.0	0.0										

04142000 RIFLE RIVER NEAR STERLING, MICH.
(National stream-quality accounting station)

LOCATION.--Lat 44°04'21", long 084°01'12", in NE¼ SW¼ sec.5, T.19 N., R.4 E., Arenac County, at gaging station 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 mi^2 (830 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1974 to September 1975.
Specific conductance: November 1974 to September 1975.
Water Temperatures: November 1974 to September 1975.
Sediment records: April to September 1966, water years 1967-69, (partial record station), October 1969 to September 1970, January to April 1971, April to September 1972.

EXTREMES.--1974-75:
Specific conductance: Maximum (observed), 480 micromhos Feb. 10; minimum (recorded), 157 micromhos Aug. 31.
Water temperatures: Maximum (observed), 25.5°C July 7; minimum (observed), 0.5°C on many days during winter period.

REMARKS.--Water-quality recorder operated since Aug. 28, 1975.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
11...	0930	219	8.4	59	14	11	1.1	232	0	190	29	16
NOV.												
18...	1200	191	6.7	61	16	11	1.0	227	0	186	32	17
DEC.												
11...	1200	195	8.7	63	17	11	1.0	232	0	190	32	18
JAN.												
10...	1130	290	8.0	55	15	11	.9	230	0	189	32	18
FEB.												
07...	1200	210	10	61	17	11	1.2	196	0	161	31	16
MAR.												
13...	1300	245	9.2	62	15	11	1.3	218	0	179	32	16
APR.												
09...	1200	560	6.9	52	13	8.5	1.5	186	0	153	27	14
MAY												
13...	1200	305	6.2	57	15	10	1.3	214	0	175	28	16
JUNE												
05...	1430	392	6.9	54	14	11	.9	204	0	167	24	17
JULY												
10...	1200	191	5.0	58	15	10	1.0	228	0	187	26	15
AUG.												
07...	1415	157	6.3	58	16	10	1.0	232	2	190	28	16
SEP.												
11...	1215	313	8.5	58	14	10	1.5	220	0	180	29	16

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
11...	0930	5.8	--	4	0	0	<10	0	0	0	1	1
JAN.												
10...	1130	10	2	1	1	0	<10	4	1	0	11	1
APR.												
09...	1200	12	3	1	1	1	<10	0	0	0	7	2
JULY												
10...	1200	3.5	4	1	0	0	<10	0	0	0	3	2

04142000 RIFLE RIVER NEAR STERLING, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
11...	.2	.02	.23	.25	.01	246	253	210	20	10	.3	415
NOV.												
18...	.2	.03	.05	.08	.01	238	257	220	34	10	.3	492
DEC.												
11...	.1	.15	.51	.66	.10	292	265	230	40	9	.3	444
JAN.												
10...	.2	.17	.28	.45	.03	247	253	200	11	11	.3	440
FEB.												
07...	.2	.24	.34	.58	.02	259	244	220	59	10	.3	470
MAR.												
13...	.2	.20	.38	.58	.04	248	254	220	41	10	.3	460
APR.												
09...	.3	.20	.55	.75	.04	221	214	180	27	9	.3	400
MAY												
13...	.4	.09	.48	.57	.02	257	239	200	25	10	.3	410
JUNE												
05...	.2	.01	.68	.69	.03	246	227	190	23	11	.3	345
JULY												
10...	.2	.00	.43	.43	.03	255	242	210	23	9	.3	383
AUG.												
07...	.4	.00	.29	.29	.01	261	250	210	20	9	.3	411
SEP.												
11...	.2	.15	.45	.60	.00	254	246	200	20	10	.3	407

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
11...	8.2	8.0	3	11.3	97	2.3	370	B8	23	6	3.5	100
NOV.												
18...	8.1	5.0	4	13.0	100	2.9	110	B14	B14	1	.52	100
DEC.												
11...	8.2	2.0	20	14.2	100	2.3	110	B8	B10	73	38	100
JAN.												
10...	7.8	1.5	10	14.6	110	5.8	410	32	160	35	27	100
FEB.												
07...	8.1	.5	2	13.8	97	2.5	210	24	B9	9	5.1	100
MAR.												
13...	8.1	.5	4	13.9	98	2.8	83	B7	B3	39	26	100
APR.												
09...	8.0	3.5	7	13.7	100	3.0	B41	B8	28	59	89	100
MAY												
13...	8.1	13.0	4	10.8	100	2.7	270	>30	B3	25	21	100
JUNE												
05...	8.2	15.0	25	9.6	96	2.1	950	>120	B520	129	137	100
JULY												
10...	8.3	18.0	15	9.0	97	1.8	630	B180	B630	40	21	100
AUG.												
07...	8.4	20.0	2	10.8	120	1.5	B20	31	31	2	.85	100
SEP.												
11...	8.1	15.0	4	11.0	110	2.8	250	52	88	9	7.6	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
11...	290	70	2	2	35	20	.0	.0	0	0	10	0
JAN.												
10...	850	10	10	2	77	10	.1	.0	0	0	60	4
APR.												
09...	930	60	13	0	40	20	.2	.0	0	0	40	4
JULY												
10...	740	0	7	1	60	10	.1	.1	0	0	20	30

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 11	0930	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	--	58
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Melosira	--	1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	1
		Cocconeis	--	1
		Rhoiocosphenia	--	1
		Cymbellaceae		
		Amphora	--	1
		Diatomaceae		
		Diatoma	--	0
		Fragilariaceae		
		Asterionella	--	1
		Gomphonemataceae		
		Gomphonema	--	11
		Naviculaceae		
		Navicula	--	2
		Neidium	--	1
		Nitzschiaceae		
		Nitzschia	--	3
		Surirellaceae		
		Surirella	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	5
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	11
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	--	0
		TOTAL	5,700	
NOV. 18	1200	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Pennales		
		Achnanthaceae		
		Cocconeis	--	4
		Cymbellaceae		
		Amphora	--	9
		Diatomaceae		
		Diatoma	--	42
		Fragilariaceae		
		Asterionella	--	9
		Synedra	--	7
		Gomphonemataceae		
		Gomphonema	--	7
		Naviculaceae		
		Gyrosigma	--	2
		Navicula	--	5
		Nitzschiaceae		
		Nitzschia	--	11
		TOTAL	2,900	
DEC. 11	1200	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cocconeis	--	4
		Rhoiocosphenia	--	3
		Cymbellaceae		
		Cymbella	--	7
		Diatomaceae		
		Diatoma	--	24
		Naviculaceae		
		Gyrosigma	--	1
		Navicula	--	38
		Nitzschiaceae		
		Nitzschia	--	18
		Surirellaceae		
		Surirella	--	1
		TOTAL	4,900	
JAN. 10	1130	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Cocconeis	--	2
		Cymbellaceae		
		Cymbella	--	8
		Diatomaceae		
		Diatoma	--	16
		Fragilariaceae		
		Asterionella	--	2
		Synedra	--	23
		Gomphonemataceae		
		Gomphonema	--	5
		Meridionaceae		
		Meridion	--	2
		Naviculaceae		
		Navicula	--	34
		Nitzschiaceae		
		Hantzschia	--	2
		Nitzschia	--	6
		Tabellariaceae		
		Tabellaria	--	2
		TOTAL	1,200	

04142000 RIFLE RIVER NEAR STERLING, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
'EB. 07	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	2
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	--	6
		Cocconeis	--	2
		Cymbellaceae		
		Cymbella	--	6
		Gomphonemataceae		
		Gomphonema	--	8
		Naviculaceae		
		Navicula	--	15
		Nitzschiaceae		
		Nitzschia	--	10
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	4
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	48
		TOTAL	550	
MAR. 13	1300	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Cocconeis	--	6
		Cymbellaceae		
		Amphora	--	3
		Cymbella	--	3
		Diatomaceae		
		Diatoma	--	6
		Fragilariaceae		
		Fragilaria	--	18
		Gomphonemataceae		
		Gomphonema	--	6
		Naviculaceae		
		Navicula	--	39
		Nitzschiaceae		
		Nitzschia	--	18
		TOTAL	550	
APR. 09	1200	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	4
		Pennales		
		Achnanthaceae		
		Achnanthes	--	13
		Fragilariaceae		
		Fragilaria	--	9
		Gomphonemataceae		
		Gomphonema	--	13
		Naviculaceae		
		Navicula	--	35
		Nitzschiaceae		
		Nitzschia	--	17
		Tabellariaceae		
		Tabellaria	--	4
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Ochromonas	--	4
		TOTAL	81,000	
MAY 13	1400	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	14
		Melosira	--	4
		Pennales		
		Achnanthaceae		
		Achnanthes	--	6
		Cocconeis	--	4
		Cymbellaceae		
		Cymbella	--	4
		Diatomaceae		
		Diatoma	--	2
		Fragilariaceae		
		Asterionella	--	29
		Fragilaria	--	2
		Gomphonemataceae		
		Gomphonema	--	10
		Naviculaceae		
		Navicula	--	24
		Nitzschiaceae		
		Nitzschia	--	2
		TOTAL	2,000	

04142000 RIFLE RIVER NEAR STERLING, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JUNE 05	1430	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	20
		Pennales		
		Cymbellaceae		
		Amphora	--	10
		Diatomaceae		
		Diatoma	--	10
		Fragilariaceae		
		Asterionella	--	10
		Synedra	--	10
		Naviculaceae		
		Navicula	--	30
		Nitzschiaceae		
		Nitzschia	--	10
		TOTAL	1,200	
JULY 10	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	11
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	9
		Pennales		
		Achnanthes		
		Cocconeis	--	9
		Rhoiocosphenia	--	3
		Cymbellaceae		
		Cymbella	--	3
		Diatomaceae		
		Diatoma	--	34
		Gomphonemataceae		
		Gomphonema	--	6
		Naviculaceae		
		Anomoeoneis	--	3
		Navicula	--	14
		Nitzschiaceae		
		Nitzschia	--	9
		TOTAL	2,700	
AUG. 07	1415	Chlorophyta		
		Chlorophyceae		
		Zygnematales		
		Desmidiaceae		
		Closterium	--	0
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	24
		Melosira	--	11
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cocconeis	--	3
		Rhoiocosphenia	--	8
		Cymbellaceae		
		Amphora		
		Cymbella		
		Diatomaceae		
		Diatoma		
		Naviculaceae		
		Navicula	--	32
		Pinnularia		
		Nitzschiaceae		
		Nitzschia	--	19
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria		
		TOTAL	1,000	
SEP. 11	1215	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus		
		Volvocales		
		Volvocaceae		
		Eudorina	--	34
		Zygnematales		
		Desmidiaceae		
		Staurastrum	--	9
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	6
		Melosira	--	9
		Pennales		
		Achnanthaceae		
		Cocconeis	--	14
		Diatomaceae		
		Diatoma	--	3
		Gomphonemataceae		
		Gomphonema	--	3
		Meridionaceae		
		Meridion		
		Naviculaceae		
		Navicula	--	20
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	--	3
		TOTAL	190	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a/]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
OCT. 11	38	58.5	49	42.6	2.1	223
FEB. 07	34	.2	.2	0.0	-	0
APR. 09	34	2.1	1.4	2.2	.2	918
JULY 10	28	16	12	26	2.0	154

REMARKS-- [a/] Sampling Method by Pholyethylene Strip.

04142000 RIFLE RIVER NEAR STERLING, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1700 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	436	418	445	424	388	362	435	419	470	
2		---	436	423	473	429	388	367	429	424	469	
3		---	410	439	461	424	388	347	413	419	423	
4		---	441	416	466	430	393	342	413	413	417	
5		---	436	426	460	428	398	352	429	413	427	
6		---	436	442	443	420	410	347	424	---	437	
7		---	425	421	446	428	410	372	429	---	438	
8		---	420	416	479	429	390	372	424	---	442	
9		---	425	416	463	425	380	382	429	---	---	
10		---	436	390	480	453	380	393	435	---	430	
11		---	429	354	466	424	370	393	429	428	455	
12		---	418	343	451	423	375	398	429	432	423	
13		---	408	374	443	433	375	398	408	436	441	
14		---	429	395	441	433	340	409	408	440	443	
15		---	408	416	436	438	360	395	408	434	443	
16		---	408	416	440	433	360	400	403	435	430	
17		---	408	421	431	422	360	400	419	371	441	
18		---	418	437	429	381	360	399	382	446	446	
19		441	418	421	430	381	360	400	382	384	442	
20		436	418	437	439	337	340	400	424	418	446	
21		436	418	437	440	306	340	400	424	406	448	
22		436	423	437	418	316	280	400	424	381	434	
23		425	413	439	342	347	370	400	424	420	437	
24		425	418	437	334	342	370	413	429	406	440	
25		425	418	385	368	337	360	424	429	404	440	
26		436	423	400	383	342	320	429	424	433	453	
27		436	439	---	399	352	400	424	424	439	448	
28		431	418	436	410	367	400	424	424	427	---	
29		431	418	431	---	367	400	435	424	425	---	
30		436	423	434	---	377	377	435	429	428	---	
31		---	418	441	---	377	---	424	---	434	---	

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1									---	---	---	---
2									---	---	---	---
3									---	---	---	---
4									---	---	---	---
5									---	---	---	---
6									---	---	---	---
7									---	---	---	---
8									---	---	---	---
9									---	---	---	---
10									---	---	---	---
11									---	---	---	---
12									---	---	398	370
13									---	---	407	392
14									---	---	417	406
15									---	---	424	413
16									---	---	428	421
17									---	---	426	422
18									---	---	426	389
19									---	---	427	412
20									---	---	423	412
21									---	---	425	414
22									---	---	422	412
23									---	---	427	414
24									---	---	419	407
25									---	---	419	410
26									---	---	415	408
27									---	---	417	409
28									430	418	416	409
29									430	388	418	411
30									437	411	421	414
31									415	157	---	---

04142000 RIFLE RIVER NEAR STERLING, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1700 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	1.5	1.5	0.5	0.5	3.5	12.0	19.5	24.5	25.0	
2		---	1.5	1.5	0.5	0.5	3.5	12.0	19.0	24.5	24.5	
3		---	0.5	1.5	0.5	0.5	3.0	11.5	18.0	25.0	24.5	
4		---	0.5	1.5	0.5	0.5	4.0	11.5	17.5	25.0	24.0	
5		---	0.5	2.0	0.5	0.5	4.0	11.5	17.0	25.0	23.5	
6		---	0.5	2.0	0.5	0.5	4.5	12.5	17.0	25.0	20.5	
7		---	1.0	1.5	0.5	0.5	4.5	13.0	16.5	25.5	20.5	
8		---	0.5	0.5	0.5	0.5	4.5	13.5	16.0	24.0	20.5	
9		---	0.5	3.0	0.5	1.0	5.0	14.0	16.5	21.5	21.5	
10		---	0.5	3.0	0.5	1.0	5.0	16.0	16.5	19.0	23.0	
11		---	0.5	2.0	0.5	1.5	5.5	16.5	16.5	18.5	23.5	
12		---	0.5	0.5	0.5	2.0	5.5	16.5	16.5	18.5	23.5	
13		---	0.5	0.5	0.5	2.0	6.0	16.5	17.0	18.0	23.0	
14		---	1.0	0.5	0.5	2.5	6.5	16.5	17.0	18.0	23.0	
15		---	1.0	0.5	0.5	3.0	7.0	17.0	17.5	20.0	22.0	
16		---	1.0	0.5	0.5	4.0	7.0	17.0	18.0	22.5	22.5	
17		---	1.5	0.5	0.5	5.0	7.0	17.5	19.0	22.0	21.5	
18		---	1.5	0.5	0.5	4.5	7.5	17.5	19.0	21.5	21.0	
19		6.0	1.0	0.5	0.5	5.0	7.5	18.0	19.5	22.0	20.0	
20		7.0	1.0	0.5	0.5	5.0	7.5	18.5	20.5	22.5	18.0	
21		5.5	0.5	0.5	1.0	4.5	8.0	20.0	20.0	22.5	18.0	
22		4.5	1.0	0.5	1.0	4.5	8.0	20.5	20.5	22.0	18.5	
23		5.0	0.5	0.5	1.0	5.0	8.0	21.0	21.0	21.0	19.0	
24		6.0	0.5	0.5	1.0	4.5	8.0	21.5	21.0	20.5	---	
25		3.5	0.5	1.0	0.5	4.0	8.5	22.0	21.5	19.5	---	
26		1.0	0.5	0.5	0.5	3.0	8.5	22.0	22.0	20.5	---	
27		1.0	0.5	0.5	0.5	2.5	9.0	21.5	23.0	22.0	---	
28		2.0	1.0	0.5	0.5	3.0	10.0	21.0	23.0	22.5	---	
29		1.5	2.0	0.5	---	2.5	11.0	20.0	23.5	23.5	---	
30		1.5	2.0	0.5	---	3.0	12.0	20.0	24.0	24.0	---	
31		---	1.5	0.5	---	3.5	---	19.5	---	24.5	---	

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1									---	---	17.0	15.5
2									---	---	18.0	16.5
3									---	---	17.5	15.0
4									---	---	17.5	14.5
5									---	---	16.0	15.0
6									---	---	17.5	14.0
7									---	---	16.0	14.0
8									---	---	15.5	13.5
9									---	---	16.0	12.0
10									---	---	15.5	12.0
11									---	---	16.0	14.0
12									---	---	15.5	13.0
13									---	---	14.0	11.5
14									---	---	13.5	9.5
15									---	---	13.0	10.5
16									---	---	13.5	12.0
17									---	---	15.5	12.0
18									---	---	15.5	13.0
19									---	---	15.5	14.0
20									---	---	15.0	13.5
21									---	---	14.0	12.5
22									---	---	14.0	12.0
23									---	---	14.0	11.5
24									---	---	14.0	11.0
25									---	---	11.5	10.0
26									---	---	12.5	10.0
27									---	---	15.0	11.0
28									19.5	16.5	14.5	10.0
29									18.5	17.0	14.0	10.0
30									17.0	16.5	15.0	12.0
31									16.5	15.5	---	---
MONTH									---	---	18.0	9.5

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, temperature recorder at gaging station on upstream side of bridge at Byron, 0.3 mi (0.5 km) downstream from milldam just upstream from South Branch Shiawassee River.

DRAINAGE AREA.--368 mi^2 (953 km^2).

PERIOD OF RECORD.--March 1962 to September 1975.

EXTREMES.--1974-75:
Water temperature: Maximum, 29.0°C July 31, to Aug. 2; minimum, freezing point on many days during December to February.
Period of record:
Water temperatures: Maximum, 29.0°C on several days in 1971, 1974 and 1975; minimum freezing point on many days during winter period.

REMARKS.--No temperature records available Dec. 14 to Jan. 17, Feb. 9 to Mar. 2 due to clock stoppage. Recorded ranges in temperature for missing record: Dec. 14 to Jan. 18, 2.5°C to 0.5°C and Feb. 9 to Mar. 3, 0.5°C to 0.5°C. A listing of periodic temperature measurements for this station is on page 541.

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	13.0	11.0	15.5	14.5	1.0	0.5	---	---	0.0	0.0	---	---
2	11.0	9.5	15.0	13.5	0.5	0.0	---	---	0.0	0.0	---	---
3	10.0	8.0	14.5	13.5	0.0	0.0	---	---	0.5	0.0	0.5	0.5
4	11.0	9.0	13.5	10.5	0.0	0.0	---	---	0.5	0.5	1.0	0.5
5	13.0	10.5	10.5	9.0	0.0	0.0	---	---	0.5	0.5	1.0	0.5
6	14.0	13.0	9.0	8.0	0.0	0.0	---	---	1.0	0.5	1.5	1.0
7	14.0	12.0	8.0	7.0	0.0	0.0	---	---	1.0	0.5	1.5	1.5
8	11.5	10.0	7.0	6.5	0.0	0.0	---	---	0.5	0.5	1.5	1.0
9	11.5	10.5	7.0	6.5	0.0	0.0	---	---	---	---	1.5	1.0
10	11.5	10.0	7.0	7.0	0.0	0.0	---	---	---	---	2.0	1.0
11	12.0	10.5	7.5	7.0	0.0	0.0	---	---	---	---	2.0	1.0
12	12.0	11.5	7.5	7.5	0.0	0.0	---	---	---	---	2.0	1.5
13	11.5	10.0	7.5	6.0	0.5	0.0	---	---	---	---	3.0	1.0
14	11.5	10.5	6.0	4.0	---	---	---	---	---	---	2.0	1.0
15	11.5	10.0	4.0	2.5	---	---	---	---	---	---	3.5	1.0
16	10.5	9.0	2.5	1.0	---	---	---	---	---	---	4.0	2.0
17	10.5	9.5	3.0	2.0	---	---	---	---	---	---	5.0	2.5
18	10.0	8.0	4.0	3.0	---	---	0.0	0.0	---	---	5.5	4.0
19	8.0	7.0	5.0	4.0	---	---	0.0	0.0	---	---	6.0	5.5
20	7.0	6.0	6.0	5.0	---	---	0.0	0.0	---	---	6.5	5.0
21	6.0	4.0	5.5	4.5	---	---	0.0	0.0	---	---	6.5	4.0
22	7.0	5.0	4.5	3.0	---	---	0.0	0.0	---	---	4.0	4.0
23	8.5	7.0	4.0	3.0	---	---	0.0	0.0	---	---	4.0	3.0
24	9.0	8.0	6.0	4.0	---	---	0.0	0.0	---	---	5.5	4.0
25	10.5	9.0	6.0	5.0	---	---	0.0	0.0	---	---	5.5	5.0
26	10.5	9.5	4.5	2.0	---	---	0.0	0.0	---	---	4.5	3.0
27	10.0	8.5	2.0	1.0	---	---	0.0	0.0	---	---	3.5	2.5
28	10.0	8.5	1.5	1.0	---	---	0.0	0.0	---	---	2.5	2.5
29	10.0	9.5	1.5	1.5	---	---	0.0	0.0	---	---	3.0	2.5
30	12.5	10.0	1.5	1.0	---	---	0.0	0.0	---	---	3.0	2.5
31	14.5	12.5	---	---	---	---	0.0	0.0	---	---	2.5	1.5
MONTH	14.5	4.0	15.5	1.0	---	---	---	---	---	---	6.5	0.5

04144000 SHIAWASSEE RIVER AT BYRON, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	3.5	2.0	16.5	14.0	20.0	18.5	25.0	22.5	29.0	26.0	19.0	19.0
2	3.5	1.0	17.0	15.0	19.0	17.5	25.5	23.0	29.0	27.0	19.0	19.0
3	1.0	1.0	16.5	15.0	18.5	16.5	25.5	23.5	26.5	25.5	19.0	17.5
4	2.0	1.0	16.0	14.5	18.5	17.0	25.5	22.5	28.0	25.0	17.5	17.0
5	2.5	1.0	15.5	13.5	18.5	16.5	25.5	23.0	27.5	23.5	17.5	17.0
6	4.0	1.5	16.0	15.0	18.5	17.5	25.5	23.0	23.0	21.5	17.0	16.5
7	5.0	3.0	17.0	14.0	18.0	16.0	25.0	23.0	23.5	20.0	17.0	16.5
8	6.0	4.0	17.0	16.5	16.5	14.5	26.0	23.0	23.5	20.0	17.5	17.5
9	5.5	4.5	18.0	15.5	17.0	14.0	25.0	22.0	24.5	20.5	17.5	16.5
10	6.5	4.5	19.0	16.5	19.0	16.0	24.5	22.0	25.5	22.5	16.5	15.5
11	6.5	4.5	19.5	17.5	18.0	17.0	22.0	20.0	25.5	23.0	17.0	16.5
12	6.5	4.5	19.5	16.0	18.0	16.5	22.0	20.0	26.0	23.0	17.0	16.0
13	7.0	5.0	17.5	14.0	19.5	17.0	22.5	19.5	25.5	23.0	16.0	14.5
14	7.0	6.0	17.5	16.0	21.0	18.5	22.0	20.0	24.0	21.5	14.0	12.5
15	6.5	5.5	17.0	16.0	20.5	19.0	21.0	19.0	23.5	22.0	14.0	13.0
16	7.0	6.0	17.0	15.5	19.0	17.0	23.5	20.5	23.0	20.5	15.5	14.0
17	8.5	6.5	18.5	16.0	19.0	18.0	25.0	22.0	23.0	21.5	16.0	15.5
18	9.0	8.0	20.5	17.5	21.5	19.0	24.5	23.0	23.0	20.0	16.0	16.0
19	9.5	8.0	23.0	20.0	23.0	21.0	23.5	22.5	21.5	20.0	17.0	16.5
20	8.0	7.5	24.5	21.5	24.0	22.5	25.0	24.0	21.0	19.0	17.0	16.0
21	7.5	7.0	24.0	22.0	24.0	22.0	25.0	23.0	20.5	19.0	16.5	15.5
22	8.0	7.0	23.5	21.5	25.0	22.5	26.0	22.5	19.0	18.5	15.5	14.0
23	8.5	8.5	23.0	21.0	25.0	23.5	26.0	24.0	18.5	18.5	14.0	13.0
24	9.0	8.5	24.0	21.5	25.0	22.5	26.0	24.0	19.5	18.5	14.0	13.0
25	10.0	9.5	25.0	22.5	22.5	21.0	25.0	22.5	21.5	19.5	14.0	13.0
26	10.0	9.0	24.0	22.0	22.0	20.0	24.0	22.0	21.5	20.5	13.0	13.0
27	11.0	10.0	23.0	21.0	22.0	21.0	24.5	22.0	21.5	20.0	13.5	12.0
28	10.5	9.5	22.5	20.5	23.5	22.0	25.0	22.0	21.5	20.0	14.0	12.5
29	11.5	8.5	22.0	20.0	24.5	22.5	27.0	22.5	21.0	21.0	14.0	13.0
30	14.0	12.0	22.0	21.0	24.5	22.0	28.0	24.0	21.0	20.0	15.0	13.5
31	---	---	22.0	20.0	---	---	29.0	25.0	20.0	19.0	---	---
MONTH	14.0	1.0	25.0	13.5	25.0	14.0	29.0	19.0	29.0	18.5	19.0	12.0
YEAR	29.0	0.0										

04157000 SAGINAW RIVER AT SAGINAW, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 43°24'46", long 83°57'47", in NW¼ SE¼ sec.26, T.12 N., R.4 E., Saginaw County, at gaging station 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 mi^2 (15,700 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1974 to September 1975.
Specific conductance: November 1974 to September 1975.
Water temperatures: November 1974 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 1120 micromhos Dec. 24; minimum observed, 324 micromhos Feb. 26.
Water temperatures: Maximum observed, 27.5°C Aug. 1; minimum observed, freezing point on many days during January to March.

REMARKS.--Primary sampling point on downstream side of bridge on Rust Avenue. Water discharge measurements are made at time of monthly sampling.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
18...	1400	4020	5.2	97	23	51	5.6	239	0	196	54	170
NOV.												
13...	1300	2810	4.3	79	24	40	4.0	310	0	254	52	88
DEC.												
06...	1200	3250	5.4	84	22	50	3.7	254	0	208	57	100
JAN.												
09...	1200	4250	4.8	83	24	55	3.6	264	0	216	67	110
FEB.												
06...	1300	4190	7.1	87	22	36	3.6	206	0	169	70	87
MAR.												
14...	1100	1180	6.6	70	19	46	5.5	214	0	176	62	95
APR.												
04...	1200	8100	5.3	63	18	21	2.8	192	0	157	53	47
MAY												
08...	1200	8230	4.3	66	17	17	2.6	216	0	177	49	37
JUNE												
06...	1130	7200	4.5	63	17	23	2.8	200	0	164	45	51
JULY												
11...	1200	3990	3.4	70	19	43	3.5	216	0	177	50	94
AUG.												
08...	1100	2450	2.7	69	23	46	4.0	240	0	197	51	100
SEP.												
12...	1030	--	9.3	62	17	18	3.4	224	0	184	42	38

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
18...	1400	9.8	3	1	1	0	<10	1	1	1	5	3
JAN.												
09...	1200	9.3	2	1	1	0	10	0	2	0	16	3
APR.												
04...	1200	8.5	2	0	0	0	<10	1	0	0	6	3
JULY												
11...	1200	11	5	1	0	0	<10	0	0	0	10	4

04157000 SAGINAW RIVER AT SAGINAW, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
18...	.4	.37	1.0	1.4	.23	560	524	340	144	24	1.2	850
NOV.												
13...	.3	.95	1.2	2.2	.46	434	680	300	46	22	1.0	632
DEC.												
06...	.3	.58	1.4	2.0	.37	444	444	300	92	26	1.3	846
JAN.												
09...	.3	1.3	1.0	2.3	.33	476	477	310	94	28	1.4	953
FEB.												
06...	.3	1.7	1.0	2.7	.20	483	414	310	141	20	.9	843
MAR.												
14...	.3	.94	1.1	2.0	.16	456	410	250	74	28	1.3	791
APR.												
04...	.2	1.5	.96	2.5	.11	383	305	230	73	16	.6	530
MAY												
08...	.3	.94	1.2	2.1	.09	393	299	230	53	13	.5	518
JUNE												
06...	.3	.35	1.5	1.9	.30	348	305	230	66	18	.7	557
JULY												
11...	.5	.55	1.4	2.0	11	425	389	250	73	27	1.2	645
AUG.												
08...	.6	1.1	--	--	.43	477	415	270	73	27	1.2	726
SEP.												
12...	.8	.90	1.3	2.2	.22	160	301	220	36	15	.5	527

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
18...	8.2	11.0	20	8.5	78	2.4	3900	B60	B34	26	282	100
NOV.												
13...	7.8	11.0	10	8.6	79	7.9	5800	B180	87	25	190	100
DEC.												
06...	8.2	1.0	10	14.1	100	2.6	>1600	120	100	17	149	100
JAN.												
09...	8.1	1.5	6	15.4	110	3.4	--	B161	B925	5	57	100
FEB.												
06...	7.8	.0	6	13.3	92	5.2	690	61	150	17	192	100
MAR.												
14...	7.9	1.0	6	12.0	86	4.3	560	B34	136	9	29	100
APR.												
04...	7.7	.5	9	15.2	110	6.1	440	240	104	22	481	100
MAY												
08...	7.9	14.0	30	9.3	91	4.4	32000	330	50	62	1380	100
JUNE												
06...	8.0	18.5	70	5.9	64	3.2	360000	6900	>1000	176	3420	100
JULY												
11...	8.0	23.0	45	6.1	72	3.5	43000	B360	290	81	873	100
AUG.												
08...	8.3	22.0	45	8.8	100	1.9	38000	240	82	132	873	100
SEP.												
12...	7.8	16.0	30	6.8	69	5.7	31000	2900	200	75	--	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
18...	1000	20	1	1	76	35	.3	.3	0	0	30	10
JAN.												
09...	590	30	9	1	65	47	.2	.2	0	0	30	10
APR.												
04...	850	260	10	0	70	30	.0	.0	0	0	40	40
JULY												
11...	2300	10	22	2	150	40	.1	.1	0	0	50	4

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04157000 SAGINAW RIVER AT SAGINAW, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a/]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
NOV. 13	23	6.2	5.4	3.8	.15	210
MAR. 14	21	1.8	.8	1.4	.2	714
APR. 04	34	6.5	5.4	10	1.0	110
JULY 11	28	44	34	66	15	152

REMARKS-- [a/] Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 18	1400	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Scenedesmaceae		
		Scenedesmus	--	3
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Volvocaceae		
		Pandorina	--	5
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	20
		Melosira	--	1
		Pennales		
		Achnanthaceae		
		Cocconeis	--	0
		Diatomaceae		
		Diatoma	--	1
		Fragilariaceae		
		Synedra	--	1
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Navicula	--	3
		Nitzschiaceae		
		Nitzschia	--	1
		Surirellaceae		
		Surirella	--	0
		Tabellariaceae		
		Diatomella	--	0
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agmenellum	--	10
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	20
		Oscillatoria	--	29
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Phacus	--	0
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium	--	1
		TOTAL	17,000	
NOV. 13	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	--	4
		Occystaceae		
		Kirchneriella	--	0
		Scenedesmaceae		
		Scenedesmus	--	0
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	15
		Melosira	--	5
		Pennales		
		Gomphonemataceae		
		Gomohonema	--	1
		Naviculaceae		
		Navicula	--	4
		Nitzschiaceae		
		Nitzschia	--	1
		Surirellaceae		
		Cymatopleura	--	0
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	67
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	0
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium	--	0
		TOTAL	17,000	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
DEC. 06	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	14
		Melosira	--	22
		Pennales		
		Achnanthaceae		
		Cocconeis	--	1
		Rhoiocosphenia	--	1
		Cymbellaceae		
		Amphora	--	1
		Rhopalodia	--	1
		Diatomaceae		
		Diatoma	--	1
		Fragilariaceae		
		Asterionella	--	32
		Synedra	--	3
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Gyrosigma	--	1
		Navicula	--	5
		Nitzschiaceae		
		Nitzschia	--	6
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngba	--	10
		TOTAL	6,200	
JAN. 09	1200	Chlorophyta		
		Chlorophyceae		
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	8
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	5
		Melosira	--	2
		Pennales		
		Diatomaceae		
		Diatoma	--	1
		Fragilariaceae		
		Asterionella	--	7
		Synedra	--	5
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	7
		Surirellaceae		
		Surirella	--	3
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	37
		Oscillatoria	--	21
		TOTAL	2,100	
FEB. 06	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Melosira	--	1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	1
		Rhoiocosphenia	--	1
		Meridionaceae		
		Meridion	--	1
		Naviculaceae		
		Navicula	--	3
		Nitzschiaceae		
		Nitzschia	--	1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	6
		Oscillatoria	--	1
		Phormidium	--	76
		TOTAL	5,800	
MAR. 14	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Chlorella	--	6
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	32
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	12
		Melosira	--	6
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Diatomaceae		
		Diatoma	--	2
		Fragilariaceae		
		Synedra	--	9
		Gomphonemataceae		
		Gomphonema		2
		Naviculaceae		
		Caloneis	--	3
		Navicula	--	22
		Nitzschiaceae		
		Nitzschia	--	2
		Surirellaceae		
		Surirella	--	2
		TOTAL	1,400	

04157000 SAGINAW RIVER AT SAGINAW, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
APR. 04	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	3
		Oocystis	--	7
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	12
		Pennales		
		Achnanthaceae		
		Achnanthes	--	2
		Cymbellaceae		
		Amphora	--	3
		Diatomaceae		
		Diatoma	--	10
		Fragilariaceae		
		Synedra	--	7
		Gomphonemataceae		
		Gomphonema	--	12
		Naviculaceae		
		Navicula	--	13
		Pinnularia	--	7
		Nitzschiaceae		
		Nitzschia	--	18
		Euglenophyta		
		Cryptophyceae		
		Cryptomonidales		
		Cryptomonodaceae		
		Cryptomonas	--	5
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Peridiniaceae		
		Peridinium	--	2
		TOTAL	530	
MAY 08	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	7
		Chlamydomonadaceae		
		Chlamydomonas	--	4
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	16
		Melosira	--	21
		Pennales		
		Achnanthaceae		
		Achnanthes	--	2
		Cocconeis	--	2
		Fragilariaceae		
		Asterionella	--	4
		Gomphonemataceae		
		Gomphonema	--	2
		Naviculaceae		
		Navicula	--	35
		Pinnularia	--	2
		Nitzschiaceae		
		Nitzschia	--	4
		Surirellaceae		
		Surirella	--	2
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	2
		TOTAL	8,400	
JUNE 06	1130	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	13
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	9
		Melosira	--	31
		Pennales		
		Achnanthaceae		
		Cocconeis	--	4
		Rhoiocosphenia	--	2
		Cymbellaceae		
		Cymbella	--	2
		Gomphonemataceae		
		Gomphonema	--	4
		Meridionaceae		
		Meridion	--	2
		Naviculaceae		
		Navicula	--	20
		Nitzschiaceae		
		Nitzschia	--	9
		Surirellaceae		
		Surirella	--	2
		TOTAL	6,000	
JULY 11	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Hydrodictyaceae		
		Pediastrum	--	8
		Occystaceae		
		Ankistrodesmus	--	5
		Kirchneriella	--	1
		Treubaria	--	4
		Scenedesmaceae		
		Actinastrum	--	8
		Scenedesmus	--	15
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	34
		Melosira	--	9
		Pennales		
		Fragilariaceae		
		Synedra	--	1
		Naviculaceae		
		Diploneis	--	1
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	6
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	7
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Phacus	--	1
		TOTAL	39,000	

04157000 SAGINAW RIVER AT SAGINAW, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
AUG. 08	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum		
		Hydrodictyaceae		
		Pediastrum	--	3
		Occystaceae		
		Ankistrodesmus		
		Dictyosphaerium	--	3
		Oocystis		
		Selenastrum		
		Scenedesmaceae		
		Actinastrum	--	3
		Scenedesmus	--	12
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas		
		Volvocaceae		
		Pandorina		
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	34
		Melosira	--	30
		Pennales		
		Fragilariaceae		
		Fragilaria		
		Gomphonemataceae		
		Gomphonema		
		Meridionaceae		
		Meridion		
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia		
		Surirellaceae		
		Surirella		
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	2
		Gomphosphaeria	--	6
		Oscillatoriales		
		Nostocaceae		
		Anabaena		
		Oscillatoriaceae		
		Lyngbya		
		Oscillatoria		
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena		
		Trachelomonas		
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium		
		TOTAL	50,000	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP. 12	1030	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	3
		Dictyosphaerium	--	44
		Scenedesmaceae		
		Scenedesmus	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Melosira	--	9
		Pennales		
		Cymbellaceae		
		Cymbella		
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Navicula	--	4
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	3
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	26
		Oscillatoriaceae		
		Lyngbya		
		TOTAL	11,000	

04157000 SAGINAW RIVER AT SAGINAW, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1800 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	830	796	510	454	530	480	636	716	662	---
2		---	947	867	504	484	440	675	689	649	694	386
3		---	883	1010	572	504	---	675	784	656	682	419
4		---	734	939	624	520	540	675	742	644	762	419
5		---	851	816	624	530	530	670	742	725	782	408
6		---	780	918	630	530	520	670	551	---	798	402
7		---	624	926	682	582	570	670	530	827	724	445
8		---	624	822	---	614	570	670	530	---	698	468
9		---	645	749	---	634	630	670	610	636	717	502
10		---	780	603	---	790	560	670	636	688	---	503
11		---	832	541	---	650	510	664	636	---	---	520
12		---	676	520	---	629	520	654	647	694	757	543
13		---	780	530	---	676	510	---	657	702	750	609
14		---	773	---	---	790	510	670	689	---	788	624
15		755	816	---	---	690	500	654	689	872	708	570
16		798	867	---	---	680	510	654	742	713	733	614
17		702	1030	---	---	700	510	664	583	652	676	582
18		723	918	---	---	540	530	664	583	703	695	611
19		830	918	---	---	480	490	654	583	718	787	684
20		745	1020	---	---	490	430	649	501	562	881	707
21		745	939	---	---	480	370	659	559	551	638	715
22		691	796	---	766	520	380	761	584	647	---	744
23		638	918	---	672	490	370	659	615	620	---	708
24		660	1120	---	430	450	400	670	656	679	426	728
25		702	918	---	357	440	360	664	593	662	396	625
26		777	918	---	324	370	380	659	567	691	416	626
27		766	893	---	344	410	440	659	560	616	455	649
28		766	806	---	404	450	410	647	560	667	495	714
29		723	765	624	---	490	450	657	570	776	513	787
30		1030	959	572	---	480	480	731	621	743	535	783
31		---	918	530	---	510	---	742	---	722	481	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1800 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		---	1.5	1.0	1.0	0.5	2.0	14.0	21.0	26.0	27.5	18.5
2		---	---	1.0	1.0	0.0	1.5	14.0	20.5	26.5	26.5	18.5
3		---	1.0	0.5	1.5	0.0	1.5	14.0	20.0	26.5	26.5	---
4		---	0.5	1.0	1.0	0.5	1.5	13.0	19.5	26.5	25.0	18.0
5		---	1.0	0.5	1.0	0.5	2.0	13.0	18.5	26.5	25.0	17.0
6		---	0.5	1.0	0.5	1.0	3.0	13.0	18.5	---	23.0	16.5
7		---	0.5	1.0	0.5	0.5	4.0	14.0	17.0	26.5	22.0	16.5
8		---	0.5	2.0	0.0	1.0	4.5	14.5	16.5	26.5	22.5	16.5
9		---	0.5	2.0	0.0	0.5	4.5	15.5	17.5	24.5	23.5	---
10		---	0.5	2.0	0.0	1.0	5.0	17.0	18.0	24.0	---	17.5
11		---	0.5	2.5	0.0	1.5	5.5	17.5	18.5	---	---	18.5
12		---	0.5	0.5	0.0	1.0	5.0	16.5	19.0	22.0	24.0	17.5
13		---	1.0	0.0	0.0	1.0	6.0	16.5	18.5	22.0	25.0	---
14		---	1.5	0.0	0.0	1.0	6.0	16.0	20.0	---	25.0	15.5
15		5.5	1.0	0.0	0.0	1.5	6.5	16.5	21.0	---	25.0	15.5
16		4.5	1.0	0.0	0.0	2.0	7.0	16.0	20.5	26.5	25.0	16.0
17		5.0	1.5	0.0	0.0	3.5	8.5	17.0	20.0	25.0	24.0	16.5
18		5.5	1.0	0.0	0.0	3.0	10.0	19.0	21.5	25.0	24.5	16.5
19		6.0	0.5	0.0	0.0	3.0	9.5	20.5	22.5	24.5	---	17.0
20		7.0	0.5	0.0	0.0	4.0	9.0	22.0	22.5	24.5	22.5	17.0
21		6.5	0.5	0.0	0.0	3.0	9.0	23.0	23.5	24.5	20.5	16.0
22		5.0	0.5	0.0	0.0	3.0	9.0	23.0	25.0	25.0	---	15.0
23		5.0	1.0	0.0	0.5	3.0	9.0	22.5	26.0	24.5	---	14.5
24		5.5	1.5	0.0	0.5	3.0	9.0	23.0	25.0	25.0	20.5	15.0
25		5.5	1.0	0.0	0.5	3.0	9.5	24.0	23.5	24.5	21.5	14.0
26		3.0	0.5	0.0	0.5	2.0	10.0	24.0	23.5	23.0	21.5	13.5
27		2.0	0.5	0.0	0.0	2.0	10.0	23.5	24.5	23.5	22.0	14.5
28		2.0	---	0.0	0.0	1.5	9.0	22.5	25.0	---	22.5	14.5
29		2.5	1.0	0.5	---	1.5	10.5	21.5	25.0	24.5	21.5	15.5
30		2.0	2.0	0.5	---	1.5	12.5	21.5	26.0	25.5	20.0	15.5
31		---	1.5	0.5	---	---	---	21.5	---	26.5	18.5	---

04165500 CLINTON RIVER AT MOUNT CLEMENS, MICH.
(National stream-quality accounting network and pesticide station)

LOCATION.--Lat 42°35'45", long 82°54'35", Macomb County, at gaging station 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 mi^2 (1,901 km^2).

PERIOD OF RECORD.--Chemical analyses: October 1974 to September 1975.
Specific conductance: October 1974 to September 1975.
Water temperatures: October 1974 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum (observed), 1440 micromhos Feb. 18; minimum (recorded), 254 micromhos Sept. 1.
Water temperatures: Maximum (observed) 26.5°C June 22, 23, July 2, 3; minimum (observed) freezing point on Feb. 10.

REMARKS.--Water-quality recorder operated since Aug. 12, 1975. Daily records, prior to Aug. 12, 1975, are based on samples collected at mid-stream point from bridge on Moravian Drive.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)
OCT.												
08...	0830	286	5.8	63	20	36	4.0	247	0	202	50	63
NOV.												
12...	1100	334	5.5	68	19	45	5.0	309	0	253	50	75
DEC.												
10...	1030	E520	5.8	79	23	100	5.0	256	0	209	65	170
JAN.												
14...	1100	1300	7.0	67	19	30	4.3	204	0	167	57	58
FEB.												
13...	1100	410	6.5	84	22	62	9.0	266	0	218	65	110
MAR.												
18...	1330	1180	4.9	68	18	32	3.5	202	0	166	56	61
APR.												
11...	1030	1750	4.5	64	17	28	3.3	188	0	154	56	56
MAY												
09...	1030	813	3.1	72	20	34	3.2	238	0	195	50	65
JUNE												
11...	1130	E500	5.9	75	20	36	3.8	248	0	203	54	66
JULY												
22...	0900	E310	5.3	67	21	36	4.4	236	0	194	50	66
AUG.												
12...	1530	309	6.3	67	19	47	5.0	222	0	182	60	79
SEP.												
17...	0945	646	5.9	70	21	32	3.5	236	0	194	51	59

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DISSOLVED ARSENIC (AS) (UG/L)	TOTAL CADMIUM (CD) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	TOTAL CHROMIUM (CR) (UG/L)	DISSOLVED CHROMIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DISSOLVED COPPER (CU) (UG/L)
OCT.												
08...	0830	12	3	3	1	1	10	8	1	1	13	5
JAN.												
14...	1100	9.5	3	--	0	1	<10	3	1	1	14	5
APR.												
11...	1030	7.5	1	1	2	1	<10	0	0	0	9	7
JULY												
22...	0900	8.4	5	1	0	0	<10	0	0	0	13	4

E--ESTIMATED VALUE

04165500 CLINTON RIVER AT MT CLEMENS, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
08...	.6	1.4	3.5	4.9	.39	670	364	240	38	24	1.0	675
NOV.												
12...	.5	1.5	2.1	3.6	.76	388	420	250	0	28	1.2	761
DEC.												
10...	.3	1.1	2.4	3.5	.76	630	574	290	81	42	2.5	1080
JAN.												
14...	.4	2.6	2.0	4.6	.26	386	344	250	83	21	.8	647
FEB.												
13...	.6	1.2	3.1	4.3	.33	486	490	300	82	30	1.6	1020
MAR.												
18...	.3	1.4	1.6	3.0	.30	360	343	240	74	22	.9	610
APR.												
11...	.3	1.4	1.2	2.6	.12	346	322	230	76	21	.8	525
MAY												
09...	.4	1.3	.90	2.2	.09	422	365	260	65	22	.9	632
JUNE												
11...	.5	3.3	.81	4.1	.31	448	383	270	67	22	1.0	705
JULY												
22...	.9	3.5	.86	4.4	.48	391	366	250	56	23	1.0	689
AUG.												
12...	.7	3.1	1.1	4.2	.34	418	393	250	68	29	1.3	673
SEP.												
17...	.4	1.5	1.0	2.5	.25	402	359	260	66	21	.9	607

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
08...	7.9	11.0	10	7.1	66	5.0	5400	230	350	16	12	98
NOV.												
12...	7.8	8.5	10	8.2	71	7.8	7200	550	228	13	12	100
DEC.												
10...	8.1	2.0	10	14.3	105	3.3	>8000	>240	B2400	21	E29	100
JAN.												
14...	7.9	.5	20	14.3	100	4.1	B9800	740	B2000	27	95	100
FEB.												
13...	8.0	.0	8	12.4	86	4.3	2400	340	99	27	30	100
MAR.												
18...	8.1	3.0	9	12.7	95	2.6	--	300	64	34	108	100
APR.												
11...	7.5	3.0	230	11.7	88	9.5	3600	B1010	221	33	156	100
MAY												
09...	8.0	15.0	15	8.6	86	3.8	6300	230	160	49	108	100
JUNE												
11...	8.2	13.5	15	7.9	77	2.5	25000	B710	840	52	E70	100
JULY												
22...	8.1	22.0	15	6.4	74	3.0	7500	B700	560	28	E23	100
AUG.												
12...	8.0	23.0	20	5.9	69	3.6	66000	>6000	B3630	19	16	100
SEP.												
17...	8.0	17.5	15	8.2	82	3.8	21000	B17000	850	74	129	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
08...	560	30	14	14	65	34	.6	.4	0	0	40	20
JAN.												
14...	460	250	15	7	65	51	.0	.0	0	0	60	30
APR.												
11...	1200	30	10	0	70	10	.1	.1	1	1	50	20
JULY												
22...	1400	10	10	0	80	40	.0	.0	0	0	70	0

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

E--ESTIMATED VALUE

04165500 CLINTON RIVER AT MT CLEMENS, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
OCT. 08	35	52.3	17	.8	.2	4400
MAR. 18	24	12	9.7	5.7	.5	400
APR. 11	28	90	82	62	2.8	130
JULY 22	21	34	28	26	6.0	230

REMARKS-- a/ Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 08	0830	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	1
		Pennales		
		Achnanthaceae		
		Cocconeis	--	3
		Rhoiocosphenia	--	<1
		Fragilariaceae		
		Asterionella	--	1
		Synedra	--	1
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	4
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis		
		Anacystis Incerta	--	22
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	63
		TOTALS	5,100	
NOV. 12	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Pennales		
		Achnanthaceae		
		Cocconeis	--	<1
		Rhoiocosphenia	--	1
		Fragilariaceae		
		Asterionella	--	7
		Synedra	--	2
		Naviculaceae		
		Navicula	--	1
		Pinnularia	--	<1
		Nitzschiaceae		
		Nitzschia	--	<1
		Surirellaceae		
		Surirella	--	<1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	2
		Oscillatoriaceae		
		Oscillatoria	--	84
		TOTAL	14,000	
DEC. 10	1030	Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Fragilariaceae		
		Asterionella	--	1
		Naviculaceae		
		Navicula	--	<1
		Nitzschiaceae		
		Nitzschia	--	1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	98
		TOTAL	31,000	
JAN. 14	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	2
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Fragilariaceae		
		Asterionella	--	2
		Naviculaceae		
		Navicula	--	1
		Nitzschiaceae		
		Nitzschia	--	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	94
		TOTAL	6,900	

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB. 13	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	2
		Scenedesmaceae		
		Scenedesmus	--	2
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	1
		Pennales		
		Achnanthaceae		
		Rhoiocosphenia	--	1
		Cymbellaceae		
		Cymbella	--	1
		Diatomaceae		
		Diatoma	--	1
		Fragilariaceae		
		Asterionella	--	1
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Navicula	--	3
		Nitzschiaceae		
		Nitzschia	--	3
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	2
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	45
		Oscillatoria	--	38
		TOTAL	3,500	
MAR. 18	1330	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	<1
		Pennales		
		Cymbellaceae		
		Amphora	--	<1
		Eunotiaceae		
		Eunotia	--	<1
		Fragilariaceae		
		Fragilaria	--	3
		Synedra	--	3
		Gomphonemataceae		
		Gomphonema	--	2
		Meridionaceae		
		Meridion	--	1
		Naviculaceae		
		Gyrosigma	--	<1
		Navicula	--	3
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	87
		TOTAL	5,000	
APR. 11	1030	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Pennales		
		Achnanthaceae		
		Cocconeis	--	2
		Diatomaceae		
		Diatoma	--	2
		Fragilariaceae		
		Asterionella	--	7
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	7
		Nitzschiaceae		
		Nitzschia	--	4
		Surirellaceae		
		Surirella	--	2
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	70
		TOTAL	2,400	
MAY 09	1030	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	1
		Scenedesmaceae		
		Scenedesmus	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	7
		Pennales		
		Achnanthaceae		
		Rhiocosphenia	--	1
		Fragilariaceae		
		Asterionella	--	2
		Fragilaria	--	2
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Navicula	--	6
		Nitzschiaceae		
		Nitzschia	--	12
		Tabellariaceae		
		Tetracyclus	--	2
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	4
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	60
		TOTAL	8,800	

04165500 CLINTON RIVER AT MT CLEMENS, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JUNE 11	1130	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	4
		Scenedesmaceae		
		Scenedesmus	--	8
		Tetrasporales		
		Palmellaceae		
		Gloeocystis	--	12
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Stephanodiscus	--	4
		Pennales		
		Achnanthaceae		
		Achnanthes	--	2
		Rhoiocosphenia	--	4
		Diatomaceae		
		Diatoma	--	2
		Gomphonemataceae		
		Gomphonema	--	4
		Naviculaceae		
		Navicula	--	17
		Nitzschiaceae		
		Nitzschia	--	33
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Lyngbya	--	10
		TOTAL	2,500	

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JULY 22	0900	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	1,800	11
		Hydrodictyaceae		
		Pediastrum	1,800	11
		Occystaceae		
		Ankistrodesmus	--	<1
		Scenedesmaceae		
		Scenedesmus	670	4
		Tetrasporales		
		Palmellaceae		
		Sphaerocystis	2,200	13
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	110	1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	900	5
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	<1
		Rhoiocosphenia	220	1
		Fragilariaceae		
		Fragilaria	670	4
		Naviculaceae		
		Navicula	330	2
		Nitzschiaceae		
		Nitzschia	1,100	7
		Surirellaceae		
		Cymatopleura	110	1
		Surirella	110	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	5,600	33
		Oscillatoriales		
		Nostocaceae		
		Anabaenopsis	900	5
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	110	1
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Peridiniaceae		
		Peridinium	110	1

04165500 CLINTON RIVER AT MT CLEMENS, MICH.--CONTINUED

QUALITATIVE AND ASSOICATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
AUG. 12	1530	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	220	10
		Occystaceae		
		Kirchneriella	28	1
		Scenedesmaceae		
		Crucigenia	--	<1
		Secendesmus	720	33
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	330	15
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Cocconeis	28	1
		Rhoiocosphenia		
		Fragilariaceae		
		Fragilaria	28	1
		Synedra	28	1
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Navicula	300	14
		Nitzschiaceae		
		Nitzschia	470	22
		Surirellaceae		
		Surirella	--	<1
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	<1
SEP. 17	0945	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Coelastraceae		
		Coelastrum	640	6
		Hydrodictyaceae		
		Pediastrum	160	2
		Scenedesmaceae		
		Scenedesmus	40	<1
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas		
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	40	<1
		Melosira	580	6
		Stephanodiscus	--	<1
		Pennales		
		Achnanthaceae		
		Cocconeis	20	<1
		Rhoiocosphenia	40	<1
		Cymbellaceae		
		Amphora	--	<1
		Cymbella	20	<1
		Epithemia	20	<1
		Diatomaceae		
		Diatoma	--	<1
		Eunotiaceae		
		Eunotia	20	<1
		Fragilariaceae		
		Asterionella	81	1
		Fragilaria	--	<1
		Synedra	20	<1
		Gomphonemataceae		
		Gomphonema	20	<1
		Naviculaceae		
		Navicula	3,300	33
		Nitzschiaceae		
		Nitzschia	60	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	40	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	690	7
		Gomphosphaeria	--	<1
		Oscillatoriales		
		Nostocaceae		
		Anphanizomenon	1,600	16
		Cylindrospermum	930	9
		Oscillatoriaceae		
		Oscillatoria	1,600	16
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Euglena	--	<1
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Ceratiaceae		
		Ceratium	--	<1
		Glenodiniaceae		
		Glenodinium	20	<1

04165500 CLINTON RIVER AT MT CLEMENS, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1800 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	580	698	892	555	714	688	679	645	624		
2	---	636	677	892	660	694	688	677	676	645		
3	---	651	750	919	666	688	816	677	707	676		
4	---	557	1030	1210	666	796	890	677	718	697		
5	---	444	1030	1160	728	765	865	677	354	718		
6	---	557	969	919	888	755	780	677	530	707		
7	---	625	969	934	1280	806	740	677	510	676		
8	659	651	918	945	981	1220	690	677	582	645		
9	625	---	899	578	872	978	600	684	628	---		
10	659	---	960	551	763	824	580	678	649	---		
11	648	677	985	420	780	1020	520	684	649	---		
12	670	666	1090	462	811	850	560	684	597	---		
13	682	708	1060	525	832	834	560	678	603	---		
14	693	708	928	578	811	695	600	678	634	---		
15	659	802	876	656	780	731	640	678	645	---		
16	629	938	918	682	762	721	630	678	582	---		
17	670	896	1050	709	1240	592	640	678	624	---		
18	674	812	918	682	1440	566	665	678	624	---		
19	618	750	825	945	1130	525	370	678	614	---		
20	591	771	1070	840	1330	515	300	668	624	---		
21	602	760	1030	892	927	525	330	657	634	---		
22	625	771	1060	810	695	663	510	562	624	---		
23	670	750	1040	818	422	367	510	614	624	---		
24	608	740	1040	770	316	444	570	645	562	---		
25	597	698	1040	825	311	428	570	655	437	---		
26	636	708	979	880	423	454	600	520	520	---		
27	653	729	918	818	566	536	630	614	572	---		
28	650	729	876	770	644	586	671	634	603	---		
29	568	792	840	555	---	663	671	686	624	---		
30	625	729	866	455	---	612	671	707	614	---		
31	580	---	814	444	---	612	---	572	---	---		

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1									---	---	384	254
2									---	---	474	387
3									---	---	520	475
4									---	---	506	468
5									---	---	548	508
6									---	---	548	541
7									---	---	540	527
8									---	---	543	527
9									---	---	560	541
10									---	---	581	558
11									---	---	592	564
12									---	---	554	529
13									721	583	578	554
14									729	704	589	576
15									741	696	597	587
16									739	681	604	595
17									749	681	608	602
18									702	666	695	680
19									717	695	685	587
20									745	716	608	590
21									768	452	610	605
22									524	327	612	610
23									503	391	614	610
24									387	333	616	612
25									369	313	618	614
26									376	344	616	613
27									371	328	620	613
28									461	372	620	618
29									535	463	620	617
30									531	304	623	618
31									308	299	---	---
MONTH									---	---	695	254

04165500 CLINTON RIVER AT MT CLEMENS, MICH.--CONTINUED

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 1600 AND 1800 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	17.0	2.0	3.0	2.0	1.5	4.5	16.0	20.5	26.0		
2	---	16.0	1.0	2.0	2.0	1.0	4.0	16.0	19.0	26.5		
3	---	16.0	2.0	2.5	2.0	1.5	2.0	15.5	19.5	26.5		
4	---	13.0	2.0	3.5	2.0	2.0	3.0	15.0	19.0	26.0		
5	---	11.0	2.5	2.5	2.5	3.0	3.5	15.5	18.5	26.0		
6	---	10.0	3.0	3.0	2.5	3.5	4.5	15.5	19.0	25.5		
7	---	10.0	4.0	4.0	1.0	2.5	6.0	16.0	17.5	25.0		
8	13.5	10.0	4.5	5.0	0.5	2.5	5.5	17.0	17.0	26.0		
9	14.0	10.5	2.5	3.5	1.0	2.0	5.5	18.0	19.0	25.0		
10	15.0	11.0	2.5	4.0	0.0	2.5	5.5	18.5	20.0	23.5		
11	15.5	11.0	3.0	3.5	1.0	3.0	5.5	19.0	19.0	22.0		
12	15.5	10.5	4.5	0.5	1.5	4.0	6.0	17.0	20.0	21.5		
13	14.0	8.5	4.5	0.5	1.0	3.5	7.0	18.0	21.0	21.5		
14	14.5	6.0	5.0	0.5	2.0	2.0	8.0	18.0	23.5	21.0		
15	14.0	4.5	4.0	2.0	2.0	4.0	8.5	19.0	21.5	22.5		
16	13.5	5.0	4.0	0.5	2.0	4.5	8.5	18.0	21.0	24.0		
17	13.5	7.0	4.5	1.0	3.5	5.0	10.0	18.5	22.5	25.0		
18	11.0	8.0	3.0	2.0	3.0	6.0	11.5	21.0	24.0	25.0		
19	9.5	9.0	2.5	1.5	3.0	7.0	11.5	22.5	25.5	25.0		
20	9.0	10.0	3.0	0.5	3.5	7.0	10.0	23.5	25.5	24.5		
21	8.5	7.0	3.0	1.0	3.5	5.0	10.0	24.0	25.5	25.0		
22	9.5	6.5	3.0	1.5	3.0	4.5	11.0	21.5	26.5	25.5		
23	12.0	7.5	3.5	2.0	2.5	4.5	11.0	23.0	26.5	25.5		
24	12.0	9.5	3.5	3.0	2.0	6.0	12.0	23.5	24.5	25.5		
25	13.0	6.5	4.5	4.0	1.0	5.0	10.0	24.5	22.5	24.5		
26	12.5	4.0	2.0	2.0	2.0	3.5	11.0	23.0	23.0	23.5		
27	11.5	4.0	2.5	1.5	2.5	3.0	11.5	23.5	24.5	---		
28	12.0	5.0	3.0	3.0	1.5	3.5	10.5	23.0	25.0	---		
29	11.5	4.5	4.5	2.5	---	5.0	12.0	23.0	26.0	---		
30	14.5	4.0	4.5	1.5	---	4.0	14.0	23.0	25.5	---		
31	15.5	---	3.0	1.0	---	3.0	---	21.0	---	---		

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1									---	---	20.5	19.5
2									---	---	20.5	19.5
3									---	---	20.5	19.5
4									---	---	19.5	18.5
5									---	---	19.5	19.0
6									---	---	19.0	18.0
7									---	---	18.5	17.5
8									---	---	19.0	18.5
9									---	---	18.5	18.0
10									---	---	18.5	17.5
11									---	---	20.0	18.0
12									---	---	20.0	17.5
13									25.5	24.0	17.5	15.5
14									25.0	23.0	16.0	15.0
15									25.0	22.5	15.5	15.0
16									23.5	21.0	17.0	15.5
17									23.5	23.0	17.5	17.0
18									23.5	22.5	18.5	18.0
19									23.0	21.0	18.5	17.5
20									22.0	20.0	18.0	17.5
21									22.5	21.0	17.5	16.5
22									21.0	20.5	16.0	15.0
23									20.5	19.5	15.5	14.5
24									20.5	19.5	16.0	15.0
25									22.5	20.0	15.5	14.5
26									22.5	22.5	14.5	14.0
27									22.5	21.5	15.5	14.0
28									22.0	21.5	15.5	14.5
29									22.5	22.0	15.5	14.5
30									22.5	21.0	16.5	15.0
31									21.0	19.5	---	---
MONTH									---	---	20.5	14.0

04165700 DETROIT RIVER AT DETROIT, MICH.
(National stream-quality accounting network station)

LOCATION.--Lat 42°20'50", long 82°57'31", in T.2 S., R.13 E., Wayne County, at Detroit municipal raw-water intake at Water Works Park at Detroit.

DRAINAGE AREA.--228,800 mi^2 (592,600 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1969 to July 1973, February 1974 to September 1975.
Specific conductance: February 1974 to September 1975.
Water temperatures: October 1973 to September 1975.

EXTREMES.--1974-75:
Specific conductance: Maximum observed, 290 micromhos Apr. 6; minimum observed, 200 micromhos July 7, 30.
Water temperatures: Maximum observed, 24.0°C July 8-10, Aug.2, 3, 5; minimum observed, 0.5°C on many days during January to April.

Period of record:
Specific conductance: Maximum observed, 290 micromhos Apr. 6, 1975; minimum observed, 200 micromhos Aug. 24, Sept. 23, 1974, July 7, 30, 1975.
Water temperatures: Maximum observed, 24.0°C July 8-10, Aug. 2, 3, 5, 1975; minimum observed, 0.5°C on many days during winter period.

REMARKS.--Primary sampling point is raw-water tap at Detroit municipal treatment plant at Water Works Park in Detroit. Plant intake is in lagoon at north end of Belle Isle in the Detroit River. Water discharges are obtained from U.S. Army Corps of Engineers and represent the monthly mean discharge for the respective months during which samples were collected.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-CHARGE (CFS)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)
OCT.												
07...	1115	234000	.6	27	7.0	4.5	.9	128	0	105	20	8.3
NOV.												
11...	1130	230000	1.1	27	7.0	4.0	.7	144	0	120	16	8.5
DEC.												
09...	1045	225000	1.2	29	7.7	3.2	.9	102	0	84	16	6.8
JAN.												
13...	1200	229000	1.5	28	7.0	4.6	.9	96	0	79	15	7.4
FEB.												
12...	1030	227000	1.5	29	6.4	4.0	.9	110	0	90	16	7.1
MAR.												
19...	0900	219000	1.2	27	7.1	4.4	1.2	98	0	80	18	8.1
APR.												
10...	1000	231000	1.1	29	7.4	6.3	1.0	80	0	66	18	11
MAY												
14...	1200	231000	.6	29	7.3	4.1	.9	104	0	85	17	7.2
JUNE												
12...	1030	236000	.8	30	7.3	4.6	1.0	108	0	89	16	7.8
JULY												
21...	1300	238000	1.2	27	7.2	4.2	.9	102	0	84	15	6.4
AUG.												
12...	1100	238000	.5	28	7.2	4.0	.9	118	0	97	15	7.0
SEP.												
16...	1200	240000	.4	31	7.3	4.0	.9	102	0	84	16	7.4

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ARSENIC (AS) (UG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	DIS-SOLVED CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	DIS-SOLVED COPPER (CU) (UG/L)
OCT.												
07...	1115	8.1	1	1	--	1	--	18	--	1	9	4
JAN.												
13...	1200	2.9	0	0	--	1	<10	1	--	1	15	5
APR.												
10...	1000	1.6	1	0	0	0	<10	0	3	1	11	3
JULY												
21...	1300	3.2	1	0	2	0	<10	0	5	2	10	3

04165700 DETROIT RIVER AT DETROIT, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)
OCT.												
07...	.3	.22	.17	.39	.01	222	132	96	0	9	.2	230
NOV.												
11...	.1	.23	.03	.26	.00	132	135	96	0	8	.2	213
DEC.												
09...	.5	.25	.28	.53	.02	108	116	100	16	6	.1	206
JAN.												
13...	.1	.28	.09	.37	.01	111	112	99	20	9	.2	212
FEB.												
12...	.1	.27	.10	.37	.01	104	119	99	9	8	.2	235
MAR.												
19...	.1	.27	.07	.34	.01	115	116	97	17	9	.2	220
APR.												
10...	.5	.34	.19	.53	.01	135	113	100	34	12	.3	230
MAY												
14...	.1	.26	.24	.50	.01	141	117	100	15	8	.2	213
JUNE												
12...	.2	.36	.15	.51	.04	168	121	110	21	9	.2	203
JULY												
21...	.1	.24	.19	.43	.00	111	112	97	13	9	.2	208
AUG.												
12...	.2	.23	.15	.38	.01	117	121	100	3	8	.2	206
SEP.												
16...	1.0	.21	.13	.34	.01	104	118	110	26	7	.2	210

DATE	PH (UNITS)	TEMPER-ATURE (DEG C)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	CARBON DIOXIDE (CO2) (MG/L)	IMME-DIATE COLI-FORM (COL. PER 100 ML)	FECAL COLI-FORM (COL. PER 100 ML)	STREP-TOCOCCI (COL-ONIES PER 100 ML)	SUS-PENDED SEDI-MENT (MG/L)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM
OCT.												
07...	7.7	12.5	6	10.3	98	4.1	--	--	--	10	6320	87
NOV.												
11...	7.9	12.5	3	10.7	100	2.9	12	B2	B1	1	621	100
DEC.												
09...	7.7	--	10	13.4	106	3.3	17	B3	B3	24	14600	100
JAN.												
13...	7.3	--	10	16.7	130	7.7	B180	B10	52	20	12400	100
FEB.												
12...	8.2	.0	0	14.8	100	1.1	<1	<1	<1	6	3680	100
MAR.												
19...	7.8	--	1	12.8	110	2.5	B3	<1	B1	8	4730	100
APR.												
10...	8.2	--	3	13.6	110	.8	B4	B2	<1	2	1250	100
MAY												
14...	7.8	14.0	3	9.9	97	2.6	B1	<1	B1	8	4990	100
JUNE												
12...	8.1	17.0	5	9.4	99	1.4	--	B4	11	12	7650	100
JULY												
21...	8.1	22.0	2	8.3	96	1.3	B7	B7	B12	5	3210	100
AUG.												
12...	8.1	23.0	2	8.2	96	1.5	19	B200	B5	4	2570	100
SEP.												
16...	7.9	18.0	3	8.2	88	2.1	B8	B2	<1	24	15600	100

DATE	TOTAL IRON (FE) (UG/L)	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	TOTAL SELE-NIUM (SE) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	TOTAL ZINC (ZN) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
OCT.												
07...	160	0	--	9	17	0	.2	.1	0	0	--	20
JAN.												
13...	780	0	9	1	0	0	.1	.0	0	0	30	0
APR.												
10...	310	0	10	0	40	20	.0	.0	0	0	30	0
JULY												
21...	3800	10	29	0	20	0	.0	.0	0	0	320	1

B--RESULTS BASED ON COLONY COUNT OUTSIDE THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

04165700 DETROIT RIVER AT DETROIT, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a/]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
OCT. 07	35	24.6	14	2.7	.5	3900
APR. 10	34	5.3	3.9	3.1	.8	450

REMARKS-- [a/] Sampling Method by Polyethylene Strip.

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
OCT. 07	1115	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Oocystis	--	7
		Volvocales		
		Volvocaceae		
		Pandorina	--	21
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	34
		Melosira	--	9
		Pennales		
		Achnanthaceae		
		Achnanthes	--	4
		Fragilariaceae		
		Asterionella	--	4
		Fragilaria	--	11
		Synedra	--	1
		Gomphonemataceae		
		Gomphonema	--	3
		Naviculaceae		
		Navicula	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	5
		TOTAL	5,900	
NOV. 11	1130	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	19
		Zygnematales		
		Desmidiaceae		
		Cosmarium	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	57
		Pennales		
		Fragilariaceae		
		Asterionella	--	5
		Fragilaria	--	7
		Nitzschiaceae		
		Nitzschia	--	2
		Tabellariaceae		
		Tabellaria	--	7
		TOTAL	910	
DEC. 09	1045	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Oocystis	--	18
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	25
		Melosira	--	14
		Pennales		
		Fragilariaceae		
		Asterionella	--	14
		Gomphonemataceae		
		Gomphonema	--	2
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	20
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	5
		TOTAL	670	
JAN. 13	1200	Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Melosira	--	9
		Pennales		
		Fragilariaceae		
		Fragilaria	--	17
		Nitzschiaceae		
		Nitzschia	--	3
		Tabellariaceae		
		Tabellaria	--	6
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	63
		TOTAL	1,500	

04165700 DETROIT RIVER AT DETROIT, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
FEB. 12	1030	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	2
		Pennales		
		Diatomaceae		
		Diatoma	--	2
		Eunotiaceae		
		Eunotia	--	16
		Fragilariaceae		
		Asterionella	--	6
		Fragilaria	--	24
		Naviculaceae		
		Navicula	--	1
		Nitzschiaceae		
		Nitzschia	--	4
		Tabellariaceae		
		Tabellaria	--	2
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	2
		Oscillatoriales		
		Lyngbya	--	33
		Oscillatoria	--	3
		TOTAL	2,100	
APR. 10	1000	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Scenedesmus	--	5
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	3
		Melosira	--	3
		Pennales		
		Achnanthaceae		
		Achnanthes	--	3
		Cymbellaceae		
		Amphora	--	3
		Eunotiaceae		
		Eunotia	--	19
		Fragilariaceae		
		Asterionella	--	4
		Fragilaria	--	24
		Synedra	--	5
		Gomphonemataceae		
		Gomphonema	--	2
		Naviculaceae		
		Diploneis	--	1
		Nitzschiaceae		
		Nitzschia	--	6
		Tabellariaceae		
		Tabellaria	--	21
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	2
		TOTAL	1,100	
MAR. 19	0900	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Tetraedron	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	2
		Pennales		
		Fragilariaceae		
		Asterionella	--	1
		Fragilaria	--	18
		Synedra	--	2
		Naviculaceae		
		Navicula	--	<1
		Tabellariaceae		
		Tabellaria	--	7
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	--	1
		Anacystis Incerta	--	68
		TOTAL	2,300	
MAY 14	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Ankistrodesmus	--	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	23
		Melosira	--	20
		Pennales		
		Fragilariaceae		
		Asterionella	--	3
		Fragilaria	--	26
		Naviculaceae		
		Navicula	--	2
		Nitzschiaceae		
		Nitzschia	--	12
		Tabellariaceae		
		Tabellaria	--	8
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	3
		TOTAL	1,800	

04165700 DETROIT RIVER AT DETROIT, MICH.--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
JUNE 12	1030	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Tetraedron	--	1
		Scenedesmaceae		
		Scenedesmus	--	8
		Tetrasporales		
		Coccomyxaceae		
		Elakatothrix	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	4
		Melosira	--	5
		Rhizosoleniaceae		
		Rhizosolenia	--	1
		Pennales		
		Achnanthaceae		
		Cocconeis	--	1
		Cymbellaceae		
		Cymbella	--	1
		Fragilariaceae		
		Asterionella	--	1
		Fragilaria	--	35
		Synedra	--	3
		Gomphonemataceae		
		Gomphonema	--	1
		Naviculaceae		
		Diploneis	--	1
		Tabellariaceae		
		Tabellaria	--	6
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	3
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	19
		Oscillatoriaceae		
		Lyngbya	--	9
		TOTAL	1,400	
JULY 21	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Scenedesmaceae		
		Crucigenia	--	<1
		Scenedesmus	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	390	68
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Cocconeis	18	3
		Fragilariaceae		
		Asterionella	37	6
		Fragilaria	37	6
		Synedra	18	3
		Naviculaceae		
		Navicula	--	<1
		Pinnularia	18	3
		Nitzschiaceae		
		Nitzschia	55	10
		Tabellariaceae		
		Tabellaria		
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Gomphosphaeria	--	<1
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Phacus	--	<1
AUG. 12	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Hydrodictyaceae		
		Pediastrum	--	<1
		Scenedesmaceae		
		Scenedesmus	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	3,400	80
		Melosira	--	<1
		Pennales		
		Achnanthaceae		
		Achnanthes	--	<1
		Cymbellaceae		
		Cymbella	--	<1
		Fragilariaceae		
		Fragilaria	740	17
		Synedra	--	<1
		Naviculaceae		
		Navicula	93	2
		Nitzschiaceae		
		Nitzschia	--	<1
		Tabellariaceae		
		Tabellaria	--	<1
		Cyanophyta		
		Myxophyceae		
		Oscillatoriales		
		Oscillatoriaceae		
		Oscillatoria	--	<1
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Peridiniaceae		
		Peridinium	--	<1
SEP. 16	1200	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Oocystis	710	21
		Tetraedron	--	<1
		Scenedesmaceae		
		Scenedesmus	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	2,200	67
		Melosira	390	12
		Pennales		
		Cymbellaceae		
		Amphora	--	<1
		Gomphonemataceae		
		Gomphonema	--	<1
		Naviculaceae		
		Navicula	--	<1
		Nitzschiaceae		
		Nitzschia	--	<1
		Tabellariaceae		
		Tabellaria	--	<1

04165700 DETROIT RIVER AT DETROIT, MICH.--CONTINUED

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0700 AND 0900 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	212	212	207	209	208	215	219	215	221	215	205
2	206	215	214	208	209	210	247	216	214	214	208	206
3	210	215	210	207	206	210	237	214	214	216	202	205
4	206	212	206	206	207	218	227	213	214	206	206	218
5	212	215	209	206	208	236	217	212	215	206	206	210
6	215	213	206	207	209	250	290	216	214	206	208	220
7	217	213	207	207	211	258	287	212	207	200	206	219
8	217	216	209	208	212	215	278	222	206	206	208	210
9	218	217	206	206	213	207	236	216	206	205	219	208
10	218	215	206	206	215	211	235	206	208	207	206	216
11	216	214	206	209	210	208	224	215	214	209	207	202
12	215	216	216	209	220	210	211	212	220	210	214	207
13	217	217	209	204	212	208	208	214	220	209	216	213
14	216	211	215	204	208	214	204	213	214	206	207	211
15	214	214	214	220	207	206	208	214	211	206	206	207
16	217	204	209	228	204	205	206	228	207	209	207	212
17	215	215	218	213	209	207	211	211	219	222	209	215
18	215	214	212	210	216	214	219	208	220	206	213	213
19	212	217	214	210	208	216	217	214	216	209	214	211
20	210	213	206	250	208	211	220	215	209	205	218	211
21	205	208	208	206	215	215	226	226	210	206	206	207
22	222	206	208	212	217	210	224	219	210	210	213	206
23	227	212	206	226	212	228	274	217	208	206	208	207
24	217	206	206	207	206	216	239	214	209	209	207	210
25	210	208	207	205	210	216	236	218	211	206	206	212
26	212	212	226	205	215	210	231	215	212	207	207	206
27	222	217	217	208	207	208	225	216	224	207	208	206
28	215	215	210	204	209	221	224	221	223	207	203	206
29	216	218	214	211	---	217	226	220	220	206	212	206
30	218	216	215	202	---	215	209	225	216	200	206	206
31	208	---	215	206	---	215	---	226	---	209	206	---

TEMPERATURE (DEG. C) OF WATER, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
(ONCE DAILY MEASUREMENT BETWEEN 0700 AND 0900 HOURS)

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.5	11.5	4.0	2.0	0.5	0.5	1.0	7.0	18.0	22.0	23.5	21.0
2	14.5	11.5	3.0	2.0	0.5	0.5	1.5	8.0	16.5	22.0	24.0	21.0
3	13.0	12.0	2.0	2.0	0.5	0.5	1.0	8.5	16.5	22.0	24.0	21.0
4	12.0	12.0	2.0	2.0	0.5	0.5	0.5	8.5	16.0	22.0	23.5	20.5
5	12.0	11.5	1.5	2.0	0.5	0.5	0.5	9.0	15.0	23.0	24.0	20.0
6	12.0	11.0	1.5	1.5	0.5	0.5	0.5	10.0	16.0	23.5	22.0	19.5
7	12.0	10.5	1.5	2.0	0.5	0.5	1.0	9.5	15.5	23.5	21.5	18.5
8	13.0	10.0	1.0	2.0	0.5	0.5	1.0	10.0	14.5	24.0	21.5	18.0
9	13.0	9.5	1.5	2.0	0.5	0.5	1.5	10.5	14.5	24.0	21.5	18.0
10	13.0	9.5	1.5	3.0	0.5	0.5	1.5	10.5	16.0	24.0	22.0	17.0
11	13.5	9.5	1.5	3.5	0.5	0.5	2.0	11.0	16.5	23.0	23.0	17.0
12	13.0	10.0	1.5	3.0	0.5	0.5	2.0	11.5	16.5	22.0	23.0	18.0
13	13.0	10.0	1.5	1.5	0.5	0.5	2.0	11.5	16.5	21.5	23.5	17.0
14	13.0	9.0	1.5	1.0	0.5	0.5	3.0	12.0	16.0	21.5	23.5	16.0
15	13.0	8.0	1.5	0.5	0.5	0.5	3.5	12.0	15.5	21.0	23.0	16.0
16	13.0	6.0	2.0	0.5	0.5	0.5	3.5	12.0	16.5	21.0	23.0	16.0
17	12.0	6.0	3.0	0.5	0.5	0.5	4.0	12.0	17.0	21.5	23.0	16.0
18	12.0	6.0	2.0	0.5	0.5	0.5	4.5	13.0	18.0	22.0	23.0	16.0
19	11.0	6.0	3.0	0.5	0.5	1.0	5.0	14.0	18.5	22.0	22.0	16.5
20	10.5	6.0	2.0	0.5	0.5	1.5	5.0	14.0	19.0	22.0	21.5	16.5
21	9.5	6.5	2.0	0.5	0.5	2.0	5.0	14.5	20.0	22.0	21.5	17.0
22	9.0	6.5	1.5	0.5	0.5	2.0	6.0	14.5	20.0	22.0	21.5	16.0
23	9.0	6.5	1.5	0.5	0.5	2.0	6.5	15.5	20.0	22.0	21.0	16.0
24	9.0	6.5	1.5	0.5	0.5	3.0	7.0	16.5	19.0	22.0	21.0	15.5
25	9.5	6.5	2.0	0.5	0.5	2.0	6.5	18.0	19.0	21.5	21.0	15.0
26	9.5	5.5	2.0	0.5	0.5	1.5	6.0	16.5	19.5	21.0	21.5	14.5
27	10.0	5.5	2.0	0.5	0.5	1.0	6.0	15.5	20.5	21.5	21.5	14.5
28	10.0	5.0	2.0	0.5	0.5	1.0	6.0	16.0	21.5	21.5	21.5	15.0
29	10.5	4.0	2.0	0.5	---	1.5	6.0	17.0	22.0	21.0	22.0	15.0
30	10.5	4.0	2.0	0.5	---	1.5	7.0	18.5	21.5	22.0	22.0	15.0
31	11.0	---	2.0	0.5	---	1.0	---	19.0	---	23.0	21.5	---

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL IRON (FE) (UG/L)	DISSOLVED IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)
04058100 - M BR ESCANABA RIVER NR PRINCETON, MICH. (LAT 46 19 02 LONG 087 30 07.01)							
OCT., 1974							
16...	1530	128	1200	740	45	--	9.7
NOV.							
19...	1345	255	1700	1100	63	54	8.8
JAN., 1975							
02...	1015	89	1800	870	90	80	11
29...	1500	89	1300	980	--	38	15
FEB.							
26...	1100	198	1500	1100	--	50	11
APR.							
10...	1120	101	1500	1100	110	70	17
MAY							
06...	1015	1310	1100	630	50	40	5.2
JUNE							
12...	1200	192	1300	760	110	110	1.5
JULY							
24...	1400	205	1800	1100	150	100	12
SEP.							
02...	1100	178	1700	730	90	80	12
24...	1030	105	1100	630	90	70	11
04058120 - GREEN CREEK NR PALMER, MICH. (LAT 46 22 22 LONG 087 36 21.01)							
OCT., 1974							
17...	0950	10	1600	1100	65	60	19
NOV.							
21...	1400	21	590	340	66	60	18
JAN., 1975							
02...	1130	42	2200	170	160	120	16
29...	1330	22	830	350	--	330	20
FEB.							
27...	1500	--	1000	630	390	380	18
APR.							
10...	1415	28	670	440	150	120	18
MAY							
08...	1000	48	300	100	--	50	13
JUNE							
11...	1330	25	580	190	100	100	17
JULY							
29...	0945	18	550	170	110	70	18
SEP.							
02...	1435	4.2	950	210	180	130	22
23...	0935	15	1700	90	90	40	19
04058250 - WARNER CREEK TRIBUTARY NR PALMER, MICH. (LAT 46 25 20 LONG 087 36 09.01)							
OCT., 1974							
17...	1140	3.3	560	140	150	100	31
NOV.							
19...	1630	5.6	490	90	140	130	27
JAN., 1975							
02...	1300	6.0	2000	220	700	450	26
29...	1220	2.9	440	50	350	340	33
FEB.							
27...	1345	2.7	1500	470	600	550	24
APR.							
09...	1415	1.1	1200	500	690	690	22
MAY							
08...	1330	8.1	430	110	--	120	20
JUNE							
12...	1500	4.9	570	210	70	70	21
JULY							
29...	1430	.37	560	70	--	70	27
SEP.							
02...	1650	7.5	270	50	40	40	36
23...	1200	.73	1800	180	130	140	27

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	HARD-NESS (CA,MG) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
04058100 - M BR ESCANABA RIVER NR PRINCETON, MICH. (LAT 46 19 02 LONG 087 30 07.01)						
OCT., 1974						
16...	3.4	.05	38	75	8.3	8.0
NOV.						
19...	2.2	.13	31	56	7.8	1.5
JAN., 1975						
02...	4.5	.18	46	105	7.3	.5
29...	3.8	.15	53	100	7.1	.5
FEB.						
26...	3.7	.18	43	105	7.2	.5
APR.						
10...	3.6	.19	57	85	7.3	.5
MAY						
06...	1.6	.17	20	50	7.2	6.5
JUNE						
12...	2.9	.09	16	66	7.9	15.5
JULY						
24...	3.4	.09	44	70	7.8	21.5
SEP.						
02...	3.5	.13	44	90	7.3	15.0
24...	3.0	.05	40	87	7.2	10.0
04058120 - GREEN CREEK NR PALMER, MICH. (LAT 46 22 22 LONG 087 36 21.01)						
OCT., 1974						
17...	9.9	.02	88	245	7.8	5.5
NOV.						
21...	11	.15	90	220	7.7	2.0
JAN., 1975						
02...	15	.30	100	370	7.8	1.0
29...	14	.35	110	345	7.3	.0
FEB.						
27...	15	.38	110	390	7.5	.5
APR.						
10...	15	.41	110	380	7.8	4.0
MAY						
08...	12	.18	82	280	8.1	11.0
JUNE						
11...	14	.13	100	348	8.1	17.5
JULY						
29...	14	.03	100	320	8.2	21.0
SEP.						
02...	13	.04	110	320	8.0	16.5
23...	12	.05	97	297	8.1	11.0
04058250 - WARNER CREEK TRIBUTARY NR PALMER, MICH. (LAT 46 25 20 LONG 087 36 09.01)						
OCT., 1974						
17...	12	.86	130	240	8.1	5.0
NOV.						
19...	10	1.3	110	200	7.7	2.0
JAN., 1975						
02...	11	.67	110	250	7.2	.5
29...	13	1.1	140	295	7.0	.0
FEB.						
27...	9.3	.60	98	250	6.9	.0
APR.						
09...	8.4	.68	90	190	7.3	1.0
MAY						
08...	7.1	.89	79	170	7.1	11.5
JUNE						
12...	8.5	.61	87	212	7.5	14.5
JULY						
29...	11	.26	110	245	8.0	19.5
SEP.						
02...	14	.20	150	430	6.9	16.5
23...	9.2	.24	110	246	7.4	7.5

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TOTAL IRON (FE) (UG/L)	DISSOLVED IRON (FE) (UG/L)	TOTAL MANGANESE (MN) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)
04058500 - EAST BRANCH ESCANABA RIVER AT GWINN, MICH. (LAT 46 17 10 LONG 087 26 00.01)							
OCT., 1974							
16...	1410	56	650	300	39	--	18
NOV.							
19...	1030	88	600	340	42	35	22
DEC.							
31...	1430	42	4200	400	73	65	19
JAN., 1975							
29...	1615	40	710	260	35	35	22
FEB.							
26...	1345	43	710	460	30	30	18
APR.							
10...	0850	106	600	390	50	40	20
MAY							
07...	1430	284	480	190	40	30	11
JUNE							
11...	1000	70	700	340	50	40	20
JULY							
24...	1030	51	660	360	50	40	19
SEP.							
02...	0900	55	1100	370	50	30	19
24...	1200	48	670	360	20	20	18
04062230 - MICHIGAMME RIVER NR MICHIGAMME, MICH. (LAT 46 28 00 LONG 088 04 28.01)							
OCT., 1974							
18...	0900	199	410	180	39	0	5.2
NOV.							
20...	1015	444	520	190	32	10	8.8
DEC.							
30...	1245	160	1800	160	--	25	6.3
JAN., 1975							
28...	1325	146	330	140	10	10	6.9
MAR.							
05...	1400	114	330	220	10	0	5.4
APR.							
08...	1630	131	280	240	10	0	6.2
MAY							
09...	1115	2060	410	180	30	10	4.7
JUNE							
13...	1000	282	290	120	30	10	3.2
JULY							
28...	1415	70	160	130	--	40	5.5
SEP.							
03...	0945	44	750	130	30	20	5.1
22...	1400	95	200	120	40	3	6.8
04062400 - MICHIGAMME RIVER NEAR WITCH LAKE, MICH. (LAT 46 14 48 LONG 088 00 45.01)							
OCT., 1974							
17...	1600	230	420	240	--	110	10
NOV.							
20...	1400	580	720	210	54	30	7.8
DEC.							
30...	1545	208	910	230	--	60	9.0
JAN., 1975							
28...	1015	190	540	220	--	70	11
MAR.							
05...	1140	152	520	280	70	50	13
APR.							
08...	1130	232	480	280	80	50	12
MAY							
09...	1300	2730	420	180	30	30	5.2
JUNE							
13...	1130	520	490	230	--	80	6.3
JULY							
28...	1100	101	400	240	--	70	17
SEP.							
03...	1115	82	830	200	70	60	17
22...	1130	172	560	170	70	30	13

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	HARD-NESS (CA,MG) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
04058500 - EAST BRANCH ESCANABA RIVER AT GWINN, MICH. . (LAT 46 17 10 LONG 087 26 00.01)						
OCT., 1974						
16...	5.6	.12	68	145	8.3	7.0
NOV.						
19...	5.1	.34	76	110	7.8	1.5
DEC.						
31...	6.2	.21	73	170	7.6	.5
JAN., 1975						
29...	5.7	.35	78	160	6.8	.0
FEB.						
26...	4.9	.23	65	160	7.0	.0
APR.						
10...	5.3	.26	72	150	7.2	.5
MAY						
07...	3.2	.13	41	100	7.2	10.0
JUNE						
11...	5.5	.04	73	159	7.7	15.0
JULY						
24...	6.1	.09	73	150	8.0	17.5
SEP.						
02...	4.9	.07	68	130	7.6	14.0
24...	4.5	.05	63	143	7.3	8.5
04062230 - MICHIGAMME RIVER NR MICHIGAMME, MICH. . (LAT 46 28 00 LONG 088 04 28.01)						
OCT., 1974						
18...	1.8	.15	20	45	7.3	6.5
NOV.						
20...	1.4	.48	28	50	7.5	4.5
DEC.						
30...	1.9	.29	24	60	6.5	1.0
JAN., 1975						
28...	1.7	.15	24	100	6.5	.5
MAR.						
05...	1.9	.16	21	45	6.6	.5
APR.						
08...	1.6	.17	22	45	7.2	2.0
MAY						
09...	1.6	.18	18	38	7.1	5.0
JUNE						
13...	1.5	.13	14	39	7.2	14.0
JULY						
28...	1.4	.09	20	35	8.0	22.5
SEP.						
03...	1.3	.10	18	50	6.7	17.5
22...	1.3	.11	22	53	7.6	13.0
04062400 - MICHIGAMME RIVER NEAR WITCH LAKE, MICH. . (LAT 46 14 48 LONG 088 00 45.01)						
OCT., 1974						
17...	3.9	.23	41	85	8.3	6.0
NOV.						
20...	2.2	.18	29	65	8.1	2.5
DEC.						
30...	4.3	.17	40	100	7.2	1.0
JAN., 1975						
28...	3.8	.17	43	100	7.2	.0
MAR.						
05...	4.5	.24	51	95	7.4	.0
APR.						
08...	4.5	.27	49	95	7.0	.5
MAY						
09...	1.6	.53	20	40	7.2	6.0
JUNE						
13...	3.1	.17	29	71	7.2	15.5
JULY						
28...	5.6	.44	66	115	8.0	20.0
SEP.						
03...	6.9	.23	71	140	7.7	15.5
22...	4.5	.30	51	118	7.6	11.0

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
04065550 - PINE CREEK NR RANDVILLE, MICH. (LAT 45 58 02 LONG 088 00 28.01)							
NOV., 1974							
19...	1600	1.1	250	6.9	3.5	9.2	72
MAR., 1975							
19...	1300	.98	250	7.2	4.0	11.2	--
MAY							
14...	1110	1.4	190	8.3	10.0	7.6	70
04065560 - GROVELAND MINE OUTLET NR RANDVILLE, MICH. (LAT 45 58 27 LONG 088 00 10.01)							
NOV., 1974							
19...	1050	12	1000	7.3	5.5	9.4	78
MAR., 1975							
19...	1050	12	975	7.4	1.0	12.4	--
MAY							
14...	1030	5.8	670	7.9	12.5	9.2	90
04065570 - PINE CREEK NEAR MERRIMAN, MICH. (LAT 45 56 42 LONG 087 59 13.01)							
NOV., 1974							
19...	1415	14	800	7.5	2.0	12.6	95
MAR., 1975							
18...	1300	8.3	765	7.1	1.0	13.5	--
MAY							
14...	1240	13	570	7.6	13.5	10.0	97
04065580 - MOUNTY'S CREEK NR MERRIMAN, MICH. (LAT 45 56 41 LONG 087 59 23.01)							
NOV., 1974							
19...	1330	1.5	160	7.4	1.5	12.0	89
MAR., 1975							
18...	1230	.73	205	6.9	1.0	12.6	--
MAY							
14...	1200	3.5	145	7.3	13.5	8.4	82
04065590 - STEEL CREEK NR MERRIMAN, MICH. (LAT 45 56 31 LONG 087 59 33.01)							
NOV., 1974							
19...	1215	2.1	205	7.3	1.0	11.0	80
MAR., 1975							
18...	1100	1.3	305	7.3	.5	12.8	--
MAY							
14...	1100	3.7	200	7.2	12.0	10.5	99
04065600 - PINE CREEK NEAR IRON MOUNTAIN, MICH. (LAT 45 55 51 LONG 087 58 18.01)							
NOV., 1974							
19...	1340	19	680	7.3	3.0	11.6	89
MAR., 1975							
19...	1430	21	670	7.4	.0	11.8	--
MAY							
14...	1340	18	380	8.4	16.0	10.2	110

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)								
JUNE, 1975								
16...	1300	1.1	7.3	230	90	72	18	5.7
04096212 - KING LAKE OUTLET AT M-99 AT HILLSDALE, MICH. . (LAT 41 54 01 LONG 084 37 55.01)								
JUNE, 1975								
16...	1415	5.7	8.0	190	60	70	18	4.9
04096217 - ST. JOSEPH RIVER AT SOUTH ST AT HILLSDALE, MICH. (LAT 41 54 58 LONG 084 37 32.01)								
JUNE, 1975								
16...	1210	9.2	4.4	110	60	65	18	13
04096227 - ST. JOSEPH RIVER BELOW STP AT HILLSDALE, MICH. . (LAT 41 56 04 LONG 084 38 26.01)								
DEC., 1974								
20...	1100	--	8.4	10	120	82	23	52
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)								
JUNE, 1975								
16...	1310	3.0	5.6	180	50	53	21	7.6
04096262 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)								
JUNE, 1975								
16...	1345	11	9.4	210	110	79	19	14
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)								
DEC., 1974								
20...	1240	--	8.2	20	59	84	24	28
04096282 - ST. JOSEPH R AT STERLING RD NR LITCHFIELD, MICH. (LAT 42 00 54 LONG 084 43 16.01)								
JUNE, 1975								
17...	0945	105	8.0	40	40	73	19	13

DATE	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)								
JUNE, 1975 16...	1.8	283	0	232	21	9.7	.2	.47
04096212 - KING LAKE OUTLET AT M-99 AT HILLSDALE, MICH. . (LAT 41 54 01 LONG 084 37 55.01)								
JUNE, 1975 16...	1.6	265	0	217	25	8.2	.2	1.2
04096217 - ST. JOSEPH RIVER AT SOUTH ST AT HILLSDALE, MICH. (LAT 41 54 58 LONG 084 37 32.01)								
JUNE, 1975 16...	1.9	250	0	205	23	23	.3	.38
04096227 - ST. JOSEPH RIVER BELOW STP AT HILLSDALE, MICH. . (LAT 41 56 04 LONG 084 38 26.01)								
DEC., 1974 20...	3.5	282	0	231	49	95	.6	--
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)								
JUNE, 1975 16...	.8	230	0	189	21	17	.2	.10
04096262 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)								
JUNE, 1975 16...	1.4	273	0	224	19	42	.7	.69
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)								
DEC., 1974 20...	2.6	300	0	246	44	51	.4	--
04096282 - ST. JOSEPH R AT STERLING RD NR LITCHFIELD, MICH. (LAT 42 00 54 LONG 084 43 16.01)								
JUNE, 1975 17...	1.5	273	0	224	23	26	.2	.93

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (P04) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)											
JUNE, 1975 16...	1300	--	--	--	.01	.03	302	250	22	5	.2
04096212 - KING LAKE OUTLET AT M-99 AT HILLSDALE, MICH. . (LAT 41 54 01 LONG 084 37 55.01)											
JUNE, 1975 16...	1415	--	--	--	.01	.03	308	250	32	4	.1
04096217 - ST. JOSEPH RIVER AT SOUTH ST AT HILLSDALE, MICH. (LAT 41 54 58 LONG 084 37 32.01)											
JUNE, 1975 16...	1210	--	--	--	.00	.00	314	240	31	11	.4
04096227 - ST. JOSEPH RIVER BELOW STP AT HILLSDALE, MICH. . (LAT 41 56 04 LONG 084 38 26.01)											
DEC., 1974 20...	1100	--	--	.65	--	--	516	300	68	27	1.3
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)											
JUNE, 1975 16...	1310	--	--	--	.01	.03	--	220	30	7	.2
04096245 - BEEBE CREEK AT KNOWLES RD NR NORTH ADAMS, MICH.. (LAT 41 56 38 LONG 084 31 32.01)											
MAR., 1975 20...	0900	10	.04	.02	--	--	--	--	--	--	--
JUNE 16...	1050	--	--	--	--	--	--	--	--	--	--
04096262 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)											
JUNE, 1975 16...	1345	--	--	--	.03	.09	391	280	52	10	.4
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)											
DEC., 1974 20...	1240	--	--	.26	--	--	392	310	63	16	.7
JUNE, 1975 17...	0830	--	--	--	--	--	--	--	--	--	--
04096282 - ST. JOSEPH R AT STERLING RD NR LITCHFIELD, MICH. (LAT 42 00 54 LONG 084 43 16.01)											
JUNE, 1975 17...	0945	--	--	--	.12	.37	304	260	37	10	.4

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLORDANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)											
JUNE, 1975 16...	425	7.0	19.5	42	7.6	83	--	.00	.0	.01	<.01
04096212 - KING LAKE OUTLET AT M-99 AT HILLSDALE, MICH. . (LAT 41 54 01 LONG 084 37 55.01)											
JUNE, 1975 16...	425	7.3	19.0	45	7.6	83	--	--	--	--	--
04096217 - ST. JOSEPH RIVER AT SOUTH ST AT HILLSDALE, MICH. (LAT 41 54 58 LONG 084 37 32.01)											
JUNE, 1975 16...	472	7.9	20.0	30	7.9	87	--	--	--	--	--
04096227 - ST. JOSEPH RIVER BELOW STP AT HILLSDALE, MICH. . (LAT 41 56 04 LONG 084 38 26.01)											
DEC., 1974 20...	853	7.6	4.0	30	11.0	87	--	--	--	--	--
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)											
JUNE, 1975 16...	427	7.6	23.0	12	5.8	68	10	.00	.0	.00	.00
04096245 - BEEBE CREEK AT KNOWLES RD NR NORTH ADAMS, MICH.. (LAT 41 56 38 LONG 084 31 32.01)											
MAR., 1975 20...	440	--	2.0	--	--	--	--	--	--	--	--
JUNE 16...	560	7.9	15.0	--	--	--	18	.00	.0	.00	.00
04096262 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)											
JUNE, 1975 16...	600	7.9	17.0	60	--	--	17	.00	.0	.00	.00
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)											
DEC., 1974 20...	722	7.9	2.0	20	12.8	96	--	--	--	--	--
JUNE, 1975 17...	570	7.7	19.0	--	--	--	13	.00	.0	.00	.00
04096282 - ST. JOSEPH R AT STERLING RD NR LITCHFIELD, MICH. (LAT 42 00 54 LONG 084 43 16.01)											
JUNE, 1975 17...	550	7.9	18.5	31	--	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA-THION (UG/L)
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)										
JUNE, 1975 16...	1300	.00	.00	.00	.00	.00	.00	.00	.00	.00
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)										
JUNE, 1975 16...	1310	.00	.00	.00	.00	.00	.00	.00	.00	.00
04096245 - BEEBE CREEK AT KNOWLES RD NR NORTH ADAMS, MICH.. (LAT 41 56 38 LONG 084 31 32.01)										
JUNE, 1975 16...	1050	.00	.00	.00	.00	.00	.00	.00	.00	.00
04096262 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)										
JUNE, 1975 16...	1345	.00	.00	.00	.00	.00	.00	.00	.00	.00
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)										
JUNE, 1975 17...	0830	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL METH-OXY-CHLOR (UG/L)	TOTAL METHYL PARA-THION (UG/L)	TOTAL METHYL TRI-THION (UG/L)	TOTAL PARA-THION (UG/L)	TOTAL PCB (UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL TRI-THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)										
JUNE, 1975 16...	.00	.00	.00	.00	.0	0	.00	.00	.03	.00
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)										
JUNE, 1975 16...	.00	.00	.00	.00	.0	0	.00	.03	.00	.07
04096245 - BEEBE CREEK AT KNOWLES RD NR NORTH ADAMS, MICH.. (LAT 41 56 38 LONG 084 31 32.01)										
JUNE, 1975 16...	.00	.00	.00	.00	.0	0	.00	.00	.00	.00
04096262 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)										
JUNE, 1975 16...	.00	.00	.00	.00	.0	0	.00	.00	.00	.00
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)										
JUNE, 1975 17...	.00	.00	.00	.00	.0	0	.00	.02	.00	.48

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
04096285 - ST. JOSEPH R AT MILL POND AT LITCHFIELD, MICH. . (LAT 42 01 58 LONG 084 44 13.01)								
JUNE, 1975								
17...	1155	133	7.5	50	80	73	20	14
04096293 - S SAND LK OUTLET AT BACON RD NR HILLSDALE, MICH. (LAT 42 55 52 LONG 084 41 56.01)								
JUNE, 1975								
17...	0855	5.5	5.6	0	10	53	16	5.4
04096298 - SAND C TRIB BELOW MECHANIC RD NR HILLSDALE, MICH (LAT 41 55 58 LONG 084 41 42.01)								
JUNE, 1975								
17...	0950	3.7	9.3	250	1400	72	19	3.5
04096299 - M SAND LK OUT AT MECHANIC RD NR HILLSDALE, MICH. (LAT 42 56 34 LONG 084 42 06.01)								
JUNE, 1975								
17...	1145	13	6.4	50	120	57	17	4.6
04096308 - SAND CREEK AT JONESVILLE RD NR ALLEN, MICH. . (LAT 41 59 08 LONG 084 45 04.01)								
JUNE, 1975								
17...	0900	29	7.4	90	0	66	18	4.2
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)								
JUNE, 1975								
17...	1040	146	7.1	50	40	75	20	11

DATE	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)
04096285 - ST. JOSEPH R AT MILL POND AT LITCHFIELD, MICH. . (LAT 42 01 58 LONG 084 44 13.01)								
JUNE, 1975								
17...	1.3	281	0	230	24	28	.5	.76
04096293 - S SAND LK OUTLET AT BACON RD NR HILLSDALE, MICH. (LAT 42 55 52 LONG 084 41 56.01)								
JUNE, 1975								
17...	1.2	207	0	170	23	9.2	.4	.09
04096298 - SAND C TRIB BELOW MECHANIC RD NR HILLSDALE, MICH (LAT 41 55 58 LONG 084 41 42.01)								
JUNE, 1975								
17...	.5	293	0	240	15	6.6	.8	.50
04096299 - M SAND LK OUT AT MECHANIC RD NR HILLSDALE, MICH. (LAT 42 56 34 LONG 084 42 06.01)								
JUNE, 1975								
17...	1.0	227	0	186	24	7.6	.2	.21
04096308 - SAND CREEK AT JONESVILLE RD NR ALLEN, MICH. . (LAT 41 59 08 LONG 084 45 04.01)								
JUNE, 1975								
17...	.9	242	0	198	28	8.7	.1	1.0
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)								
JUNE, 1975								
17...	1.2	275	0	226	29	23	.1	.92

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO PHOS-PHATE (PO4) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO
04096285 - ST. JOSEPH R AT MILL POND AT LITCHFIELD, MICH. . (LAT 42 01 58 LONG 084 44 13.01)											
JUNE, 1975 17...	1155	--	--	--	.13	.40	358	260	34	10	.4
04096293 - S SAND LK OUTLET AT BACON RD NR HILLSDALE, MICH. (LAT 42 55 52 LONG 084 41 56.01)											
JUNE, 1975 17...	0855	--	--	--	.00	.00	224	200	28	6	.2
04096298 - SAND C TRIB BELOW MECHANIC RD NR HILLSDALE, MICH (LAT 41 55 58 LONG 084 41 42.01)											
JUNE, 1975 17...	0950	--	--	--	.00	.00	327	260	18	3	.1
04096299 - M SAND LK OUT AT MECHANIC RD NR HILLSDALE, MICH. (LAT 42 56 34 LONG 084 42 06.01)											
JUNE, 1975 17...	1145	--	--	--	.00	.00	285	210	26	4	.1
04096304 - SAND CREEK AT US-12 NEAR ALLEN, MICH. . (LAT 41 57 47 LONG 084 44 20.01)											
MAR., 1975 20...	1300	6.3	.01	.01	--	--	--	--	--	--	--
04096307 - SAND C TRIBUTARY AT BEULOW RD NEAR ALLEN, MICH.. (LAT 41 58 51 LONG 084 44 20.01)											
JUNE, 1975 17...	1220	--	--	--	--	--	--	--	--	--	--
04096308 - SAND CREEK AT JONESVILLE RD NR ALLEN, MICH. . (LAT 41 59 08 LONG 084 45 04.01)											
JUNE, 1975 17...	0900	--	--	--	.00	.00	286	240	40	4	.1
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)											
JUNE, 1975 17...	1040	--	--	--	.06	.18	333	270	44	8	.3

DATE	TIME	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA-THION (UG/L)
04096307 - SAND C TRIBUTARY AT BEULOW RD NEAR ALLEN, MICH.. (LAT 41 58 51 LONG 084 44 20.01)										
JUNE, 1975 17...	1220	.00	.00	.00	.00	.00	.00	.00	.00	.00
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)										
JUNE, 1975 17...	1040	.00	.00	.00	.00	.00	.00	.00	.00	.00

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLORDANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)
04096285 - ST. JOSEPH R AT MILL POND AT LITCHFIELD, MICH. . (LAT 42 01 58 LONG 084 44 13.01)											
JUNE, 1975 17...	565	7.8	19.5	30	--	--	--	--	--	--	--
04096293 - S SAND LK OUTLET AT BACON RD NR HILLSDALE, MICH. (LAT 42 55 52 LONG 084 41 56.01)											
JUNE, 1975 17...	380	8.3	21.5	9	8.4	97	--	--	--	--	--
04096298 - SAND C TRIB BELOW MECHANIC RD NR HILLSDALE, MICH (LAT 41 55 58 LONG 084 41 42.01)											
JUNE, 1975 17...	460	7.9	19.5	47	7.8	87	--	--	--	--	--
04096299 - M SAND LK OUT AT MECHANIC RD NR HILLSDALE, MICH. (LAT 42 56 34 LONG 084 42 06.01)											
JUNE, 1975 17...	410	8.2	21.0	22	9.2	100	--	--	--	--	--
04096304 - SAND CREEK AT US-12 NEAR ALLEN, MICH. . (LAT 41 57 47 LONG 084 44 20.01)											
MAR., 1975 20...	430	--	9.0	--	--	--	--	--	--	--	--
04096307 - SAND C TRIBUTARY AT BEULOW RD NEAR ALLEN, MICH.. (LAT 41 58 51 LONG 084 44 20.01)											
JUNE, 1975 17...	450	8.2	23.0	--	8.8	97	5.1	.00	.0	.00	.00
04096308 - SAND CREEK AT JONESVILLE RD NR ALLEN, MICH. . (LAT 41 59 08 LONG 084 45 04.01)											
JUNE, 1975 17...	436	7.9	17.5	10	9.0	97	--	--	--	--	--
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)											
JUNE, 1975 17...	560	8.0	18.5	28	--	--	12	.00	.0	.00	.00

DATE	TOTAL METHOXYCHLOR (UG/L)	TOTAL METHYL PARATHION (UG/L)	TOTAL METHYL TRITHION (UG/L)	TOTAL PARATHION (UG/L)	TOTAL PCB (UG/L)	TOTAL TOXAPHENE (UG/L)	TOTAL TRITHION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
04096307 - SAND C TRIBUTARY AT BEULOW RD NEAR ALLEN, MICH.. (LAT 41 58 51 LONG 084 44 20.01)										
JUNE, 1975 17...	.00	.00	.00	.00	.0	0	.00	.00	.02	.00
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)										
JUNE, 1975 17...	.00	.00	.00	.00	.0	0	.00	.00	.00	.09

STREAMS TRIBUTARY TO LAKE ERIE

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04173000 - HURON RIVER NEAR DEXTER, MICH. (LAT 42 23 10 LONG 083 54 40.01)

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)
NOV. 25...	1410	295	--	--	--	--	--	--	--	266
JAN. 22...	1345	480	--	--	--	--	--	--	--	246
MAR. 26...	1205	870	7.2	20	20	72	19	14	1.9	248
MAY 28...	1315	330	--	--	--	--	--	--	--	230
JULY 23...	1255	140	--	--	--	--	--	--	--	242
SEP. 23...	1400	450	8.1	10	10	63	20	15	1.8	234

DATE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
NOV. 25...	0	218	--	--	--	.06	.02	.02	.02	.01
JAN. 22...	0	202	--	--	--	.03	.02	.01	.03	.02
MAR. 26...	0	203	45	27	.2	.04	.02	.02	.02	.02
MAY 28...	4	195	--	--	--	.01	.01	.01	.28	.00
JULY 23...	0	198	--	--	--	.01	.01	.01	.00	.00
SEP. 23...	0	192	28	44	.2	.02	.02	02	.00	.00

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
NOV. 25...	--	--	--	540	8.2	5.5	--	--	13.9	110
JAN. 22...	--	--	--	568	8.2	.5	--	--	12.8	91
MAR. 26...	318	260	55	525	7.8	.5	20	2	13.7	98
MAY 28...	--	--	--	561	8.4	24.0	--	--	10.1	120
JULY 23...	--	--	--	558	8.3	26.0	--	--	9.8	120
SEP. 23...	334	240	48	549	8.1	16.0	27	1	16.1	160

DATE	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	COMPLETE COLIFORM (MPN)	FECAL COLIFORM (EC BROTH) (MPN)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
NOV. 25...	.8	1500	<30	.0	--	--	--	--	--
JAN. 22...	3.4	930	<30	.0	--	--	--	--	--
MAR. 26...	.7	<30	<30	.0	--	--	--	--	--
MAY 28...	1.4	390	<30	.0	--	--	--	--	--
JULY 23...	1.3	2100	30	.0	--	--	--	--	--
SEP. 23...	2.0	930	<30	.0	2	0	4	0	.1

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04173254 - MILL CREEK AT JERUSALEM RD NR LIMA CENTER, MICH. (LAT 42 16 54 LONG 083 55 22.01)

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)
NOV.											
25...	1540	E16	--	--	--	--	--	--	--	365	0
JAN.											
23...	0850	E18	--	--	--	--	--	--	--	305	0
MAR.											
26...	1410	E58	7.1	80	70	100	22	7.8	2.5	258	0
MAY											
28...	1545	E19	--	--	--	--	--	--	--	344	0
JULY											
23...	1515	E13	--	--	--	--	--	--	--	320	0
SEP.											
24...	0900	E19	11	60	110	120	27	11	2.4	360	0

DATE	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	HARDNESS (CA,MG) (MG/L)
NOV.											
25...	299	--	--	--	.04	.01	.02	.02	.00	--	--
JAN.											
23...	250	--	--	--	.20	.02	.03	.02	.02	--	--
MAR.											
26...	212	100	20	.3	.30	.04	.02	.02	.02	424	340
MAY											
28...	282	--	--	--	.04	.03	.01	.03	.00	--	--
JULY											
23...	262	--	--	--	.04	.01	.01	.00	.00	--	--
SEP.											
24...	295	90	23	.3	.05	.04	.02	.00	.00	495	410

DATE	NONCARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	COMPLETE COLIFORM (MPN)
NOV.										
25...	--	650	8.1	4.0	--	--	14.0	110	.6	110000
JAN.										
23...	--	860	8.2	.0	--	--	12.8	90	.1	24000
MAR.										
26...	130	651	7.8	1.5	50	20	13.4	99	1.3	40
MAY										
28...	--	742	8.2	22.0	--	--	8.9	100	.7	390
JULY										
23...	--	644	8.3	25.0	--	--	12.6	150	1.8	11000
SEP.										
24...	120	714	8.1	11.0	45	2	9.4	87	.9	46000

DATE	FECAL COLIFORM (EC BROTH) (MPN)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)	DISSOLVED NICKEL (NI) (UG/L)	DISSOLVED SELENIUM (SE) (UG/L)	DISSOLVED ZINC (ZN) (UG/L)
NOV.										
25...	2800	.0	--	--	--	--	--	--	--	--
JAN.										
23...	930	.0	--	--	--	--	--	--	--	--
MAR.										
26...	<30	.0	--	--	--	--	--	--	--	--
MAY										
28...	<30	.0	--	--	--	--	--	--	--	--
JULY										
23...	430	.0	--	--	--	--	--	--	--	--
SEP.										
24...	430	.0	2	0	0	0	.2	0	0	4

STREAMS TRIBUTARY TO LAKE ERIE

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

04173310 - NF MILL CREEK AT MCKINLEY RD NR CHELSEA, MICH. . (LAT 42 19 34 LONG 084 00 57.01)

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)
NOV. 25...	1455	--	--	--	--	--	--	--	259	0
JAN. 22...	1455	--	--	--	--	--	--	--	229	0
MAR. 26...	1305	7.4	70	20	58	15	6.7	1.2	222	0
MAY 28...	1431	--	--	--	--	--	--	--	--	--
JULY 23...	1400	--	--	--	--	--	--	--	294	0
SEP. 23...	1530	13	40	40	73	19	9.0	1.3	272	0

DATE	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)
NOV. 25...	212	--	--	--	.00	.01	.01	.03	.00
JAN. 22...	188	--	--	--	.03	.02	.03	.03	.02
MAR. 26...	182	31	16	.2	.03	.03	.02	.00	.00
MAY 28...	--	--	--	--	.02	.02	.01	.03	.00
JULY 23...	241	--	--	--	.04	.01	.01	.01	.01
SEP. 23...	223	29	21	.3	.03	.01	.01	.00	.00

DATE	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)
NOV. 25...	--	--	--	490	7.8	3.5	--	--	12.3
JAN. 22...	--	--	--	495	8.2	1.5	--	--	12.4
MAR. 26...	263	210	25	427	7.8	.0	30	2	13.6
MAY 28...	--	--	--	--	--	--	--	--	--
JULY 23...	--	--	--	510	8.3	21.0	--	--	10.2
SEP. 23...	339	260	37	592	8.2	12.0	33	1	15.8

DATE	PER-CENT SATUR-ATION	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	COM-PLETE COLI-FORM (MPN)	FECAL COLI-FORM (EC BROTH) (MPN)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)
NOV. 25...	96	.5	110000	11000	.0	--	--	--	--
JAN. 22...	92	2.9	4300	430	.0	--	--	--	--
MAR. 26...	96	2.7	2400	40	.0	--	--	--	--
MAY 28...	--	.2	11000	930	.0	--	--	--	--
JULY 23...	86	.1	110000	930	.0	--	--	--	--
SEP. 23...	66	2.7	46000	430	.0	0	0	0	.2

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04173350 - NF MILL CREEK AT DANCER RD NR LIMA CENTER, MICH. (LAT 42 17 46 LONG 083 57 33.01)

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)
NOV. 26...	0900	14	--	--	--	--	--	--	--	337
JAN. 23...	0945	19	--	--	--	--	--	--	--	280
MAR. 26...	1445	105	6.5	80	40	82	18	13	1.7	252
MAY 28...	1515	12	--	--	--	--	--	--	--	322
JULY 23...	1545	5.0	--	--	--	--	--	--	--	352
SEP. 24...	1000	19	11	30	110	110	24	21	2.2	344

DATE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
NOV. 26...	0	276	--	--	--	.03	.23	.02	.17	.12
JAN. 23...	0	230	--	--	--	.04	.01	.04	.10	.08
MAR. 26...	0	207	60	28	.2	.07	.03	.03	.03	.03
MAY 28...	0	264	--	--	--	.08	.18	.02	.36	.06
JULY 23...	0	289	--	--	--	.09	.05	.01	.05	.04
SEP. 24...	0	282	63	43	.3	.08	.08	.01	.15	.14

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
NOV. 26...	--	--	--	690	8.1	6.0	--	--	11.6	95
JAN. 23...	--	--	--	840	8.0	.0	--	--	11.8	83
MAR. 26...	352	280	72	605	7.7	.0	40	4	12.4	87
MAY 28...	--	--	--	770	8.0	21.0	--	--	8.6	98
JULY 23...	--	--	--	750	8.3	23.5	--	--	14.9	180
SEP. 24...	494	370	91	714	7.9	12.5	55	4	7.2	70

DATE	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	COMPLETE COLIFORM (MPN)	FECAL COLIFORM (EC BROTH) (MPN)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
NOV. 26...	1.7	110000	200	.0	--	--	--	--	--
JAN. 23...	2.1	110000	930	.0	--	--	--	--	--
MAR. 26...	1.2	930	40	.0	--	--	--	--	--
MAY 28...	2.3	4600	750	.0	--	--	--	--	--
JULY 23...	4.4	11000	390	.0	--	--	--	--	--
SEP. 24...	2.9	2100	390	.0	2	0	4	0	.1

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04174050 - HURON RIVER AT DELHI MILLS, MICH. (LAT 42 20 01 LONG 083 48 34.01)

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
NOV. 25...	1215	--	--	--	--	--	--	--	278	0	228
JAN. 22...	1200	--	--	--	--	--	--	--	260	0	213
MAR. 26...	1115	6.8	40	10	77	20	13	2.0	266	0	218
MAY 28...	1145	--	--	--	--	--	--	--	258	0	212
JULY 23...	1110	--	--	--	--	--	--	--	260	0	213
SEP. 23...	1200	8.7	40	20	72	21	15	1.9	244	0	200

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)
NOV. 25...	--	--	--	.01	.04	.03	.05	.02	--	--
JAN. 22...	--	--	--	.04	.01	.04	.03	.02	--	--
MAR. 26...	50	27	.2	.06	.03	.01	.01	.01	331	270
MAY 28...	--	--	--	.02	.02	.02	.03	.02	--	--
JULY 23...	--	--	--	.04	.02	.01	.02	.02	--	--
SEP. 23...	50	29	.3	.01	.01	.01	.00	.00	336	270

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	COM-PLETE COLI-FORM (MPN)
NOV. 25...	--	570	8.1	6.0	--	--	12.1	100	1.6	>240000
JAN. 22...	--	610	8.1	.0	--	--	12.6	89	2.3	15000
MAR. 26...	56	555	7.8	1.5	30	3	13.2	97	1.0	750
MAY 28...	--	583	8.2	21.5	--	--	8.6	100	.5	430
JULY 23...	--	600	8.2	24.5	--	--	8.8	93	3.4	11000
SEP. 23...	66	576	8.2	14.5	30	1	16.2	62	3.1	11000

DATE	FECAL COLI-FORM (EC BROTH) (MPN)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV. 25...	>240000	.0	--	--	--	--	--	--	--	--
JAN. 22...	<30	.0	--	--	--	--	--	--	--	--
MAR. 26...	<30	.0	--	--	--	--	--	--	--	--
MAY 28...	<30	.0	--	--	--	--	--	--	--	--
JULY 23...	90	.0	--	--	--	--	--	--	--	--
SEP. 23...	40	.0	2	0	0	0	.1	0	0	0

04174050 - HURON RIVER AT DELHI MILLS, MICH. (LAT 42 20 01 LONG 083 48 34.01)

DATE	TIME	TOTAL ORGANIC CARBON (C) (MG/L)	TOTAL ALDRIN (UG/L)	TOTAL CHLOR-DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	TOTAL HEPTA-CHLOR (UG/L)
NOV.. 1973												
01...	1215	.0	.00	.0	.00	.00	.00	.00	.00	.00	--	.00
JAN.. 1974												
09...	1030	.0	.00	.0	.00	.00	.00	.00	.00	.00	--	.00
MAR.												
25...	1055	11	.00	.0	.00	.00	.00	.00	.00	.00	--	.00
MAY												
30...	0845	16	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
JULY												
15...	0920	10	.00	.0	.01	.00	.00	.00	.00	.00	.00	.00
SEP.												
03...	1445	18	.00	.0	.00	.00	.00	--	.00	.00	--	.00
NOV.												
25...	1215	6.6	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
JAN.. 1975												
22...	1200	6.4	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
MAR.												
25...	1115	7.6	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
MAY												
21...	1145	14	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00
JULY												
23...	1110	13	.00	.0	<.01	.00	<.01	.00	.00	.00	.00	.00
SEP.												
23...	1200	11	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)	TOTAL MALA-THION (UG/L)	TOTAL METHYL PARA-THION (UG/L)	TOTAL METHYL TRI-THION (UG/L)	TOTAL PARA-THION (UG/L)	TOTAL PCB (UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL TRI-THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
NOV.. 1973												
01...	.00	.00	.00	.00	--	.00	.0	--	--	.10	.01	.16
JAN.. 1974												
09...	.00	.00	.00	.00	--	.00	.0	--	--	.07	.01	.07
MAR.												
25...	.00	.00	.00	.00	--	.00	.0	--	--	.00	.00	.00
MAY												
30...	.00	.00	.00	.00	.00	.00	.0	0	.00	.05	.00	.04
JULY												
15...	.00	.00	.00	.00	.00	.00	.0	0	.00	.11	.00	.09
SEP.												
03...	.00	.00	--	--	--	--	.0	0	--	.06	.00	.15
NOV.												
25...	.00	.00	.00	.00	.00	.00	.0	0	.00	.03	.00	.05
JAN.. 1975												
22...	.00	.00	.00	.00	.00	.00	.0	0	.00	.00	.00	.09
MAR.												
25...	.00	.00	.00	.00	.00	.00	.0	0	.00	.01	.01	.05
MAY												
21...	.00	.00	.00	.00	.00	.00	.0	0	.00	1.2	.00	.14
JULY												
23...	.00	.00	.00	.00	.00	.00	.0	0	.00	.28	.00	.12
SEP.												
23...	.00	.00	.00	.00	.00	.00	.0	0	.00	.07	.06	.00

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04174800 - HURON RIVER AT YPSILANTI, MICH. (LAT 42 14 57 LONG 083 36 45.01)

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)
NOV. 27...	0815	309	--	--	--	--	--	--	--	286
JAN. 24...	0815	550	--	--	--	--	--	--	--	251
MAR. 27...	0805	1140	6.4	40	20	74	19	16	2.2	220
MAY 29...	0745	491	--	--	--	--	--	--	--	250
JULY 24...	0745	178	--	--	--	--	--	--	--	230
SEP. 25...	0845	473	9.0	50	30	73	20	19	2.4	256

DATE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
NOV. 27...	0	235	--	--	--	.06	.16	.07	.15	.10
JAN. 24...	0	206	--	--	--	.06	.00	.06	.07	.06
MAR. 27...	0	180	65	33	.3	.08	.07	.04	.03	.02
MAY 29...	0	205	--	--	--	.08	.24	.02	.05	.02
JULY 24...	0	189	--	--	--	.07	.22	.08	.06	.05
SEP. 25...	0	210	54	38	.2	.03	.09	.05	.02	.01

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
NOV. 27...	--	--	--	610	7.9	5.5	--	--	13.2	110
JAN. 24...	--	--	--	680	8.3	.0	--	--	14.4	100
MAR. 27...	334	260	83	582	8.0	.0	30	5	16.5	120
MAY 29...	--	--	--	636	8.1	22.0	--	--	8.5	99
JULY 24...	--	--	--	600	7.7	25.0	--	--	9.0	110
SEP. 25...	416	260	55	715	8.1	14.0	28	10	8.2	81

DATE	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	COMPLETE COLIFORM (MPN)	FECAL COLIFORM (EC BROTH) (MPN)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
NOV. 27...	1.8	9300	230	.0	--	--	--	--	--
JAN. 24...	3.0	430	<30	.0	--	--	--	--	--
MAR. 27...	2.5	230	40	.0	--	--	--	--	--
MAY 29...	4.8	4300	<30	.0	--	--	--	--	--
JULY 24...	4.4	46000	90	.0	--	--	--	--	--
SEP. 25...	2.5	230	<30	.0	2	0	0	0	.0

04174900 - FORD LAKE AT FORD DAM NR RAWSONVILLE, MICH. . (LAT 42 12 22 LONG 083 33 28.01)

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)
NOV.											
27...	0855	--	--	--	--	--	--	--	--	--	--
JAN.											
24...	0920	--	--	--	--	--	--	--	238	0	195
MAR.											
27...	0900	6.3	120	50	73	20	20	2.2	276	0	226
MAY											
29...	0840	--	--	--	--	--	--	--	201	0	165
JULY											
24...	0840	--	--	--	--	--	--	--	202	4	172
SEP.											
25...	1015	8.8	10	0	70	19	18	2.4	238	0	195

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	HARD-NESS (CA,MG) (MG/L)
NOV.										
27...	--	--	--	.02	.04	.07	.10	.06	--	--
JAN.										
24...	--	--	--	.10	.03	.05	.06	.05	--	--
MAR.										
27...	50	39	.3	.05	.05	.05	.05	.05	349	260
MAY										
29...	--	--	--	.04	.11	.05	.01	.00	--	--
JULY										
24...	--	--	--	.02	.02	.02	.01	.01	--	--
SEP.										
25...	53	36	.2	.03	.08	.04	.02	.00	--	250

DATE	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-GIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	COM-PLETE COLI-FORM (MPN)
NOV.										
27...	--	620	7.8	5.0	--	--	11.0	87	.9	2400
JAN.										
24...	--	560	8.3	.5	--	--	14.0	98	3.0	4300
MAR.										
27...	38	602	8.2	2.5	30	8	13.6	100	1.9	7500
MAY										
29...	--	572	8.2	23.0	--	--	10.6	130	2.6	700
JULY										
24...	--	500	8.4	25.0	--	--	8.7	110	5.8	15000
SEP.										
25...	58	564	8.0	15.0	29	7	4.2	240	3.4	430

DATE	FECAL COLI-FORM (EC BROTH) (MPN)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SELE-NIUM (SE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV.										
27...	<30	.0	--	--	--	--	--	--	--	--
JAN.										
24...	<30	.0	--	--	--	--	--	--	--	--
MAR.										
27...	<30	.0	--	--	--	--	--	--	--	--
MAY										
29...	<30	.0	--	--	--	--	--	--	--	--
JULY										
24...	30	.0	--	--	--	--	--	--	--	--
SEP.										
25...	40	.0	2	2	0	9	.0	5	0	5

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04175597 - RIVER RAISIN AT SHARON V RD NR SHARONVILLE, MICH (LAT 42 10 04 LONG 084 07 21.01)

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)
NOV. 26...	1030	E118	--	--	--	--	--	--	--	285
JAN. 23...	1125	E226	--	--	--	--	--	--	--	238
MAR. 27...	1330	E361	5.4	50	20	67	18	7.5	1.6	246
MAY 29...	1315	E158	--	--	--	--	--	--	--	262
JULY 24...	1315	E65	--	--	--	--	--	--	--	260
SEP. 24...	1200	E143	7.5	60	20	69	21	8.1	1.7	262

DATE	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)
NOV. 26...	0	234	--	--	--	.05	.01	.02	.03	.01
JAN. 23...	0	195	--	--	--	.05	.02	.04	.03	.02
MAR. 27...	0	202	35	15	.2	.03	.03	.02	.01	.00
MAY 29...	0	215	--	--	--	.05	.04	.01	.01	.01
JULY 24...	0	213	--	--	--	.04	.02	.01	.02	.00
SEP. 24...	0	215	30	16	.2	.03	.01	.02	.00	.00

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
NOV. 26...	--	--	--	480	7.7	2.0	--	--	12.0	90
JAN. 23...	--	--	--	620	8.0	.0	--	--	12.6	89
MAR. 27...	268	240	38	445	8.0	.0	30	2	15.2	110
MAY 29...	--	--	--	483	8.0	22.5	--	--	9.6	120
JULY 24...	--	--	--	450	8.2	24.5	--	--	8.7	110
SEP. 24...	555	260	44	532	8.2	12.5	30	1	9.0	87

DATE	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	COMPLETE COLIFORM (MPN)	FECAL COLIFORM (EC BROTH) (MPN)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	DISSOLVED ARSENIC (AS) (UG/L)	DISSOLVED CADMIUM (CD) (UG/L)	DISSOLVED COBALT (CO) (UG/L)	DISSOLVED LEAD (PB) (UG/L)	DISSOLVED MERCURY (HG) (UG/L)
NOV. 26...	.0	4300	70	.0	--	--	--	--	--
JAN. 23...	.2	46000	30	.0	--	--	--	--	--
MAR. 27...	.1	4600	<30	.0	--	--	--	--	--
MAY 29...	1.6	4300	<30	.0	--	--	--	--	--
JULY 24...	2.9	24000	430	.0	--	--	--	--	--
SEP. 24...	.3	1500	40	.0	1	0	0	0	.2

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04175610 - RIVER RAISIN AT AUSTIN RD NR MANCHESTER, MICH. • (LAT 42 08 52 LONG 084 00 56.01)

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)
NOV. 26...	1100	--	--	--	--	--	--	--	298	0
JAN. 23...	1245	--	--	--	--	--	--	--	241	0
MAR. 27...	1230	5.4	70	10	61	17	7.2	1.5	240	0
MAY 29...	1215	--	--	--	--	--	--	--	266	0
JULY 24...	1210	--	--	--	--	--	--	--	274	0
SEP. 24...	1245	7.9	10	20	73	21	8.7	1.7	278	0

DATE	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)
NOV. 26...	244	--	--	--	.05	.01	.03	.05	.02	--
JAN. 23...	198	--	--	--	.06	.03	.03	.06	.06	--
MAR. 27...	197	34	15	.2	.03	.03	.02	.02	.01	253
MAY 29...	218	--	--	--	.03	.05	.02	.02	.01	--
JULY 24...	225	--	--	--	.03	.02	.01	.04	.02	--
SEP. 24...	228	32	17	.2	.03	.03	.01	.02	.01	297

DATE	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION
NOV. 26...	--	--	510	7.9	4.0	--	--	12.1	94
JAN. 23...	--	--	580	7.9	.0	--	--	13.8	97
MAR. 27...	220	25	446	7.9	.0	30	3	16.1	120
MAY 29...	--	--	489	8.1	23.0	--	--	9.2	91
JULY 24...	--	--	470	8.0	25.0	--	--	7.2	88
SEP. 24...	270	41	576	8.2	14.0	30	4	9.6	110

DATE	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	COM-PLETE COLI-FORM (MPN)	FECAL COLI-FORM (EC BROTH) (MPN)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)
NOV. 26...	.7	15000	4600	.0	--	--	--	--	--
JAN. 23...	2.3	7500	930	.2	--	--	--	--	--
MAR. 27...	2.8	46000	7500	.0	--	--	--	--	--
MAY 29...	1.0	4300	40	.0	--	--	--	--	--
JULY 24...	2.9	46000	4600	.0	--	--	--	--	--
SEP. 24...	.2	2100	230	.0	1	0	0	0	.2

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04176365 - SALINE RIVER AT DELL ROAD NR SALINE, MICH. . (LAT 42 10 16 LONG 083 49 32.01)

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)
NOV.										
26...	1145	--	--	--	--	--	--	--	371	0
JAN.										
23...	1345	--	--	--	--	--	--	--	282	0
MAR.										
27...	1130	5.1	70	70	110	24	8.0	2.6	276	0
MAY										
29...	1050	--	--	--	--	--	--	--	334	0
JULY										
24...	1110	--	--	--	--	--	--	--	348	0
SEP.										
24...	1445	10	20	80	130	29	9.3	3.0	340	0

DATE	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)
NOV.										
26...	304	--	--	--	.05	.02	.03	.04	.01	--
JAN.										
23...	231	--	--	--	.20	.02	.04	.04	.02	--
MAR.										
27...	226	110	20	.3	.02	.04	.01	.03	.02	426
MAY										
29...	274	--	--	--	.03	.02	.01	.02	.02	--
JULY										
24...	285	--	--	--	.02	.01	.01	.01	.01	--
SEP.										
24...	279	150	22	.3	.05	.02	.01	.02	.01	371

DATE	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION
NOV.									
26...	--	--	740	8.0	1.0	--	--	12.4	90
JAN.									
23...	--	--	860	8.0	1.5	--	--	13.0	96
MAR.									
27...	370	150	718	8.0	.0	40	5	15.6	110
MAY									
29...	--	--	676	8.1	23.0	--	--	9.2	110
JULY									
24...	--	--	728	8.2	21.5	--	--	8.6	100
SEP.									
24...	440	170	854	8.0	12.5	45	3	9.8	95

DATE	BIO-CHEM-ICAL OXYGEN DEMAND 5 DAY (MG/L)	COM-PLETE COLI-FORM (MPN)	FECAL COLI-FORM (EC BROTH) (MPN)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CAD-MIUM (CD) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)
NOV.									
26...	1.3	4300	4300	.0	--	--	--	--	--
JAN.									
23...	.0	15000	230	.0	--	--	--	--	--
MAR.									
27...	.4	1500	230	.0	--	--	--	--	--
MAY									
29...	.5	21000	3900	.0	--	--	--	--	--
JULY									
24...	3.3	11000	2400	.0	--	--	--	--	--
SEP.									
24...	.9	46000	2400	.0	1	0	0	0	.2

STREAMS TRIBUTARY TO LAKE ERIE--CONTINUED

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

04176418 - SALINE RIVER AT PLATT RD AT MILAN, MICH. - (LAT 42 05 05 LONG 083 41 45.01)

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED IRON (FE) (UG/L)	DIS-SOLVED MANGANESE (MN) (UG/L)	DIS-SOLVED CALCIUM (CA) (MG/L)	DIS-SOLVED MAGNESIUM (MG) (MG/L)	DIS-SOLVED SODIUM (NA) (MG/L)	DIS-SOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
NOV.											
26...	1315	--	--	--	--	--	--	--	271	0	222
JAN.											
23...	1515	--	--	--	--	--	--	--	284	0	233
MAR.											
27...	1020	5.9	30	50	110	20	16	2.7	290	0	238
MAY											
29...	0940	--	--	--	--	--	--	--	314	0	258
JULY											
24...	0950	--	--	--	--	--	--	--	270	0	221
SEP.											
25...	1145	11	10	70	120	27	31	3.8	332	0	272

DATE	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLORIDE (CL) (MG/L)	DIS-SOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	HARDNESS (CA,MG) (MG/L)
NOV.										
26...	--	--	--	.01	.08	.04	.10	.08	--	--
JAN.										
23...	--	--	--	.20	.02	.02	.10	.09	--	--
MAR.										
27...	100	33	.3	.30	.05	.01	.04	.03	435	360
MAY										
29...	--	--	--	.20	.09	.02	.13	.11	--	--
JULY										
24...	--	--	--	.11	.03	.01	.14	.10	--	--
SEP.										
25...	150	51	.3	.10	.04	.02	.04	.03	--	410

DATE	NON-CARBONATE HARDNESS (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)	TURBIDITY (JTU)	DIS-SOLVED OXYGEN (MG/L)	PERCENT SATURATION	BIOCHEMICAL OXYGEN DEMAND 5 DAY (MG/L)	COMPLETE COLIFORM (MPN)
NOV.										
26...	--	840	7.8	4.0	--	--	9.6	74	.6	1500
JAN.										
23...	--	900	7.9	1.0	--	--	11.8	85	.6	24000
MAR.										
27...	120	728	8.3	.5	40	8	14.8	100	4.4	11000
MAY										
29...	--	888	8.0	20.0	--	--	6.2	69	3.3	15000
JULY										
24...	--	750	8.0	22.0	--	--	4.5	54	4.4	11000
SEP.										
25...	140	945	8.0	12.0	27	15	7.0	67	3.6	24000

DATE	FECAL COLIFORM (EC BROTH) (MPN)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	DIS-SOLVED ARSENIC (AS) (UG/L)	DIS-SOLVED CADMIUM (CD) (UG/L)	DIS-SOLVED COBALT (CO) (UG/L)	DIS-SOLVED LEAD (PB) (UG/L)	DIS-SOLVED MERCURY (HG) (UG/L)	DIS-SOLVED NICKEL (NI) (UG/L)	DIS-SOLVED SELENIUM (SE) (UG/L)	DIS-SOLVED ZINC (ZN) (UG/L)
NOV.										
26...	150	.0	--	--	--	--	--	--	--	--
JAN.										
23...	930	.0	--	--	--	--	--	--	--	--
MAR.										
27...	90	.0	--	--	--	--	--	--	--	--
MAY										
29...	1500	.0	--	--	--	--	--	--	--	--
JULY										
24...	430	.0	--	--	--	--	--	--	--	--
SEP.										
25...	90	.0	2	2	0	4	.0	45	0	30

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

ANALYSES OF SAMPLES COLLECTED AT LAKES

463025087365001 TEAL LAKE AT NEGAUNEE, MICH., SITE 1

Lat 46°30'25", long 87°36'50", in secs. 31,35 and 36, T.48N., R.26 and 27W., Marquette County, at Negaunee. Surface area, 266 acres (189 hectares). Maximum depth, 32 ft (9.8 m). Inlet, small unnamed tributary at north side of lake. Outlet at northeast side of lake flows intermittently into Carp River. Drainage area at outlet, 3.36 sq mi (8.70 km^2). Datum of gage is 1,362.2 ft (415.199 m) above mean sea level.

Sampling site No. 1 is 1,680 ft (512 m) from southern-most point on lake; at azimuth 0°.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	Sample DEPTH (FT)	DIS-SOLVED SILICA (SIO2) (MG/L)	DIS-SOLVED CAL-CIUM (CA) (MG/L)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L)	BICAR-BONATE (HCO3) (MG/L)	CAR-BONATE (CO3) (MG/L)	ALKA-LINITY AS CACO3 (MG/L)	DIS-SOLVED SULFATE (SO4) (MG/L)	DIS-SOLVED CHLO-RIDE (CL) (MG/L)	DIS-SOLVED FLUO-RIDE (F) (MG/L)
MAY												
14...	1125	--	--	--	--	--	--	--	--	--	--	--
15...	0930	3.0	5.2	14	4.1	.6	43	0	35	11	6.9	.0
JUNE												
17...	1100	3.0	4.9	13	3.8	.5	40	0	33	11	7.2	.2
JULY												
22...	1100	3.0	5.2	13	3.8	.5	47	0	39	10	7.0	.1
AUG.												
22...	1100	3.0	7.4	15	4.5	.6	46	0	38	11	7.9	.2
SEP.												
25...	1110	3.0	8.3	13	3.6	.6	43	0	35	11	7.7	.1

DATE	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L)
MAY												
14...	--	--	--	--	--	--	--	--	--	--	--	--
15...	.07	.00	.07	--	.02	.19	.21	.28	1.2	.01	.00	--
JUNE												
17...	.00	.00	.00	.00	.00	.12	.12	.12	.53	.01	.00	.00
JULY												
22...	.00	.00	.00	--	--	--	--	--	--	.16	.00	--
AUG.												
22...	.00	.00	.00	--	.05	.43	.48	.48	2.1	.03	.00	--
SEP.												
25...	.00	.00	.00	--	.00	.31	.31	.31	1.4	.01	.09	--

DATE	TOTAL HYDRO-LYZABLE PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS-PHORUS (P) (MG/L)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L)	DIS-SOLVED SOLIDS (TONS PER AC-FT)	HARD-NESS (CA,MG) (MG/L)	NON-CAR-BONATE HARD-NESS (MG/L)	PERCENT SODIUM	SODIUM AD-SORP-TION RATIO	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)
MAY												
14...	--	--	--	--	--	--	--	--	--	--	--	--
15...	.01	.00	81	67	.11	52	17	13	.2	118	7.4	9.5
JUNE												
17...	.00	.01	77	64	.10	48	15	15	.2	120	7.7	17.0
JULY												
22...	.00	.16	<74	67	.10	48	10	15	.3	120	8.3	22.5
AUG.												
22...	.01	.02	70	73	.10	56	18	13	.2	130	7.6	19.0
SEP.												
25...	.01	.00	69	69	.09	47	12	15	.2	122	7.8	13.0

DATE	AIR TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (JTU)	TRANS-PAR-ENCY (SECCHI DISK) (IN)	CARBON DIOXIDE (CO2) (MG/L)	TOTAL SESTON (MG/L)	SESTON ASH WEIGHT (MG/L)	CHLORO-PHYLL A (UG/L)	CHLORO-PHYLL B (UG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	PHENOLS (UG/L)	STAGE (FT ABOVE DATUM)
MAY												
14...	--	--	--	134	--	--	--	--	--	--	--	--
15...	--	4	0	108	2.7	--	--	--	--	--	1	6.80
JUNE												
17...	21.0	2	0	248	1.3	.0	.0	--	--	4.4	--	7.10
JULY												
22...	23.5	8	0	156	.4	.0	.0	.3	.0	7.6	--	6.60
AUG.												
22...	16.0	9	2	84	1.8	.0	.0	3.9	.0	4.2	--	5.84
SEP.												
25...	14.5	16	2	121	1.1	.0	.0	--	--	5.2	--	5.74

ANALYSES OF SAMPLES COLLECTED AT LAKES--CONTINUED

463025087365001 TEAL LAKE AT NEGAUNEE, MICH., SITE 1--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TOTAL ALDRIN (UG/L)	TOTAL CHLOR-DANE (UG/L)	TOTAL DDD (UG/L)	TOTAL DDE (UG/L)	TOTAL DDT (UG/L)	TOTAL DI-AZINON (UG/L)	TOTAL DI-ELDRIN (UG/L)	TOTAL ENDRIN (UG/L)	TOTAL ETHION (UG/L)	TOTAL HEPTA-CHLOR (UG/L)	TOTAL HEPTA-CHLOR EPOXIDE (UG/L)	TOTAL LINDANE (UG/L)
MAY 15...	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUNE 17...	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
JULY 22...	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG. 22...	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
SEP. 25...	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	TOTAL MALA-THION (UG/L)	TOTAL METH-OXY-CHLOR (UG/L)	TOTAL METHYL PARA-THION (UG/L)	TOTAL METHYL TRI-THION (UG/L)	TOTAL PARA-THION (UG/L)	TOTAL PCB (UG/L)	TOTAL TOX-APHENE (UG/L)	TOTAL TRI-THION (UG/L)	TOTAL 2,4-D (UG/L)	TOTAL 2,4,5-T (UG/L)	TOTAL SILVEX (UG/L)
MAY 15...	.00	.00	.00	.00	.00	.0	0	.00	--	--	--
JUNE 17...	.00	.00	.00	.00	.00	.0	0	.00	.00	.00	.00
JULY 22...	.00	.00	.00	.00	.00	.0	0	.00	--	--	--
AUG. 22...	.00	.00	.00	.00	.00	.0	0	.00	.00	.00	.00
SEP. 25...	.00	.00	.00	.00	.00	.0	0	.00	.00	.00	.00

DATE	TOTAL ARSENIC (AS) (UG/L)	TOTAL BARIUM (BA) (UG/L)	TOTAL CAD-MIUM (CD) (UG/L)	TOTAL CHRO-MIUM (CR) (UG/L)	TOTAL COBALT (CO) (UG/L)	TOTAL COPPER (CU) (UG/L)	TOTAL IRON (FE) (UG/L)
MAY 15...	0	0	0	<10	0	2	90
JUNE 17...	--	--	--	--	--	--	--
JULY 22...	--	--	--	--	--	--	--
AUG. 22...	--	--	--	--	--	--	--
SEP. 25...	--	--	--	--	--	--	--

DATE	DIS-SOLVED IRON (FE) (UG/L)	TOTAL LEAD (PB) (UG/L)	TOTAL MAN-GANESE (MN) (UG/L)	DIS-SOLVED MAN-GANESE (MN) (UG/L)	TOTAL MERCURY (HG) (UG/L)	TOTAL NICKEL (NI) (UG/L)	TOTAL ZINC (ZN) (UG/L)
MAY 15...	0	1	60	40	.5	2	10
JUNE 17...	0	--	--	30	--	--	--
JULY 22...	--	--	--	0	--	--	--
AUG. 22...	60	--	--	50	--	--	--
SEP. 25...	30	--	--	0	--	--	--

ANALYSES OF SAMPLES COLLECTED AT LAKES--CONTINUED

463025087365001 TEAL LAKE AT NEGAUNEE, MICH., SITE 1--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	DEPTH (FT)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
MAY							
15...	0830	1.0	9.5	10.4	95	--	--
15...	0832	5.0	9.5	10.4	--	--	--
15...	0833	10	9.5	10.3	--	--	--
15...	0834	15	9.5	10.3	--	110	7.1
15...	0835	20	9.5	10.1	--	--	--
15...	0836	25	9.0	10.0	--	120	7.1
15...	0837	28	8.0	7.9	--	--	--
15...	0838	30	7.5	7.8	--	--	--
15...	0839	31	7.0	7.7	--	--	--
JUNE							
17...	1104	1.0	17.0	8.7	93	--	--
17...	1106	5.0	16.0	8.7	--	--	--
17...	1107	10	15.5	8.6	--	--	--
17...	1108	15	15.5	8.6	--	120	7.6
17...	1109	20	15.0	8.5	--	--	--
17...	1110	25	13.0	5.0	--	120	7.1
17...	1111	30	11.5	2.0	--	--	--
17...	1112	32	11.0	.8	--	--	--
JULY							
22...	1105	1.0	22.5	7.7	92	120	--
22...	1107	5.0	22.5	7.5	--	120	--
22...	1108	10	22.5	7.2	--	120	--
22...	1109	15	22.0	7.1	--	120	8.4
AUG.							
22...	1110	1.0	19.0	8.2	91	--	--
22...	1112	5.0	19.5	8.1	--	--	--
22...	1114	10	19.5	8.0	--	--	--
22...	1116	15	20.0	8.0	--	125	7.6
22...	1118	20	20.0	8.0	--	--	--
22...	1120	25	19.5	8.1	--	125	7.6
22...	1122	28	19.5	7.6	--	--	--
22...	1124	29	19.5	6.6	--	--	--
22...	1128	30	19.5	.3	--	--	--
SEP.							
25...	1112	1.0	13.0	9.4	92	--	--
25...	1116	5.0	13.0	9.6	--	--	--
25...	1118	10	13.0	9.6	--	--	--
25...	1120	15	13.0	9.6	--	121	7.6
25...	1122	20	13.0	9.5	--	--	--
25...	1124	25	13.0	9.5	--	121	7.6
25...	1126	30	13.0	9.4	--	--	--
25...	1128	32	13.0	9.3	--	--	--

ANALYSES OF SAMPLES COLLECTED AT LAKES--CONTINUED

463025087365001 TEAL LAKE AT NEGAUNEE, MICH., SITE 1--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAY 15	0930	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Occystaceae		
		Chlorella	--	5
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	19
		Stephanodiscus	--	2
		Pennales		
		Achnanthaceae		
		Achnanthes	--	5
		Fragilariaceae		
		Asterionella	--	9
		Fragilaria	--	23
		Naviculaceae		
		Navicula	--	7
		Nitzschiaceae		
		Nitzschia	--	12
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	5
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	--	2
		Pyrrhophyta		
		Dinophyceae		
		Peridiniales		
		Peridiniaceae		
		Peridinium	--	9
		TOTAL	730	
JUNE 17	1100	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Botryococcaceae		
		Botryococcus	--	81
		Occystaceae		
		Ankistrodesmus	--	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	12
		Pennales		
		Achnanthaceae		
		Achnanthes	--	2
		Nitzschiaceae		
		Nitzschia	--	1
		Tabellariaceae		
		Tabellaria	--	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	1
		TOTAL	1,300	
JULY 22	1100	Chlorophyta		
		Chlorophyceae		
		Tetrasporales		
		Palmellaceae		
		Sphaerocystis	100	19
		Zygnematales		
		Desmidiaceae		
		Staurasirum	--	<1
		Chrysophyta		
		Bacillariophyceae		
		Pennales		
		Achnanthaceae		
		Achnanthes	6	1
		Cocconeis	--	<1
		Fragilariaceae		
		Asterionella	--	<1
		Fragilaria	12	2
		Chrysophyceae		
		Chrysomonadales		
		Mallomonadaceae		
		Mallomonas	--	<1
		Ochromonadaceae		
		Dinobryon	94	17
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Agmenellum	100	19
		Anacystis	220	42
		Oscillatoriales		
		Nostocaceae		
		Anabaena	--	<1
AUG. 22	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Characiaceae		
		Schroederia	100	9
		Scenedesmaceae		
		Scenedesmus	67	6
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	210	19
		Stephanodiscus	11	1
		Pennales		
		Eunotiaceae		
		Eunotia	11	1
		Fragilariaceae		
		Fragilaria	--	<1
		Naviculaceae		
		Navicula	11	1
		Nitzschiaceae		
		Nitzschia	11	1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	560	50
		Oscillatoriales		
		Nostocaceae		
		Anabaena	130	12
		Oscillatoriaceae		
		Oscillatoria	--	<1
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	11	1

ANALYSES OF SAMPLES COLLECTED AT LAKES--CONTINUED

463025087365001 TEAL LAKE AT NEGAUNEE, MICH., SITE 1--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP. 25	1110	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Characiaceae		
		Schroederia	--	<1
		Volvocales		
		Volvocaceae		
		Eudorina	--	<1
		Chrysophyia		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	180	2
		Stephanodiscus	--	<1
		Pennales		
		Fragilariaceae		
		Fragilaria	--	<1
		Synedra	--	<1
		Nitzschiaceae		
		Nitzschia	--	<1
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	3,500	31
		Anacystis incerta	3,600	33
		Gomphosphaeria	--	<1
		Oscillatoriales		
		Nostocaceae		
		Anabaena	3,800	34
		Aphanizomenon	--	<1
		Euglenophyta		
		Euglenophyceae		
		Euglenales		
		Euglenaceae		
		Trachelomonas	--	<1

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON [a]

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
SEP. 25	34	29	18	1.8	0.1	6110

REMARKS.-- a/ Sampling Method by Polyethylene Strip.

ANALYSES OF SAMPLES COLLECTED AT LAKES

463025087365002 TEAL LAKE AT NEGAUNEE, MICH. SITE 2

Lat 46°30'25", long 87°36'50", in secs. 31, 35, and 36, T.48N., R.26 and 27W., Marquette County, at Negaunee. Surface area, 466 acres (189 hectares). Maximum depth, 32 ft (9.8 m). Inlet, small unnamed tributary at north side of lake. Outlet at northeast side of lake flows intermittently into Carp River. Drainage area at outlet, 3.36 sq mi (8.70 km^2). Datum of gage is 1,362.2 ft (415.199 m) above mean sea level.

Sampling site No. 2 is 5,150 ft (1,570 m) from southern-most point on lake; at azimuth 301°.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	Sample DEPTH (FT)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	AMMONIA NITRO-GEN (N) (MG/L)	TOTAL ORGANIC NITRO-GEN (N) (MG/L)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (N) (MG/L)	TOTAL NITRO-GEN (NO3) (MG/L)	TOTAL PHOS-PHORUS (P) (MG/L)	STAGE (FT ABOVE DATUM)
MAY												
15...	1400	3.0	.06	.00	.06	.01	.17	.18	.24	1.1	.01	6.80
JUNE												
17...	1330	3.0	.00	.01	.00	.01	.07	.08	.08	.35	.01	7.10
JULY												
22...	1530	3.0	.00	.00	.00	.00	20	.20	.20	.89	.00	6.60
AUG.												
22...	1300	3.0	.00	.00	.00	.04	.32	.36	.36	1.6	.02	5.84
SEP.												
25...	1425	3.0	.00	.00	.00	.00	.22	.22	.22	.97	.02	5.74

DATE	TOTAL ORTHO PHOS-PHORUS (P) (MG/L)	TOTAL HYDRO-LYZABLE PHOS-PHORUS (P) (MG/L)	TOTAL ORGANIC PHOS-PHORUS (P) (MG/L)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	AIR TEMPER-ATURE (DEG C)	TRANS-PAR-ENCY (SECCHI DISK) (IN)	TOTAL SESTON (MG/L)	SESTON ASH WEIGHT (MG/L)	TOTAL ORGANIC CARBON (C) (MG/L)	ALGAL GROWTH POTENT-IAL (MG/L)
MAY												
15...	.00	.01	.00	125	7.6	--	--	113	--	--	4.5	1.4
JUNE												
17...	.01	.00	.00	120	7.7	16.0	18.0	235	.0	.0	3.5	1.1
JULY												
22...	.00	.00	.00	120	8.4	23.5	25.5	96	.0	.0	4.8	.4
AUG.												
22...	.00	.02	.00	130	7.6	19.5	18.5	96	.0	.0	8.0	--
SEP.												
25...	.01	.01	.00	112	8.4	14.5	16.0	117	.0	.0	5.0	1.2

DATE	TIME	DEPTH (FT)	TEMPER-ATURE (DEG C)	DIS-SOLVED OXYGEN (MG/L)	PER-CENT SATUR-ATION	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)
JUNE							
17...	1333	1.0	16.0	8.8	97	--	--
17...	1335	5.0	15.5	8.7	--	--	--
17...	1336	10	15.5	8.6	--	--	--
17...	1337	15	15.0	8.5	--	120	7.6
17...	1338	20	15.0	7.6	--	--	--
17...	1339	25	14.5	7.3	--	120	7.4
17...	1340	29	13.0	4.5	--	--	--
JULY							
22...	1540	1.0	24.0	8.1	100	120	--
22...	1544	5.0	23.5	8.3	--	120	--
22...	1546	10	23.5	8.2	--	120	--
22...	1548	15	23.5	8.2	--	120	8.4
22...	1550	20	21.5	7.3	--	120	--
22...	1552	25	18.0	2.5	--	130	7.3
22...	1554	30	16.0	.3	--	150	--
AUG.							
22...	1314	1.0	19.5	7.7	86	--	--
22...	1316	5.0	19.5	7.7	--	--	--
22...	1318	10	19.5	7.6	--	--	--
22...	1320	15	19.5	7.5	--	130	7.6
22...	1322	20	19.5	7.5	--	--	--
22...	1324	25	19.5	7.4	--	130	7.5
22...	1326	27	19.5	6.8	--	--	--
SEP.							
25...	1430	1.0	14.5	9.8	98	--	--
25...	1434	5.0	14.0	9.8	--	--	--
25...	1436	10	14.0	9.9	--	--	--
25...	1438	15	13.5	9.8	--	122	7.7
25...	1440	20	13.5	9.7	--	--	--
25...	1442	25	13.5	9.6	--	119	7.7
25...	1444	27	13.0	9.5	--	--	--

ANALYSES OF SAMPLES COLLECTED AT LAKES--CONTINUED

463025087365002 TEAL LAKE AT NEGAUNEE, MICH., SITE 2--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
MAY 15	1400	Chlorophyta		
		Chlorophyceae		
		Tetrasporales		
		Palmellaceae		
		Sphaerocystis	--	26
		Volvocales		
		Chlamydomonadaceae		
		Chlamydomonas	--	3
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Cyclotella	--	19
		Melosira	--	29
		Pennales		
		Fragilariaceae		
		Asterionella	--	2
		Fragilaria	--	3
		Naviculaceae		
		Navicula	--	12
		Nitzschiaceae		
		Nitzschia	--	2
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	3
		TOTAL	2,700	
JUNE 17	1330	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Botryococcaceae		
		Botryococcus	--	62
		Oocystaceae		
		Ankistrodesmus	--	4
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	18
		Pennales		
		Fragilariaceae		
		Asterionella	--	1
		Fragilaria	--	10
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	--	5
		TOTAL	1,400	
JULY 22	1530	Chrysophyta		
		Chrysophyceae		
		Chrysomonadales		
		Ochromonadaceae		
		Dinobryon	33	8
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	210	49
		Gomphosphaeria		
		Oscillatoriales		
		Nostocaceae		
		Anabaena	190	43
AUG. 22	1300	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Characiaceae		
		Schroederia	65	1
		Tetrasporales		
		Palmellaceae		
		Sphaerocystis	--	<1
		Zygnematales		
		Desmidiaceae		
		Staurastrum	21	<1
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscimodiscaceae		
		Melosira	87	2
		Stephanooiscus	--	<1
		Pennales		
		Cymbellaceae		
		Cymbella	21	<1
		Fragilariaceae		
		Asterionella	370	8
		Fragilaria	87	2
		Naviculaceae		
		Diploneis	21	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	3,200	72
		Oscillatoriales		
		Nostocaceae		
		Anabaena	87	2
		Oscillatoriaceae		
		Lyngbya	470	11

ANALYSES OF SAMPLES COLLECTED AT LAKES--CONTINUED

463025087365002 TEAL LAKE AT NEGAUNEE, MICH., SITE 2--CONTINUED

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PHYTOPLANKTON

DATE	TIME	ORGANISM	COUNT (cells/ml)	PERCENT OF TOTAL
SEP. 25	1425	Chlorophyta		
		Chlorophyceae		
		Chlorococcales		
		Characiaceae		
		Schroederia	42	<2
		Chrysophyta		
		Bacillariophyceae		
		Centrales		
		Coscinodiscaceae		
		Melosira	--	<1
		Cyanophyta		
		Myxophyceae		
		Chroococcales		
		Chroococcaceae		
		Anacystis	3,900	43
		Anacystis incerta	--	<1
		Oscillatoriales		
		Nostocaceae		
		Anabaena	5,200	56
		Aphanizomenon	--	<1

QUALITATIVE AND ASSOCIATED QUANTITATIVE ANALYSES OF BIOLOGICAL DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975
PERIPHYTON a/

DATE	LENGTH OF EXPOSURE (days)	BIOMASS (g/m^2) DRY WEIGHT	BIOMASS (g/m^2) ASH WEIGHT	CHLOROPHYLL a (mg/m^2)	CHLOROPHYLL b (mg/m^2)	BIOMASS PIGMENT RATIO
SEP. 25	34	3.4	1.8	3.2	0.5	500

REMARKS.-- a/ Sampling Method Polyethylene Strip.

ANALYSES OF SAMPLES COLLECTED AT LAKES

04101598 CEDAR LAKE NEAR MARCELLUS

Lat 42°00'05", long 85°50'19", in SW¼ SW¼ sec. 28, T.4S., R.13W., Van Buren County, at outlet, 4 mi (6 km) north of Marcellus. Surface area, 269 acres (109 hectares).

Sampling points referenced by distance and azimuth from outlet.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AZIMUTH FROM OUTLET (DEG)	DISTANCE FROM SOUTHERNMOST POINT (FT)	DEPTH TO TOP OF SAMPLE INTERVAL (FT)	DEPTH TO BOTTOM OF SAMPLE INTERVAL (FT)	TIME	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
AUG., 1975											
21...	46.0	3500	2.0	2.0	1200	1.2	20	0	28	13	1.7
21...	46.0	3500	53	53	1210	2.1	10	170	37	13	1.8
21...	52.0	4400	.00	E5.0	1300	--	--	--	--	--	--
21...	32.0	1500	.00	E4.0	1330	--	--	--	--	--	--

DATE	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)
AUG., 1975											
21...	1.0	144	20	118	10	2.3	.2	.00	.00	.00	.00
21...	1.1	188	0	154	10	2.5	.2	.03	.02	.05	.05
21...	--	144	20	118	--	--	.2	.00	.00	.00	--
21...	--	144	20	118	--	--	--	.00	.00	.00	--

DATE	TOTAL AMMONIA (NH4) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)
AUG., 1975											
21...	.04	.50	.54	.54	2.4	.02	.00	.00	.00	.01	.01
21...	.41	.36	.77	.82	3.6	.01	.00	.00	.00	.01	.00
21...	.00	.73	.73	.73	3.2	.00	.00	--	--	.01	.00
21...	.01	.50	.51	.51	2.3	.01	.00	--	--	.01	.00

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)
AUG., 1975											
21...	133	148	.18	120	0	3	.1	228	8.4	24.0	3
21...	170	161	.23	150	0	3	.1	300	7.6	7.0	8
21...	--	--	--	--	--	--	--	230	8.4	24.0	0
21...	--	--	--	--	--	--	--	230	8.4	24.0	--

DATE	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CARBON DIOXIDE (CO2) (MG/L)	TOTAL PHYTOPLANKTON (CELLS PER ML)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	AIR TEMPERATURE (DEG C)
AUG., 1975										
21...	1	--	--	1.2	--	--	--	--	.0	32.0
21...	1	--	--	7.6	--	--	--	--	.0	--
21...	1	9.8	118	1.2	28000	84	<1	<1	.0	32.0
21...	--	10.2	123	1.4	--	89	865	89	.0	32.0

DATE	TIME	DEPTH (FT)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
AUG., 1975					
21...	1215	5.0	24.0	9.3	112
21...	1216	10	24.0	8.4	101
21...	1217	15	24.0	6.6	80
21...	1218	20	21.0	6.0	72
21...	1219	25	15.0	6.0	72
21...	1220	30	11.0	5.6	67
21...	1221	35	9.5	4.6	55
21...	1222	40	8.0	3.6	43
21...	1223	45	7.5	2.2	26
21...	1224	50	7.0	1.8	22

ANALYSES OF SAMPLES COLLECTED AT LAKES

04102414 VAN AUKEN LAKE NEAR McDONALD, MICH.

Lat 42°15'00", long 86°11'26", in SE¼ sec. 32, T.2S., R.16W., Van Buren County, at outlet, 2.0 mi (3.2 km) southwest of McDonald. Drainage area, 3.3 mi^2 (8.6 km^2), approximately; surface area, 244 acres (99 hectares).

Sampling points referenced by distance and azimuth from outlet.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	AZIMUTH FROM OUTLET (DEG)	DISTANCE FROM SOUTHERNMOST POINT (FT)	DEPTH TO TOP OF SAMPLE INTERVAL (FT)	DEPTH TO BOTTOM OF SAMPLE INTERVAL (FT)	TIME	DISSOLVED SILICA (SIO2) (MG/L)	DISSOLVED IRON (FE) (UG/L)	DISSOLVED MANGANESE (MN) (UG/L)	DISSOLVED CALCIUM (CA) (MG/L)	DISSOLVED MAGNESIUM (MG) (MG/L)	DISSOLVED SODIUM (NA) (MG/L)
AUG., 1975											
19...	27.0	3100	.00	E6.5	1300	--	--	--	--	--	--
19...	33.0	4000	.00	E4.0	1345	--	--	--	--	--	--
19...	45.0	2150	2.0	2.0	1430	2.4	10	20	36	14	13
19...	45.0	2150	43	43	1440	5.6	130	1300	41	15	13
19...	49.0	150	.00	E2.0	1630	--	--	--	--	--	--
20...	45.0	2150	2.0	2.0	1245	--	--	--	--	--	--
20...	45.0	2150	43	43	1250	--	--	--	--	--	--

DATE	DISSOLVED POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)	DISSOLVED SULFATE (SO4) (MG/L)	DISSOLVED CHLORIDE (CL) (MG/L)	DISSOLVED FLUORIDE (F) (MG/L)	TOTAL NITRATE (NO3) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L)
AUG., 1975											
19...	--	150	4	130	--	--	--	--	.01	.01	--
19...	--	72	9	75	--	--	--	--	.00	.00	--
19...	2.1	134	9	125	23	26	.2	--	--	--	.12
19...	2.3	192	0	157	17	27	.2	--	--	--	.00
19...	--	--	--	--	--	--	--	--	.01	.01	--
20...	--	--	--	--	--	--	--	.02	.00	.02	--
20...	--	--	--	--	--	--	--	.00	.00	.00	--

DATE	TOTAL AMMONIA (NH4) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHORUS (P) (MG/L)	DISSOLVED ORTHO PHOSPHATE (P04) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)
AUG., 1975											
19...	--	.87	.88	.89	3.9	.05	.01	--	--	.02	.02
19...	--	.89	.89	.89	3.9	.02	.01	--	--	.01	.00
19...	--	--	--	--	--	--	--	.01	.03	--	--
19...	--	--	--	--	--	--	--	.31	.95	--	--
19...	--	.82	.82	.83	3.7	.03	.02	--	--	.05	.00
20...	.06	1.3	1.4	1.4	6.3	.03	.00	--	--	.03	.00
20...	.77	.93	1.7	1.7	7.5	.16	.13	--	--	.17	.00

DATE	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L)	DISSOLVED SOLIDS (TONS PER AC-FT)	HARDNESS (CA,MG) (MG/L)	NONCARBONATE HARDNESS (MG/L)	PERCENT SODIUM	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	COLOR (PLATINUM-COBALT UNITS)
AUG., 1975											
19...	--	--	--	--	--	--	--	351	8.5	25.5	--
19...	--	--	--	--	--	--	--	325	8.9	26.0	--
19...	246	192	.33	150	23	16	.5	332	8.7	26.2	11
19...	213	218	.29	160	23	14	.4	345	7.4	8.9	3
19...	--	--	--	--	--	--	--	328	8.9	26.0	--
20...	--	--	--	--	--	--	--	--	8.7	--	--
20...	--	--	--	--	--	--	--	--	7.4	--	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

ANALYSES OF SAMPLES COLLECTED AT LAKES

04102414 VAN AUKEN LAKE NEAR MC DONALD, MICH.--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TURBIDITY (JTU)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CARBON DIOXIDE (CO2) (MG/L)	TOTAL PHYTOPLANKTON (CELLS PER ML)	IMMEDIATE COLIFORM (COL. PER 100 ML)	FECAL COLIFORM (COL. PER 100 ML)	STREPTOCOCCI (COLONIES PER 100 ML)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	AIR TEMPERATURE (DEG C)
AUG., 1975										
19...	--	1.5	18	.8	--	32	85	126	.0	28.0
19...	--	6.9	85	.2	16000	815	83	81	.0	28.0
19...	1	9.7	102	.6	--	--	--	--	.0	28.0
19...	2	.1	2	12	--	--	--	--	.0	--
19...	--	--	--	--	--	--	--	--	.0	28.0
20...	--	--	--	--	--	81	<1	<1	--	24.5
20...	--	--	--	--	--	--	--	--	--	--

DATE	TIME	DEPTH (FT)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION
AUG., 1975					
19...	1450	1.0	26.5	13.0	106
19...	1451	2.0	26.2	9.7	102
19...	1452	3.0	26.0	2.6	32
19...	1453	4.0	25.8	1.5	18
19...	1454	5.0	25.5	1.3	16
19...	1455	10	25.2	1.3	16
19...	1456	15	24.1	1.3	16
19...	1457	20	17.2	.4	5
19...	1458	25	12.5	.2	3
19...	1459	30	10.2	.1	2
19...	1500	35	9.2	.1	1
19...	1501	40	9.0	.1	1
19...	1502	43	8.9	.1	1

04102415 VAN AUKEN LAKE OUTLET AT 46TH ST NEAR TOQUIN, MICH.

DATE	TIME	STREAM WIDTH (FT)	MEAN DEPTH (FT)	STREAM VELOCITY (FPS)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)
AUG., 1975									
20...	1600	E6.0	E.40	.0	.13	.00	.13	.06	1.2

DATE	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	BICARBONATE (HCO3) (MG/L)	ALKALINITY AS CACO3 (MG/L)
AUG., 1975									
20...	1.3	1.4	6.3	.03	.02	.03	.00	166	136

DATE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	DISSOLVED OXYGEN (MG/L)	PERCENT SATURATION	CARBON DIOXIDE (CO2) (MG/L)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L)	AIR TEMPERATURE (DEG C)
AUG., 1975								
20...	339	7.7	23.5	7.8	93	5.3	.0	28.5

ANALYSES OF SAMPLES COLLECTED AT LAKES

04105785 SHERMAN LAKE NEAR AUGUSTA, MICH.

Lat 42°20'55", long 85°23'40", in SW¼ sec. 29, T.1S., R.9W., Kalamazoo County, at stage gage, 2.0 mi (3.2 km) northwest of Augusta. Landlocked lake with no inlet or outlet. Surface area, 147 acres (59 hectares).

Sampling point located 1,000 ft (305 m) north of gage at end of public fishing dock.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DEPTH (FT)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)
MAY 13...	1620	1.0	.00	.00	.00	.01	.39	.40	.40

DATE	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	TOTAL PHYTOPLANKTON (CELLS PER ML)
MAY 13...	1.8	.01	.00	.01	.00	200	18.5	650

ANALYSES OF SAMPLES COLLECTED AT LAKES

04105980 CAMPBELL LAKE NEAR KALAMAZOO, MICH.

Lat 42°19'14", long 85°28'16", in SW¼ sec. 3, T.2S., R.10W., Kalamazoo County, at stage gage, 1,000 ft(305 m) east of outlet, and 6 mi (10 km) northeast of Kalamazoo. Surface area, 142 acres (57 hectares).
Sampling point located at gage.

WATER QUALITY DATA, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DEPTH (FT)	TOTAL NITRATE (N) (MG/L)	TOTAL NITRITE (N) (MG/L)	TOTAL NITRITE PLUS NITRATE (N) (MG/L)	AMMONIA NITROGEN (N) (MG/L)	TOTAL ORGANIC NITROGEN (N) (MG/L)	TOTAL KJELDAHL NITROGEN (N) (MG/L)	TOTAL NITROGEN (N) (MG/L)
MAY 13...	1530	1.0	.42	.01	.43	.04	.33	.37	.80

DATE	TOTAL NITROGEN (NO3) (MG/L)	TOTAL PHOSPHORUS (P) (MG/L)	TOTAL ORTHO PHOSPHORUS (P) (MG/L)	TOTAL HYDROLYZABLE PHOSPHORUS (P) (MG/L)	TOTAL ORGANIC PHOSPHORUS (P) (MG/L)	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	TOTAL PHYTOPLANKTON (CELLS PER ML)
MAY 13...	3.5	.01	.00	.01	.00	390	19.5	1200

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE

Measurements of water temperatures are made at stream gaging stations in Michigan during periodic inspections of the gaging stations. The results of those water temperature measurements are tabulated below, along with discharges, air temperatures, and, at selected sites, the specific conductance.

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE SUPERIOR

04031000 BLACK RIVER NEAR BESSEMER, MICH.
(LAT 46°30'41" LONG 090°04'28")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 23, 1974	1330	79	6.5	16.0	--
DEC. 04	1530	164	0.0	-1.5	--
JAN. 15, 1975	1400	96	0.0	-11.0	--
FEB. 25	1500	74	0.0	-4.0	--
APR. 09	1300	212	1.5	6.0	--
MAY 21	1605	386	21.5	22.5	--
JULY 02	1010	96	22.5	22.0	--

04031500 PRESQUE ISLE RIVER AT MARENISCO, MICH.
(LAT 46°22'20' LONG 089°41'32")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 23, 1974	1100	78	6.0	8.0	--
DEC. 04	1000	171	0.0	-7.0	--
JAN. 15, 1975	1100	100	0.0	5.0	--
FEB. 26	1100	104	0.0	-5.0	--
APR. 09	1000	149	0.0	1.0	--
MAY 22	1115	458	22.0	23.5	--
JULY 01	1400	93	24.5	27.0	--
AUG. 13	1300	34	22.0	19.5	--

04033000 MIDDLE BRANCH ONTONAGON RIVER NEAR PAULDING, MICH.
(LAT 46°21'25" LONG 089°04'38")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 21, 1974	1510	122	5.0	15.0	--
DEC. 03	1320	155	0.0	-3.5	--
JAN. 14, 1975	1400	122	0.0	-18.0	--
APR. 08	1305	129	2.5	6.0	--
JULY 03	0800	138	21.5	20.0	--
SEP. 16	1130	125	13.0	17.0	--

04035000 EAST BRANCH ONTONAGON RIVER NEAR MASS, MICH.
(LAT 46°41'24" LONG 089°04'24")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 23, 1974	1100	148	8.0	6.5	--
JAN. 22, 1975	1030	139	0.0	-31.0	--
FEB. 19	1200	147	0.0	-1.0	--
APR. 02	1015	209	0.0	-3.0	--
MAY 21	1000	1,900	15.0	20.0	--
JULY 07	1405	129	23.5	27.5	--

04035500 MIDDLE BRANCH ONTONAGON RIVER NEAR ROCKLAND, MICH.
(LAT 46°41'57" LONG 089°09'36")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 22, 1974	1115	241	5.5	11.5	--
DEC. 10	1300	268	0.0	0.5	--
JAN. 21, 1975	1300	227	0.0	-7.0	--
FEB. 18	1330	277	0.0	-0.5	--
APR. 02	0930	332	0.0	-3.0	--
MAY 20	1520	3,040	6.5	27.0	--
JULY 07	1730	220	27.0	27.5	--
AUG. 26	1450	261	19.5	21.5	--

04036000 WEST BRANCH ONTONAGON RIVER NEAR BERGLAND, MICH.
(LAT 46°35'15" LONG 089°32'30")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 22, 1974	1100	124	6.0	10.0	--
JAN. 15, 1975	0915	194	1.5	-15.0	--
MAY 21	1100	712	17.0	27.0	--
AUG. 13	1520	4.6	24.0	21.5	--

04037500 CISCO BRANCH ONTONAGON RIVER AT CISCO LAKE, MICH.
(LAT 46°15'12" LONG 089°27'05")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 24, 1974	1000	124	6.0	8.0	--
DEC. 05	1100	27	1.5	-7.0	--
FEB. 26, 1975	1500	66	1.0	-5.0	--
APR. 09	1220	11	3.0	1.0	--
MAY 22	1330	125	21.5	23.5	--
JULY 01	1200	45	21.0	26.0	--
SEP. 18	1100	44	14.0	15.5	--

STREAMS TRIBUTARY TO LAKE SUPERIOR--Continued

04040500 STURGEON RIVER NEAR SIDNAW, MICH.
(LAT 46° 35'03" LONG 088°34'33")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
NOV. 26, 1974	1220	213	0.5	-15.0	--
DEC. 12	1210	112	0.0	-1.5	--
DEC. 24	1050	89	0.0	-9.4	--
JAN. 23, 1975	1030	74	0.5	-7.0	--
FEB. 20	1400	66	0.0	0.0	--
MAR. 26	1100	101	0.0	-5.0	--
APR. 25	1130	1,630	5.0	1.0	--
MAY 21	1435	941	13.0	24.0	--
JUNE 25	1300	282	23.0	28.0	--
AUG. 26	1230	50	21.5	23.5	--
SEP. 25	1120	272	8.5	11.4	--

04044400 CARP RIVER NEAR NEGAUNEE, MICH.
(LAT 46°31'29" LONG 087°34'25")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
NOV. 05, 1974	1445	50	5.5	2.5	--
JUNE 18, 1975	1015	62	15.0	16.0	--
SEP. 09	1700	59	12.0	19.0	--

STREAMS TRIBUTARY TO LAKE MICHIGAN

04056500 MANISTIQUE RIVER NEAR MANISTIQUE, MICH.
(LAT 46°01'50" LONG 086°09'40")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
DEC. 17, 1974	1015	1350	0.0	-5.0	--
JAN. 15, 1975	1215	1300	0.0	- 11.0	--
FEB. 05	1040	1020	0.0	-3.0	--
MAR. 05	1050	1020	0.0	-1.0	--
APR. 15	1125	1290	5.0	14.0	--
MAY 13	1150	3290	4.5	14.0	--
JUNE 12	1130	1050	16.0	12.0	--
JULY 15	1235	838	19.5	24.5	--
AUG. 26	1040	906	19.0	20.0	--

04057510 STURGEON RIVER NEAR NAHMA JUNCTION, MICH.
(LAT 45°56'35" LONG 086°42'20")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 30, 1974	1330	140	8.5	13.5	--
DEC. 17	1420	158	0.0	-3.5	--
JAN. 16, 1975	1410	--	0.0	-9.0	--
FEB. 11	0900	85	0.0	-10.0	--
MAR. 05	1350	112	0.0	-1.0	--
APR. 15	1410	198	3.0	12.0	--
JUNE 06	1030	168	13.5	16.5	--
JUNE 06	1430	163	13.5	16.5	--
JULY 16	1010	108	18.5	22.5	--
AUG. 26	1400	101	17.5	20.0	--

04058100 MIDDLE BRANCH ESCANABA RIVER NEAR PRINCETON, MICH.
(LAT 46°19'02" LONG 086°30'07")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 16, 1974	1530	128	8.0	11.0	75
NOV. 05	1100	172	5.5	2.5	--
NOV. 19	1345	255	1.5	2.5	56
JAN. 02, 1975	1000	89	0.5	-6.0	105
JAN. 29	1500	89	0.5	-5.0	100
FEB. 26	1100	198	0.5	-6.0	105
MAR. 13	1350	104	0.5	2.0	--
APR. 10	1120	104	0.5	1.5	85
APR. 22	1010	525	2.0	9.0	--
APR. 28	1250	1310	3.0	3.0	--
MAY 06	1015	1310	6.5	11.5	50
MAY 15	1110	398	12.0	4.0	--
JUNE 12	1330	192	15.5	15.5	75
JULY 24	1400	205	21.5	21.0	70
SEP. 02	1100	178	15.0	12.5	90
SEP. 24	1030	105	10.0	11.0	87

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04058300 WARNER CREEK NEAR PALMER, MICH.
(LAT 46°24'09" LONG 087°32'39")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
NOV. 05, 1974	1255	13	5.0	5.0	--
FEB. 18, 1975	1110	4.8	0.0	0.5	--
APR. 08	1410	11	0.0	2.0	--
APR. 21	1105	86	1.0	3.0	--
APR. 24	1600	189	2.5	9.0	--
APR. 25	1430	132	5.5	10.0	--
MAY 15	1305	29	10.0	3.5	--
JUNE 18	1245	29	15.5	22.0	--
JULY 30	1030	3.6	20.5	30.0	--
SEP. 09	1230	9.4	10.0	18.5	--

04058400 GOOSE LAKE OUTLET NEAR SANDS STATION, MICH.
(LAT 46°23'36" LONG 087°29'40")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
NOV. 05, 1974	1245	25	4.5	5.0	--
APR. 25, 1975	1225	318	2.0	12.0	--
JUNE 18	1340	51	15.5	17.5	--

04058500 EAST BRANCH ESCANABA RIVER AT GWINN, MICH.
(LAT 46°17'10" LONG 087°26'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 16, 1974	1410	56	7.0	11.0	145
NOV. 19	1030	88	1.5	2.5	110
DEC. 31	1430	42	0.5	-1.5	170
JAN. 29, 1975	1615	40	0.0	-5.0	160
FEB. 26	1345	43	0.0	-6.0	160
MAR. 13	1520	35	0.0	3.0	--
APR. 10	0850	106	0.5	1.0	150
APR. 17	1340	170	3.0	15.0	--
MAY 07	1430	284	10.0	18.0	100
JUNE 11	1000	70	15.0	14.0	150
JULY 24	1030	51	17.5	22.0	150
JULY 30	1230	35	20.0	27.5	--
SEP. 02	0900	55	14.0	12.5	13.0
SEP. 24	1200	48	8.5	12.0	143

04059400 TENMILE CREEK AT PERRONVILLE, MICH.
(LAT 45°48'38" LONG 087°22'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 28, 1974	1015	22	6.5	14.0	--
DEC. 16	1430	22	0.0	5.0	--
JAN. 16, 1975	1100	20	0.0	-10.0	--
FEB. 10	1200	6.7	0.0	-12.0	--
MAR. 04	1230	9.8	0.0	5.5	--
APR. 14	1310	24	0.0	9.0	--
APR. 21	1420	245	2.5	15.0	--
APR. 24	1145	660	1.5	8.0	--
APR. 25	1615	663	5.0	13.0	--
JUNE 03	1000	33	14.5	16.0	--
JULY 16	1100	11	24.0	25.5	--
JULY 25	1330	3.2	19.5	21.5	--
AUG. 19	1130	.42	16.5	16.0	--
SEP. 25	1410	19	9.5	15.0	--

04060500 IRON RIVER AT CASPION, MICH.
(LAT 46°03'31" LONG 088°37'38")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 02, 1974	0910	67	4.5	-1.5	--
OCT. 29	1640	69	11.0	11.0	--
DEC. 02	1510	77	1.0	0.5	--
JAN. 02, 1975	1530	73	0.5	-2.0	--
JAN. 29	1815	69	0.0	9.0	--
FEB. 27	0845	58	0.5	-12.0	--
APR. 21	1030	407	1.0	2.0	--
MAY 23	0930	141	20.0	24.5	--
JUNE 27	1330	79	19.0	26.0	--
JULY 30	1510	56	19.5	36.0	--
AUG. 28	1130	96	--	12.0	--
SEP. 30	1040	64	9.5	9.0	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04061000 BRULE RIVER NEAR FLORENCE, WISCONSIN
(LAT 45°57'31" LONG 088°15'57")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 03, 1974	1010	264	3.0	--	--
JAN. 16, 1975	1300	270	0.0	--	--
JAN. 30	1130	275	0.0	--	--
FEB. 26	1500	277	0.0	--	--
MAR. 31	1415	215	0.0	-4.0	--
APR. 29	1140	1190	2.0	3.0	--
MAY 29	1300	401	16.0	16.0	--
AUG. 29	1000	488	15.0	14.5	--

04061500 PAINT RIVER AT CRYSTAL FALLS, MICH.
(LAT 46°06'21" LONG 088°20'05")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
DEC. 03, 1974	0910	417	0.5	--	--
FEB. 26, 1975	1345	322	0.0	-5.5	--
JULY 30	1015	262	23.0	27.0	--

04062000 PAINT RIVER AT ALPHA, MICH.
(LAT 46°00'40" LONG 088°15'30")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 02, 1974	1450	99	8.5	--	--
OCT. 30	0930	89	8.5	--	--
JAN. 02, 1975	1230	92	0.0	--	--
JAN. 29	1500	90	0.0	--	--
MAR. 28	1345	93	0.5	-5.0	--
APR. 29	1425	1870	3.0	--	--
JUNE 27	1100	83	24.0	26.0	--
JULY 31	1020	91	25.0	29.5	--

04062230 MICHIGAMME RIVER NEAR MICHIGAMME, MICH.
(LAT 46°28'00" LONG 088°04'28")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 18, 1974	0900	199	6.5	0.0	45
NOV. 06	1330	346	7.0	11.0	--
NOV. 20	1015	444	4.5	1.0	50
DEC. 30	1245	160	1.0	2.0	65
JAN. 28, 1975	1325	146	0.5	-3.0	100
MAR. 05	1400	114	0.5	2.0	45
APR. 08	1630	131	2.0	10.0	45
MAY 01	1310	1,910	3.0	13.0	--
MAY 09	1115	2,060	5.0	16.5	40
JUNE 13	1000	282	14.0	18.0	55
JUNE 16	1300	336	15.0	16.5	--
JULY 28	1415	70	22.5	27.0	35
SEP. 03	0945	44	17.5	12.5	50
SEP. 03	1430	42	18.0	24.0	--
SEP. 22	1400	95	13.0	11.0	53

04062300 MICHIGAMME RIVER AT REPUBLIC, MICH.
(LAT 46°23'03" LONG 087°58'48")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
NOV. 06, 1974	1000	326	5.0	0.0	--
JAN. 28, 1975	1145	146	0.0	-10.0	--
MAR. 12	1130	101	0.0	0.5	--
APR. 07	1300	134	0.5	1.0	--
MAY 09	1030	2,480	6.0	13.5	--
JUNE 16	1120	403	15.5	16.5	--
JULY 23	1430	91	24.0	18.0	--

04062400 MICHIGAMME RIVER NEAR WITCH LAKE, MICH.
(LAT 46°14'48" LONG 088°00'45")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 17, 1974	1600	230	6.0	0.0	85
NOV. 06	1600	406	6.0	12.0	--
NOV. 20	1400	580	2.5	1.0	65
DEC. 30	1540	207	1.0	1.0	100
JAN. 28, 1975	1015	184	0.0	-15.0	100
MAR. 05	1100	152	0.0	-2.0	95
APR. 08	1130	228	0.5	5.5	95
MAY 09	1300	2,730	6.0	16.0	115
JUNE 13	1130	520	20.0	15.5	78
JUNE 16	0930	437	14.5	18.0	--
JULY 23	1200	143	22.0	18.0	--
JULY 28	1100	101	24.0	20.0	115
SEP. 03	1130	82	15.5	15.0	140
SEP. 22	1130	172	11.0	10.5	118

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04062500 MICHIGAMME RIVER NEAR CRYSTAL FALLS, MICH.
(LAT 46° 06'50" LONG 088°12'57")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 29, 1974	1100	130	7.5	--	--
JAN. 29, 1975	1140	908	1.0	-6.5	--
JUNE 26	1330	1,120	22.5	25.0	--
SEP. 29	1000	146	10.0	8.0	--

04063000 MENOMINEE RIVER NEAR FLORENCE, WISC.
(LAT 45°57'04" LONG 088°11'13")

OCT. 03, 1974	1320	1,390	8.0	--	--
JAN. 03, 1975	1030	2,170	1.0	--	--
MAR. 28	1035	1,450	1.0	-5.0	--
JULY 31	0815	251	20.0	19.0	--

04065300 WEST BRANCH STURGEON RIVER NEAR RANDVILLE, MICH.
(LAT 46°00'45" LONG 087°58'41")

NOV. 12, 1974	1100	138	3.5	3.0	--
DEC. 13	1245	16	0.0	0.0	--
DEC. 19	1330	15	0.0	-2.5	--
JAN. 24, 1975	1230	11	0.0	-3.0	--
FEB. 27	1100	13	0.0	-3.0	--
MAR. 20	1100	21	0.0	3.0	--
APR. 21	1745	234	4.0	11.0	--
MAY 19	1000	40	15.0	18.5	--
JUNE 12	1345	36	14.5	16.0	--
JULY 17	1350	15	23.0	31.0	--
JULY 31	0930	8.1	22.5	25.0	--
AUG. 22	1325	7.4	15.5	18.0	--

04065393 E. BR. STURGEON RV BELOW SKUNK CREEK NR FELCH, MICH.
(LAT 46°01'34" LONG 087°49'56")

OCT. 24, 1974	1345	19	5.0	16.5	--
DEC. 19	1500	22	0.0	--	--
JAN. 24, 1975	1425	18	0.0	-5.0	--
FEB. 27	1400	16	0.0	-3.0	--
MAR. 20	1300	28	0.0	5.0	--
APR. 21	1330	334	0.5	4.5	--
APR. 24	1435	606	3.5	8.5	--
MAY 19	1210	79	15.5	24.0	--
JULY 17	1400	18	25.0	31.0	--
AUG. 01	1100	9.6	20.0	31.0	--
SEP. 05	1100	36	13.5	14.0	--

04096400 ST. JOSEPH RIVER NEAR BURLINGTON, MICH.
(LAT 42°06'10" LONG 085°02'25")

NOV. 04, 1974	1225	72	10.0	8.0	--
DEC. 18	1308	116	1.0	-0.5	--
JAN. 15, 1975	1610	198	0.5	-1.0	--
FEB. 19	1410	164	1.0	2.5	--
MAR. 27	1150	277	3.0	-2.0	--
MAY 02	1055	310	13.5	14.0	--
JULY 28	1050	87	21.5	25.0	--
AUG. 29	1455	183	20.5	24.5	--

04096515 HOG CREEK NEAR ALLEN, MICH.
(LAT 41°56'55" LONG 084°49'40")

NOV. 01, 1974	1130	7.2	15.5	17.0	--
DEC. 18	1038	19	0.0	-5.0	--
JAN. 14, 1975	1040	67	0.0	--	--
FEB. 19	0930	34	0.0	-1.0	--
MAR. 26	1045	79	1.5	-3.5	--
MAY 01	1505	108	16.5	15.5	--
JUNE 04	1645	121	18.0	21.0	--
AUG. 08	1020	13	17.5	18.0	--
SEP. 24	0955	19	11.5	13.5	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04096600 COLDWATER RIVER NEAR HODUNK, MICH.
(LAT 42°01'45" LONG 085°06'25")

NOV. 01, 1974	1410	103	15.5	19.0	--
DEC. 18	1139	131	0.5	-3.5	--
JAN. 14, 1975	1205	214	0.0	--	--
FEB. 19	1110	196	1.0	2.0	--
MAR. 26	1300	406	4.0	-0.5	--
MAY 02	1400	605	14.0	20.0	--
JUNE 04	1415	530	19.0	20.0	--
AUG. 29	1355	389	22.5	22.5	--

04096900 NOTTAWA CREEK NEAR ATHENS, MICH.
(LAT 42°03'20" LONG 085°18'30")

NOV. 04, 1974	1410	86	10.0	6.0	--
DEC. 18	1419	113	1.0	-3.0	--
JAN. 14, 1975	1330	202	0.0	10.0	--
FEB. 19	1230	100	1.0	3.0	--
MAR. 27	1330	230	3.0	1.0	--
MAY 02	1200	211	14.0	14.0	--
JUNE 04	1150	216	17.0	21.0	--
JULY 28	1225	59	25.0	24.0	--
SEP. 09	1130	186	19.0	18.0	--

04097170 PORTAGE RIVER NEAR VICKSBURG, MICH.
(LAT 42°06'53" LONG 085°29'08")

OCT. 22, 1974	1100	26	6.5	9.0	--
NOV. 20	1055	42	7.0	5.0	--
DEC. 19	1540	47	1.0	-1.5	--
JAN. 30, 1975	1330	77	1.5	2.5	--
MAR. 06	1520	79	3.5	5.5	--
APR. 07	1240	86	5.0	4.5	--
MAY 15	1620	88	18.0	16.0	--
JULY 25	1520	35	25.0	25.0	--
SEP. 05	1255	147	19.0	18.0	--

04097500 ST. JOSEPH RIVER NEAR THREE RIVERS, MICH.
(LAT 41°56'25" LONG 085°38'00")

OCT. 22, 1974	1420	433	9.0	14.0	--
NOV. 18	1140	767	6.0	12.0	--
DEC. 19	1315	863	1.5	-1.0	--
JAN. 30, 1975	1130	1320	1.5	2.0	--
MAR. 06	1300	1820	3.5	6.0	--
APR. 07	1615	1820	10.0	9.0	--
MAY 15	1400	2170	19.0	15.0	--
JULY 25	1250	599	25.0	21.0	--

04097540 PRAIRIE RIVER NEAR NOTTAWA, MICH.
(LAT 41°53'18" LONG 085°24'34")

OCT. 22, 1974	1530	36	10.5	15.0	--
NOV. 18	1330	59	7.0	12.0	--
DEC. 18	1710	79	2.0	-4.0	--
JAN. 30, 1975	0930	111	0.5	--	--
MAR. 06	1040	119	2.0	2.5	--
APR. 07	1805	145	9.0	5.5	--
MAY 15	1205	158	17.0	17.0	--
JULY 25	1110	47	23.0	21.0	--
SEP. 09	1305	134	16.0	16.0	--

04098500 FAWN RIVER NEAR WHITE PIGEON, MICH.
(LAT 41°46'56" LONG 085°35'00")

OCT. 22, 1974	1700	113	9.0	13.0	--
NOV. 18	1440	145	6.0	11.0	--
DEC. 19	1120	142	1.0	-1.0	--
JAN. 29, 1975	1615	196	2.0	1.5	--
MAR. 05	1830	247	3.0	4.0	--
APR. 08	1110	238	7.0	6.5	--
MAY 14	2010	325	18.0	16.0	--
JULY 24	1920	123	26.0	23.0	--
AUG. 29	1030	265	22.0	21.0	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04099000 ST. JOSEPH RIVER AT MOTTVILLE, MICH.
(LAT 41°48'03" LONG 085°45'22")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 10, 1974	1655	512	15.0	--	--
DEC. 19	0940	906	1.0	0.5	--
JAN. 29, 1975	1440	1820	1.5	0.0	--
MAR. 05	1650	2600	2.5	4.0	--
APR. 16	1450	2580	8.0	12.0	--
MAY 14	1815	3160	18.0	15.0	--
JULY 24	1750	769	26.0	27.0	--
AUG. 28	1745	2730	24.0	27.0	--

04101500 ST. JOSEPH RIVER AT NILES, MICH.
(LAT 41°49'45" LONG 086°15'35")

OCT. 23, 1974	1030	1380	12.5	10.0	--
NOV. 19	1030	1420	7.0	10.5	--
DEC. 18	1110	2770	2.5	-1.0	--
JAN. 29, 1975	1130	3730	2.5	1.5	--
MAR. 05	1335	4310	2.5	6.0	--
MAY 14	1500	5020	18.0	20.0	--
JULY 24	1500	1850	26.0	24.0	--

04101800 DOWAGIAC RIVER AT SUMNERVILLE, MICH.
(LAT 41°54'57" LONG 086°12'47")

OCT. 23, 1974	1310	184	10.5	13.0	--
NOV. 19	1220	319	8.0	10.5	--
DEC. 18	1320	327	1.0	-4.0	--
JAN. 28, 1975	1630	353	3.5	2.0	--
MAR. 04	1730	350	3.0	-1.0	--
APR. 16	1030	333	8.0	8.0	--
MAY 13	1900	381	15.0	18.0	--
JULY 24	1140	208	21.0	24.0	--
AUG. 28	1435	189	19.5	23.5	--

04102500 PAW PAW RIVER AT RIVERSIDE, MICH.
(LAT 42°11'10" LONG 086°22'06")

OCT. 23, 1974	1600	307	9.0	11.0	--
NOV. 19	1520	420	7.0	10.0	--
DEC. 17	1630	463	1.0	-2.0	--
JAN. 28, 1975	1340	586	2.0	1.0	--
MAR. 04	1515	746	2.0	2.0	--
APR. 15	1640	681	8.5	--	--
MAY 13	1630	886	19.0	17.0	--
JUNE 17	1915	611	20.0	23.0	--
JULY 23	1615	443	23.0	26.0	--
AUG. 27	1815	451	21.5	22.5	--

04102700 BLACK RIVER NEAR BANGOR, MICH.
(LAT 42°21'15" LONG 086°11'15")

OCT. 23, 1974	1700	32	9.5	13.5	--
NOV. 19	1650	65	7.0	10.0	--
DEC. 17	1250	98	3.0	-1.0	--
JAN. 28, 1975	1050	148	1.5	6.0	--
MAR. 04	1200	119	2.0	1.0	--
APR. 15	1400	131	7.0	9.0	--
MAY 13	1330	127	16.0	17.0	--
JUNE 17	1650	161	19.0	19.0	--
JULY 23	1600	83	21.0	28.5	--
AUG. 27	1520	63	19.5	23.0	--

04102850 SOUTH BRANCH KALAMAZOO RIVER NEAR ALBION, MICH.
LAT 42°12'11" LONG 084°47'39")

OCT. 05, 1974	1242	63	13.5	21.0	--
NOV. 02	1340	71	15.5	20.5	--
DEC. 12	1535	91	3.5	2.0	--
JAN. 11, 1975	1124	243	4.5	0.0	--
FEB. 15	1220	94	1.0	0.0	--
MAR. 29	1202	183	4.0	0.5	--
MAY 03	1111	177	14.0	21.0	--
JUNE 23	1310	127	24.5	25.0	--
AUG. 15	1130	71	20.5	18.0	--
SEP. 19	1150	117	15.5	21.0	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04103500 KALAMAZOO RIVER AT MARSHALL, MICH.
(LAT 42°15'55" LONG 084°57'55")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
NOV. 04, 1974	1030	541	12.0	6.0	--
DEC. 17	1414	314	2.0	-0.5	--
JAN. 15, 1975	1430	207	1.0	-2.0	--
FEB. 20	1405	469	2.0	1.0	--
APR. 29	1325	295	10.5	17.0	--
JUNE 05	0945	516	18.5	22.0	--
JULY 21	1048	64	23.5	24.5	--
SEP. 03	1650	843	21.0	22.0	--

04105000 BATTLE CREEK AT BATTLE CREEK, MICH.
(LAT 42°19'55" LONG 085°09'15")

NOV. 05, 1974	0950	147	9.0	5.0	--
DEC. 17	0828	191	1.5	0.5	--
JAN. 15, 1975	1050	449	0.5	--	--
FEB. 20	1025	164	0.5	1.5	--
MAR. 28	1110	536	2.0	-0.5	--
APR. 29	1120	782	9.0	15.0	--
JUNE 05	1400	312	19.5	22.0	--
JULY 21	1245	85	25.0	29.0	--
SEP. 03	1150	375	20.0	23.0	--

04105500 KALAMAZOO RIVER NEAR BATTLE CREEK, MICH.
(LAT 42°19'26" LONG 085°11'51")

NOV. 05, 1974	1125	685	9.0	5.5	--
DEC. 17	1001	631	2.5	0.0	--
JAN. 15, 1975	1245	998	1.0	-7.0	--
FEB. 20	1210	578	2.0	3.0	--
MAR. 28	1250	1360	2.0	0.0	--
JUNE 05	1140	938	19.0	20.0	--
JULY 21	1450	512	26.0	26.5	--
SEP. 03	1430	1710	21.0	19.0	--

04105700 AUGUSTA CREEK NEAR AUGUSTA, MICH.
(LAT 42°21'12" LONG 085°21'14")

OCT. 21, 1974	1040	39	4.0	4.5	--
NOV. 21	1230	54	5.0	4.0	--
DEC. 16	1205	60	3.0	2.0	--
JAN. 27, 1975	1135	59	1.0	2.5	--
MAR. 03	1040	55	1.5	-2.0	--
APR. 14	1055	56	7.5	8.5	--
APR. 21	1415	150	11.0	12.5	--
MAY 12	1150	70	16.0	15.0	--
JUNE 16	1130	81	16.0	21.0	--
JULY 21	1645	39	24.0	26.0	--
SEP. 04	1050	74	18.0	22.0	--

04106000 KALAMAZOO RIVER AT COMSTOCK, MICH.
(LAT 42°17'05" LONG 085°30'50")

OCT. 21, 1974	1150	562	11.0	7.0	--
NOV. 21	1040	863	9.0	4.0	--
DEC. 16	1300	1030	5.0	1.0	--
JAN. 27, 1975	1330	1010	5.5	2.5	--
MAR. 03	1200	1610	3.0	-1.0	--
APR. 15	0930	1390	7.0	10.0	--
APR. 22	1135	5070	10.0	--	--
APR. 24	1115	3970	12.0	9.5	--
MAY 12	1410	1360	19.0	16.0	--
JUNE 16	1440	1300	20.0	22.0	--
JULY 23	1110	627	26.5	24.0	--
SEP. 04	1215	2070	20.0	19.0	--

04106300 PORTAGE CREEK NEAR KALAMAZOO, MICH.
(LAT 42°14'46" LONG 085°34'33")

OCT. 22, 1974	1425	32	9.5	10.0	--
NOV. 20	1550	44	10.0	8.0	--
DEC. 16	1600	43	8.0	1.0	--
JAN. 27, 1975	1635	44	11.0	-1.5	--
MAR. 03	1520	43	11.0	1.0	--
APR. 14	1705	38	10.5	9.0	--
MAY 12	1710	47	17.0	16.0	--
JULY 22	1145	37	19.0	25.0	--
SEP. 04	1655	50	19.0	20.0	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04106320 WEST FORK PORTAGE CREEK NEAR OSHTEMO, MICH.
(LAT 42°14'07" LONG 085°38'54")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	0930	8.6	7.0	5.5	--
NOV. 20	1250	10	7.0	4.0	--
DEC. 17	0945	8.9	4.5	0.0	--
JAN. 27, 1975	1740	9.9	2.0	--	--
MAR. 03	1820	10	3.0	-5.0	--
APR. 14	1410	9.1	8.0	8.0	--
MAY 12	1840	14	18.0	17.0	--
JUNE 17	1130	10	21.0	24.0	--
JULY 22	1500	9.1	28.0	28.0	--

04106400 WEST FORK PORTAGE CREEK AT KALAMAZOO, MICH.
(LAT 42°14'40" LONG 085°36'50")

OCT. 21, 1974	1615	11	9.0	11.0	--
NOV. 20	1350	15	7.0	4.0	--
DEC. 16	1720	14	2.0	0.5	--
MAR. 03, 1975	1705	14	2.0	1.5	--
APR. 14	1545	14	9.0	10.0	--
MAY 13	1120	16	18.0	--	--
JUNE 17	1315	14	22.0	24.0	--
JULY 22	1315	12	27.0	27.0	--

04108500 KALAMAZOO RIVER NEAR FENNVILLE, MICH.
(LAT 42°35'36" LONG 085°59'03")

OCT. 24, 1974	1305	1100	11.0	17.5	--
NOV. 25	1635	1970	6.0	1.0	--
FEB. 18, 1975	1630	1490	0.5	-6.0	--
MAR. 17	1745	2120	5.0	--	--
APR. 26	1350	5750	13.0	14.0	--
MAY 27	1725	2450	24.0	22.5	--
AUG. 04	1530	1220	26.5	30.5	--
SEP. 15	1530	2750	16.5	24.5	--
SEP. 17	1450	1500	18.0	23.0	--

04108600 RABBIT RIVER NEAR HOPKINS, MICH.
(LAT 42°38'32" LONG 085°43'19")

OCT. 24, 1974	1025	27	9.5	10.0	--
NOV. 25	1330	54	5.0	0.5	--
FEB. 10, 1975	1420	62	0.5	-6.0	--
MAR. 17	1505	100	5.0	15.0	--
MAY 27	1440	52	21.5	24.0	--
AUG. 04	1315	35	21.5	25.0	--
SEP. 15	1405	24	13.0	21.5	--

04108800 BLACK RIVER NEAR ZEELAND, MICH.
(LAT 42°46'40" LONG 086°01'06")

OCT. 24, 1974	1500	5.8	12.5	15.0	--
NOV. 26	0900	35	1.0	-7.0	--
FEB. 11, 1975	1000	25	0.5	-4.0	--
MAR. 18	0940	561	1.0	5.0	--
APR. 23	1950	97	11.5	15.5	--
MAY 28	1100	10	22.5	22.0	--
AUG. 05	1017	14	20.0	16.0	--
SEP. 16	0915	9.5	14.0	16.5	--

04109000 GRAND RIVER AT JACKSON, MICH.
(LAT 42°17'05" LONG 084°24'30")

OCT. 05, 1974	1427	44	16.0	21.0	--
NOV. 02	1035	84	14.5	18.0	--
NOV. 29	0911	118	6.0	5.0	--
JAN. 11, 1975	1309	269	5.5	1.0	--
FEB. 15	0930	56	6.0	-1.0	--
MAR. 29	0918	285	4.0	0.0	--
MAY 03	0925	212	13.5	9.0	--
JUNE 23	1550	166	26.5	27.0	--
AUG. 15	1415	81	22.5	19.5	--
SEP. 18	1420	164	18.0	18.0	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04111000 GRAND RIVER NEAR EATON RAPIDS, MICH.
(LAT 42°32'05" LONG 084°37'25")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 05, 1974	0930	58	10.5	12.0	--
NOV. 02	1500	238	15.5	19.5	--
DEC. 13	0946	351	1.0	1.5	--
JAN. 11, 1975	1636	908	2.5	0.0	--
FEB. 15	1455	299	0.5	-0.5	--
MAR. 29	1416	1060	3.0	1.5	--
MAY 03	1311	1210	15.5	17.0	--
MAY 22	1045	597	20.0	28.0	--
JULY 11	0940	221	21.0	14.5	--
AUG. 15	0835	52	22.0	19.0	--
SEP. 19	0855	521	16.0	17.5	--

04111379 RED CEDAR RIVER NEAR WILLIAMSTON, MICH.
(LAT 42°40'41" LONG 084°13'09")

JULY 30, 1975	1000	22	21.5	26.5	--
SEP. 05	1100	251	18.0	17.0	--

04111500 DEER CREEK NEAR DANSVILLE, MICH.
(LAT 42°36'30" LONG 084°19'15")

NOV. 23, 1974	1304	2.0	5.0	13.0	--
DEC. 23	1351	4.0	2.0	6.0	--
JAN. 25, 1975	1532	6.8	1.0	1.5	--
MAR. 18	1322	15	4.5	15.0	--
MAY 24	1203	8.4	17.0	23.0	--
JUNE 25	1420	29	19.0	23.0	--
JULY 30	1130	.73	20.5	29.0	--
SEP. 03	1500	16	17.0	17.0	--

04112000 SLOAN CREEK NEAR WILLIAMSTON, MICH.
(LAT 42°40'33 LONG 084°21'50")

NOV. 23, 1974	1348	.38	5.0	15.5	--
DEC. 23	1451	1.3	3.0	2.5	--
MAR. 17, 1975	1541	9.7	6.0	12.0	--
APR. 12	1411	35	6.0	3.0	--
MAY 24	1219	3.5	19.0	23.0	--
JULY 30	1240	.39	22.0	31	--
SEP. 03	1115	11	18.0	19.0	--

04112500 RED CEDAR RIVER AT EAST LANSING, MICH.
(LAT 42°43'40" LONG 084°28'40")

NOV. 25, 1974	1025	82	6.0	0.0	--
JAN. 27, 1975	1330	142	0.5	--	--
MAR. 25	1140	1080	3.0	1.0	--
APR. 23	0915	3180	10.0	10.0	--
MAY 28	1030	280	19.5	21.0	--
JUNE 25	1120	490	21.0	22.0	--
JULY 25	1405	68	23.5	24.0	--

04112850 SYCAMORE CREEK NEAR HOLT, MICH.
(LAT 42°38'25" LONG 084°38'58")

APR. 18, 1975	1140	95	11.0	18.0	--
APR. 19	1150	2070	10.0	10.0	--
MAY 16	1015	71	13.0	10.0	--
AUG. 01	0918	13	21.0	23.0	--
SEP. 04	1045	89	18.0	19.0	--

04112904 MUD LAKE DRAIN AT LANSING, MICH.
(LAT 42°40'09" LONG 084°32'05")

MAR. 14, 1975	1125	2.5	0.5	-1.0	--
APR. 18	1450	9.9	13.0	--	--
APR. 19	1107	91	10.0	10.0	--
APR. 21	1135	32	9.0	--	--
MAY 07	1255	4.3	17.5	18.5	--
JUNE 25	1555	.81	26.5	27.0	--
JULY 31	1405	.10	29.5	32.0	--
SEP. 04	1155	1.3	20.5	21.5	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04113000 GRAND RIVER AT LANSING, MICH.
(LAT 42°45'02" LONG 084°33'19")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 26, 1974	1156	210	17.0	10.0	--
NOV. 29	1246	424	4.0	2.0	--
DEC. 23	1151	581	2.0	3.0	--
JAN. 25, 1975	1146	872	2.0	4.0	--
MAR. 17	1131	1140	4.0	4.0	--
APR. 12	1230	2160	6.0	2.0	--
MAY 17	1055	--	17.0	13.0	--
MAY 24	0921	1190	23.0	21.0	--
JUNE 26	0900	1220	22.0	--	--
JULY 31	1150	270	26.0	26.5	--
SEP. 04	1425	2040	19.0	20.0	--

04113097 CARRIER CREEK NEAR LANSING, MICH.
(LAT 42°45'20" LONG 084°39'10")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
MAR. 14, 1975	0945	11	0.5	-2.0	--
APR. 20	1600	128	10.5	5.0	--
MAY 07	1130	9.0	12.0	18.0	--
AUG. 08	1030	.27	16.0	22.5	--
SEP. 11	1120	2.4	18.0	25.0	--

04114000 GRAND RIVER AT PORTLAND, MICH.
(LAT 42°51'20" LONG 084°54'45")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 30, 1974	1215	493	13.0	21.0	--
NOV. 29	0930	558	2.0	-3.0	--
DEC. 31	1410	656	2.0	1.0	--
MAR. 20, 1975	1300	1650	7.0	10.0	--
AUG. 07	1415	398	23.0	21.0	--
SEP. 10	1315	1790	18.5	15.0	--

04114500 LOOKINGGLASS RIVER NEAR EAGLE, MICH.
(LAT 42°49'45" LONG 084°46'40")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 30, 1974	1345	84	14.0	23.0	--
NOV. 29	1205	82	4.0	2.0	--
DEC. 31	1510	102	1.5	0.0	--
FEB. 13, 1975	1510	82	0.5	-3.5	--
MAR. 20	1030	378	3.0	7.0	--
APR. 24	1040	1090	11.5	10.0	--
JUNE 02	1040	135	17.5	20.5	--
AUG. 07	1510	54	22.0	22.5	--
SEP. 10	1750	682	17.0	28.0	--

04115000 MAPLE RIVER AT MAPLE RAPIDS, MICH.
(LAT 43°06'35" LONG 084°41'35")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 29, 1974	1040	38	11.0	14.0	--
NOV. 27	1420	117	2.0	1.5	--
JAN. 02, 1975	1050	157	0.5	-3.0	--
FEB. 13	1215	163	0.5	-8.0	--
MAY 30	1040	170	23.0	26.0	--
AUG. 06	1640	46	24.0	19.5	--
SEP. 19	1430	534	16.5	19.5	--

04116000 GRAND RIVER AT IONIA, MICH.
(LAT 42°58'20" LONG 085°04'13")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 29, 1974	1405	584	13.0	15.0	--
NOV. 29	1425	1070	2.0	11.0	--
JAN. 03, 1975	1520	686	0.5	1.0	--
MAR. 20	1815	3790	10.0	--	--
APR. 21	1750	16500	11.0	10.5	--
APR. 22	1310	16200	11.0	11.5	--
APR. 24	1310	11300	11.0	11.0	--
MAY 30	1220	1830	22.5	24.0	--
JULY 07	1210	733	26.0	29.5	--
AUG. 07	1210	394	22.5	19.0	--
SEP. 19	1615	2730	16.5	18.5	--

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04116500 FLAT RIVER AT SMYRNA, MICH.
(LAT 43°03'10" LONG 085°15'50")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 29, 1974	1330	386	10.5	16.0	--
NOV. 27	1125	528	2.0	0.0	--
JAN. 02, 1975	1345	362	1.0	1.0	--
MAR. 20	1500	764	10.0	5.0	--
APR. 23	1200	924	11.0	12.0	--
MAY 29	1240	447	21.5	25.5	--
AUG. 06	1300	289	21.0	20.0	--
SEP. 18	1320	637	15.0	21.5	--

04117000 QUAKER BROOK NEAR NASHVILLE, MICH.
(LAT 42°33'57" LONG 085°05'37")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 30, 1974	0905	12	12.5	19.5	--
NOV. 25	0930	8.3	3.5	3.5	--
FEB. 10, 1975	0940	4.6	0.5	-10.0	--
MAR. 17	1030	15	1.5	8.0	--
MAY 27	1040	8.4	18.0	21.0	--
JUNE 30	1015	4.2	17.0	24.0	--
AUG. 04	0940	5.3	17.0	21.5	--
SEP. 15	0945	4.1	11.5	12.5	--

04117500 THORNAPPLE RIVER NEAR HASTINGS, MICH.
(LAT 42°36'57" LONG 085°14'11")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 30, 1974	1030	173	12.0	18.5	--
NOV. 25	1200	243	4.5	1.5	--
FEB. 10, 1975	1145	241	0.5	-8.0	--
MAR. 17	1240	563	3.5	9.0	--
MAY 27	1215	548	23.0	25.0	--
JUNE 30	1200	196	26.5	24.0	--
AUG. 04	1110	160	22.0	28.5	--
SEP. 15	1110	174	16.0	14.0	--

04118000 THORNAPPLE RIVER NEAR CALEDONIA, MICH.
(LAT 42°48'40" LONG 085°29'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 24, 1974	1730	372	11.5	14.5	--
NOV. 26	1100	572	2.0	1.5	--
DEC. 31	1200	540	2.5	0.0	--
FEB. 11, 1975	1200	663	0.5	-3.0	--
MAR. 20	1640	1560	5.0	15.0	--
MAY 28	1300	884	21.5	27.5	--
AUG. 08	1225	426	21.0	21.0	--
SEP. 18	1025	410	16.0	19.0	--

04118500 ROGUE RIVER NEAR ROCKFORD, MICH.
(LAT 43°05'00" LONG 085°35'30")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 25, 1974	1300	168	10.0	14.0	--
NOV. 27	0830	260	1.0	-1.0	--
JAN. 02, 1975	1600	190	0.5	0.0	--
FEB. 12	1230	203	0.5	-7.0	--
MAR. 29	1600	317	5.5	15.5	--
APR. 23	1340	374	12.0	13.0	--
MAY 29	1110	177	18.5	24.5	--
AUG. 06	1120	129	19.0	18.0	--
SEP. 16	1330	311	12.0	20.0	--

04119000 GRAND RIVER AT GRAND RAPIDS, MICH.
(LAT 42°57'52" LONG 085°40'35")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 25, 1974	0930	1790	9.5	10.5	--
NOV. 26	1430	3100	3.0	-0.5	--
JAN. 03, 1975	1230	2750	0.5	1.0	--
FEB. 11	1400	3190	0.5	0.0	--
MAR. 18	1705	6180	4.5	14.0	--
APR. 23	1730	22500	18.0	11.0	--
MAY 28	1600	4210	24.0	25.0	--
AUG. 05	1540	2290	24.0	21.0	--
SEP. 17	1200	5440	15.0	21.0	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04121300 CLAM RIVER AT VOGEL CENTER, MICH.
(LAT 44°12'02" LONG 085°03'10")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 02, 1974	0920	97	7.5	0.5	--
NOV. 04	0910	85	8.5	4.5	--
DEC. 05	1005	77	1.0	0.0	--
JAN. 07, 1975	1025	74	0.5	-1.0	--
FEB. 04	1405	83	1.0	-1.5	--
MAR. 14	1335	67	4.0	0.0	--
APR. 08	1000	122	4.5	-1.0	--
MAY 21	0940	162	21.0	22.0	--
JUNE 18	1120	187	17.0	20.5	--
JULY 02	0905	109	19.5	23.0	--
AUG. 25	1005	167	17.0	22.0	--
SEP. 23	1055	199	11.0	9.5	--

04122000 MUSKEGON RIVER AT NEWAYGO, MICH.
(LAT 43°25'20" LONG 085°48'04")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 01, 1974	1430	1900	14.0	4.0	--
NOV. 04	1345	1260	10.5	6.5	--
DEC. 09	1455	1340	2.0	3.0	--
MAR. 12, 1975	1930	1010	2.0	-1.0	--
APR. 14	1330	3460	5.0	9.5	--
MAY 19	1620	1830	19.0	25.0	--
JULY 01	1340	2360	18.5	25.0	--
AUG. 11	1505	1230	21.0	28.0	--
SEP. 03	1045	8390	17.0	20.5	--

04122100 BEAR CREEK NEAR MUSKEGON, MICH.
(LAT 43°17'19" LONG 086°13'22")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 02, 1974	1005	5.1	6.5	4.5	--
NOV. 05	1025	7.1	7.5	5.0	--
DEC. 11	0850	8.1	0.0	-9.0	--
JAN. 14, 1975	1545	20	0.0	-8.5	--
FEB. 10	1540	12	0.0	-11.0	--
MAR. 11	1635	15	2.5	0.5	--
APR. 15	1515	15	9.0	8.5	--
MAY 20	1450	8.7	18.0	25.0	--
JUNE 11	1545	11	13.5	20.5	--
JULY 02	1450	7.2	19.0	32.0	--
AUG. 12	1320	3.7	19.0	30.0	--
SEP. 01	1620	146	18.0	24.0	--

04122200 WHITE RIVER NEAR WHITEHALL, MICH.
(LAT 43°27'51" LONG 086°13'57")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 02, 1974	1215	365	7.0	5.0	--
DEC. 10	1615	388	1.0	2.0	--
JAN. 13, 1975	1545	949	0.0	-10.0	--
MAR. 10	1535	437	2.5	3.5	--
APR. 14	1535	610	7.0	8.0	--
APR. 21	1515	555	9.5	11.0	--
MAY 19	1430	386	20.0	24.5	--
JULY 01	1605	413	22.0	28.0	--
AUG. 12	1520	267	21.0	30.0	--
SEP. 01	1440	5300	17.0	25.0	--
SEP. 02	1600	3000	18.0	20.0	--
SEP. 11	1415	744	15.5	21.5	--

04122500 PERE MARQUETTE RIVER AT SCOTTVILLE, MICH.
(LAT 43°56'42" LONG 086°16'43")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 03, 1974	0845	675	6.0	-1.0	350
NOV. 06	1050	630	7.0	7.0	350
DEC. 11	1415	660	0.5	1.0	300
JAN. 15, 1975	1255	1230	0.0	-5.5	205
MAR. 12	1400	716	1.0	1.0	320
APR. 16	0940	921	7.0	10.0	305
MAY. 22	0810	699	19.0	16.5	330
JULY 03	1130	620	21.0	30.0	370
AUG. 13	0735	440	19.5	21.5	360
SEP. 03	1510	2620	17.0	17.5	220

STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued

04124000 MANISTEE RIVER NEAR SHERMAN, MICH.
(LAT 44°26'11" LONG 085°41'55")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 03, 1974	1235	928	6.5	7.0	310
NOV. 07	1225	896	6.0	7.0	320
DEC. 18	1240	874	2.0	-4.0	340
JAN. 08, 1975	1255	865	2.5	2.0	320
FEB. 04	1205	839	0.5	-2.0	300
MAR. 14	1125	878	1.0	-5.0	320
APR. 08	1420	1070	5.5	6.0	325
JUNE 09	1315	1210	13.0	22.0	290
JULY 15	1215	1050	16.0	22.5	315
AUG. 14	1155	861	18.0	20.0	310

04125500 PINE RIVER NEAR HOXEYVILLE, MICH.
(LAT 44°12'11" LONG 085°47'58")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 03, 1974	1410	246	7.0	8.0	325
NOV. 07	1050	227	6.0	6.5	320
DEC. 05	1310	230	3.5	2.0	315
JAN. 08, 1975	1425	252	4.5	3.5	320
FEB. 04	1035	244	2.0	-3.0	315
MAR. 17	1415	263	5.0	8.5	320
APR. 08	1205	296	5.0	6.0	280
MAY 15	1040	275	12.0	10.0	305
JUNE 09	1040	275	12.0	21.0	280
JULY 15	1025	302	13.5	21.0	300
AUG. 14	1000	281	14.0	18.0	320

04126000 MANISTEE RIVER NEAR MANISTEE, MICH.
(LAT 44°16'14" LONG 086°11'56")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 04, 1974	0940	2140	11.5	8.5	340
NOV. 06	1540	1270	9.0	8.0	340
DEC. 12	0955	1780	2.0	2.0	320
JAN. 15, 1975	1600	1490	0.0	-6.0	330
MAR. 18	1045	1510	1.5	4.0	330
APR. 16	1140	2790	5.0	10.5	300
MAY 22	1215	2040	19.0	25.5	320
JULY 03	1105	1690	21.0	30.0	295
AUG. 13	1340	1400	22.0	28.0	330
SEP. 04	1030	4160	17.0	11.0	300

04126200 LITTLE MANISTEE RIVER NEAR FREESOIL, MICH.
(LAT 44°11'00" LONG 086°10'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 03, 1974	1335	158	8.0	9.0	300
NOV. 07	0910	151	5.5	0.5	300
DEC. 12	1055	157	4.0	4.0	350
JAN. 16, 1975	0855	183	1.0	-8.0	280
FEB. 12	1340	163	1.5	-5.0	300
MAR. 18	1315	176	4.5	5.0	290
APR. 16	1300	220	8.0	10.5	260
MAY 29	1045	175	15.5	21.0	280
JULY 03	1225	166	18.5	25.0	295
AUG. 14	0715	144	15.5	11.5	320
SEP. 04	1230	461	15.5	19.5	220

04127000 BOARDMAN RIVER NEAR MAYFIELD, MICH.
(LAT 44°38'18" LONG 085°31'10")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 10, 1974	1025	163	8.5	11.0	320
NOV. 11	1000	161	7.5	7.0	310
DEC. 19	0945	185	2.5	-4.5	320
JAN. 20, 1975	0940	161	1.0	-4.0	300
FEB. 05	1030	153	2.0	-3.0	295
MAR. 20	1015	190	3.5	1.0	310
APR. 09	0920	192	4.0	-0.5	280
MAY 12	1400	205	14.5	17.0	270
JUNE 09	1255	163	15.0	19.0	280
JULY 14	0955	174	16.0	16.5	290
SEP. 30	1035	163	11.0	14.0	280

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
STREAMS TRIBUTARY TO LAKE MICHIGAN--Continued					
04127800 JORDAN RIVER NEAR EAST JORDAN, MICH. (LAT 45°06'09" LONG 085°05'53")					
OCT. 09, 1974	1355	165	8.0	9.5	340
NOV. 14	1420	180	3.0	0.5	360
DEC. 17	1000	180	3.0	0.0	350
JAN. 16, 1975	1020	181	0.5	-7.0	360
FEB. 18	0940	174	1.5	-0.5	360
MAR. 24	0955	219	2.5	0.0	380
APR. 09	1140	178	3.0	2.0	280
MAY 01	1325	410	10.0	13.0	265
MAY 12	0955	176	9.5	10.0	325
JUNE 09	0945	171	10.0	14.0	360
JULY 14	1240	205	13.5	17.0	360
AUG. 20	1300	171	12.0	19.0	340
SEP. 18	1340	174	13.0	23.0	350
STREAMS TRIBUTARY TO LAKE HURON					
04127918 PINE RIVER NEAR RUDYARD, MICH. (LAT 46°11'09" LONG 084°35'52")					
OCT. 08, 1974	1135	237	5.0	2.0	--
FEB. 12, 1975	1600	121	0.0	-10.0	--
APR. 01	1045	122	0.0	-1.0	--
APR. 22	1210	2120	1.0	10.0	--
MAY 20	1445	193	18.0	23.5	--
JULY 09	1215	84	17.5	19.0	--
AUG. 12	1620	66	18.0	24.0	--
SEP. 16	1445	170	12.0	19.5	--
04128500 INDIAN RIVER AT INDIAN RIVER, MICH. (LAT 45°24'38" LONG 084°37'12")					
OCT. 10, 1974	1000	527	11.0	12.5	--
NOV. 13	1025	649	6.0	0.5	--
DEC. 16	1230	679	0.5	1.0	--
JAN. 30, 1975	1105	578	0.0	-6.5	--
FEB. 19	1300	711	0.0	0.0	--
MAR. 25	1120	659	2.0	-7.0	--
APR. 24	1000	758	3.5	3.5	--
MAY 06	1215	1010	6.0	9.0	--
MAY 29	1020	942	16.5	21.0	--
JUNE 10	0915	849	16.0	16.5	--
JULY 07	1230	584	25.0	27.0	--
AUG. 19	0900	459	22.0	14.5	--
SEP. 17	1415	598	16.0	20.0	--
04129000 PIGEON RIVER NEAR VANDERBILT, MICH. (LAT 45°10'15" LONG 084°26'18")					
OCT. 10, 1974	1345	76	9.0	15.0	--
NOV. 13	1415	60	5.5	1.0	--
DEC. 17	1410	72	2.5	-2.0	--
DEC. 30	1020	77	1.5	-2.0	--
JAN. 16, 1975	1335	78	0.0	-4.0	--
FEB. 19	1055	70	1.0	-0.5	--
MAR. 24	1435	68	2.5	2.0	--
APR. 10	1315	64	5.5	5.0	--
APR. 25	1300	212	5.5	8.5	--
MAY 16	1020	124	10.5	12.0	--
JUNE 10	1035	84	15.0	21.5	--
JULY 07	1015	73	19.0	23.5	--
AUG. 19	1410	60	14.5	20.0	--
SEP. 18	1110	70	12.5	17.0	--
04129500 PIGEON RIVER AT AFTON, MICH. (LAT 45°22'26" LONG 084°30'54")					
OCT. 10, 1974	0920	141	7.5	11.0	--
NOV. 13	1125	152	4.5	0.5	--
JAN. 15, 1975	1325	120	0.0	-5.0	--
FEB. 20	1335	129	0.0	-0.5	--
MAR. 25	1040	161	1.0	-3.5	--
APR. 10	1015	124	5.0	3.0	--
APR. 25	1035	512	4.0	8.0	--
MAY 02	1510	693	7.0	13.5	--
MAY 29	1315	182	18.5	26.0	--
JUNE 10	1330	132	15.5	23.5	--
JULY 07	1135	115	19.5	25.0	--
AUG. 19	1110	87	15.0	16.0	--
SEP. 18	0835	141	12.5	14.0	--

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
STREAMS TRIBUTARY TO LAKE HURON--Continued					
04130500 BLACK RIVER NEAR TOWER, MICH. (LAT 45°23'33" LONG 084°20'00")					
OCT. 07, 1974	1040	255	8.5	3.5	--
NOV. 11	1600	247	8.5	7.5	--
DEC. 16	1130	244	0.5	0.5	--
JAN. 15, 1975	1120	179	0.5	-6.0	--
FEB. 10	1355	140	0.5	-9.0	--
FEB. 20	1055	226	0.5	-2.0	--
MAR. 17	1435	235	1.0	2.0	--
APR. 03	1045	227	1.0	-3.0	--
APR. 03	1115	173	1.0	-2.0	--
APR. 03	1225	116	1.0	-2.0	--
MAY 03	1115	934	12.0	13.0	--
MAY 20	1220	12	20.0	26.5	--
JUNE 10	1205	236	18.5	19.0	--
JULY 08	1150	240	24.0	23.0	--
AUG. 18	1445	227	21.0	20.0	--
SEP. 17	0850	405	13.0	9.5	--
04131500 RAINY RIVER NEAR OCQUEOC, MICH. (LAT 45°24'30" LONG 084°10'45")					
OCT. 08, 1974	0905	15	6.5	3.5	400
NOV. 12	0855	14	6.0	2.5	400
DEC. 02	1355	22	0.5	2.0	345
JAN. 06, 1975	1440	14	0.0	3.0	370
FEB. 06	1445	11	0.0	-3.5	230
MAR. 20	1135	32	0.0	3.0	385
APR. 08	1250	55	1.0	1.0	300
MAY 03	1315	324	7.0	14.0	--
MAY 19	1310	48	19.0	26.5	270
JULY 07	1510	8.8	18.0	28.5	350
AUG. 18	1340	16	19.0	19.0	360
SEP. 16	1515	41	21.0	13.0	310
04133500 THUNDER BAY RIVER NEAR BOLTON, MICH. (LAT 45°07'40" LONG 083°38'30")					
OCT. 08, 1974	1345	452	8.0	8.5	--
NOV. 12	1145	330	6.5	4.0	--
DEC. 03	1120	323	0.0	-5.0	--
JAN. 07, 1975	1105	335	0.5	1.5	--
FEB. 11	1430	509	0.0	-7.0	--
MAR. 18	1025	423	0.5	1 0	--
APR. 15	1000	1000	1.5	7.0	--
MAY 20	0915	362	19.0	24.0	--
JULY 09	0950	272	19.0	19.0	--
AUG. 18	1100	301	21.5	16.0	--
SEP. 16	1110	411	12.5	12.0	--
04134000 NORTH BRANCH THUNDER BY RIVER NEAR BOLTON, MICH. (LAT 45°08'55" LONG 083°36'35")					
OCT. 08, 1974	1120	33	9.0	4.0	--
NOV. 12	1110	32	6.0	5.0	--
DEC. 03	0915	54	0.0	-5.0	--
JAN. 07, 1975	0825	32	0.0	-1.0	--
FEB. 11	0835	39	0.0	-13.0	--
MAR. 18	0845	52	0.0	0.5	--
APR. 14	1545	179	0.0	6.0	--
APR. 24	1245	841	5.5	7.5	--
MAY 19	1540	978	20.5	27.0	--
JULY 09	0835	22	19.5	14.5	--
AUG. 18	1150	19	22.0	18.0	--
SEP. 16	1220	96	12.5	14.0	--
04135500 AU SABLE RIVER AT GRAYLING, MICH. (LAT 44°39'35" LONG 084°42'45")					
OCT. 09, 1974	1100	75	7.5	7.5	305
NOV. 04	1200	61	8.0	8.5	310
DEC. 04	1055	52	0.5	-3.5	320
JAN. 02, 1975	1500	58	0.0	-1.0	325
FEB. 03	1040	60	0.5	-6.0	330
MAR. 03	1130	62	0.0	-4.5	340
APR. 07	1250	68	4.0	4.0	305
MAY 07	1130	134	11.0	17.0	250
JUNE 09	0920	79	13.0	12.5	290
JULY 11	0755	64	14.0	9.5	300
AUG. 06	0930	62	18.0	16.0	305
SEP. 16	1330	87	12.0	13.0	290

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE HURON--Continued

04135600 EAST BRANCH AU SABLE RIVER AT GRAYLING, MICH.
(LAT 44°40'08" LONG 084°42'20")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)
OCT. 09, 1974	1450	43	8.0	10.5	--
NOV. 04	1335	36	7.5	8.5	--
DEC. 04	1240	25	1.5	0.0	--
JAN. 03, 1975	1325	37	0.5	-1.0	--
FEB. 03	0940	33	0.5	-10.0	--
MAR. 03	1310	31	2.0	-2.5	--
APR. 07	1400	42	6.5	6.0	--
MAY 07	1510	93	12.0	18.0	--
JUNE 09	1130	47	11.0	21.5	--
JULY 11	1130	44	12.0	17.0	--
AUG. 06	1100	40	14.0	15.0	--
SEP. 16	1320	53	11.5	13.5	--

04136500 AU SABLE RIVER AT MIO, MICH.
(LAT 44°39'36" LONG 084°07'52")

OCT. 08, 1974	1345	1150	9.0	11.5	--
DEC. 02	1010	967	2.0	-1.5	--
FEB. 13, 1975	1435	821	1.0	-9.0	--
JULY 08	1230	966	23.0	25.0	--
AUG. 06	1050	983	17.0	17.0	--
AUG. 28	1000	505	18.0	16.0	--

04138500 AU GRES RIVER NEAR NATIONAL CITY, MICH
(LAT 44°10'26" LONG 083°44'36")

OCT. 07, 1974	1255	43	9.5	7.0	--
NOV. 12	1620	42	7.0	1.0	--
DEC. 02	1205	41	1.0	-1.0	--
JAN. 06, 1975	1050	43	0.0	-5.0	--
FEB. 12	1220	41	0.0	-5.0	--
APR. 14	1200	183	5.5	8.0	--
MAY 19	1240	60	19.0	20.0	--
JULY 07	1515	21	26.5	26.5	--
AUG. 11	1315	19	23.0	28.0	--
SEP. 15	1405	44	12.5	12.0	--

04140500 RIFLE RIVER AT SELKIRK, MICH.
(LAT 44°18'48" LONG 084°04'10")

OCT. 07, 1974	1400	123	9.5	14.0	320
NOV. 13	0855	113	5.0	-2.0	425
DEC. 10	1350	116	0.0	2.0	430
JAN. 08, 1975	1250	108	2.0	3.0	460
FEB. 12	1005	99	0.0	-6.0	400
MAR. 13	1245	111	1.5	2.0	480
APR. 14	0935	223	3.5	4.0	370
MAY 19	0930	120	16.0	16.0	400
JULY 08	0955	85	18.0	22.5	400
AUG. 11	1030	87	17.0	22.0	390
SEP. 16	1050	107	10.5	9.5	420

04141000 SOUTH BRANCH SHEPARDS CREEK NEAR SELKIRK, MICH.
(LAT 44°18'28" LONG 084°05'13")

OCT. 07, 1974	1500	0.16	9.0	9.0	520
NOV. 13	1030	0.16	4.5	-1.5	650
DEC. 10	1410	0.13	0.0	2.0	640
JAN. 14, 1975	1450	0.19	0.0	-6.5	470
FEB. 12	1025	0.08	0.0	-5.0	520
MAR. 13	1200	0.15	0.0	1.0	625
APR. 15	1420	0.88	6.5	12.0	480
MAY 01	1105	2.7	10.0	15.0	--
MAY 19	1030	0.19	14.0	16.0	510
JULY 08	1100	0.03	19.0	24.0	540
AUG. 11	1115	0.04	18.0	23.0	580
SEP. 16	1155	0.17	11.0	12.0	--

STREAMS TRIBUTARY TO LAKE HURON--Continued

04143500 NORTH BRANCH KAWKAWLIN RIVER NEAR KAWKAWLIN, MICH.
(LAT 43°40'05" LONG 083°58'13")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC TANCE TANCE (UMHOS at 25°C)
OCT. 04, 1974	0835	.30	7.5	4.0	--
NOV. 06	1605	2.3	6.0	6.0	--
DEC. 02	1515	6.4	1.5	0.0	--
JAN. 06, 1975	1300	6.4	0.0	5.0	--
FEB. 04	1555	49	0.0	-3.0	--
APR. 15	0950	231	5.0	7.5	--
MAY 20	1325	20	24.0	33.0	--
JULY 07	1135	5.6	24.5	27.0	--
AUG. 11	1645	4.8	24.0	28.0	--

04143900 SHIAWASSEE RIVER AT LINDEN, MICH.
(LAT 42°48'56" LONG 083°48'08")

OCT. 19, 1974	1046	39	8.5	3.0	--
NOV. 09	1447	48	11.5	18.0	--
DEC. 14	1302	63	2.5	1.5	--
JAN. 18, 1975	1327	87	0.5	3.0	--
MAR. 03	1335	154	0.5	--	--
APR. 05	1202	150	2.5	-1.0	--
APR. 21	1045	438	5.6	5.6	--
APR. 23	1000	462	9.5	15.0	--
JUNE 20	1230	58	26.5	29.5	--
JULY 28	1155	22	24.0	26.0	--
AUG. 29	1250	68	23.5	21.0	--

04144000 SHIAWASSEE RIVER AT BYRON, MICH.
(LAT 42°49'25" LONG 083°56'45")

OCT. 19, 1974	1146	109	7.0	3.0	--
NOV. 09	1130	239	6.5	9.0	--
DEC. 14	1341	195	2.0	1.5	--
JAN. 18, 1975	1448	542	0.0	0.5	--
MAR. 03	1000	620	0.5	--	--
APR. 05	1351	618	2.0	0.0	--
APR. 21	1330	3770	7.0	5.5	--
APR. 23	1115	3530	--	16.5	--
JUNE 20	1410	195	23.0	28.0	--
JULY 28	0930	93	22.0	--	--
AUG. 29	1325	179	21.0	22.0	--

04144500 SHIAWASSEE RIVER AT OWOSSO, MICH.
(LAT 43°00'54" LONG 084°10'52")

OCT. 26, 1974	1014	204	9.5	6.5	--
NOV. 09	0926	365	4.0	5.0	--
DEC. 23	0916	326	0.5	3.0	--
JAN. 25, 1975	0942	405	0.5	5.0	--
MAR. 17	0919	562	2.5	4.5	--
APR. 12	0909	1160	4.5	0.5	--
APR. 21	1630	4250	7.0	11.0	--
APR. 23	1240	4680	9.5	14.5	--
MAY 17	0909	493	15.0	13.5	--
JUNE 18	1010	353	22.0	23.0	--
JULY 29	1415	110	26.5	25.0	--
AUG. 27	1100	583	22.0	24.5	--

04145000 SHIAWASSEE RIVER NEAR FERGUS, MICH.
(LAT 43°15'17" LONG 084°06'20")

OCT. 16, 1974	1050	107	10.5	9.0	--
NOV. 18	1050	170	4.5	8.0	--
DEC. 16	1015	284	1.0	2.0	--
JAN. 02, 1975	1400	197	0.5	--	--
JAN. 27	1440	834	0.0	--	--
MAR. 05	1100	1000	0.5	-1.0	--
APR. 22	0840	4530	8.0	4.5	--
APR. 23	1400	5150	--	13.0	--
JUNE 18	1230	358	23.5	29.0	--
JULY 29	1205	163	25.0	--	--
AUG. 27	1630	914	23.5	28.0	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO LAKE HURON--Continued

04146000 FARMERS CREEK NEAR LAPEER, MICH.
(LAT 43°02'41" LONG 083°20'14")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 17, 1974	1450	11	12.0	13.0	--
NOV. 19	1545	18	7.5	10.5	--
DEC. 17	1650	30	2.0	-0.5	--
JAN. 29, 1975	1600	57	0.5	2.0	--
MAR. 06	1530	60	1.5	1.0	--
APR. 11	1730	82	8.5	4.0	--
MAY 13	1650	45	18.5	19.5	--
JUNE 16	1055	34	18.0	20.0	--
JULY 23	1010	7.3	23.0	28.0	--
AUG. 25	1330	162	23.0	28.0	--

04147500 FLINT RIVER NEAR OTISVILLE, MICH.
(LAT 43°06'40" LONG 083°31'10")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 17, 1974	1150	126	12.0	13.5	--
NOV. 19	1340	159	6.5	10.5	--
DEC. 17	1455	239	2.5	0.5	--
JAN. 28, 1975	1425	320	2.0	3.0	--
MAR. 07	1330	573	3.0	1.5	--
MAY 12	1805	273	14.5	10.0	--
JULY 23	1445	174	25.0	29.0	--
AUG. 28	1255	473	23.5	25.5	--

04147990 BUTTERNUT CREEK NEAR GENESEE, MICH.
(LAT 43°08'09" LONG 083°35'57")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 17, 1974	1030	4.6	9.5	12.5	--
NOV. 19	1145	6.4	6.5	9.5	--
DEC. 17	1320	12	2.5	1.0	--
JAN. 28, 1975	1245	14	1.5	4.0	--
FEB. 24	1655	211	2.0	3.0	--
MAR. 07	1145	19	1.0	0.5	--
APR. 08	1200	40	2.5	3.0	--
MAY 12	1600	23	11.5	10.0	--
JUNE 19	1640	16	22.0	28.5	--
JULY 23	1550	3.7	21.5	30.0	--
AUG. 28	1445	11	19.5	26.0	--

04148140 KEARSLEY CREEK NEAR DAVISION, MICH.
(LAT 43°02'01" LONG 083°34'53")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 17, 1974	1305	21	11.0	12.0	--
NOV. 19	1440	33	6.0	11.0	--
DEC. 18	1655	59	0.5	-3.0	--
JAN. 28, 1975	1545	96	0.5	3.0	--
MAR. 07	1545	124	1.5	2.0	--
APR. 10	1750	185	7.0	6.0	--
MAY 12	1305	105	15.5	10.0	--
JUNE 19	1900	80	24.5	31.0	--
JULY 24	1000	36	23.5	23.5	--
AUG. 28	1050	325	21.0	24.5	--

04148160 GILKEY CREEK NEAR FLINT, MICH.
(LAT 43°01'27" LONG 083°37'32")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 17, 1974	0900	.03	8.5	14.0	--
DEC. 17	1140	2.8	1.0	1.0	--
JAN. 28, 1975	1105	1.1	0.0	--	--
FEB. 24	1500	73	1.5	4.5	--
MAR. 07	0950	2.8	0.5	-0.5	--
APR. 08	1030	10	2.0	0.5	--
MAY 12	1420	13	11.0	10.0	--
JUNE 19	1445	3.1	24.0	28.0	--
JULY 24	1105	1.9	22.0	22.5	--
AUG. 28	0900	2.6	18.5	21.5	--

04148200 SWARTZ CREEK NEAR HOLLY, MICH.
(LAT 42°49'39" LONG 083°37'42")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1010	2.6	6.0	8.5	--
NOV. 21	1300	6.5	5.5	4.0	--
DEC. 19	1140	9.3	1.5	2.0	--
JAN. 30, 1975	1135	21	0.5	1.0	--
MAR. 04	1230	15	2.0	0.5	--
APR. 07	1500	21	3.0	6.0	--
MAY 08	1400	18	18.0	20.0	--
JUNE 20	1210	6.7	24.5	26.0	--
JULY 28	1500	2.5	24.5	26.0	--
AUG. 29	1055	11	23.0	22.0	--

STREAMS TRIBUTARY TO LAKE HURON--Continued

04148300 SWARTZ CREEK AT FLINT, MICH.
(LAT 42°59'16" LONG 083°43'57")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1310	4.1	6.0	18.5	--
NOV. 21	1410	20	4.5	3.5	--
DEC. 19	1230	32	0.5	1.5	--
JAN. 30, 1975	1315	158	0.5	0.5	--
MAR. 04	1000	112	0.5	-0.5	--
APR. 07	1130	151	3.5	1.5	--
MAY 09	1305	92	16.0	20.0	--
JUNE 19	0905	39	23.5	24.0	--
JULY 24	1405	9.0	24.5	--	--
AUG. 25	1115	427	22.0	27.5	--

04148440 THREAD CREEK NEAR FLINT, MICH.
(LAT 42°58'30" LONG 083°38'09")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1145	2.4	5.5	14.0	--
NOV. 21	1150	15	4.0	2.5	--
DEC. 19	0950	22	0.0	-1.0	--
JAN. 30, 1975	1015	62	0.0	2.5	--
MAR. 04	1420	51	0.0	0.0	--
APR. 07	1300	80	3.0	3.0	--
JUNE 20	1110	14	24.0	28.0	--
JULY 24	1200	25	24.0	--	--
AUG. 29	0955	95	21.5	21.0	--

04148500 FLINT RIVER NEAR FLINT, MICH.
(LAT 43°02'20" LONG 083°46'10")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1500	230	12.5	19.0	--
NOV. 21	1630	410	7.0	4.0	--
DEC. 19	1600	485	3.0	2.0	--
JAN. 30, 1975	1540	1160	2.5	2.0	--
MAR. 05	1650	1050	3.5	0.0	--
APR. 10	1200	1990	4.5	6.0	--
APR. 23	1600	5920	10.5	14.5	--
JUNE 19	1015	1200	23.0	25.5	--
JULY 25	1400	265	23.0	24.0	--
SEP. 02	1600	1770	21.5	26.0	--

04148720 BRENT RUN NEAR MONTROSE, MICH.
(LAT 43°10'12" LONG 083°50'03")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 16, 1974	1520	6.5	11.0	14.0	--
NOV. 18	1500	8.0	6.0	10.5	--
DEC. 16	1530	9.4	3.0	2.5	--
JAN. 27, 1975	1815	10	0.0	--	--
MAR. 05	1245	11	1.0	--	--
APR. 10	1410	47	6.5	7.0	--
MAY 08	1800	8.8	16.5	18.5	--
JUNE 18	1850	7.9	23.0	28.5	--
JULY 25	1140	8.8	21.5	24.0	--
AUG. 28	1655	8.9	22.0	24.5	--

04149000 FLINT RIVER NEAR FOSTERS, MICH.
(LAT 43°18'30" LONG 083°57'13")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 16, 1974	1315	289	11.5	14.5	--
NOV. 18	1305	518	6.5	9.5	--
DEC. 16	1325	524	3.0	2.5	--
JAN. 27, 1975	1310	814	0.5	1.5	--
MAR. 03	1435	1730	0.5	-0.5	--
APR. 22	1140	6180	8.0	10.0	--
APR. 23	1800	6180	11.5	15.0	--
JUNE 18	1610	775	24.0	30.5	--
JULY 28	1730	272	26.5	27.0	--

04150000 SOUTH BRANCH CASS RIVER NEAR CASS CITY, MICH.
(LAT 43°34'01" LONG 083°06'43")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 01, 1974	1335	12	12.5	9.0	--
NOV. 06	0920	11	7.5	4.0	--
DEC. 04	0900	10	0.0	-6.0	--
JAN. 07, 1975	1320	13	1.0	4.0	--
FEB. 04	0840	43	0.0	-4.0	--
APR. 15	1600	1080	4.5	10.0	--
MAY 21	1030	39	23.5	22.5	--
JULY 03	0820	14	24.0	22.0	--
AUG. 12	1205	6.9	20.5	28.0	--
SEP. 17	1425	12	18.0	22.0	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
STREAMS TRIBUTARY TO LAKE HURON--Continued					
04150500 CASS RIVER AT CASS CITY, MICH. (LAT 43°35'03" LONG 083°10'34")					
OCT. 01, 1974	1455	16	11.0	9.5	--
NOV. 06	1130	21	6.5	5.0	--
DEC. 04	1010	22	0.0	-3.5	--
JAN. 07, 1975	1410	38	0.5	3.0	--
FEB. 04	1000	149	0.0	-6.0	--
APR. 15	1405	1610	4.5	12.0	--
MAY 21	0855	82	22.0	21.0	--
JULY 03	0950	24	24.5	25.0	--
AUG. 12	1410	8.0	25.5	30.0	--
SEP. 17	1305	15	15.5	18.0	--
04150800 CASS RIVER AT WAHJAMEGA, MICH. (LAT 43°27'02" LONG 083°26'29")					
OCT. 02, 1974	0830	42	9.5	-1.0	--
NOV. 05	1525	81	9.5	6.0	--
DEC. 03	1520	74	1.5	-3.0	--
JAN. 08, 1975	0830	97	1.5	2.5	--
FEB. 03	1535	333	1.5	2.0	--
MAR. 12	1035	230	1.0	1.5	--
APR. 16	0855	2520	4.5	1.5	--
MAY 20	1005	187	20.5	23.5	--
JULY 02	1450	71	28.0	28.5	--
AUG. 18	1445	37	25.0	26.0	--
SEP. 17	1615	46	17.5	20.0	--
04151500 CASS RIVER AT FRANKENMUTH, MICH. (LAT 43°19'40" LONG 083°44'53")					
OCT. 02, 1974	1040	71	11.5	0.0	--
NOV. 05	1320	115	10.5	6.0	--
DEC. 03	1220	126	1.5	-0.5	--
JAN. 06, 1975	1510	117	1.0	3.5	--
APR. 16	1405	2980	5.5	13.0	--
MAY 20	1530	274	22.5	29.0	--
JULY 02	1220	106	28.0	27.0	--
AUG. 12	0930	42	24.5	26.0	--
SEP. 18	0905	106	17.0	14.0	--
04152500 TOBACCO RIVER AT BEAVERTON, MICH. (LAT 43°52'43" LONG 084°28'18")					
OCT. 04, 1974	1115	241	9.5	10.5	--
NOV. 07	1115	296	7.5	0.5	--
DEC. 10	1120	210	1.5	-1.0	--
MAR. 13, 1975	0940	259	1.0	-4.0	--
APR. 14	1155	439	6.5	8.0	--
MAY 02	1115	1590	12.5	14.0	--
JULY 07	1000	330	24.5	22.0	--
SEP. 02	0945	4960	17.0	18.5	--
04154000 CHIPPEWA RIVER NEAR MOUNT PLEASANT, MICH. (LAT 43°37'32" LONG 084°42'28")					
OCT. 03, 1974	1610	378	10.5	11.0	--
NOV. 04	1035	277	9.5	5.5	--
DEC. 09	1030	235	1.0	-6.0	--
FEB. 03, 1975	1020	200	0.5	-3.0	--
MAR. 12	1035	283	2.5	1.0	--
APR. 11	1340	520	6.0	8.5	--
MAY 19	1100	306	18.5	22.5	--
JULY 01	1055	299	23.5	27.0	--
AUG. 18	1100	141	20.5	20.0	--
SEP. 02	1255	2950	18.0	22.0	--
04155000 PINE RIVER AT ALMA, MICH. (LAT 43°22'46" LONG 084°39'20")					
OCT. 03, 1974	1255	175	9.0	7.0	--
NOV. 04	1300	162	11.0	7.0	--
DEC. 09	1150	155	1.0	-3.0	--
JAN. 13, 1975	1135	651	0.0	-11.5	--
FEB. 03	1155	253	0.5	-1.0	--
MAR. 12	1255	209	0.5	1.5	--
APR. 11	1140	578	5.5	3.0	--
MAY 19	1305	201	21.5	26.5	--
JULY 01	1250	129	25.5	28.0	--
AUG. 18	1250	87	21.0	24.0	--
SEP. 02	1555	1620	18.0	22.5	--

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
STREAMS TRIBUTARY TO LAKE HURON--Continued					
04155500 PINE RIVER NEAR MIDLAND, MICH. (LAT 43°33'52" LONG 084°22'09)					
OCT. 02, 1974	1420	241	10.5	8.0	--
NOV. 04	1520	197	10.5	7.0	--
DEC. 09	1405	216	0.0	-3.0	--
MAR. 12, 1975	1435	193	2.0	2.0	--
APR. 14	1425	842	7.0	8.0	--
MAY 19	1445	203	23.5	29.0	--
JULY 01	1445	190	28.0	30.0	--
AUG. 18	1455	74	26.0	23.0	--
04156000 TITTABAWASSEE RIVER AT MIDLAND, MICH. (LAT 43°35'43" LONG 084°14'08")					
OCT. 03, 1974	0945	787	12.0	0.0	--
NOV. 05	0955	663	10.5	6.5	--
DEC. 03	0935	629	2.0	-4.0	--
JAN. 07, 1975	0940	802	2.0	2.0	--
FEB. 05	1000	868	2.0	0.0	--
MAY 20	0835	846	21.5	20.0	--
JULY 02	0910	614	27.5	22.0	--
AUG. 19	0900	271	24.0	15.0	--
04158500 PIGEON RIVER NEAR OWNEDALE, MICH. (LAT 43°45'49" LONG 083°14'46")					
OCT. 01, 1974	1200	6.0	11.0	7.5	--
NOV. 06	1310	9.0	6.5	6.5	--
DEC. 04	1115	7.0	0.0	-2.5	--
JAN. 07, 1975	1520	11	0.5	2.0	--
FEB. 04	1055	18	0.0	-5.0	--
MAR. 13	0820	11	0.0	-3.0	--
MAR. 21	1055	84	4.0	-1.0	--
APR. 15	1110	272	4.0	11.0	--
APR. 23	1350	65	9.5	13.5	--
MAY 20	1210	15	20.5	25.0	--
JULY 03	1115	7.5	24.5	25.0	--
AUG. 18	1140	2.1	26.0	24.0	--
SEP. 17	0920	3.8	14.0	18.0	--
STREAMS TRIBUTARY TO ST. CLAIR RIVER					
04159500 BLACK RIVER NEAR FARGO, MICH. (LAT 43°05'32" LONG 082°37'05")					
OCT. 18, 1974	1350	17	9.5	7.0	--
NOV. 20	1340	25	6.0	7.5	--
DEC. 18	1240	42	0.5	-3.0	--
JAN. 29, 1975	1015	163	0.0	5.0	--
MAR. 06	1005	121	1.0	1.5	--
MAY 13	1240	118	15.0	13.0	--
JUNE 17	1050	97	21.5	23.0	--
JULY 22	1100	47	23.5	21.0	--
AUG. 26	1100	103	22.0	21.0	--
04159900 MILL CREEK NEAR AVOCA, MICH. (LAT 43°03'16" LONG 082°44'05")					
OCT. 18, 1974	1305	8.6	8.0	6.0	--
NOV. 20	1515	14	7.0	7.5	--
DEC. 18	1350	16	0.5	-0.5	--
JAN. 29, 1975	1320	180	0.0	--	--
MAR. 06	1200	91	0.5	1.5	--
APR. 11	1430	341	5.5	4.0	--
MAY 13	1355	54	16.5	14.5	--
JUNE 17	1200	35	23.0	26.0	--
JULY 22	1245	11	25.0	23.5	--
AUG. 26	1220	55	22.5	22.0	--

ANALYSES OF SAMPLES COLLECTED AT WATER-QUALITY PARTIAL-RECORD STATIONS

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO ST. CLAIR RIVER--Continued

04160570 NORTH BRANCH BELLE RIVER AT IMLAY CITY, MICH.
(LAT 43°01'49" LONG 083°04'02")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 18, 1974	1700	3.5	8.5	5.0	--
NOV. 20	1635	6.1	8.0	6.5	--
DEC. 18	1515	8.4	1.0	-1.0	--
JAN. 29, 1975	1445	55	1.0	2.0	--
MAR. 06	1350	13	4.0	3.0	--
APR. 11	1630	55	4.0	4.0	--
MAY 13	1530	12	17.5	21.0	--
JUNE 17	1320	7.5	22.0	29.0	--
JULY 22	1550	1.6	24.0	--	--
AUG. 25	1650	14	23.0	27.0	--

04160600 BELLE RIVER AT MEMPHIS, MICH.
(LAT 42°54'03" LONG 082°46'09")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 18, 1974	1355	12	8.5	5.5	--
NOV. 19	1535	24	6.0	10.0	--
DEC. 17	1610	36	1.0	0.5	--
JAN. 21, 1975	1615	65	0.5	1.0	--
FEB. 19	1700	67	0.5	0.5	--
MAR. 27	1625	528	3.5	2.0	--
MAY 01	1600	126	18.0	19.5	--
JUNE 16	1430	45	22.0	23.5	--
JULY 21	1510	15	26.0	25.0	--
AUG. 26	1400	166	22.0	23.0	--

STREAMS TRIBUTARY TO LAKE ST. CLAIR

01460800 SASHABAW CREEK NEAR DRAYTON PLAINS, MICH.
(LAT 42°43'12" LONG 083°21'13")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1300	2.2	7.5	18.5	--
NOV. 18	1300	6.9	8.0	10.5	--
DEC. 16	1325	13	2.0	2.5	--
JAN. 20, 1975	1400	18	0.5	-4.0	--
FEB. 18	1230	16	2.0	1.5	--
APR. 01	1155	39	3.5	3.5	--
APR. 28	1425	44	10.0	9.0	--
JUNE 02	1415	12	21.0	21.0	--
JULY 08	1750	8.8	30.0	30.0	--
AUG. 15	1230	10	19.5	15.5	--
SEP. 25	1500	19	11.5	9.0	--

04160900 CLINTON RIVER NEAR DRAYTON PLAINS, MICH.
(LAT 42°39'37" LONG 083°23'25")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1040	29	8.0	12.5	--
NOV. 18	1130	63	7.0	9.0	--
DEC. 16	1130	66	2.5	2.0	--
JAN. 20, 1975	1120	96	1.0	-4.0	--
FEB. 18	1110	75	2.5	1.5	--
APR. 01	1005	147	3.5	--	--
APR. 28	1215	195	9.0	5.0	--
JUNE 02	1140	60	20.5	20.0	--
JULY 07	1515	66	27.5	--	--
AUG. 18	1120	58	22.5	22.5	--
SEP. 25	1240	77	14.0	9.5	--

04161000 CLINTON RIVER AT AUBURN HEIGHTS, MICH.
(LAT 42°38'00" LONG 083°13'28")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 23, 1974	1425	104	13.5	13.0	--
NOV. 21	1615	137	8.5	3.0	--
DEC. 19	1645	173	4.5	-0.5	--
JAN. 23, 1975	1720	161	4.5	1.0	--
FEB. 21	1540	175	7.0	8.5	--
APR. 17	1220	250	10.0	16.0	--
JUNE 05	1435	71	19.5	22.5	--
JULY 08	1305	77	26.0	28.0	--
AUG. 15	1105	40	19.5	16.5	--
SEP. 26	1405	229	14.0	11.0	--

STREAMS TRIBUTARY TO LAKE ST. CLAIR--Continued

04161100 GALLOWAY CREEK NEAR AUBURN HEIGHTS, MICH.
(LAT 42°40'02" LONG 083°12'02")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SEPCIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 16, 1974	1205	1.3	8.0	12.5	--
NOV. 21	1450	7.1	5.0	3.0	--
DEC. 19	1510	7.5	2.0	0.0	--
JAN. 23, 1975	1555	8.5	0.5	1.0	--
FEB. 21	1440	11	3.0	8.0	--
APR. 01	1320	22	3.5	--	--
APR. 29	1140	20	7.5	6.5	--
JUNE 04	1340	6.0	19.0	22.0	--
JULY 08	1435	2.2	23.0	30.0	--
AUG. 11	1630	1.4	21.5	19.0	--
SEP. 26	1255	4.6	12.5	10.5	--

04161500 PAINT CREEK NEAR LAKE ORION, MICH.
(LAT 42°46'03" LONG 083°13'12")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1450	23	10.5	17.5	--
NOV. 18	1500	19	8.5	11.0	--
DEC. 16	1500	11	4.5	2.5	--
JAN. 20, 1975	1500	46	2.0	-5.0	--
FEB. 18	1340	30	3.5	1.5	--
MAR. 31	1100	86	3.5	-1.5	--
APR. 29	1340	87	10.0	10.0	--
JUNE 02	1550	37	21.5	14.0	--
JULY 09	1240	32	26.0	28.0	--
SEP. 25	1745	54	13.5	9.5	--

04161540 PAINT CREEK AT ROCHESTER, MICH.
(LAT 42°41'18" LONG 083°08'35")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 23, 1974	1025	36	10.0	11.0	--
NOV. 19	0935	41	7.0	8.5	--
DEC. 17	0950	38	3.0	1.0	--
JAN. 21, 1975	1040	67	0.5	-2.0	--
FEB. 18	1650	61	3.0	1.0	--
MAR. 31	1405	131	3.5	3.0	--
APR. 30	1135	124	10.5	19.0	--
JUNE 03	1045	54	17.0	19.0	--
JULY 09	1120	41	23.0	26.0	--
AUG. 11	1440	24	22.5	28.5	--
SEP. 26	1020	97	12.5	11.5	--

04161580 STONY CREEK NEAR ROMEO, MICH.
(LAT 42°48'03" LONG 083°05'25")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 22, 1974	1625	11	9.0	18.5	--
NOV. 19	1145	15	6.0	7.5	--
DEC. 17	1100	17	2.0	1.5	--
JAN. 21, 1975	1145	23	0.5	-2.0	--
FEB. 19	1230	18	2.5	3.0	--
MAR. 31	1155	49	1.5	0.0	--
APR. 29	1500	56	13.0	18.0	--
JUNE 03	1315	13	17.0	20.0	--
JULY 09	1500	9.2	24.5	25.5	--
AUG. 13	1420	18	21.0	24.5	--
SEP. 22	1305	29	12.5	12.5	--

04161800 STONY CREEK NEAR WASHINGTON, MICH.
(LAT 42°42'55" LONG 083°05'31")

DATE	TIME	DISCHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 23, 1974	1135	42	9.0	12.0	--
NOV. 18	1610	44	4.5	11.0	--
DEC. 16	1700	55	3.0	1.0	--
JAN. 20, 1975	1620	58	2.5	-5.0	--
FEB. 18	1430	42	3.5	1.5	--
MAR. 31	1430	12	4.0	--	--
APR. 30	1245	127	11.0	18.0	--
JUNE 02	1735	45	21.5	14.0	--
JULY 09	1800	21	25.0	27.0	--
AUG. 14	1120	24	23.5	22.0	--
SEP. 26	1115	61	13.5	10.5	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
STREAMS TRIBUTARY TO LAKE ST. CLAIR--Continued					
04162900 BIG BEAVER CREEK NEAR WARREN, MICH. (LAT 42°32'31" LONG 083°02'52")					
OCT. 16, 1974	1455	.85	11.5	15.5	--
NOV. 21	1240	1.9	6.0	3.5	--
DEC. 19	1235	2.4	1.5	2.5	--
JAN. 23, 1975	1345	.69	0.5	2.0	--
FEB. 21	1235	2.8	1.0	9.0	--
MAR. 26	1340	6.3	4.5	-2.0	--
MAY 02	1325	3.3	18.0	18.0	--
JUNE 04	1605	.65	18.0	17.0	--
JULY 11	1235	2.3	21.5	19.0	--
AUG. 14	1515	.90	22.0	25.0	--
SEP. 24	1110	.42	12.0	14.5	--
04163400 PLUM BROOK AT UTICA, MICH. (LAT 42°36'05" LONG 083°04'27")					
OCT. 16, 1974	1320	1.3	10.0	15.0	--
NOV. 21	1350	4.1	4.5	3.5	--
DEC. 19	1345	6.4	1.0	1.5	--
JAN. 23, 1975	1450	4.1	0.5	1.0	--
FEB. 21	1345	11	1.0	7.0	--
MAR. 26	1455	44	4.5	-1.0	--
MAY 02	1430	16	16.0	19.5	--
JUNE 04	1500	5.0	18.0	17.5	--
JULY 11	1325	2.0	20.5	20.5	--
AUG. 14	1340	.96	22.0	23.5	--
SEP. 24	1220	3.5	13.0	15.0	--
04164000 CLINTON RIVER NEAR FRASER, MICH. (LAT 42°34'40" LONG 082°57'00")					
OCT. 16, 1974	1705	272	13.0	16.0	--
NOV. 21	1125	323	8.0	4.5	--
DEC. 19	1115	371	3.0	3.0	--
JAN. 22, 1975	1800	382	2.0	-5.0	--
FEB. 21	1125	418	4.0	3.5	--
MAR. 28	1250	894	4.0	3.0	--
MAY 02	1200	800	15.0	18.5	--
JUNE 05	1310	627	18.0	23.5	--
AUG. 12	1215	317	26.0	28.0	--
04164100 EAST POND CREEK AT ROMEO, MICH. (LAT 42°49'21" LONG 083°01'13")					
OCT. 18, 1974	1600	7.2	8.0	5.0	--
NOV. 19	1240	14	5.5	9.0	--
DEC. 17	1210	17	2.0	2.0	--
JAN. 21, 1975	1300	23	0.5	1.5	--
FEB. 19	1330	17	2.0	3.0	--
MAR. 27	1230	68	3.0	2.5	--
APR. 29	1625	48	14.0	18.0	--
JUNE 03	1455	19	20.0	21.5	--
JULY 09	1555	9.7	24.5	26.0	--
AUG. 13	1530	16	21.0	25.0	--
SEP. 22	1410	23	13.0	11.5	--
04164300 EAST BRANCH COON CREEK AT ARMADA, MICH. (LAT 42°50'45" LONG 082°53'06")					
NOV. 19, 1974	1425	.48	7.0	10.5	--
DEC. 17	1425	1.5	2.5	2.0	--
FEB. 19, 1975	1500	3.5	2.0	0.5	--
MAR. 27	1415	14	3.5	2.0	--
MAY 01	1450	3.8	19.0	19.0	--
JUNE 03	1715	.69	21.5	20.0	--
JULY 10	1125	.22	21.0	25.0	--
AUG. 13	1135	1.5	21.5	22.0	--
SEP. 22	1600	2.2	12.5	12.5	--
04164500 NORTH BRANCH CLINTON RIVER NEAR MOUNT CLEMENS, MICH. (LAT 42°37'45" LONG 082°53'25")					
NOV. 20, 1974	1550	38	7.0	7.5	--
JAN. 23, 1975	1205	76	0.5	0.0	--
FEB. 20	1530	113	0.5	2.0	--
MAR. 28	1100	399	2.5	0.0	--
MAY 01	1830	163	17.0	18.5	--
JUNE 04	1740	61	19.0	17.0	--
JULY 11	0905	23	21.0	19.5	--
AUG. 12	1730	9.7	24.0	26.0	--
SEP. 23	1410	110	13.0	14.0	--
STREAMS TRIBUTARY TO LAKE ST. CLAIR--Continued					
04164800 MIDDLE BRANCH CLINTON RIVER AT MACOMB, MICH. (LAT 42°42'23" LONG 082°57'33")					
OCT. 17, 1974	1510	4.2	12.5	15.5	--
NOV. 20	1420	14	8.5	7.5	--
DEC. 18	1500	19	1.0	-1.5	--
JAN. 22, 1975	1400	14	0.5	-5.0	--
FEB. 20	1430	25	1.0	3.5	--
MAR. 28	1425	47	3.0	3.5	--
MAY 01	1015	41	13.5	17.5	--
JUNE 04	1155	22	17.0	23.5	--
JULY 10	1545	8.0	24.0	23.5	--
AUG. 12	1910	3.3	24.0	26.5	--
SEP. 23	1150	23	11.5	17.0	--
STREAMS TRIBUTARY TO DETROIT RIVER					
04166000 RIVER ROUGE AT BIRMINGHAM, MICH. (LAT 42°32'45" LONG 083°13'25")					
OCT. 28, 1974	1700	3.4	10.5	11.0	--
DEC. 03	1640	11	1.0	1.5	--
JAN. 06, 1975	1600	15	1.5	1.0	--
FEB. 10	1600	18	1.0	--	--
MAR. 19	1400	43	5.0	10.5	--
APR. 22	1420	48	11.0	14.5	--
JULY 08	1055	7.5	25.5	28.5	--
SEP. 24	1350	16	13.5	15.5	--
04166100 RIVER ROUGE AT SOUTHFIELD, MICH. (LAT 42°26'52" LONG 083°17'52")					
OCT. 29, 1974	1450	13	9.5	18.0	--
DEC. 04	1240	35	1.0	0.0	--
JAN. 07, 1975	1120	41	1.0	2.5	--
FEB. 11	0845	40	0.0	-1.0	--
MAR. 19	0940	108	6.0	8.0	--
APR. 22	1225	166	9.0	12.0	--
JULY 07	1445	67	23.5	27.0	--
AUG. 11	1405	10	25.5	28.0	--
SEP. 15	1335	39	13.5	17.5	--
04166200 EVANS DITCH AT SOUTHFIELD, MICH. (LAT 42°27'28" LONG 083°16'03")					
OCT. 29, 1974	1600	1.6	10.5	18.0	--
DEC. 04	1400	7.0	2.0	2.0	--
JAN. 07, 1975	1025	3.6	3.0	2.0	--
FEB. 11	1020	3.0	0.5	-1.0	--
MAR. 19	1240	9.7	7.0	8.5	--
APR. 22	1330	8.0	10.5	14.0	--
JULY 07	1545	5.2	23.5	28.0	--
AUG. 11	1445	2.0	25.0	33.0	--
SEP. 15	1500	3.7	15.5	19.0	--
04166300 UPPER RIVER ROUGE AT FARMINGTON, MICH. (LAT 42°27'52" LONG 083°22'11")					
OCT. 28, 1974	1520	3.1	10.5	16.0	--
DEC. 04	1045	4.1	1.0	3.0	--
JAN. 06, 1975	1450	6.6	1.0	1.0	--
FEB. 10	1430	7.2	0.5	-12.0	--
MAR. 19	1045	28	5.5	7.0	--
APR. 22	1035	34	9.0	8.5	--
JULY 07	1305	15	23.0	27.0	--
AUG. 11	1230	2.0	23.5	29.0	--
SEP. 15	1150	7.6	13.0	17.5	--
04166500 RIVER ROUGE AT DETROIT, MICH. (LAT 42°22'20" LONG 083°15'20")					
OCT. 29, 1974	1235	26	11.0	17.0	--
DEC. 04	1600	76	0.5	-1.0	--
JAN. 07, 1975	1230	79	1.0	3.5	--
FEB. 11	1150	77	0.0	--	--
MAR. 17	1710	161	5.0	11.0	--
APR. 23	0900	213	9.5	12.5	--
JULY 08	1020	61	23.5	26.0	--
AUG. 12	1100	43	23.5	26.0	--
SEP. 16	0955	69	14.5	14.5	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

STREAMS TRIBUTARY TO DETROIT RIVER--Continued

04167000 MIDDLE RIVER ROUGE NEAR GARDEN CITY, MICH.
(LAT 42°20'55" LONG 083°18'45")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 29, 1974	1100	18	11.0	--	--
DEC. 05	1105	34	0.5	-4.0	--
JAN. 07, 1975	1415	36	2.0	4.0	--
FEB. 11	1300	42	0.5	-3.5	--
MAR. 18	1535	88	5.5	11.0	--
APR. 23	1035	121	9.0	16.5	--
JULY 08	1130	60	23.0	26.0	--
AUG. 12	1200	41	24.0	27.0	--
SEP. 16	1055	58	16.5	17.5	--

04168000 LOWER RIVER ROUGE AT INKSTER, MICH.
(LAT 42°18'00" LONG 083°18'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 29, 1974	0935	2.0	9.5	15.0	--
DEC. 05	0945	6.6	1.0	-3.0	--
JAN. 07, 1975	1540	17	3.5	4.0	--
FEB. 11	1430	11	1.0	-4.0	--
MAR. 18	1420	82	6.5	13.0	--
APR. 23	1320	46	9.0	--	--
JULY 08	1245	30	23.5	26.0	--
AUG. 12	1300	5.3	25.5	27.0	--
SEP. 16	1230	23	16.5	19.0	--

STREAMS TRIBUTARY TO LAKE ERIE

04169500 HURON RIVER AT COMMERCE, MICH.
(LAT 42°35'25" LONG 083°29'05")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 28, 1974	1340	20	11.0	19.5	--
DEC. 03	1440	32	1.0	-1.5	--
JAN. 06, 1975	1340	45	2.0	2.0	--
FEB. 10	1305	53	1.0	-15.0	--
APR. 25	1320	117	9.5	7.0	--
JULY 07	1350	17	25.0	--	--
AUG. 18	1335	8.4	19.0	21.0	--
SEP. 24	1530	74	15.0	15.0	--

04170000 HURON RIVER AT MILFORD, MICH.
(LAT 42°34'44" LONG 083°37'36")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 28, 1974	1215	59	12.0	21.0	--
DEC. 03	1230	91	1.5	0.5	--
JAN. 06, 1975	1240	106	2.5	2.0	--
FEB. 10	1205	116	1.5	-16.0	--
MAR. 20	1240	179	6.0	8.5	--
APR. 25	1110	291	10.5	7.0	--
JULY 07	1230	14	24.0	24.0	--
AUG. 15	1520	60	22.5	17.5	--
SEP. 05	1320	365	20.5	16.5	--
SEP. 25	1115	168	14.0	9.5	--

04170500 HURON RIVER NEAR NEW HUDSON, MICH.
(LAT 42°30'45" LONG 083°40'35")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 28, 1974	1030	118	10.5	19.0	--
DEC. 03	1045	112	1.5	0.5	--
JAN. 06, 1975	1125	122	3.5	2.0	--
FEB. 10	1055	134	1.0	-18.0	--
MAR. 20	1000	193	4.5	7.0	--
APR. 25	1000	293	10.5	7.5	--
JUNE 03	1110	123	19.5	15.5	--
JULY 07	1050	66	23.0	22.5	--
AUG. 11	1100	56	23.0	26.0	--
SEP. 12	1420	253	20.5	17.5	--

04172000 HURON RIVER NEAR HAMBURG, MICH.
(LAT 42°27'55" LONG 083°48'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 12, 1974	1239	139	14.0	19.5	--
NOV. 16	1525	241	4.5	3.5	--
DEC. 30	1246	230	3.0	2.5	--
MAR. 19, 1975	1016	333	5.0	7.0	--
APR. 30	1040	540	12.0	17.0	--
JUNE 02	1410	233	19.5	17.5	--
JULY 07	1015	175	23.0	26.5	--
AUG. 11	1015	99	24.0	26.0	--
SEP. 15	1000	394	15.0	12.0	--

STREAMS TRIBUTARY TO LAKE ERIE--Continued

04173500 MILL CREEK NEAR DEXTER, MICH.
(LAT 42°18'00" LONG 083°53'55")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 12, 1974	1031	26	12.5	16.5	--
NOV. 16	1113	33	1.5	1.0	--
DEC. 30	1030	60	3.0	1.0	--
FEB. 01, 1975	1016	113	1.5	-2.0	--
MAR. 19	1311	184	5.5	11.0	--
APR. 29	1450	189	10.5	--	--
JUNE 02	1135	56	15.0	19.5	--
JULY 10	1320	34	20.0	25.0	--
AUG. 14	1145	21	20.5	27.0	--
SEP. 18	1215	62	15.5	18.0	--

04174500 HURON RIVER AT ANN ARBOR, MICH.
(LAT 42°17'10" LONG 083°44'00")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 31, 1974	1130	84	14.0	24.0	--
DEC. 09	1305	326	1.5	-3.0	--
JAN. 09, 1975	1345	643	2.0	--	--
FEB. 13	1110	317	0.5	-6.5	--
APR. 29	1225	1380	9.0	14.5	--
MAY 30	1050	282	22.0	23.5	--
JULY 10	1140	198	26.0	21.0	--
AUG. 14	1100	116	26.0	22.0	--

04174800 HURON RIVER AT YPSILANTI, MICH.
(LAT 42°14'57" LONG 083°36'45")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 31, 1974	0945	233	14.0	21.0	--
DEC. 09	1100	326	2.0	-1.0	--
FEB. 13, 1975	1000	371	1.0	-5.5	--
APR. 29	1030	1430	9.0	--	--
MAY 30	1610	189	24.0	25.5	--
JULY 10	1015	303	24.5	21.0	--
AUG. 14	0930	92	25.0	22.0	--
SEP. 03	1105	1750	21.0	21.0	--
SEP. 18	1035	823	15.5	17.0	--

04175340 STONY CREEK AT OAKVILLE, MICH.
(LAT 42°05'05" LONG 083°34'43')

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 30, 1974	1245	11	13.0	20.0	--
DEC. 05	1740	11	0.5	-1.0	--
JAN. 08, 1975	1350	37	2.0	4.0	--
FEB. 12	1150	20	0.0	-3.5	--
APR. 24	1000	76	10.0	17.0	--
JULY 08	1525	13	22.0	28.0	--
AUG. 12	1425	7.1	23.5	32.5	--
SEP. 16	1445	20	15.5	22.0	--

04175600 RIVER RAISIN NEAR MANCHESTER, MICH.
(LAT 42°10'05" LONG 084°04'34")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
OCT. 31, 1974	1100	33	14.0	22.0	--
DEC. 19	1013	98	0.5	-1.0	--
JAN. 13, 1975	1110	149	0.5	--	--
FEB. 18	1030	100	0.5	2.5	--
MAR. 25	1030	246	5.5	3.5	--
APR. 30	1125	197	12.0	19.5	--
JULY 09	1455	37	25.5	22.5	--
AUG. 13	1400	21	26.0	26.5	--
SEP. 17	1425	76	17.5	19.5	--

04175700 RIVER RAISIN NEAR TECUMSEH, MICH.
(LAT 41°56'35" LONG 083°56'45")

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERATURE (°C)	AIR TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS at 25°C)
DEC. 19, 1974	1416	185	1.0	0.5	--
JAN. 13, 1975	1400	486	0.0	-8.0	--
FEB. 18	1215	205	0.5	1.0	--
MAR. 25	1320	432	7.0	2.5	--
JULY 09	1310	76	22.5	24.5	--
AUG. 13	1235	55	24.5	27.5	--
SEP. 17	1125	158	16.5	20.0	--

PERIODIC MEASUREMENTS OF WATER TEMPERATURES AND SPECIFIC CONDUCTANCE.--Continued

WATER QUALITY DATA AT STREAMFLOW STATIONS, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	DIS-CHARGE (CFS)	WATER TEMPERA-TURE (°C)	AIR TEMPERA-TURE (°C)	SPECIFIC CONDUC-TANCE (UMHOS at 25°C)

STREAMS TRIBUTARY TO LAKE ERIE--Continued

04176000 RIVER RAISIN NEAR ADRIAN, MICH.
(LAT 41°54'15" LONG 083°58'50")

OCT. 31., 1974	1600	118	13.5	20.0	--
DEC. 20	1021	260	1.0	-4.0	--
JAN. 13, 1975	1500	1330	0.5	-8.0	--
FEB. 18	1500	347	0.5	1.0	--
MAR. 25	1530	687	6.5	2.5	--
APR. 30	1630	760	12.5	20.0	--
JULY 09	1130	164	22.5	21.5	--
AUG. 13	1100	82	24.0	28.0	--
SEP. 17	1310	213	17.0	22.0	--

04176400 SALINE RIVER NEAR SALINE, MICH.
(LAT 42°07'50" LONG 083°46'35")

OCT. 30, 1974	1500	20	13.0	22.0	--
DEC. 06	1030	18	0.5	-2.0	--
JAN. 08, 1975	1510	40	4.0	4.0	--
FEB. 12	1400	32	0.5	-4.0	--
MAR. 17	1400	73	4.5	--	--
APR. 24	1245	94	11.0	14.0	--
JULY 09	1650	23	22.5	26.0	--
AUG. 13	1600	11	24.0	27.5	--
SEP. 17	1600	40	16.5	20.5	--

04176500 RIVER RAISIN NEAR MONROE, MICH.
(LAT 41°57'38" LONG 083°31'52")

OCT. 30, 1974	1015	136	12.0	18.0	--
DEC. 05	1430	213	1.0	-1.5	--
JAN. 08, 1975	1140	435	2.0	4.0	--
FEB. 12	0930	446	0.0	-3.5	--
APR. 23	1700	2630	9.5	13.5	--
JULY 08	1715	725	23.0	27.0	--
AUG. 12	1605	115	27.5	28.0	--
SEP. 16	1650	432	17.5	17.0	--

SEDIMENT PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE MICHIGAN

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
04096205 - BAW BEESE LAKE INLET AT M-99 NR HILLSDALE, MICH. (LAT 41 53 17 LONG 084 35 38.01)					
JUNE, 1975					
16...	1525	3.4	22.5	E1	--
04096209 - BAW BEESE LK OUT AT GRSWLD RD AT HILLSDALE, MICH (LAT 41 54 23 LONG 084 37 21.01)					
JUNE, 1975					
16...	1135	.66	19.0	1	.00
04096210 - KING LK INLET AT CAMBRIA RD AT HILLSDALE, MICH.. (LAT 41 53 48 LONG 084 39 04.01)					
JUNE, 1975					
16...	1300	1.1	19.5	10	.03
04096212 - KING LAKE OUTLET AT M-99 AT HILLSDALE, MICH. . (LAT 41 54 01 LONG 084 37 55.01)					
JUNE, 1975					
16...	1415	5.7	19.0	7	.11
04096217 - ST. JOSEPH RIVER AT SOUTH ST AT HILLSDALE, MICH. (LAT 41 54 58 LONG 084 37 32.01)					
JUNE, 1975					
16...	1210	9.2	20.0	1	.02
04096227 - ST. JOSEPH RIVER BELOW STP AT HILLSDALE, MICH. . (LAT 41 56 04 LONG 084 38 26.01)					
JUNE, 1975					
16...	1145	17	18.5	18	.84
04096235 - WINONA LK OUT AT HILLSDALE ST AT HILLSDALE, MICH (LAT 41 56 31 LONG 084 37 54.01)					
JUNE, 1975					
16...	1310	3.0	23.0	8	.06
04096240 - BEEBE CREEK AT MAUCK RD NEAR NORTH ADAMS, MICH.. (LAT 41 56 31 LONG 084 31 16.01)					
JUNE, 1975					
16...	1150	13	15.5	19	.69
04096245 - BEEBE CREEK AT KNOWLES RD NR NORTH ADAMS, MICH.. (LAT 41 56 38 LONG 084 31 32.01)					
MAR., 1975					
20...	0900	24	2.0	7	.46
JUNE					
16...	1050	21	15.0	35	2.0
04096257 - BEEBE CREEK AT MILNES RD NEAR HILLSDALE, MICH. . (LAT 41 57 44 LONG 084 35 35.01)					
JUNE, 1975					
16...	1515	37	21.5	3	.30
04096260 - BEEBE C TRIB AT BARKER RD NR NORTH ADAMS, MICH.. (LAT 41 59 02 LONG 084 33 53.01)					
JUNE, 1975					
16...	1255	.17	17.5	1	.00

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
04096263 - BEEBE C TRIB AT MILNES RD NEAR HILLSDALE, MICH.. (LAT 41 58 08 LONG 084 35 35.01)					
JUNE, 1975					
16...	1345	11	17.0	19	.56
04096264 - TR TO BEEBE C TR AT MILNES RD NR HILLSDALE, MICH (LAT 41 58 02 LONG 084 35 35.01)					
JUNE, 1975					
16...	1430	1.1	18.5	23	.07
04096265 - HALF MOON LK OUT,N ADAMS RD,NR JONESVILLE, MICH. (LAT 41 58 38 LONG 084 36 40.01)					
JUNE, 1975					
16...	1525	1.2	24.5	4	.01
04096278 - ST. JOSEPH R BELOW STP AT JONESVILLE, MICH. . (LAT 41 59 37 LONG 084 40 20.01)					
JUNE, 1975					
17...	0830	93	19.0	5	1.3
04096282 - ST. JOSEPH R AT STERLING RD NR LITCHFIELD, MICH. (LAT 42 00 54 LONG 084 43 16.01)					
JUNE, 1975					
17...	0945	105	18.5	10	2.8
04096285 - ST. JOSEPH R AT MILL POND AT LITCHFIELD, MICH. . (LAT 42 01 58 LONG 084 44 13.01)					
JUNE, 1975					
17...	1155	133	19.5	2	.72
04096293 - S SAND LK OUTLET AT BACON RD NR HILLSDALE, MICH. (LAT 42 55 52 LONG 084 41 56.01)					
JUNE, 1975					
17...	0855	5.5	21.5	8	.12
04096298 - SAND C TRIB BELOW MECHANIC RD NR HILLSDALE, MICH (LAT 41 55 58 LONG 084 41 42.01)					
JUNE, 1975					
17...	0950	3.7	19.5	15	.15
04096299 - M SAND LK OUT AT MECHANIC RD NR HILLSDALE, MICH. (LAT 42 56 34 LONG 084 42 06.01)					
JUNE, 1975					
17...	1145	13	21.0	5	.18
04096304 - SAND CREEK AT US-12 NEAR ALLEN, MICH. . (LAT 41 57 47 LONG 084 44 20.01)					
MAR., 1975					
20...	1300	15	9.0	E7	--
JUNE					
17...	1200	27	20.0	4	.29
04096307 - SAND C TRIBUTARY AT BEULOW RD NEAR ALLEN, MICH.. (LAT 41 58 51 LONG 084 44 20.01)					
JUNE, 1975					
17...	1220	1.8	23.0	13	.06

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975--CONTINUED

DATE	TIME	INSTANTANEOUS DISCHARGE (CFS)	TEMPERATURE (DEG C)	SUSPENDED SEDIMENT (MG/L)	SUSPENDED SEDIMENT DISCHARGE (T/DAY)
04096308 - SAND CREEK AT JONESVILLE RD NR ALLEN, MICH. . (LAT 41 59 08 LONG 084 45 04.01)					
JUNE, 1975					
17...	0900	29	17.5	10	.78
04096317 - ST. JOSEPH R AT S CO LINE RD NR LITCHFIELD, MICH (LAT 42 04 21 LONG 084 49 50.01)					
JUNE, 1975					
17...	1040	146	18.5	21	8.3
04096332 - ST. JOSEPH R AT T DRIVE SOUTH NEAR HOMER, MICH.. (LAT 42 06 04 LONG 084 50 38.01)					
JUNE, 1975					
17...	1335	176	19.5	22	10
04112500 - RED CEDAR RIVER AT EAST LANSING, MICH. . (LAT 42 43 40 LONG 084 28 40.01)					
APR., 1975					
20...	1610	5820		331	5200
21...	0920	5610		166	2510
21...	1430	5410		156	2280
22...	0840	4560		86	1060
23...	0915	3180		57	489
MAY					
29...	1100	236		18	11
04113000 - GRAND RIVER AT LANSING, MICH. . (LAT 42 45 02 LONG 084 33 19.01)					
APR., 1975					
20...	1710	11200		312	9440
21...	1025	10900		185	5450
21...	1500	10500		162	4590
22...	0930	9060		101	2470
22...	1535	8220		97	2150
23...	1005	6820		71	1310
MAY					
29...	0945	1090		24	71
04114000 - GRAND RIVER AT PORTLAND, MICH. . (LAT 42 51 20 LONG 084 54 45.01)					
APR., 1975					
20...	1830	12200		347	11400
21...	1130	12200		278	9160
21...	1545	12100		240	7840
22...	1015	10700		151	4360
22...	1610	9990		136	3670
23...	1035	8130		96	2110
04116000 - GRAND RIVER AT IONIA, MICH. . (LAT 42 58 20 LONG 085 04 13.01)					
APR., 1975					
20...	1430	11800		227	7230
21...	1625	16200		219	9580
22...	1140	16500		172	7660
22...	1630	16200		141	6170
23...	1135	14200		84	3220

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
04112500 - RED CEDAR RIVER AT EAST LANSING, MICH. (LAT 42 43 40 LONG 084 28 40.01)											
APR., 1975											
22...	0840	79	91	93	94	95	96	96	96	100	--
23...	0915	67	78	82	85	88	89	89	90	100	--
04114000 - GRAND RIVER AT PORTLAND, MICH. (LAT 42 51 20 LONG 084 54 45.01)											
APR., 1975											
22...	1610	65	68	73	77	78	78	80	82	100	--
04116000 - GRAND RIVER AT IONIA, MICH. (LAT 42 58 20 LONG 085 04 13.01)											
APR., 1975											
22...	1140	74	86	95	97	98	99	99	100	--	--
22...	1630	80	89	95	98	99	99	99	99	100	--

STREAMS TRIBUTARY TO LAKE HURON

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUSPENDED SEDIMENT CONCENTRATION, MG/L	SUSPENDED SEDIMENT DISCHARGE, T/DAY	SUSPENDED SEDIMENT DISCHARGE, T/DAY
04143900 - SHIAWASSEE RIVER AT LINDEN, MICH. (LAT 42 48 56 LONG 083 48 08.01)				
APR., 1975				
21...	1100	438	16	19
23...	1000	462	10	12
04144000 - SHIAWASSEE RIVER AT BYRON, MICH. (LAT 42 49 25 LONG 083 56 45.01)				
APR., 1975				
21...	1330	3770	76	774
23...	1115	3530	31	295
04144500 - SHIAWASSEE RIVER AT OWOSSO, MICH. (LAT 43 00 54 LONG 084 10 52.01)				
APR., 1975				
21...	1630	4250	153	1760
23...	1240	4680	80	1010
04145000 - SHIAWASSEE RIVER NEAR FERGUS, MICH. (LAT 43 15 17 LONG 084 06 20.01)				
APR., 1975				
21...	1730	4210	259	2940
22...	1530	4740	256	3280
23...	1400	5150	226	3140
04148500 - FLINT RIVER NEAR FLINT, MICH. (LAT 43 02 20 LONG 083 46 10.01)				
APR., 1975				
22...	1400	5900	154	2450
23...	1600	5920	207	3310
04149000 - FLINT RIVER NEAR FOSTERS, MICH. (LAT 43 18 30 LONG 083 57 13.01)				
APR., 1975				
22...	1450	6160	129	2150
23...	1800	6180	120	2000

SEDIMENT PARTIAL-RECORD STATIONS

STREAMS TRIBUTARY TO LAKE HURON--CONTINUED

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1974 TO SEPTEMBER 1975

DATE	TIME	SUS. SED. FALL DIAM. % FINER THAN .002 MM	SUS. SED. FALL DIAM. % FINER THAN .004 MM	SUS. SED. FALL DIAM. % FINER THAN .008 MM	SUS. SED. FALL DIAM. % FINER THAN .016 MM	SUS. SED. FALL DIAM. % FINER THAN .031 MM	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM	SUS. SED. SIEVE DIAM. % FINER THAN .125 MM	SUS. SED. SIEVE DIAM. % FINER THAN .250 MM	SUS. SED. SIEVE DIAM. % FINER THAN .500 MM	SUS. SED. SIEVE DIAM. % FINER THAN 1.00 MM
04144500 - SHIAWASSEE RIVER AT OWOSSO, MICH. (LAT 43 00 54 LONG 084 10 52.01)											
APR., 1975 23...	1240	60	69	77	80	83	83	83	85	89	100
04145000 - SHIAWASSEE RIVER NEAR FERGUS, MICH. (LAT 43 15 17 LONG 084 06 20.01)											
APR., 1975 23...	1400	36	45	50	54	58	61	62	67	80	100
04148500 - FLINT RIVER NEAR FLINT, MICH. (LAT 43 02 20 LONG 083 46 10.01)											
APR., 1975 23...	1600	37	46	54	60	66	69	70	81	92	100
04149000 - FLINT RIVER NEAR FOSTERS, MICH. (LAT 43 18 30 LONG 083 57 13.01)											
APR., 1975 23...	1800	51	61	70	77	82	84	85	100	--	--

Temperatures of ground water are measured as part of a state-wide water resource investigation in cooperation with Michigan Department of Natural Resources. The purpose of these measurements is to determine the natural ground-water temperature of selected points throughout the state. These data, when combined with existing theory, can be used to estimate ground-water temperatures at moderate depth at any point in the state. Measurements of temperature were made by means of "lazy" thermometers (Heath 1964), which remain in the well except when being read.

TEMPERATURE (°C) OF GROUND WATER AT INDICATED DEPTH

DATE	WATER TEMPER-ATURE (°C)	DATE	WATER TEMPER-ATURE (°C)	DATE	WATER TEMPER-ATURE (°C)
ALGER COUNTY, 45N19W25BD (LAT46°16'08", LONG 86°37'38") DEPTH 66 ft (20 m)					
OCT. 30, 1974	9.5	MAY 05, 1975	6.5	SEP. 16.....	9.0
DEC. 18.....	8.5	AUG. 21.....	9.0		
CLINTON COUNTY, 06N02W16DDAD (LAT 42°54'10", LONG 84°32'35") DEPTH 23 ft (7 m)					
OCT. 25, 1974	11.0	MAR. 25.....	9.5	AUG. 26.....	10.0
NOV. 25.....	11.5	APR. 24.....	9.0	AUG. 27.....	10.5
DEC. 22.....	11.5	MAY 23.....	9.0	SEP. 24.....	11.0
JAN. 22, 1975	11.0	JUNE 20.....	8.5	SEP. 26.....	11.0
FEB. 25.....	10.0	JULY 28.....	9.5		
DICKINGSON COUNTY, 43N28W32AD (LAT 46°04'59", LONG 87°49'37") DEPTH 31 ft (9 m)					
OCT. 24, 1974	7.5	FEB. 27.....	7.5	JULY 17.....	6.5
NOV. 12.....	7.5	MAR. 20.....	7.0	SEP. 03.....	7.0
DEC. 19.....	7.5	APR. 17.....	7.0	SEP. 30.....	7.5
JAN. 24, 1975	7.5	MAY 19.....	6.5		
HILLSDALE COUNTY, 07S02W10BDDD (LAT 41°52'36", LONG 84°31'37") DEPTH 20 ft (6 m)					
NOV. 22, 1974	10.5	MAR. 21.....	9.0	AUG. 26.....	9.0
DEC. 16.....	10.5	MAY 20.....	8.0	SEP. 23.....	9.0
JAN. 16, 1975	10.5	JULY 02.....	8.0		
FEB. 19.....	9.5	JULY 22.....	8.5		

DATE	WATER TEMPER-ATURE (°C)	DATE	WATER TEMPER-ATURE (°C)	DATE	WATER TEMPER-ATURE (°C)
INGHAM COUNTY, 03N01E07DDCA (LAT 42°39'34", LONG 84°21'49") DEPTH 41 ft (12 m)					
NOV. 26, 1974	11.0	MAR. 25.....	9.5	JULY 31.....	10.5
DEC. 22.....	11.0	APR. 24.....	9.5	AUG. 26.....	11.0
JAN. 23, 1975	10.0	MAY 29.....	10.5	SEP. 24.....	10.5
FEB. 24.....	10.0	JULY 02.....	10.5		
KENT COUNTY, 10N12W13DDDA (LAT 43°15'00", LONG 85°40'22") DEPTH 30 ft (9 m)					
JULY 01, 1975	12.0	AUG. 11.....	13.5	SEP. 09.....	13.5
LENAWEE COUNTY, 05S01E12DDBD (LAT 42°02'46", LONG 84°15'06") DEPTH 39 ft (12 m)					
OCT. 23, 1974	9.5	FEB. 18.....	9.5	JUNE 26.....	9.5
NOV. 22.....	9.5	MAR. 20.....	9.5	JULY 21.....	9.5
DEC. 13.....	9.5	APR. 17.....	9.5	AUG. 18.....	9.5
JAN. 15, 1975	9.5	MAY 19.....	9.5	SEP. 24.....	9.5
MARQUETTE COUNTY, 47N29W02DA (LAT 46°29'59", LONG 87°53'13") DEPTH 19 ft (6 m)					
NOV. 07, 1974	9.0	FEB. 20.....	5.5	JULY 23.....	8.0
DEC. 09.....	7.5	APR. 07.....	4.0	SEP. 04.....	9.5
JAN. 10, 1975	6.5	JUNE 17.....	6.5		
MENOMINEE COUNTY, 37N26W19DA (LAT 45°35'00", LONG 87°33'15") DEPTH 17 ft (5 m)					
OCT. 25, 1974	11.0	MAR. 19, 1975	5.5	AUG. 22.....	11.0
NOV. 20.....	10.0	APR. 15.....	5.5	SEP. 25.....	11.5
DEC. 19.....	8.5	JUNE 25.....	7.5		
MONROE COUNTY, 07S06E15AD (LAT 41°52'35", LONG 83°41'40") DEPTH 17 ft (5 m)					
OCT. 30, 1974	12.5	MAR. 17.....	10.5	AUG. 12.....	10.0
DEC. 05.....	11.5	APR. 24.....	8.5	SEP. 16.....	11.0
JAN. 08, 1975	11.0	JUNE 05.....	8.5		
FEB. 12.....	10.5	JULY 09.....	9.0		
MUSKEGON COUNTY, 11N15W34DA (LAT 43°18'06, LONG 86°04'44") DEPTH 31 ft (9 m)					
OCT. 02, 1974	10.5	FEB. 11.....	8.5	JULY 02.....	9.5
NOV. 05.....	9.0	MAR. 11.....	7.5	AUG. 12.....	10.0
DEC. 09.....	9.0	APR. 14.....	6.5	SEP. 11.....	11.0
JAN. 14, 1975	8.0	MAY 20.....	8.5		

DATE	WATER TEMPER-ATURE (°C)	DATE	WATER TEMPER-ATURE (°C)	DATE	WATER TEMPER-ATURE (°C)
OAKLAND COUNTY, 05N08E08ACAC (LAT 42°51'16", LONG 83°32'15") DEPTH 42 ft (13 m)					
OCT. 18, 1974	9.0	FEB. 14.....	9.0	JUNE 13.....	9.0
NOV. 18.....	10.0	MAR. 17.....	9.5	JULY 11.....	8.0
DEC. 12.....	9.0	APR. 16.....	9.0	AUG. 13.....	10.0
JAN. 14, 1975	9.0	MAY 16.....	10.0	SEP. 19.....	10.0
ONTONAGON COUNTY , 46N38W30ADD (LAT 46°21'18", LONG 89°05'43") DEPTH 50 ft (15 m)					
OCT. 21, 1974	6.5	APR. 08.....	6.5	SEP. 16.....	6.5
DEC. 03	7.0	MAY 20.....	6.0		
JAN. 14, 1975	6.5	JULY 03.....	6.0		
ROSCOMMON COUNTY, 24N02W20BA (LAT 44°27'22", LONG 84°35'07") DEPTH 12 ft (4 m)					
OCT. 21, 1974	9.0	MAR. 19.....	5.5	JULY 21.....	8.5
NOV. 21.....	8.5	APR. 22.....	4.5	AUG. 22.....	9.5
DEC. 20.....	7.5	MAY 27.....	6.0	SEP. 22.....	10.0
JAN. 21, 1975	6.5	JUNE 20.....	7.0		
FEB. 21.....	5.5	JUNE 25.....	7.5		

SECTION 3. GROUND-WATER RECORDS

Figure 8.--Map showing location of observation wells published in this report.

WELL DESCRIPTIONS AND WATER-LEVEL MEASUREMENTS

Alger County

Au Train Township

461608086373801. Local number 45N 19W 25BDDB. U.S. Forest Service. Artesian well in deposits of Pleistocene age, diam 6 in (15 cm), depth 66 ft (20 m). Lsd about 850 ft (259 m) above msl. Highest water level 6.35 ft (1.94 m), June 29, 1960; lowest 14.19 ft (4.33 m), Apr. 3, 1964. Records available: 1959-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 30, 1974	11.82	May 5, 1975	11.14	Aug 21, 1975	11.79	Sep 16, 1975	11.65
Dec 18	11.76						

Baraga County

Covington Township

463353088144301. Local number 48N 32W 12DDCC. State Highway Department. Water-table well in sand and gravel of Pleistocene age, diam 1¼ in (3.2 cm), depth 10 ft (3 m), screened 7-10 ft (2-3 m). Lsd about 1,630 ft (497 m) above msl. Highest water level 3.27 ft (1.00 m), Apr. 30, 1965; lowest 8.09 ft (2.47 m), Sept. 2, 1960. Records available: 1948-75. Measurements made by Wisconsin-Michigan Power Co.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 2, 1974	6.51	Jan 31, 1975	6.87	Apr 30, 1975	5.23	Jul 31, 1975	7.53
31	7.63	Feb 28	6.96	Jun 2	6.58	Sep 2	7.26
Dec 3	6.50	Mar 31	6.83	30	6.82	30	7.11

Bay County

Pinconning Township

435128083582401. Local number 17N 4E 22DBDC. Pinconning Township. Artesian well in Saginaw Formation of Pennsylvanian age, diam 6 in (15 cm), depth 110 ft (33 m), cased to 60 ft (18 m). Lsd about 620 ft (189 m) above msl. Highest water level 0.57 ft (0.17 m), Mar. 15, 1971; lowest 10.53 ft (3.21 m), Aug. 8, 1963. Records available: 1962-75. Water levels affected by regional pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	2.11	1.57	--	1.48	1.15	1.20	--	1.19	1.75	--	2.25	--
10	1.80	1.65	1.32	1.25	--	1.22	--	1.46	2.40	2.35	--	--
15	1.73	1.52	1.55	1.32	1.27	1.30	1.23	1.45	--	1.85	--	--
20	1.87	1.37	1.45	1.36	1.21	--	1.41	1.95	--	1.93	--	1.28
25	1.60	1.56	1.52	1.10	1.08	--	1.15	2.20	--	2.10	--	1.26
Eom	1.62	1.63	1.49	1.35	1.16	--	1.22	2.48	--	3.22	--	1.23

Branch County

City of Coldwater

415602084593701. Local number 6S 6W 22CABA. City of Coldwater. Artesian well in sand and gravel of Pleistocene age, diam 6 in (15 cm), depth 113 ft (34 m), screened 73-113 ft (22-34 m). Lsd about 970 ft (296 m) above msl. Highest water level 9.0 ft (2.7 m), May 6, 1975; lowest 24.1 ft (7.3 m), Aug. 7, 1964. Records available: 1964-75. Water levels affected by nearby pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	16.2	18.8	19.2	19.3	19.0	17.9	13.7	16.7	17.3	13.8	18.6	16.8
10	20.1	15.1	19.6	19.1	18.8	17.9	17.6	13.0	17.2	18.6	14.9	--
15	19.9	18.8	17.5	17.2	15.7	13.9	17.4	--	13.0	17.3	19.2	17.1
20	15.9	18.9	19.5	18.8	18.9	18.0	13.2	17.5	17.0	14.5	17.3	14.7
25	17.0	19.0	16.2	15.6	17.9	17.7	16.3	13.2	--	18.5	18.1	17.0
Eom	18.8	15.7	18.8	18.8	17.8	17.7	16.3	14.3	--	19.4	12.8	16.3

Calhoun County

Pennfield Township

422422085071501. Local number 1S 7W 10BBAB. Kenneth N. Sabin. Water-table well in deposits of Pleistocene age, diam 15 in (38 cm), depth 12 ft (4 m), tiled to open bottom. Lsd 907.99 ft (276.76 m) above msl. Highest water level 0.89 ft (0.27 m), Mar. 28, 1950; lowest dry, July 29, 1964. Records available: 1946-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct. 2, 1974	4.02	Jan 1, 1975	4.20	Apr 2, 1975	3.54	Jul 2, 1975	3.30
9	4.10	8	4.04	9	3.58	9	3.46
16	4.20	15	3.89	16	3.60	16	3.58
23	4.22	22	3.68	23	2.28	23	3.68
30	4.24	29	3.68	30	3.41	30	3.78
Nov 6	4.30	Feb 5	3.64	May 7	3.68	Aug 6	3.82
13	4.28	12	3.61	14	3.76	13	3.90
20	4.34	17	3.61	21	3.70	20	3.98
28	4.36	26	3.57	28	3.68	28	2.92
Dec 4	4.40	Mar 5	3.64	Jun 4	3.34	Sep 3	3.00
11	4.55	12	3.61	11	3.34	10	3.08
18	4.55	19	3.61	18	3.30	17	3.50
26	4.50	27	3.57	25	3.24	24	3.82

City of Battle Creek

422025085084001. Local number 1S 7W 32DABA. City of Battle Creek. Artesian well in Marshall Formation of Mississippian age, diam 8 in (20 cm), depth 127 ft (39 m), cased to 103 ft (31 m). Lsd 830.79 ft (253.22 m) above msl. Highest water level 0.7 ft (0.2 m), Apr. 26-27, 1950; lowest 16.75 ft (5.11 m), July 16, 1959. Records available: 1939-75. Water levels affected by nearby pumping. Measurements made by Water Dept.

Daily readings; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	5.25	5.05	5.10	4.60	4.35	4.40	4.00	3.05	4.10	4.60	6.70	6.10
10	5.90	4.95	5.15	4.65	4.30	4.10	4.40	3.35	4.00	5.20	6.55	4.65
15	5.15	5.00	5.10	5.50	4.70	4.25	4.90	4.20	4.50	5.80	6.50	4.65
20	5.20	4.80	4.50	5.20	4.45	4.10	3.25	4.10	5.25	5.10	7.80	4.50
25	5.65	4.85	5.05	4.40	4.00	3.90	3.00	3.55	4.30	6.15	7.20	4.20
Eom	5.60	5.25	4.75	4.70	3.90	3.80	3.40	4.90	5.70	7.95	5.15	4.70

Cass County

Mason Township

414651085575601. Local number 8S 14W 17BAAA. Ted Little. Water-table well in deposits of Pleistocene age, diam 28 in (71 cm), depth 55 ft (17 m), cribbed with brick to open bottom. Lsd about 840 ft (256 m) above msl. Highest water level 46.20 ft (14.08 m), July 16, 1950; lowest dry, Mar. 10, 1947. Records available: 1945-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 22, 1974	50.15	Jan 22, 1975	50.90	Apr 22, 1975	50.70	Jul 23, 1975	50.80
Nov 25	50.50	Feb 19	51.10	May 19	50.45	Aug 20	50.40
Dec 26	50.57	Mar 24	50.90	Jun 24	50.28	Sep 24	50.50

Charlevoix County

Chandler Township

451700084454401. Local number 33N 4W 2ACCB. State Dept. of Natural Resources. Artesian well in deposits of Pleistocene age, diam 6 in (15 cm), depth 94 ft (29 m). Lsd about 970 ft (296 m) above msl. Highest water level 69.49 ft (21.18 m), July 14, 1960; lowest 75.85 ft (23.12 m), Apr. 16, 1956. Records available: 1948-75.

Date	Water level	Date	Water level	Date	Water level
Dec 16, 1974	73.16	Jul 15, 1975	72.76	Oct 16, 1975	72.15

Chippewa County

Superior Township

462158084442201. Local number 46N 4W 24DADA. U.S. Forest Service. Artesian well in deposits of Pleistocene age, diam 6 in (15 cm), depth 54 ft (16 m). Lsd about 850 ft (259 m) above msl. Highest water level 18.40 ft (5.61 m), June 7, 1971; lowest 28.43 ft (8.67 m), Apr. 14, 1964. Records available: 1952-65, 1969-75. Measurement discontinued Apr. 20, 1965, resumed Nov. 10, 1969.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	22.35	22.64	22.54	22.82	23.08	23.40	--	22.29	20.78	20.73	21.36	21.95
10	22.40	22.57	22.50	22.87	23.12	23.46	--	21.65	20.90	20.85	21.42	22.02
15	22.43	22.53	22.61	22.92	23.20	23.56	--	21.22	20.74	20.98	21.52	22.09
20	22.50	22.49	22.64	22.91	23.25	23.61	24.00	20.97	20.94	21.07	21.63	22.10
25	22.56	22.60	22.70	22.92	23.30	23.30	23.79	20.89	20.80	21.18	21.70	22.19
Eom	22.61	22.62	22.76	23.07	23.34	23.17	23.12	20.81	20.75	21.27	21.82	22.20

Clinton County

Olive Township

425410084323501. Local number 6N 2W 16DDAD. State Highway Department. Water-table well in gravel of Pleistocene age, diam 14 in (36 cm), depth 23 ft (7 m), open bottom. Lsd 803.32 ft (244.85 m) above msl. Highest water level 13.84 ft (4.22 m), Apr. 30, 1974; lowest 19.93 ft (6.07 m), Feb. 27, 1964. Records available: 1948-75. Federal key well.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 25, 1974	17.76	Jan 22, 1975	17.54	Apr 24, 1975	16.00	Jul 28, 1975	16.70
Nov 25	17.89	Feb 25	17.16	May 23	15.98	Aug 26	16.62
Dec 22	17.83	Mar 25	16.90	Jun 20	16.49	Sep 24	15.58

Crawford County

South Branch Township

443308084242001. Local number 25N 1W 15DDCD. U.S. Forest Service. Huron National Forest. Artesian well in deposits of Pleistocene age, diam 6 in (15 cm), depth 56 ft (17 m), cased. Lsd about 1,190 ft (363 m) above msl. Highest water level 26.85 ft (8.18 m), May 25, 1971; lowest 35.97 ft (10.96 m), Apr. 4-6, 1951. Records available: 1948-75.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	27.95	28.28	28.62	28.99	29.28	29.61	29.94	29.65	28.58	28.24	28.22	28.13
10	28.01	28.33	28.65	29.01	29.36	29.66	29.95	29.51	28.51	28.23	28.19	28.06
15	28.06	28.39	28.73	29.08	29.42	29.72	29.99	29.32	28.38	28.27	28.19	27.92
20	28.14	28.40	28.79	29.14	29.46	29.77	20.05	29.13	28.35	28.24	28.19	27.70
25	28.18	28.53	28.85	29.14	29.46	29.82	30.00	28.97	28.31	28.27	28.14	27.58
Eom	28.23	28.58	28.92	29.29	29.56	29.86	29.83	28.72	28.28	28.27	28.14	27.41

Genesee County

Grand Blanc Township

425552083382801. Local number 6N 7E 9DCCC. General Motors Corporation. Artesian well in Saginaw Formation of Pennsylvanian age, diam 10 in (25 cm), depth 385 ft (117 m). Lsd 837.0 ft (255.1 m), above msl. Highest water level 53.5 ft (16.3 m), May 11, 1974; lowest 82.3 ft (25.1 m) Aug. 1, 1975. Records available: 1974-75. Water levels affected by nearby pumping. Measurements made by Plant Water Dept.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	67.1	67.4	59.4	59.4	63.1	--	64.4	60.1	66.9	71.2	76.4	61.6
10	70.2	63.1	65.0	65.0	62.6	62.3	64.1	59.1	66.7	70.1	74.1	61.0
15	68.8	60.7	60.2	63.6	58.3	59.1	63.6	63.2	59.6	66.8	69.8	63.5
20	65.1	64.8	65.0	62.6	63.6	64.3	57.1	64.4	65.4	64.1	72.8	61.0
25	64.6	64.9	60.3	58.6	62.3	62.1	61.3	61.0	74.2	78.6	66.2	59.7
Eom	67.6	59.2	63.0	64.6	60.1	61.6	60.9	--	66.4	81.7	61.1	63.5

Gogebic County

Ironwood Township

463029090133401. Local number 48N 47W 31DCDC. City of Ironwood. Big Springs well field. Artesian well in sand and gravel of Pleistocene age, diam 1¼ in (3.2 cm), depth 115 ft (35 m), screened 112-115 ft (34-35 m). Lsd 1,170 ft (357 m) above msl. Highest water level 12.6 ft (38 m), June 2, 1966; lowest 44.4 ft (13.5 m), Feb. 10, 1974. Records available: 1963-75. Water levels affected by nearby pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	22.1	20.9	21.0	20.7	--	--	--	15.9	16.9	17.9	19.6	19.0
10	23.1	21.3	20.4	20.8	--	--	21.0	16.3	17.2	18.3	19.7	18.3
15	22.7	--	20.4	20.3	--	--	20.4	15.7	17.5	18.1	20.5	--
20	20.3	--	20.6	20.7	21.4	--	17.8	16.2	17.8	19.1	--	--
25	20.5	--	20.7	--	22.3	--	16.0	16.3	17.7	19.1	--	--
Eom	20.9	--	20.7	--	--	--	15.5	16.7	17.9	19.6	18.7	--

Ingham County

City of Lansing

424502084331301. Local number 4N 2W 9BDAD. City of Lansing. North Grand River Ave. and Josephine St., Lansing. Artesian well in Saginaw Formation of Pennsylvanian age, diam 14 in (36 cm), depth 395 ft (120 m), cased to 49 ft (15 m). Lsd 828.81 ft (252.62 m) above msl. Highest water level 15.63 ft (4.76 m), Mar. 26, 1931; lowest 179.4 ft (54.7 m), Apr. 29, 1968. Records available: 1919, 1929-75. Water levels affected by regional pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	120.5	118.7	117.9	117.0	115.3	114.3	113.5	111.2	112.8	113.0	112.5	109.1
10	120.3	118.4	117.5	116.4	115.2	114.3	113.1	111.6	113.3	113.5	112.2	109.0
15	120.2	117.9	117.5	116.3	115.1	114.4	112.9	111.3	113.1	112.8	111.7	108.8
20	120.2	117.3	117.3	115.8	114.2	114.0	112.3	111.7	113.4	112.3	111.6	108.0
25	119.9	118.2	117.3	115.2	113.8	113.7	111.3	112.6	113.0	112.1	110.2	108.3
Eom	119.5	118.0	117.3	115.8	114.1	113.0	111.2	112.6	112.5	113.1	109.0	107.1

Iron County

Stambaugh Township

460455088412901. Local number 43N 35W 33BDAD. State Highway Department. Water-table well in sand and gravel of Pleistocene age, diam 1¼ in (3.2 cm), depth 12 ft (4 m), screened 9-12 ft (3-4 m). Lsd about 1,520 ft (463 m) above msl. Highest water level 1.66 ft (0.51 m), June 1, 1973; lowest 8.44 ft (2.57 m), Mar. 15, 1949. Records available: 1948-75. Measurements made by Wisconsin-Michigan Power Co.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 1, 1974	5.00	Jan 3, 1975	5.33	Apr 1, 1975	5.84	Jul 1, 1975	3.72
Nov 1	5.15	Feb 4	5.58	May 1	4.08	Aug 1	4.35
Dec 2	5.06	Mar 3	5.74	Jun 3	3.53	Sep 3	4.78

Kalamazoo County

City of Kalamazoo

421641085350601. Local number 2S 11W 22CDBB. City of Kalamazoo. Stockbridge Ave. Water-table well in deposits of Pleistocene age, diam 4 in (10 cm), depth 137 ft (42 m), screened 134-137 ft (41-42 m). Lsd 764.7 ft (233.1 m) above msl. Highest water level 4.81 ft (1.47 m), Feb. 5, 1975; lowest 31.08 ft (9.47 m), Aug. 19, 1961. Records available: 1960-75. Water levels affected by nearby pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	10.47	6.14	7.67	7.55	6.55	7.63	6.88	6.41	9.37	8.70	11.00	10.39
10	10.51	5.85	8.43	8.44	7.59	6.80	7.79	6.85	8.05	10.33	11.01	10.01
15	9.97	9.03	9.07	7.96	8.08	7.84	7.89	8.25	8.89	9.95	11.85	9.20
20	10.00	7.82	9.06	7.28	7.30	7.86	6.55	8.37	9.56	10.55	12.05	9.45
25	10.22	7.42	8.50	7.76	7.08	6.60	6.81	8.75	9.87	10.60	10.56	--
Eom	7.00	7.26	6.98	7.90	7.99	6.32	6.55	9.43	9.65	12.13	10.40	9.12

Schoolcraft Township

420624085362401. Local number 4S 11W 21CBBB2. Willis Chamberlain. 16th St., Schoolcraft. Water-table well in sand of Pleistocene age diam 1¼ in (3.2 cm), depth 21 ft (6 m), screened 18-21 ft (5-6 m). Lsd about 863 ft (263 m) above msl. Highest water level 9.69 ft (2.95 m), May 27, 1974; lowest 13.77 ft (4.20 m), Dec. 15, 1968. Records available: 1966-Aug. 25, 1975.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Sep 30, 1974	12.50	Dec 23, 1974	12.30	Mar 17, 1975	12.80	Jun 9, 1975	12.37
Oct 7	12.56	30	11.48	24	12.90	16	12.35
14	12.68	Jan 6, 1975	13.55	31	12.85	23	12.30
21	12.70	13	13.10	Apr 7	13.20	30	12.30
28	12.70	20	13.38	14	13.10	Jul 7	12.10
Nov 4	12.88	27	13.28	21	12.80	14	12.38
11	12.97	Feb 3	12.06	28	12.70	21	12.48
18	13.05	10	13.28	May 5	12.60	28	12.70
25	13.00	17	13.20	12	12.48	Aug 4	12.70
Dec 2	13.20	24	13.00	19	12.40	11	12.77
9	12.70	Mar 3	12.80	26	12.32	18	12.80
16	12.30	10	13.00	Jun 3	12.30	25	12.78

Texas Township

421325085404801. Local number 3S 12W 11BDAD. City of Kalamazoo. Atwater well field. Artesian well in deposits of Pleistocene age, diam 3 in (7.6 cm), depth 248 ft (76 m). Lsd about 880 ft (268 m) above msl. Highest water level +2.98 ft (+0.91 m), Sept. 4, 1969; lowest 0.31 ft (0.09 m) Jan. 21, 1965. Records available: 1961-75.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	+1.26	+1.17	+1.00	+0.91	+1.11	+1.89	+1.90	+2.09	+2.17	+1.88	+2.16	+2.48
10	1.29	1.24	1.07	1.11	--	1.34	1.72	2.13	1.80	1.58	2.27	2.50
15	1.40	1.08	1.01	0.94	--	1.83	1.39	2.04	2.10	2.14	2.28	2.50
20	1.47	1.18	0.93	--	1.30	1.39	1.37	1.90	1.74	2.27	1.76	2.51
25	1.33	1.00	1.05	1.65	1.75	1.81	1.57	1.53	--	1.87	2.35	2.52
Eom	1.25	1.56	0.95	1.05	1.83	1.50	2.02	--	1.84	1.48	2.44	2.59

Kent County

City of Wyoming

425305085432001. Local number 6N 12W 27BBBA. City of Wyoming. 44th St. and Byron Center Ave. Artesian well in Marshall Formation of Mississippian age, diam 14 in (36 cm), depth 265 ft (81 m), cased to 207 ft (63 m). Lsd 707.24 ft (215.57 m) above msl. Highest water level 46.38 ft (14.14 m), May 21, 1974; lowest 56.05 ft (17.08 m), Aug. 8, 1964. Records available: 1962-75. Water levels affected by pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	47.79	47.93	47.87	47.81	47.41	47.35	47.20	46.89	47.18	47.29	47.50	47.21
10	47.79	47.96	47.80	48.85	47.59	47.50	46.99	47.02	47.28	47.45	47.61	47.12
15	47.72	48.02	47.87	47.62	47.64	47.63	46.95	47.04	47.22	47.41	47.77	47.17
20	47.90	47.77	47.93	47.58	47.64	47.47	47.16	47.10	47.25	47.53	47.93	47.14
25	47.92	47.94	47.85	47.46	47.51	47.44	47.13	47.13	47.26	47.16	47.65	47.16
Eom	47.93	47.89	47.85	47.64	47.46	47.07	46.92	47.29	--	47.64	47.55	47.01

Bryon Township

425028085435301. Local number 5N 12W 4DCCD. City of Wyoming. Wobma well. Artesian well in sand and gravel of Pleistocene age, diam 6 in (15 cm), depth 86 ft (26 m). Lsd 685.97 ft (209.08 m) above msl. Highest water level 8.28 ft (2.52 m), Apr. 14, 1974; lowest 12.91 ft (3.93 m), Aug. 19, 1964. Records available: 1962-75.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	10.52	--	10.38	--	9.52	9.46	9.29	9.01	9.60	9.88	10.20	9.86
10	10.55	--	10-37	10.13	9.66	9.51	9.10	9.14	9.75	10.03	10.33	9.91
15	10.38	--	10.34	--	--	9.59	9.20	9.27	9.68	9.96	10.43	10.04
20	10.46	--	10.29	9.63	9.74	9.35	9.18	9.45	9.41	10.04	10.54	10.09
25	10.49	10.31	10.31	9.56	9.36	9.28	9.12	9.50	--	10.13	10.41	10.10
Eom	--	10.34	10.28	9.51	9.36	9.19	8.99	9.60	9.73	10.31	10.23	10.17

Lake County

Pleasant Plains Township

435348085514401. Local number 17N 13W 4ADAD. Chesapeake and Ohio RR. Artesian well in deposits of Pleistocene age, diam 8 in (20 cm), depth 83 ft (25 m). Lsd about 840 ft (256 m) above msl. Highest water level 15.16 ft (4.62 m), July 15, 1969; lowest 20.36 ft (6.21 m), May 23, 1958. Records available: 1957-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 3, 1974	17.64	Dec 11, 1974	18.05	Apr 16, 1975	17.59	Jul 2, 1975	17.32

Mackinac County

Marquette Township

460310084355001. Local number 42N 2W 7AABB. U.S. Forest Service. Water-table well in Manistique Dolomite of Silurian age, diam 6 in (15 cm), depth 102 ft (31 m). Lsd about 650 ft (198 m) above msl. Highest water level 13.1 ft (4.0 m), May 11, 1960; lowest 32.2 ft (9.8 m), Nov. 22, 1963. Records available: 1956-75.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	26.4	23.1	22.5	24.4	--	24.9	24.7	15.5	21.3	22.4	25.2	26.6
10	26.1	23.7	23.0	24.5	--	25.1	24.8	16.9	22.1	23.0	25.4	26.5
15	26.1	22.6	23.4	--	24.6	25.2	24.4	18.3	22.5	23.6	25.8	26.1
20	25.9	22.8	23.6	--	24.8	25.2	15.3	19.3	18.7	24.1	26.1	26.2
25	25.8	21.4	24.0	--	24.8	24.4	15.4	20.1	20.4	24.4	26.2	26.3
Eom	25.8	21.7	24.2	--	24.9	24.5	16.9	20.8	21.7	24.9	26.3	26.2

Marquette County

Ely Township

462936087475901. Local number 47N 28W 3CCDC. Ely Township. Artesian well in sand and gravel of Pleistocene age, diam 8 in (20 cm), depth 72 ft (22 m), screened 68-72 ft (19-22 m). Lsd 1,571.99 ft (479.14 m) above msl. Highest water level 9.74 ft (2.97 m), May 13, 1974; lowest 19.26 ft (5.87 m), Apr. 10-11, 1964. Records available: 1961-75.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	14.45	14.44	14.21	14.82	15.39	15.89	16.23	--	11.88	12.45	13.39	14.16
10	14.38	14.31	14.29	14.92	15.48	15.98	16.36	--	12.09	12.66	13.53	14.21
15	14.41	14.05	14.38	15.05	15.56	16.08	16.36	12.60	12.07	12.74	e)13.74	14.15
20	14.53	13.93	14.50	15.16	15.67	16.10	15.48	12.56	12.18	12.86	13.91	14.19
25	14.59	14.09	14.62	15.24	15.75	16.20	--	11.68	12.21	13.02	13.98	14.33
Eom	14.67	14.17	14.80	15.37	15.80	16.25	--	11.80	12.33	13.21	14.06	14.37

e) estimated

Presque Isle County

Allis Township

451307084134901. Local number 33N 2E 30DACB. State Dept. of Natural Resources. Water-table well in deposits of Pleistocene age, diam 2 in (5.1 cm), depth 14 ft (4 m), open bottom. Lsd about 800 ft (243 m) above msl. Highest water level 0.61 ft (0.19 m), July 12, 1960; lowest 5.69 ft (1.73 m), Jan. 27, 1956. Records available: 1934-44, 1948-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 7, 1974	2.94	Dec 16, 1974	3.73	Apr 8, 1975	4.44	Jul 8, 1975	2.44

Roscommon County

Higgins Township

442756084350801. Local number 24N 2W 20BABA. State Dept. of Natural Resources. Water-table well in sand of Pleistocene age, diam 8 in (20 cm), depth 14 ft (4 m), open bottom. Lsd 1,145.30 ft (349.09 m) above msl. Highest water level 2.30 ft (0.70 m), Apr. 23, 1971; lowest 6.23 ft (1.90 m), Dec. 6-11, 1949. Records available: 1934-75. Federal key well.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	4.28	4.46	4.59	4.75	4.56	4.76	4.51	3.24	3.54	3.73	4.16	2.84
10	4.23	4.50	4.62	4.77	4.60	4.78	4.46	3.19	3.58	3.86	4.27	2.94
15	4.31	4.52	4.64	4.43	4.65	4.80	4.34	3.26	3.62	3.92	4.38	3.09
20	4.34	4.55	4.68	4.45	4.69	4.69	3.62	3.35	3.10	3.73	4.50	3.21
25	4.39	4.56	4.70	4.48	4.71	4.55	3.44	3.35	3.36	3.91	4.26	3.31
Eom	4.43	5.58	4.73	4.54	4.71	4.51	3.42	3.48	3.55	4.05	3.98	3.39

Sanilac County

Moore Township

432508082554501. Local number 12N 13E 33DDDD. State Highway Department. Artesian well in lower part of the Marshall Formation, diam 3 in (7.6 cm), depth 150 ft (46 m), cased to 53 ft (16 m). Lsd about 800 ft (243 m) above msl. Highest water level 15.45 ft (4.71 m), Apr. 25, 1951; lowest 25.64 ft (7.82 m), Jan. 6, 1965. Records available: 1948-75.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 31, 1974	22.45	Jan 11, 1975	22.25	Apr 30, 1975	17.70	Jul 25, 1975	19.65
Nov 13	22.56	Feb 21	20.95	May 7	17.95	Aug 28	20.83
Dec 5	22.99	Mar 26	19.39	Jun 23	18.48	Sep 20	21.20

Schoolcraft County

Germfask Township

461720085565201. Local number 45N 13W 16CCCB. U.S. Fish and Wildlife Service. Artesian well in limestones of Ordovivian age, diam 4 in (10 cm), depth 151 ft (46 m), cased to about 65 ft (20 m). Lsd about 710 ft (216 m) above msl. Highest water level 4.64 ft (1.41 m), Apr. 13, 1971; lowest 6.50 ft (1.98 m), Oct. 23, 1963. Records available: 1953-75.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	5.57	5.47	5.42	5.40	5.27	5.17	5.22	5.36	5.50	5.57	5.70	5.71
10	5.58	5.51	5.37	5.40	5.25	5.20	--	5.47	5.56	5.67	5.75	5.56
15	5.55	5.41	5.41	5.32	5.25	5.20	--	5.50	5.45	5.66	5.79	5.55
20	5.60	5.42	5.37	5.31	5.22	5.20	--	5.47	5.36	5.40	5.82	5.55
25	5.57	5.41	5.37	5.24	5.13	5.21	5.23	5.52	5.46	5.56	5.74	5.73
Eom	5.55	5.44	5.41	5.30	5.16	5.16	5.40	5.48	5.54	5.63	5.68	5.64

Washtenaw County

Ypsilanti Township

421226083331701. Local number 3S 7E 24CADB. Ypsilanti Township. Formerly Ford Motor Co. Water-table well in sand of Pleistocene age, diam 4 in (10 cm), depth 80 ft (24 m), screened 77-80 ft (23-24 m). Lsd 665.56 ft (202.86 m) above msl. Highest water level 5.79 ft (1.76 m), Jan. 5, 1950; lowest 22.66 ft (6.91 m), Feb. 13, 1971. Records available: 1943-45, 1949-75. Water levels affected by nearby pumping.

Lowest water level for the day, from recorder graph; water year Oct. 1974 to Sept. 1975

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	15.57	15.27	16.45	16.20	18.04	15.96	17.06	16.94	15.88	14.92	15.62	14.25
10	15.56	15.27	16.40	16.72	18.61	15.56	17.17	17.30	15.65	14.92	15.22	14.45
15	15.52	15.41	16.52	17.37	18.13	15.40	17.46	17.22	15.37	14.89	15.77	14.56
20	15.58	15.80	16.44	18.07	17.61	15.20	17.77	17.18	15.29	14.73	15.47	14.38
25	15.44	16.41	16.34	18.56	16.72	15.16	17.66	17.27	14.97	14.82	14.99	14.45
Eom	15.40	16.48	16.22	18.84	16.53	16.24	17.07	16.46	14.95	15.55	14.64	14.30

Wexford County

City of Cadillac

441503084242201. Local number 21N 9W 4ABBC. City of Cadillac. Artesian well in deposits of Pleistocene age, diam 6 in (15 cm), reported depth 277 ft (84 m). Lsd 1,291.10 ft (393.53 m) above msl. Highest water level 19.99 ft (6.09 m), July 6, 1953; lowest 27.59 ft (8.41 m), June 30, 1964. Records available: 1949-75. Water levels affected by nearby pumping.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Oct 4, 1974	21.88	Dec 5, 1974	21.85	Apr 8, 1975	22.66	Jul 15, 1975	22.38

WATER QUALITY RECORDS