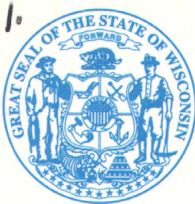


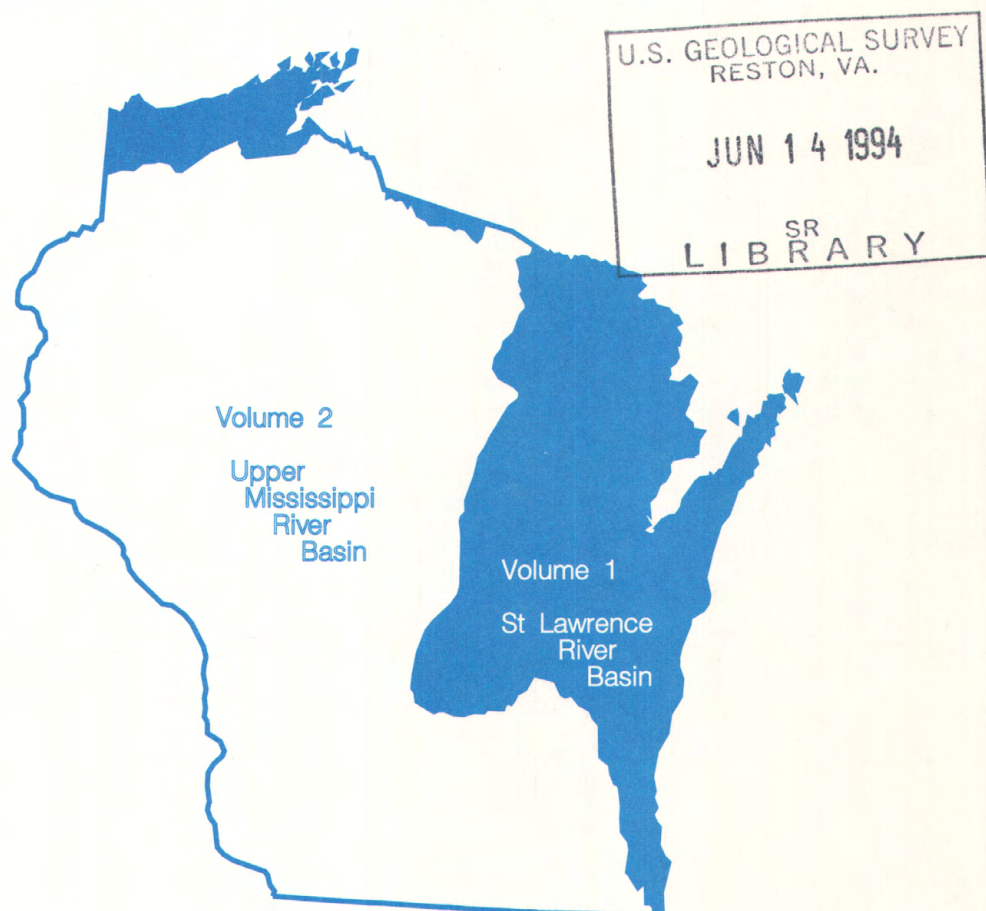
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# Water Resources Data Wisconsin Water Year 1993

Volume 1. St. Lawrence River Basin



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WI-93-1  
Prepared in cooperation with the State of Wisconsin  
and with other agencies



# CALENDAR FOR WATER YEAR 1993

1992

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

1993

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





# Water Resources Data Wisconsin Water Year 1993

## Volume 1. St. Lawrence River Basin

by B.K. Holmstrom, P.A. Kammerer, Jr., and B.R. Ellefson



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WI-93-1  
Prepared in cooperation with the State of Wisconsin  
and with other agencies



U. S. DEPARTMENT OF THE INTERIOR  
BRUCE BABBITT, Secretary

U. S. GEOLOGICAL SURVEY  
ROBERT M. HIRSCH, Acting Director

Prepared in cooperation with

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Dane County Department of Public Works  
Dane County Regional Planning Commission  
City of Madison  
City of Middleton  
City of Beaver Dam  
City of Thorp  
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Milwaukee Metropolitan Sewerage District  
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City of Waupun  
City of Peshtigo  
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Stockbridge/Munsee Indian Tribe  
Dane County Lakes and Watershed Commission  
Park Lake Management District  
City of Sparta  
City of Brookfield  
Town of Baraboo  
Whitewater-Rice Lake Management District  
Elkhart Lake Improvement Association

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## PREFACE

This volume of the annual hydrologic data report of Wisconsin is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and water quality provide the hydrologic information needed by State, local, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by a number of people who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines. Most of the data were collected, computed and processed from area field offices. Technicians-in-charge of the field offices are:

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James W. George, Merrill, northeast  
Josef Habale, Madison, southwest

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<b>16. Abstract (Limit: 200 words)</b>  Water-resources data for the 1993 water year for Wisconsin include records of stream-flow at gaging stations, partial-record stations, and miscellaneous sites, records of chemical, biological, and physical characteristics of surface water, ground water, and precipitation. In addition water levels in observation wells are reported. These data were collected by the U.S. Geological Survey in cooperation with State and local agencies and other Federal agencies in Wisconsin.			
<b>17. Document Analysis    a. Descriptors</b>  *Wisconsin, *Hydrologic data, *Surface water, *Ground water, *Water quality, Flow rate, Gaging stations, Lakes, Chemical analyses, Microbiological analyses, Sediment, Water levels  <b>b. Identifiers/Open-Ended Terms</b>          <b>c. COSATI Field/Group</b>			
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[Letters after station name designate type of data: (c) chemical, (d) discharge, (g) gage height, (m) microbiological, (pr) precipitation, (r) radiochemical, (s) sediment, (t) water temperature]

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<u>WALWORTH COUNTY</u>	
Well 423532088254601 Local number WW-02/17E/36-0037.....	281
<u>WAUKESHA COUNTY</u>	
Well 425535088131701 Local number WK-05/19E/02-0031.....	281
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Well 441545088522901 Local number WP-21/13E/25-0002.....	282
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## DISCONTINUED SURFACE-WATER DISCHARGE STATIONS

The following continuous-record surface-water discharge stations in Wisconsin have been discontinued. Daily stream-flow records were collected and published for the period of record, expressed in water years, shown for each station. Those stations with an asterisk (\*) after the station number are currently operated as crest-stage partial-record stations. Some of the discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

## Discontinued surface-water discharge stations

Station name	Station number	Drainage area (sq mi)	Period of record
STREAMS TRIBUTARY TO LAKE SUPERIOR			
Little Balsam Creek at Patzau, WI	04024314	4.89	1976-78
Little Balsam Creek near Patzau, WI	04024315	5.05	1976-78
Little Balsam Creek Tributary near Patzau, WI	04024318	0.60	1976-78
Little Balsam Creek near Foxboro, WI	04024320	3.27	1977-78
Amnicon River near Poplar (Amnicon Falls), WI	04025000	110	1914-16
Bois Brule (Brule) River near Brule, WI	04026000	160	1914-17
Sioux River near Washburn, WI	04026300*	33.9	1965-66
Pine Creek at Moquah, WI	04026347	6.20	1976-78
Pine Creek Tributary at Moquah, WI	04026348	0.48	1976-78
Pine Creek near Moquah, WI	04026349	19.9	1976-78
North Fish Creek near Moquah, WI	040263491	65.4	1990-91
Bad River near Mellen, WI	04026450*	82.0	1971-75
Bad River at Mellen, WI	04026500	98.3	1948-55
Alder Creek near Upson, WI	04026870	22.2	1972-77
Montreal River near Kimball, WI	04028500	100	1924-26
West Fork Montreal River at Gile, WI	04029000	75.0	1918-26, 1943-47
West Fork Montreal River near Kimball, WI	04029500	86.2	1924-26
STREAMS TRIBUTARY TO LAKE MICHIGAN			
North Branch Pine River at Windsor Dam nr Alvin, WI	04063640*	27.8	1967-68
Pine River near Florence, WI	04064000	510	1914-23
Pine River below Pine River Powerplant near Florence, WI	04064500	533	1924-76
Pike River at Amberg, WI	04066500	255	1914-70
Menominee River near McAllister, WI	04067500	3,930	1945-61, 1979-86, 1988-90
Peshtigo River at High Falls near Crivitz, WI	04068000	537	1912-57
Suamico River at Suamico, WI	04072000	60.7	1951-52
Lawrence Creek near Westfield, WI	04072750	13.4	1968-73
Grand River near Kingston, WI	04073050	73.5	1968-75
West Branch White River near Wautoma, WI	04073405	38.9	1964-65
White Creek at Forest Glen Beach near Green Lake, WI	04073462	3.05	1982-88
Swamp Creek above Rice Lake at Mole Lake, WI	04074538	46.3	1977-83, 1985-87
Swamp Creek below Rice Lake at Mole Lake, WI	04074548	56.8	1977-79, 1982-85
Wolf River near White Lake, WI	04075000	485	1935-38
Evergreen Creek near Langlade, WI	04075200*	8.09	1964-73
Wolf River above West Branch Wolf River, WI	04075500	616	1928-62
West Branch Wolf River at Neopit, WI	04076000	93.2	1911-17
West Branch Wolf River near Keshena, WI	04076500	163	1928-32
Embarrass River near Embarrass, WI	04078500	384	1919-85
Little Wolf River near Galloway, WI	04079602	22.6	1974-79
Spaulding Creek near Big Falls, WI	04079700*	5.57	1964-66
Little Wolf River at Royalton, WI	04080000	507	1914-70, 1983-85
Emmons Creek near Rural, WI	04080950	25.1	1968-74
Storm Sewer to Mirror Lake at Waupaca, WI	04080976	0.04	1971-74
Waupaca River near Waupaca, WI	04081000	265	1916-66, 1983-85
Daggets Creek at Butte Des Morts, WI	04081800	10.6	1977
West Branch Fond du Lac River at Fond du Lac, WI	04083000	83.1	1939-54
East Branch Fond du Lac River near Fond du Lac, WI	04083500	78.4	1939-54
Brothertown Creek at Brothertown, WI	04084200	5.10	1976-77
Onion River at Hingham, WI	04085813	37.2	1979-80
Onion River near Sheboygan Falls, WI	04085845	94.1	1979-82
Milwaukee River at Kewaskum, WI	04086150	138	1968-81
East Branch Milwaukee River near New Fane, WI	04086200	54.1	1968-81
North Branch Milwaukee River near Fillmore, WI	04086340	148	1968-81
Milwaukee River at Waubesa, WI	04086360	432	1968-81
Mud Lake Outlet near Decker Corner, WI	04086488	7.36	1983-84
Milwaukee River above North Ave Dam at Milwaukee, WI	04087010	702	1982-84
Menomonee River at Germantown, WI	04087018	19.0	1975-77
Jefferson Park Drainageway at Germantown, WI	04087019	1.82	1976-78
Menomonee River at Butler, WI	04087040	60.6	1975-79
Little Menomonee River near Freistadt, WI	04087050*	8.0	1975-79
Noyes Creek at Milwaukee, WI	04087060	1.94	1975-80, 1990
Little Menomonee River at Milwaukee, WI	04087070	19.7	1975-77
Honey Creek at Wauwatosa, WI	04087119	10.3	1975-81
Schoonmaker Creek at Wauwatosa, WI	04087125	1.94	1975-79
Hawley Road Storm Sewer at Milwaukee, WI	04087130	1.83	1975-77
Menomonee River at Milwaukee, WI	04087138	134	1982-84
Kinnickinnic River at Milwaukee, WI	04087160	20.4	1976-83



## DISCONTINUED SURFACE-WATER-QUALITY STATIONS

XI

The following daily- or continuous-record surface-water-quality stations were discontinued prior to the 1993 water year. Discontinued stations with less than 1 year of record or where data collection frequency was less than daily are not included. Some of the stations in the list are still in operation for purposes other than collection of daily or continuous water-quality data. Information regarding these stations may be obtained from the District Office at the address given on the back of the title page of this report.

[Type of record: T (water temperature), SC (specific conductance), DO (dissolved-oxygen concentration), PH (pH), SED (daily sediment discharge), C (daily discharge of one or more chemical constituents)]

Station name	Station number	Drainage area (sq mi)	Type of record	Period of record (water year)
STREAMS TRIBUTARY TO LAKE SUPERIOR				
Little Balsam Creek at Patzau, WI	04024314	5.00	SED	1976-78
Little Balsam Creek near Patzau, WI	04024315	4.57	SED	1976-78
Little Balsam Creek Tributary near Patzau, WI	04024318	0.64	SED	1976-78
Little Balsam Creek near Foxboro, WI	04024320	6.27	SED	1977-78
Nemadji River near South Superior, WI	04024430	420	SED	1974-78
North Fish Creek near Benoit, WI	04026346	36	SED	1990-91
Pine Creek at Moquah, WI	04026347	5.90	SED	1976-78
Pine Creek Tributary at Moquah, WI	04026348	0.57	SED	1976-78
Pine Creek near Moquah, WI	04026349	21.5	SED	1976-78
North Fish Creek near Moquah, WI	040263491	65.4	SED	1990-91
North Fish Creek near Ashland, WI	04026350	74.4	SED	1990-91
Bad River near Odanah, WI	04027000	597	T,SC	1976-78
White River near Mason, WI	04027080	---	T	1970-72
Sadjak Springs Trib to White River nr Mason, WI	04027086	1.00	T	1970-72
Bad River at Odanah, WI	04027595	970	T,SC	1978-81
STREAMS TRIBUTARY TO LAKE MICHIGAN				
Escanaba River at mouth at Escanaba, MI	040590345	928	SED	1988-90
Popple River near Fence, WI	04063700	139	T	1964-80
Menominee River near McAllister, WI	04067500	3,930	T,SC	1979-80
			SED	1988-90
Menominee River at mouth at Marinette, WI	04067651	4,070	SED	1988-90
Peshtigo River at Peshtigo, WI	04069500	1,080	T	1989-90
			SED	1988-90
Peshtigo River at mouth near Peshtigo, WI	04069530	1,100	SED	1988-90
Oconto River near Oconto, WI	04071765	966	SED	1989-90
Oconto River at mouth at Oconto, WI	04071775	982	SED	1989-90
White Creek at Forest Glen Beach nr Green Lake, WI	04073462	3.05	SED,C	1982-88
Middle Branch Embarrass River near Wittenberg, WI	0407809265	76.3	T	1990-91
Fox River at Appleton, WI	04084445	5,950	T	1987-90
			SED	1986-90
Fox River at State Highway 55 at Kaukauna, WI	04084475	5,980	SED	1989-90
Fox River at Wrightstown, WI	04085000	6,050	T,SC	1975-81
Fox River at Little Rapids, WI	04085054	6,100	SED	1989-90
Fox River at De Pere, WI	04085059	6,110	SED	1989-90
Bower Creek at Sunnyview Road near De Pere, WI	04085118	4.82	SED,C	1985-86
Bower Creek at County MM near De Pere, WI	04085119	14.8	C	1991
East River at Monroe Street in Green Bay, WI	040851378	144.9	SED,C	1985-86
Fox River at mouth at Green Bay, WI	04085139	6,330	T,SC,DO,PH	1989-90
Manitowoc River at Manitowoc, WI	04085427	526	T,SC	1979-80
Cedar Lake near Kiel, WI	04085500	1.43	T	1974-77
Onion River at Hingham, WI	04085813	37.2	T,SC,SED	1979-80
			C	1980
Onion River near Sheboygan Falls, WI	04085845	94.1	T,SC,SED	1979-80
			C	1980
Milwaukee River near Cedarburg, WI	04086600	607	SED	1982-84
Milwaukee River at Milwaukee, WI	04087000	696	T,SC	1973-80 <sup>2</sup>
			SED	1982-84
Milwaukee River above North Avenue Dam at Milwaukee, WI	04087010	702	SED	1982-84
Menomonee River at Germantown, WI	04087018	19	SED	1975-77
Jefferson Park Drain at Germantown, WI	04087019	1.82	SED	1977-78
Menomonee River at Menomonee Falls, WI	04087030	34.7	SED	1975-77, 1982-84
Menomonee River at Butler, WI	04087040	60.64	SED	1975-77
Little Menomonee River near Freistadt, WI	04087050	8.0	SED	1975-77
Noyes Creek at Milwaukee, WI	04087060	1.94	SED	1975-77
Little Menomonee River at Milwaukee, WI	04087070	19.7	SED	1975-77
Underwood Creek at Wauwatosa, WI	04087088	18.2	SED	1975-77
Honey Creek at Wauwatosa, WI	04087119	10.3	SED	1975-77
Menomonee River at Wauwatosa, WI	04087120	123	SED	1975-77, 1982-84
Schoonmaker Creek at Wauwatosa, WI	04087125	1.94	SED	1975-77
Hawley Road Storm Sewer at Wauwatosa, WI	04087130	1.83	SED	1975-77
Menomonee River at Milwaukee, WI	04087138	134	SED	1983-84
Menomonee River at Falk Corp at Milwaukee, WI	04087140	133.82	SED	1975-77, 1982
Kinnickinnic River at South 11th Street at Milwaukee, WI	04087159	20.2	SED	1983-84

<sup>2</sup> Numerous periods of missing record.





## INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with local, State and Federal agencies, obtains a large amount of data pertaining to the water resources of Wisconsin each year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Wisconsin." For the 1993 water year, the data are published in two volumes - one for the St. Lawrence River drainage basin (Volume 1) and one for the Upper Mississippi River drainage basin (Volume 2). All ground-water data appear in Volume 1. The following introductory material applies collectively to both volumes.

Water-resources data for Wisconsin for the 1993 water year include records of streamflow at gaging stations, partial-record stations, and miscellaneous sites; stage and contents of lakes and reservoirs; chemical, physical, and biological characteristics of surface and ground water; and water levels in observation wells. Records from several stations in bordering states are also included. These volumes contain discharge records from 141 gaging stations and peak stage and discharge from 100 crest-stage stations; stage for 32 lakes and contents for 24 reservoirs; water-quality data from 65 streams and from 63 lakes; precipitation from 27 sites; and water-level records from 64 observation wells. Additional water data were collected at various sites not involved in the systematic data-collection program, and are published in this report as miscellaneous measurements.

This series of annual reports for Wisconsin began in the 1961 water year with streamflow data, the 1964 water year with water-quality data, and the 1971 water year with ground-water data. Beginning with the 1975 water year, streamflow, water-quality, and ground-water data for each State were published in present format. These annual reports are for sale, in paper copy or microfiche, by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Wisconsin were published in U.S. Geological Survey Water-Supply Papers. Records of stream discharges and of water levels in lakes and reservoirs were published annually through 1960 and then for the 5-year periods 1961-65 and 1966-70 in the series "Surface-Water Supply of the United States". Chemical-quality, water-temperature, and suspended-sediment data were published annually, from 1941 to 1970, in the series "Quality of Surface Waters of the United States". Records of ground-water levels were published annually from 1935 to 1974, in the series "Ground-Water Levels in the United States". The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Box 25425, Federal Center, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Survey reports have 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 volume is identified as "U.S. Geological Survey Water-Data Report WI-93-1." For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc.

Additional information, including current prices for ordering specific reports, may be obtained from the District Chief at the address given on the back of the title page, or by telephone (608)274-3535. A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

## COOPERATION

The U.S. Geological Survey and the State of Wisconsin have worked under cooperative agreements since 1913 collecting streamflow data, since 1955 collecting water-quality data, and since 1964 collecting ground-water level data. Agencies that worked cooperatively with the Survey during this year collecting data are:

Wisconsin Department of Natural Resources, George E. Meyer, secretary.  
Southeastern Wisconsin Regional Planning Commission, K. W. Bauer, executive director.  
U.S. Army Corps of Engineers.  
Wisconsin Department of Transportation, S. W. Woods, chief bridge engineer.  
The University of Wisconsin-Extension, Geological and Natural History Survey, Jamie Robertson, state geologist and director.  
Dane County Department of Public Works, Kenneth J. Kosciak, director.  
Dane County Regional Planning Commission, Thomas Favour, executive director.  
City of Madison, Paul Soglin, mayor.  
City of Middleton, Dan Ramsey, mayor.  
City of Beaver Dam, Robert Kachelski, mayor.  
City of Thorp, Bernell Lange, mayor.  
Madison Metropolitan Sewerage District, James L. Nemke, chief engineer and director.  
Milwaukee Metropolitan Sewerage District, Ralph Hollman, acting executive director.  
Green Bay Metropolitan Sewerage District, Paul E. Thormodsgard, general manager.  
City of Hillsboro, Janice G. Boekme, mayor.  
Illinois Department of Transportation, Melvin Allison, Chief, Bureau of Planning.  
City of Waupun, Dennis Westhuis, Manager, Public Utilities.  
City of Peshtigo, J. F. Dale Berman, mayor.  
Rock County Public Works Department, Thomas G. Kautz, Parks and Conservation Director.  
Village of Wittenberg, Phillip Meyer, Chairman, Sewer and Water Committee.  
Menominee Indian Tribe of Wisconsin, Glen Miller, Chairman.  
Oneida Indian Tribe of Wisconsin, Richard G. Hill, Chairman.  
Town of Delavan, Pat Kohler, Town Clerk.  
Green Lake Sanitary District, Ron Edwards, Administrator.  
City of Fond du Lac, J. William Roemer, Acting City Manager.  
City of Barron, Bard Kittleson, Mayor.  
Brown County Planning Commission, Ken Jaworski, Senior Planner.  
Lac du Flambeau Band of Lake Superior Chippewa, Thomas Moulson, President.  
Stockbridge/Munsee Indian Tribe, Leah Miller-Heath, President.  
Dane County Lakes and Watershed Division, Karin VanVlack, Watershed Management Coordinator.  
Park Lake Management District, David C. Roberts, Chairman.  
City of Sparta, Milo Seubert, Mayor.  
City of Brookfield, Kathryn C. Bloomberg, Mayor.  
Town of Baraboo, Peter Cleveland, Town Clerk.  
Whitewater-Rice Lake Management District, William Norris, Chairman.  
Elkhart Lake Improvement Association, Lee Verhulst, President.

The following organizations aided in collecting streamflow records: Wisconsin Valley Improvement Co., Wisconsin-Michigan Power Co., Wisconsin Public Service Corp., Northern States Power Co., Dairyland Power Cooperative, Wisconsin Power and Light Co., Georgia-Pacific Corp., Wisconsin Electric Power Co., Wisconsin River Power Co., Scott Paper Co., and Milwaukee County Park Commission. Organizations that supplied data are acknowledged in station descriptions.

#### SUMMARY OF HYDROLOGIC CONDITIONS

##### Streamflow

The statewide average precipitation of 38.79 inches for the 1993 water year was 122 percent of the normal annual precipitation of 31.77 inches for water years 1961-90. Average precipitation values ranged from 103 percent of normal in northwestern Wisconsin to 150 percent of normal in southwestern Wisconsin (Pamela Naber Knox, UW-Extension, Geological and Natural History Survey, written commun., 1993).

Runoff was variable for rivers throughout the State ranging from 99 percent in north-central Wisconsin to 278 percent in southwestern Wisconsin. Departure of runoff in the 1993 water year from long-term average runoff is shown in Figure 1. Runoff was lowest (99 percent of the average annual runoff from 1936-93) for the Wisconsin River at Rainbow Lake near Lake Tomahawk. Runoff was highest (278 percent of the average annual runoff from 1939-93) for the Pecatonica River at Darlington. The average annual runoff for the 1993 water year was the maximum for the period of record at 33 long-term stations (more than 10 years of record) in the southern half of Wisconsin.

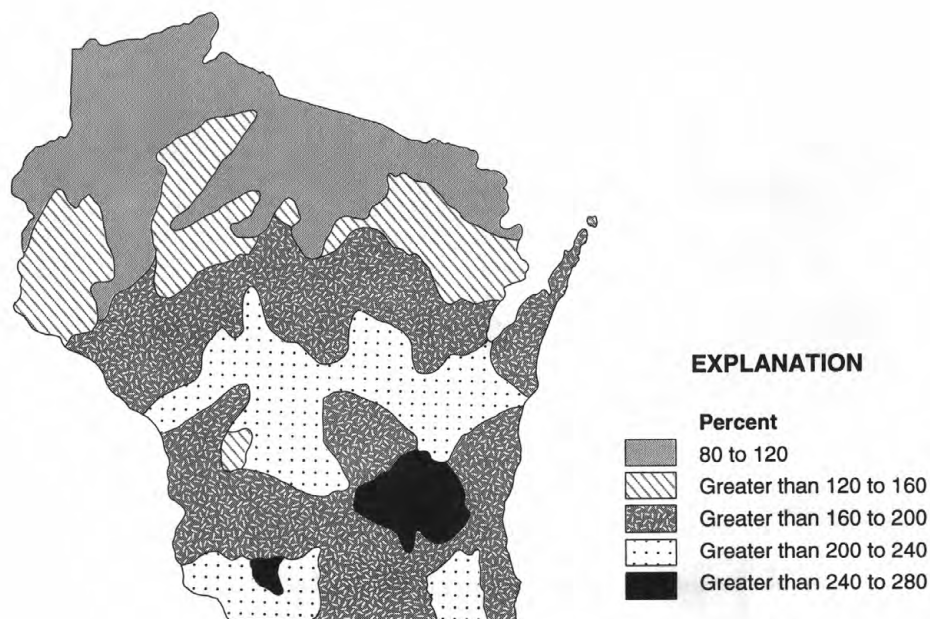
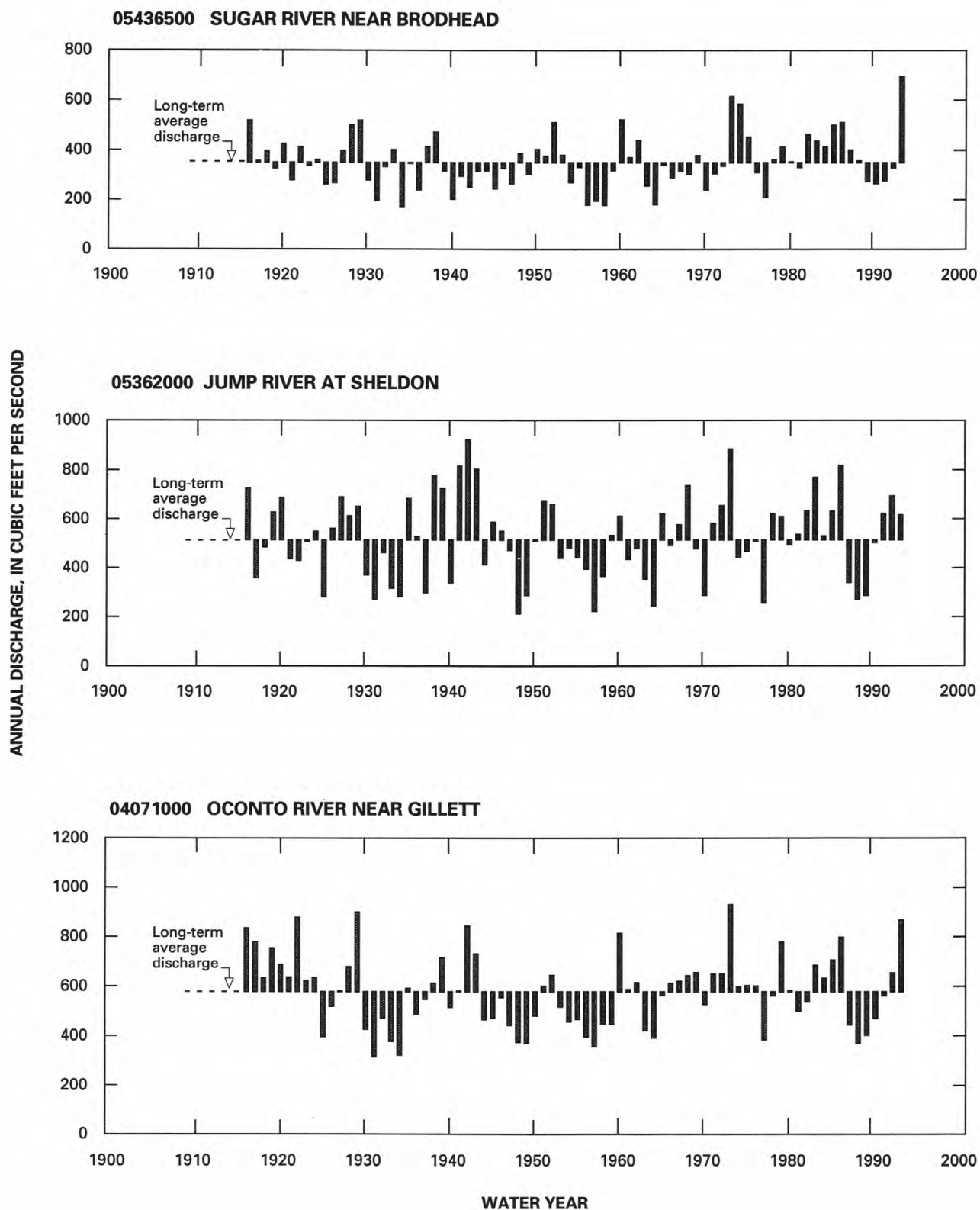


Figure 1. 1993 runoff as percent of long-term average runoff.

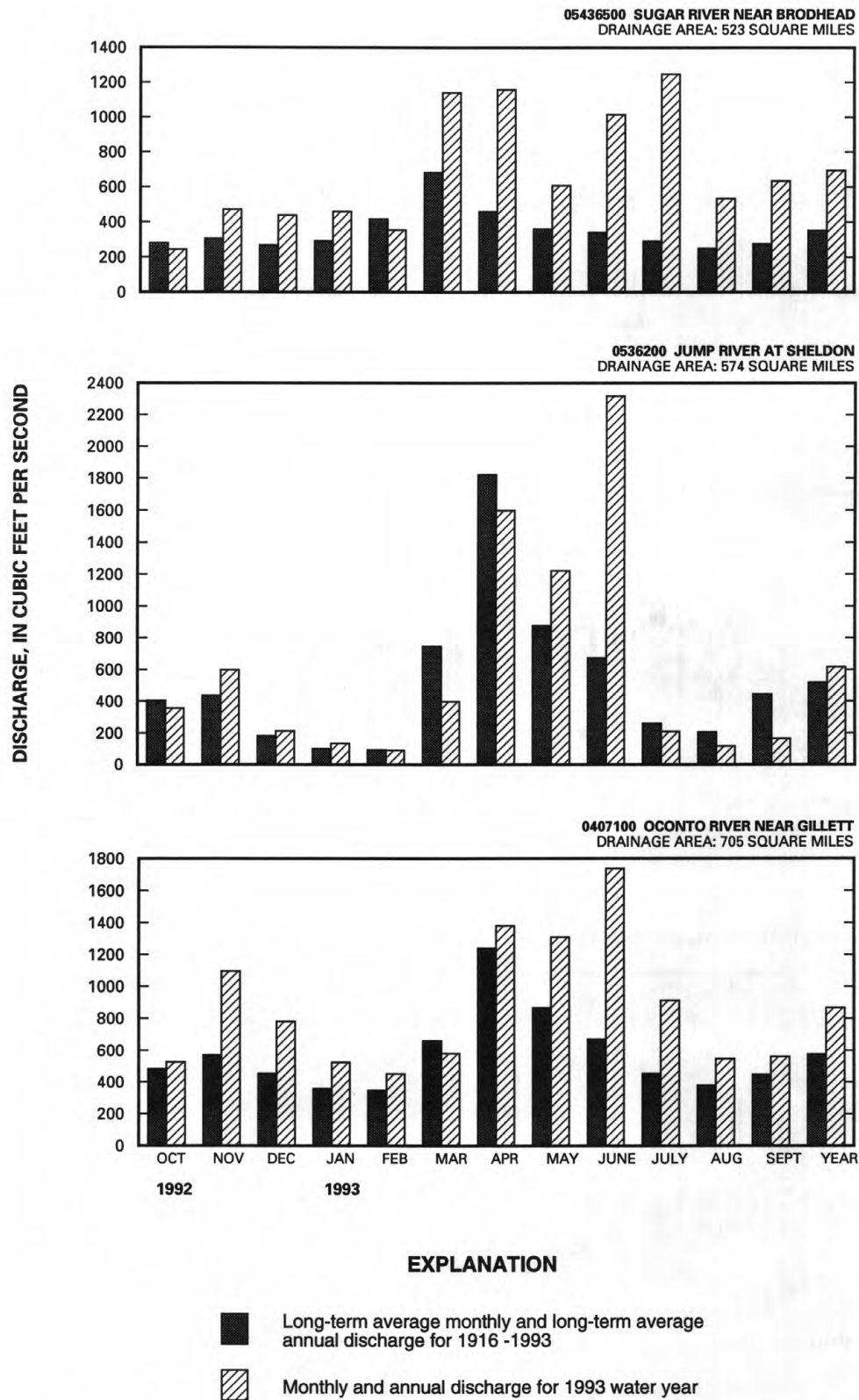
A comparison of the annual discharge for the individual water years (1916-93) at the Oconto River near Gillett, Jump River at Sheldon, and Sugar River near Brodhead is shown in figure 2. The comparisons of monthly and annual discharges for the 1993 water year to discharge for a 78-year base period at the same three gaging stations are shown in figure 3.

Spring runoff from snowmelt and major storms in the period March through September 1993, caused floods with discharges that equalled or exceeded those with a recurrence interval of 10 years (Krug and others, 1991) at a number of crest-stage gage and gaging stations.



**Figure 2.** Comparison of annual discharge at representative gaging stations to their long-term average discharge for water years 1916-1993.





**Figure 3.** Comparison of discharge at representative gaging stations during 1993 water year with discharge for 1916-1993.

The unprecedented floods during June and July of 1993 began with wet antecedent conditions and above-normal runoff in south-central Wisconsin in May. Periods of flooding that stand out occurred on June 20-25, July 5-6, and July 18, although the two months were unusually wet in general and had frequent passes of thunderstorms from frontal systems. The worst flooding generally occurred in drainage basins of south-central and southwestern Wisconsin.

The unusual conditions were caused by a high-pressure center anchored on the East Coast, which drew up moist, unstable air into the Midwest. This high pressure kept other systems in the Midwest from moving east, reported meteorologists from the National Meteorological Center at Camp Spring, MD (Wisconsin State Journal, August 8, 1993). At the same time, a trough over the Rocky Mountains spawned rainstorms hitting the Midwest. The jet stream, normally farther north, stalled over southern Wisconsin, trapping warm, unstable air to the south (Wisconsin State Journal, July 7, 1993). The stalled low-pressure system was locked over the Midwest, ushering storms into Wisconsin, which first began in June. Storms recurred, sometimes affecting the same areas. Over the next two months there were over a dozen storm systems passing over the region. According to the Midwest Climate Center, the June-July period was the wettest since 1895 in parts of Wisconsin, Iowa, and Illinois (Wisconsin State Journal, August 8, 1993).

Rain totals for June in west-central Wisconsin at Hatfield and LaCrosse were 12.14 inches and 10.79 inches, respectively. Neillsville in north-central Wisconsin also had a total of 10.57 inches for June (Pamela Naber Knox, UW-Extension, Geological and Natural History Survey, written commun., 1993). The precipitation total for June at LaCrosse made it the wettest month in 93 years. A total of 8.35 inches of the 10.57 inch amount fell in the week ending June 20th (Interagency Hazard Mitigation Team Report Wisconsin, 1993). The heavy rains during the week ending June 20 caused flooding which destroyed a levee on the Black River on June 20 and caused significant flooding in Black River Falls. Over 700 people were evacuated in Jackson and Clark Counties. Interstate 94 near the Black River was closed for 7 hours on June 20. The Lake Arbutus Dam on the Black River near Hatfield experienced erosion around the left abutment and was in danger of failing (Wisconsin State Journal, June 21, 1993). The first flooding along the Mississippi River and evacuation of homes near Trempealeau and Prairie du Chien occurred from this storm. On June 22, the State Journal reported the majority of farm fields were saturated, and that 71-100 percent of farmers in counties throughout the State reported surplus soil moisture hurting the corn crop. Since April 1, southern Wisconsin received 16-17+ inches of rain; the normal amount is about 9 inches.

Rainfall totals for June also exceeded 10 inches at a number of precipitation stations in southwest and south-central Wisconsin. Rainfall amounts at Monroe, Beloit, Brodhead, Cuba City, Darlington, Blanchardville, Clinton, Platteville, and Lancaster were 14.53 inches, 14.39 inches, 13.11 inches, 13.03 inches, 12.68 inches, 11.84 inches, 11.04 inches, 10.75 inches, and 10.39 inches, respectively (Pamela Naber Knox, UW-Extension, Geological and Natural History Survey, written commun., 1993). New maximum monthly mean flows were set for June for the period of record at many of the gaging stations in the southern half of the State.

A second round of significant flooding occurred from heavy rains on July 5 in south-central Wisconsin, causing significant flood damage in the Madison area and on the Pecatonica River at Darlington and East Branch Pecatonica River near Blanchardville. Madison received a record rainfall of 3.75 inches the evening of July 5, more than the normal total for the month (Wisconsin State Journal, July 6 1993).

Tributaries of the Baraboo River near Baraboo were hit hard by an extremely intense rainstorm that dumped 7 inches of rain in one hour and 12 to 13 inches of rain in four hours near Devil's Lake on the night of July 17; Baraboo received 7.78 inches (Brian Hahn, National Weather Service, written commun., July 19, 1993). Resulting flash floods in small streams were responsible for the death of a 12-year-old boy (Wisconsin State Journal, July 19, 1993).

For July, Madison received 9.34 inches of rain, 5.95 inches above normal, which is the third wettest July on record (Brian Hahn, National Weather Service, written commun., August 1993); Baraboo received 14.79 inches, 10.99 inches above normal. Most of southern Wisconsin had rainfalls for July totalling more than 6 inches, and many areas had year-to-date totals equal to or greater than that for the entire year. New maximum monthly mean flows were also set for July for the period of record at many gaging stations in southern Wisconsin.

Preliminary flood damage estimates from the initial flooding on the Black River and other streams in southwestern Wisconsin totalled \$50 million on June 25 (Wisconsin State Journal, June 25, 1993). The Governor declared a state of emergency for 24 counties in the flood-stricken area. By the end of June, the Governor asked the President to declare 30 counties federal disaster areas. Damage estimates now totalled \$175 million, including \$125 million in damage to agriculture and \$50 million in damage to structures (Wisconsin State Journal, June 30, 1993). By this time commercial traffic on the Mississippi from St. Paul to St. Louis was halted because of the high water.

Additional flooding from the July storms raised the flood damage estimates up to a total of \$256 million, including \$131 million in damage to roads, bridges, homes, and businesses (Wisconsin State Journal, July 12, 1993). High water levels in Madison area lakes alone caused \$12 million in damage. As of August, 46 of the 72 Wisconsin counties had been declared federal disaster areas (Diane Kleiboer, Wisconsin Division of Emergency Government, oral commun., August 24, 1993). Forty of these counties were eligible for both individual and public disaster assistance. Final estimated damages in Wisconsin totalled \$800 million.

Peak discharges which had recurrence intervals that equalled or exceeded 10 years are summarized in the following table:

Station number	Station name	Date	Peak discharge (ft <sup>3</sup> /s)	Recurrence interval (years)
04073400	Bird Creek at Wautoma	June 18	160	25
04074700	Hunting Creek near Elcho	Sept. 13	150	20
04077400	Wolf River near Shawano	June 21	3,820	17
04081900	Sawyer Creek near Oshkosh	July 5	1,700	20
04085030	Apple Creek near Kaukauna	July 5	1,900	50
04085200	Kewaunee River near Kewaunee	July 6	6,010	14
04085400	Killsnake River near Chilton	June 8	1,470	15
04087050	Little Menomonee River nr Freistadt	Apr. 20	340	13
04087200	Oak Creek near South Milwaukee	Apr. 19	660	14
04087204	Oak Creek at South Milwaukee	Apr. 19	887	10
04087233	Root River Canal near Franklin	Apr. 20	1,260	17

Station number	Station name	Date	Peak discharge (ft <sup>3</sup> /s)	Recurrence interval (years)
05341900	Kinnickinnic River Tributary near River Falls	Mar. 28	2,700	10
05360500	Flambeau River near Bruce	June 21	16,500	10
05362000	Jump River at Sheldon	June 21	16,400	13
05364100	Seth Creek near Cadott	June 20	532	20
05366500	Eau Claire River near Fall Creek	June 20	24,500	45
05367030	Willow Creek near Eau Claire	June 19	260	10
05369500	Chippewa River at Durand	June 23	90,100	21
05371800	Buffalo River Tributary near Osseo	June 19	154	25
05371920	Buffalo River near Mondovi	June 20	4,000	25
05380900	Poplar River near Owen	June 20	10,800	20
05380970	Cawley Creek near Neillsville	June 20	7,000	25
05381000	Black River at Neillsville	June 20	30,400	24
05382000	Black River near Galesville	June 21	64,000	>100
05386300	Mormon Creek near LaCrosse	June 17	3,770	15
05393500	Spirit River at Spirit Falls	June 20	2,730	10
05397600	Big Sandy Creek near Wausau	June 17	1,300	22
05398000	Wisconsin River at Rothschild	June 21	44,400	10
05400760	Wisconsin River at Wisconsin Rapids	June 21	64,600	34
05401800	Yellow River Tributary nr Pittsville	June 9	715	12
05404000	Wisconsin River nr Wisconsin Dells	June 24	59,100	23
05405000	Baraboo River near Baraboo	July 18	6,340	19
05406500	Black Earth Creek at Black Earth	July 6	1,320	31
05407000	Wisconsin River at Muscoda	June 26	59,600	12
05414900	Pats Creek near Elk Grove	July 9	7,000	>100
05425500	Rock River at Watertown	Apr. 20	4,620	25
05425700	Robbins Creek near Columbus	July 5	344	15
05426000	Crawfish River at Milford	Apr. 23	4,140	12
05427948	Pheasant Branch at Middleton	July 6	746	18
05427965	Spring Harbor Storm Sewer at Madison	July 5	754	21
05429500	Yahara River near McFarland	Apr. 21	681	26
05430403	Fisher Creek Tributary at Janesville	June 30	680	18
05430500	Rock River at Afton	Apr. 23	10,700	10
05431486	Turtle Creek near Clinton	June 30	5,580	14
05432300	Rock Branch near Mineral Point	July 5	3,100	>100
05432500	Pecatonica River at Darlington	July 6	12,400	24
05433500	Yellowstone River nr Blanchardville	July 6	4,700	13
05435900	Sugar River Tributary nr Pine Bluff	July 5	800	>100
05436200	Gill Creek near Brooklyn	Mar. 23	285	45
05437200	East Fork Racoon Creek Tributary near Beloit	June 30	2,300	>100
05546500	Fox River at Wilmot	Apr. 22	5,060	14
05548150	North Branch Nippersink Creek nr Genoa City	June 30	350	30

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#### Water Quality

Suspended-sediment and total phosphorus yields in southern Wisconsin for the 1993 water year were well above long-term average yields. The suspended-sediment yield at the Grant River at Burton in southwestern Wisconsin was 794 tons/mi<sup>2</sup> (tons per square mile), which is about three times the average yield for 1978-93. The total-phosphorus yield for Delavan Lake Inlet in southeastern Wisconsin for the 1993 water year was 725 lbs/mi<sup>2</sup> (pounds per square mile), which is about twice the average yield for the period 1984-93. Suspended-sediment and total-phosphorus yields at Silver Creek near Ripon were about 75 percent higher in the 1993 water year than the average annual yield for the period 1988-93.

Data collection began at ten sites operated by the National Water-Quality Assessment Program (NAWQA). Samples were collected at approximately monthly intervals and during storms from March through September. Data for these sites for the 1993 water year are included in this report; data collection will continue in the 1994 water year.



### Ground-Water Levels

Maps showing the seasonal ground-water trends for the year (fig. 4) are based on water-level data from 26 shallow-aquifer wells, each having at least 15 years of record. Water-level measurements from each well are grouped so that FALL consists of measurements from October through December 1992; WINTER consists of measurements from January through March 1993; SPRING consists of measurements from April through June 1993; and SUMMER consists of measurements from July through September 1993. Mean seasonal water levels were compared to the long-term mean seasonal water levels. The 1993 water level was considered normal if it was within one-half of the standard deviation on the long-term mean.

In general, shallow ground-water levels during the 1993 water year were normal to above normal for most of the wells in the State. The only counties having below normal ground-water levels were Door and Milwaukee in the FALL, Forest in the WINTER, and Chippewa in the SPRING, with no counties having ground-water levels below normal in the SUMMER. Most ground-water levels were above normal in the SUMMER, with only a narrow section in northern part of the State having normal ground-water levels. The large extent of the above normal ground-water levels can be attributed to the above normal rainfall during the 1993 water year.

### SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream-Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in national or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, diverse, and geographically distributed part of the Nation's ground- and surface-water resources, and to identify, describe, and explain the major natural and human factors that affect these observed conditions and trends.

Assessment activities have begun in more than one-third of the study units and ultimately will be conducted in 60 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Radiochemical Surveillance Network is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

### EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are from the 1993 water year that began October 1, 1992, and ended September 30, 1993. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data; stage and content data for lakes and reservoirs; water-quality data for precipitation; surface and ground water; and ground-water-level data. Figure 5 shows major surface-water drainage basins and an index of hydrologic records. The locations of the stations and wells where the data were collected are shown in basin location maps and figure 6.

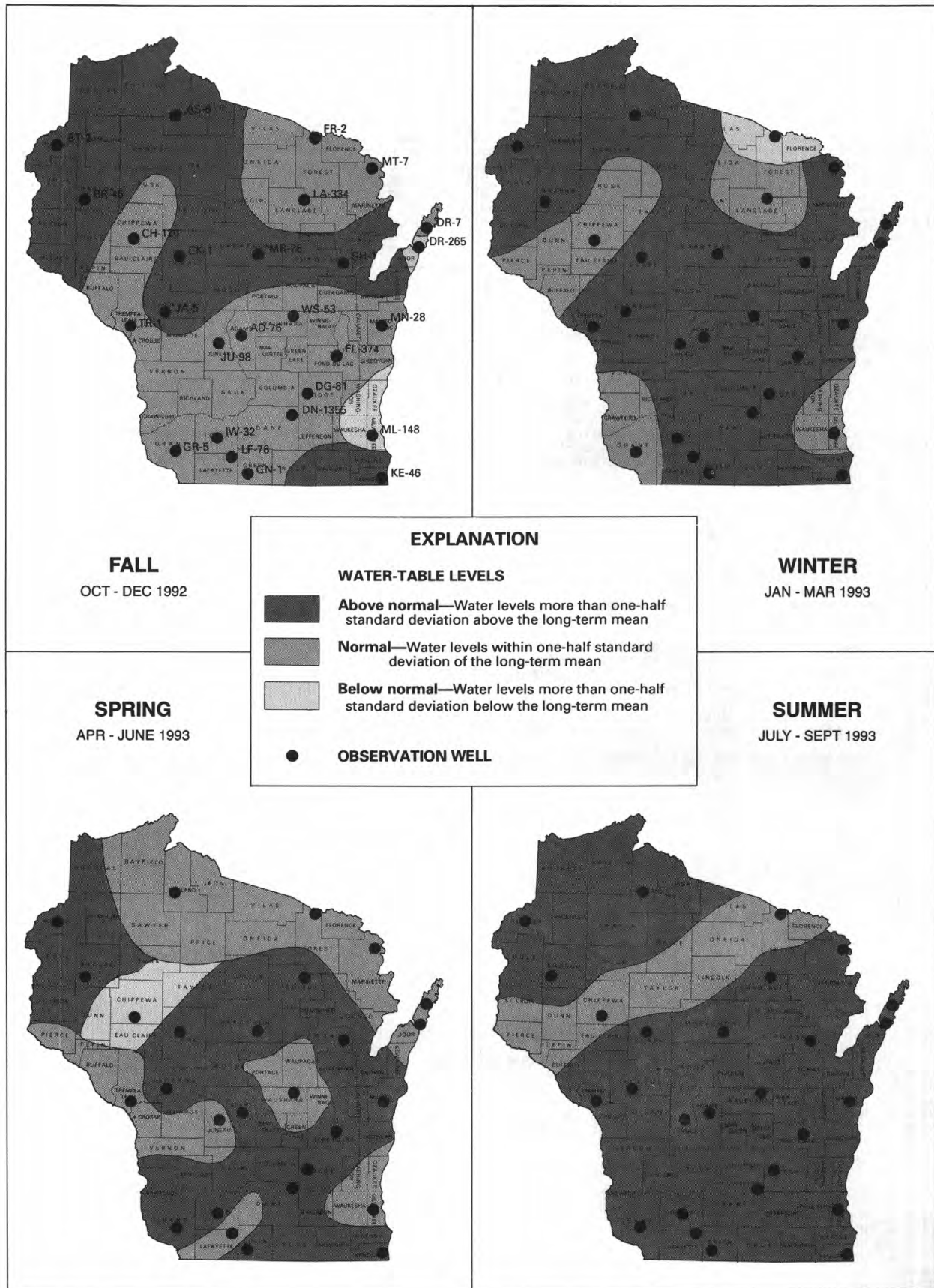
The following sections of introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

### Station Identification Numbers

In this report each data station, whether streamsite or well, is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order number" is used for most surface-water stations on streams and a unique 15-digit number is used for lakes, wells, and precipitation monitoring sites.

### Downstream Order and Station Number

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.



**Figure 4.** Relation of seasonal water-table levels to long-term means.

The station-identification number is assigned according to downstream order. No station-number distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight- to ten-digit number for each station, such as 04087000, 054310157, or 0407809265, which appears just to the left of the station name, includes the two-digit Part number "04" or "05" plus the six- to eight-digit downstream-order number ("087000", "4310157", or "07809265"). The Part number designates the major river basin; for example, records in Volume 1 are in Part 04 (St. Lawrence River basin) and Volume 2 are in Part 05 (Upper Mississippi River basin).

In some special cases, stations on streams may be identified with the numbering system used for ground-water and lake-data sites described in the following paragraph. This is generally done only for special purpose short-term stations where station density precludes convenient assignment of downstream order numbers.

#### Numbering System for Ground-Water, Lake, and Precipitation Data Sites

Wells, springs, sites on lakes, and precipitation gages where data are collected are identified by a unique 15-digit number that is a concatenation of the site's latitude, longitude, and a two-digit sequence number. The sequence number is used to distinguish between sites located at the same latitude-longitude designation. The site identification number is permanently assigned to the site; actual latitude and longitude of the site are subject to update and are stored separately. Each ground-water site is also identified by a local number based on the cadastral-survey system of the U.S. Government. The number consists of an abbreviation of the county name, the township, range and section, and a four-digit number assigned to the well.

#### Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained from a continuous stage-recording device by which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained from a continuous stage-recording device, but need not be. Because daily mean discharges are commonly published for such stations, they are referred to as "daily stations." By contrast, partial records consist of discrete measurements, without using a continuous stage-recording device. Two types of surface-water partial-record stations are operated: (1) crest-stage partial-record stations, for which maximum discharge is recorded; and (2) miscellaneous stations, for which periodic discharge measurements and/or limited water-quality analyses are made. Each type of station is presented separately in this report.

#### Data Collection and Computation

The basic data collected at complete-record gaging stations include stage and discharge measurements of streams, and stage, surface area, and content measurements of lakes and reservoirs. Factors affecting stage-discharge relationships, weather records, and other information supplement the basic data used to determine daily flow. Records of stage are obtained by reading a non-recording gage, from a continuous graph, from a tape punched at selected intervals on a water-stage recorder, or from electronic data logger. Measurements of discharge are made with a current meter by using methods described in "U.S. Geological Survey Techniques of Water Resources Investigations" listed in "Publications on techniques of water-resources investigations."

Rating tables of stream stage and corresponding discharges are prepared from stage-discharge relationship curves. Extended-rating curves, based on step-backwater techniques, velocity-area studies, logarithmic plotting, and indirect measurements of peak discharge are used to estimate discharges greater than those measured. Daily mean discharges are computed from gage heights and rating tables, and the monthly and yearly means are computed from the daily figures. If the stage-discharge relationship varies due to changes in the control, such as aquatic growth, debris, or scour and fill, daily mean discharge is computed by a shifting-control method in which correction factors, based on individual discharge measurements and notes by observers, are used when the gage heights are applied to the rating tables.

The slope method is used to compute discharge at stream-gaging stations where backwater from lakes or reservoirs, tributary streams, or other sources affect the stage-discharge relationship. Acoustic velocity meters have also been installed at some locations where aforementioned problems occur. The rate of change of stage is used to compute discharge at stations where the stage-discharge relationship is affected by rapid changes in stage. When ice conditions at stream-gaging stations affect the stage-discharge relationship, gage-height records, winter discharge measurements, temperature and precipitation data, and comparable records of discharge for nearby stations are used to compute discharge. At gaging stations where gage-height records are faulty or non-existent for some periods, the daily discharges are estimated based on the recorded range in stage, prior and subsequent records, discharge measurements, weather records, and comparison with records for nearby stations.

Descriptions of the stations and tabulations of data are included in this report. A table showing daily, monthly, and yearly discharges is given for each gaging station on a stream or canal. A table showing the monthly summary of stage is given for gaging stations on lakes.

#### Data Presentation

Streamflow data in this report are presented in a format that is considerably different from the format in data reports prior to the 1992 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or stations manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consists of four parts: the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.



Station manuscripts

The manuscript provides, under various headings, descriptive information such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments that follow clarify information presented under the various headings of the station description.

**LOCATION.**--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages were provided by the U.S. Army Corps of Engineers or other agencies.

**DRAINAGE AREA.**--Drainage areas are measured using the most accurate maps available. Because the type of map available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.**--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation when the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

**REVISED RECORDS.**--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. All the reports in which revisions have been published for the station and the water years to which the revisions apply are listed under this heading. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted 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 most recently revised figure was first published is given.

**GAGE.**--The type of gage in current use, the datum of the current gage referred to sea level (see definition of terms), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.**--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations, or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify an estimated record, this information will be presented as the first entry of the paragraph. The paragraph is also used to present information about the accuracy of the records, special methods of computation, conditions that affect natural flow at the station and any other pertinent items.

**COOPERATION.**--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

**EXTREMES OUTSIDE PERIOD OF RECORD.**--Information concerning major floods or unusually low flows that occurred outside the stated period of record is included here. The information may or may not have been obtained by the U.S. Geological Survey.

**REVISIONS.**--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although it is rare, occasionally the records of a discontinued gaging station may need revision. Because there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations, who obtained the record from previously published data reports, may wish to contact the District office to determine if the published records were ever revised after the station was discontinued. If the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

The data presented for most gaging stations on lakes include a description of the station and a monthly summary table of stage.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, AND EXTREMES FOR CURRENT YEAR have been deleted and the information contained in these paragraphs, except for the listing of secondary instantaneous peak discharges in the EXTREMES FOR CURRENT YEAR paragraph, is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. The RATING TABLE heading has also been deleted. No changes have been made to the data presentation of lake contents.

Data table of daily mean values

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly 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 is usually also 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.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEARS \_\_\_\_\_, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period as appropriate. The designated period selected, "WATER YEARS \_\_\_\_\_", will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (see line headings below), except for the "ANNUAL" 7-DAY MINIMUM statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office (see address on back of title page of this report).

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the date of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

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

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

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded by 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded by 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded by 90 percent of the time for the designated period.

Data collected at crest-stage partial-record stations are given in a table of annual maximum stages and discharges that follows the information for continuous-record sites. The crest-stage partial-record stations table is followed by a list of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for special reasons are called measurements at miscellaneous sites.

### Identifying Estimated Daily Discharge

Estimated daily-discharge values are identified by listing the dates of the estimated record in the REMARKS paragraph of the station description.

### Accuracy of the Records

The accuracy of streamflow records 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 measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true value; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft<sup>3</sup>/s; to the nearest tenth between 1.0 and 10 ft<sup>3</sup>/s; to the nearest whole number between 10 and 1,000 ft<sup>3</sup>/s; and to 3 significant figures for more than 1,000 ft<sup>3</sup>/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, or changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents.

### Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables are on file in the Wisconsin District office. Also, most of the daily mean discharges are in computer-readable form and have been statistically analyzed. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the District office.

### Records of Surface-Water Quality

Records of stream-water quality ordinarily are obtained at or near streamgaging stations, because interpretation of records of stream-water quality nearly always requires corresponding stream discharge data. The stream discharge shown with a water-quality analysis is the instantaneous value corresponding to the time of sample collection ("Streamflow, Instantaneous") whenever possible. When an instantaneous discharge value is not available, the daily mean discharge ("Discharge, in Cubic Feet per Second") is given if available. Water samples from lakes are collected at locations identified by latitude and longitude; the depth at which the sample was collected is given with each analysis. Records of surface-water quality in this report include a variety of types of data and measurement frequencies.

### Classification and Arrangement of Records

The water-quality data collected at surface-water sites fall into two general classifications. Continuous-record stations are sites where data are collected on a regularly scheduled basis as part of a monitoring program or interpretive investigation. Water-quality records for these stations accompany stream-discharge or lake-stage records, where available, in the Surface Water Records section of this report. More limited water-quality data are collected at gaging stations and other sites on streams. These data include measurements of water temperature and specific conductance made at gaging stations and water-quality analyses of samples collected at gaging stations and other sites on streams for reconnaissance and other special purposes. These data are presented separately at the end of the Surface-Water Records section.

### On-site Measurements and Sample Collection

In obtaining water-quality data, care is taken to assure that the data obtained represent the quality of the water at the time of sampling. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen concentration, are made on site when the samples are taken. To assure that measurements made in the laboratory also reflect the original quality of the water, prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for on-site measurements and for collecting, treating, and shipping samples are given in "U.S. Geological Survey Techniques of Water-Resources Investigations," listed in "Publications on techniques of water-resources investigations."

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 using depth-integrating samplers to obtain a representative sample needed for an accurate mean concentration and for use in calculating the discharge of suspended and dissolved materials. Water quality in lakes may differ with depth and laterally at a particular depth depending on thermal stratification and other physical and biological factors.

Water-quality data published in this report are considered to be representative values 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.

For chemical-quality stations equipped with continuous monitors, daily maximum, minimum, and mean values for each constituent or property are computed and reported herein. Continuous records (usually hourly values) are on file at the U.S. Geological Survey (USGS) Wisconsin District Office.



## Transport of suspended and dissolved materials

Samples used for computing discharge of suspended and dissolved materials (suspended sediment, suspended solids, phosphorus, and nitrogen) are collected using a number of sampling methods. Sample types include flow-integrated samples collected using a depth-integrating sampler at multiple locations in a stream cross section (equal-width increment or EWI samples), samples collected using depth-integrating sampler at a single location in a cross section, or point samples collected by an automated sampler from a single point in a cross section. Coefficients are used to compensate for concentration differences between flow-integrated samples and samples collected at single points or single locations.

Samples are collected more frequently during periods of rapidly-changing stream discharge than during stable periods. Discharges of suspended and dissolved materials for days of rapidly-changing stream discharge are computed by the subdivided day method (time-discharge weighted average) given in "U.S. Geological Survey Techniques of Water-Resources Investigations" listed in "Publications on techniques of water-resources investigations." For periods when no samples were collected, discharges of suspended and dissolved material are estimated from stream discharge and constituent concentrations from adjacent time periods and periods with similar stream discharges. Suspended-sediment and suspended-solids discharges of less than 0.005 tons/day are reported as 0.00 tons/day, and phosphorus and nitrogen discharges of less than 0.005 pounds per day (lb/day) are reported as 0.00 lb/day.

Concentration values used in discharge computations are given in separate tables.

In addition to the records of suspended-sediment discharge and concentration, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

## Laboratory Measurements

Samples for suspended-sediment concentration and particle-size determination are analyzed by the USGS Iowa District Sediment Laboratory. Chemical analyses, other than field measurements, are done by the USGS National Water Quality Laboratory unless indicated otherwise in the descriptive heading for the station. Methods used by USGS laboratories to analyze water and sediment samples are given in "U.S. Geological Survey Techniques of Water-Resources Investigations" listed in "Publications on techniques of water-resources investigations."

In March 1989, the USGS National Water-Quality Laboratory discovered a bias in their turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and July 1989. The magnitude of the bias differs among stations.

Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ( $\mu\text{g/L}$ ) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Present data above the  $\mu\text{g/L}$  level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey will begin using new trace-element protocols in water year 1994.

A problem has been identified with total phosphorus and total Kjeldahl nitrogen analyses done by the USGS National Water Quality Laboratory prior to Oct. 1, 1991. Some time after 1975, an error was introduced during a rewrite of the laboratory method for digestion of samples for total phosphorus or total Kjeldahl nitrogen analyses. The error resulted in incomplete digestion of samples causing a negative bias in the total phosphorus and total Kjeldahl nitrogen concentrations reported for many samples. The amount of bias is variable, but it generally increases with increasing concentrations of particulate phosphorus, suspended sediment, or organic carbon in the sample. In the absence of split-sample data, there is no scientifically defensible way to correct for the bias. Total phosphorus loads calculated using concentration data for samples analyzed prior to October 1991 may also have a sizeable negative bias. A new digestion procedure was implemented effective Oct. 1, 1991, that eliminated the bias.

## Collecting and Analyzing Agencies

All water-quality analyses stored in USGS computer files (WATSTORE) contain codes that identify the agencies that collected the sample (collecting agency) and analyzed it (analyzing agency). These codes may be included in some of the water-quality tables herein. Codes in use for Wisconsin data are as follows:

<u>Agency</u>	<u>Agency Code</u>
U.S. Geological Survey	1028
U.S. Geological Survey, National Water-Quality Laboratory	80020
Wisconsin State Laboratory of Hygiene	85543
Wisconsin Department of Natural Resources	85545

## Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, laboratories (if other than USGS), cooperation, and extremes for daily discharges of suspended and dissolved materials. For each station, tables of data collected at less-than-daily frequency are presented first followed by tables of daily values.

The concentrations of some constituents are given as less than a particular value; that value is the detection for the analytical method used for the analysis. Occasionally these values differ, or an actual concentration is given that is less than a higher detection limit indicated for the constituent in another analysis. These differences are due to differences in analytical methods.

The five-digit numbers in parentheses in column headings in many of the water-quality tables are codes that identify the constituent or property in USGS computer files (WATSTORE).

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of constituents or properties measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for each constituent or property.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, temperature recorder, automated sediment sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records. Laboratories other than USGS laboratories are identified.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximum and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of USGS water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates or check with the District Office to determine if updates were made.

The surface-water-quality records for water-quality partial-record stations are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its station number and name in the regular downstream-order sequence.

#### Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E, e	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)

#### Records of Ground-Water Levels

Water-level data for 64 wells are given in Volume 1 of this report. The locations of these wells are shown in figure 6. These wells are part of a national network of observation wells, and the water-level data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers.

Data in this report represent natural water-table and artesian conditions in the principal aquifers of the State, except in the sandstone aquifer in southeastern Wisconsin where heavy municipal and industrial pumping is causing a continual decline in the water level. Water in this aquifer is under artesian pressure where confined by the overlying Maquoketa Shale.

Although records of water levels for 64 wells are presented in Volume 1 of this report, water-level data are currently being collected for a total of 193 wells in Wisconsin through a cooperative program with the Wisconsin Geological and Natural History Survey (WG&NHS). Many federal, state, county and local agencies, as well as interested area residents, assist in this program by measuring and reporting water levels. All water-level data are placed in computer storage. Reports containing hydrographs, showing water-level changes in all of these wells, are periodically published by the WG&NHS.

The amplitude of water-level changes is typified by nine well hydrographs in this report that show annual maximum and minimum water levels for the period of record.

#### Data Collection and Computation

Measurements of water levels 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 ensure that measurements at each well are consistently accurate and reliable.

Tables of water-level data are presented by county arranged in alphabetical order. The prime identification number for a given well is the 15-digit number that appears in the heading. It is followed by the secondary identification number (the local number), that consists of a two-letter abbreviation of the county name, the township-range-section location of the well, and a four-digit identification number that is unique within the county.

Water-level records are obtained from direct measurements with a steel tape or from the graph or punched tape of a water-stage recorder. The 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. The altitude of the lsd above sea level and the distance of the measuring point (MP) above or below the lsd is given in each well description. Water levels are normally reported to a hundredth of a foot. The absolute value of the depth to water may be in error by a few tenths of a foot, but the error in determining the net change in water level between successive measurements is normally only a hundredth or a few hundredths of a foot.

## Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well precedes the tabular data. The comments below clarify information presented under the various headings.

**LOCATION.**--This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds); the hydrologic-unit number; and the land owner's name.

**AQUIFER.**--This entry designates by name the primary aquifer(s) open to the well.

**WELL CHARACTERISTICS.**--This entry describes the well in terms of depth, diameter, casing depth and/or screened interval, method of construction, and use.

**INSTRUMENTATION.**--This paragraph provides information on both the frequency of measurement and the collection method.

**DATUM.**--This entry describes both the measuring point and the land-surface elevation at the well. The measuring point is described physically (such as top of casing, top of breather pipe, hole in pump base and so on), and in relation to land surface (such as 1.3 ft above land-surface datum). The elevation of the land-surface datum is described in feet above (or below) sea level; it is reported with a precision dependent on the method of determination.

**REMARKS.**--This entry describes factors that may influence the water level in a well or the measurement of the water level.

**PERIOD OF RECORD.**--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year.

**EXTREMES FOR PERIOD OF RECORD.**--This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum and all taped measurements of water level are listed. For wells equipped with recorders, only abbreviated tables are published; daily lows are listed for every fifth day and at the end of the month (eom). For these wells the highest and lowest water levels of the water year and their dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for these wells, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

## ACCESS OF WATSTORE DATA

The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National Water Data Storage and Retrieval system (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia, and consists of related files and data bases.

- \* Station Header File - Contains descriptive information on more than 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.
- \* Daily Values File - Contains more than 220 million daily values of stream flows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- \* Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.
- \* Water Quality File - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radio-chemical characteristics of both surface and ground water.
- \* Ground-Water Site Inventory Data Base - Contains inventory data for more than 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requester will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey  
National Water Data Exchange  
421 USGS National Center  
Reston, Virginia 22092

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk; and, as noted in the introduction, on CD-ROM discs. Beginning with the 1990 water year, all water-data reports will also be available on Compact Disc-Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, will be reproduced on a single CD-ROM disc. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division's District offices. (See address on the back of the title page.) A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, CO 80225.



## DEFINITION OF TERMS

Terms used in this report with reference to streamflow, water-quality, and other hydrologic data are defined below. For conversion of inch-pound units and International System (SI) units see the table on the inside of the back cover.

Acre-foot (acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot. It is the equivalent of 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters.

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

Bacteria are microscopic, unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, and often clumped into colonies. Some bacteria cause disease; others perform essential roles in the natural recycling of materials such as decomposing organic matter into forms available for reuse by plants.

Fecal coliform bacteria are present in the intestines of warmblooded animals and are used to determine the sanitary quality of water. They are defined as those organisms that produce blue colonies within 24 hours when incubated at  $44.5^{\circ}\text{C} + 0.2^{\circ}$  on M-FC culture medium. Their concentrations are expressed as number of colonies per 100 ml of sample.

Fecal streptococci bacteria are also found in the intestines of warmblooded animals. Their presence in water is used to verify fecal pollution. They are characterized as gram-positive, spherical bacteria capable of growth in brain-heart infusion broth. They are defined as those organisms that produce red or pink colonies within 48 hours at  $35^{\circ} + 1.0^{\circ}$  on KF-streptococcus culture medium. Their concentrations are expressed as number of colonies per 100 ml of sample.

Bed material is the unconsolidated material at the bottom of a streambed, lake, pond, reservoir, or estuary.

Biochemical oxygen demand (BOD) measures the quantity of dissolved oxygen, in milligrams per liter, used by microorganisms for the decomposition of organic matter.

Cfs-day is the volume of water produced by a flow of 1 cubic foot per second for 24 hours. It is the equivalent of 86,400 cubic feet, 1.9835 acre-feet, 646,000 gallons, or 2,447 cubic meters.

Control is a feature downstream from a gage that determines the stage-discharge relation at the gage. The control may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Cubic foot per second ( $\text{ft}^3/\text{s}$ ) represents a volume of 1 cubic foot of water passing a given point during 1 second and is the equivalent of 7.48 gallons per second, 448.8 gallons per minute, or 0.02832 cubic meters per second.

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

Discharge is the volume of fluid or mass of suspended sediment passing a given point in a given period of time.

Mean discharge (MEAN) is the arithmetic average of all daily mean discharges for a specific period of time.

Instantaneous discharge is the discharge at a particular time.

Dissolved is an operational definition used by Federal and State agencies collecting water data as that material in a water sample which passes through a  $0.45\ \mu\text{m}$  membrane filter. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Drainage area of a stream at a specified location is measured in a horizontal plane and constitutes an area enclosed by a topographic divide from which surface runoff above the specified point drains by gravity into the stream. Values of the drainage areas given herein include closed basins and noncontributing areas within the basin, as noted.

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

Gaging station is a particular site on a stream or lake where systematic hydrologic data are collected.

Geologic unit is a geologic formation or group of formations; in this report, the term is used in the same sense as "aquifer" and refers to the geologic formation(s) open to the uncased or screened portion of a well.

Hardness is a physical-chemical characteristic of water that is attributable principally to the presence of calcium and magnesium and is expressed as calcium carbonate ( $\text{CaCO}_3$ ). Hardness is commonly recognized by the increased quantity of soap required to produce lather.

Hydrologic unit designates part or all of a surface-drainage basin delineated by the Office of Water Data Coordination; each hydrologic unit is identified by an 8-digit number.

Lake stage is the elevation of the lake's water surface referred to some arbitrary gage datum.

Micrograms per gram ( $\mu\text{g/g}$ ) indicates the concentration of a chemical constituent as the mass (micrograms) of that constituent per unit mass (gram) of sediment.

Micrograms per kilogram ( $\mu\text{g/kg}$ ) indicates the concentration of a chemical constituent as mass (micrograms) of that constituent per unit mass (kilogram) of sediment.

Micrograms per liter ( $\mu\text{g/L}$ ) indicates the concentration of a chemical constituent as the mass (micrograms) of that constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter.

Milligrams per liter ( $\text{mg/L}$ ) indicates the concentration of a chemical constituent or suspended sediment as the mass (milligrams) per unit volume (liter) of water.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent mean sea level at any particular place.

Partial-record station is a site for the systematic collection of limited streamflow or water-quality data over a period of years.

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

Particle-size classification for this report is based on recommendations of the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

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

Pesticides are chemical compounds used to control undesirable plants and animals. They include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides control insects and plants respectively and are the two categories reported.

Picocurie (PCi) is one trillionth ( $1 \times 10^{-12}$ ) of a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  disintegrations per second. A picocurie yields 2.22 disintegrations per minute.

Polychlorinated biphenyls (PCB's) are industrial chemicals composed of biphenyl compounds containing various amounts of chlorine. Their chemical structure is similar to the organochlorine insecticides.

Polychlorinated naphthalenes (PCN's) are industrial chemicals composed of naphthalene compounds containing various amounts of chlorine. Their chemical structure is similar to the organochlorine insecticides.

Recoverable from bottom material is the amount of a given constituent that is in solution after a sample of bottom material has been digested by an acid or mixture of acids that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material usually is not achieved by the digestion treatment and thus the determination represents less than the total amount of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Runoff in inches (IN, in) indicates the depth of water that would cover a drainage area if all runoff for a given time period were uniformly distributed.

Sea level, in the report, refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Secchi disk is a black and white plate, 20-25 cm in diameter, which is lowered into a lake on a calibrated line until it is no longer visible. The depth, in meters, at which the disk just disappears is reported as a measure of transparency.

Sediment originates mostly from disintegrated rocks and is transported by, suspended in, and deposited by water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. Topography, geology, soil type, land cover, land use, quantity and intensity of precipitation, and other environmental factors influence the quantity, characteristics, and cause of sediment in streams.

Suspended sediment is sediment maintained in suspension by turbulent currents or as a colloid.

Suspended-sediment concentration is the discharge-weighted concentration of suspended sediment in a sample zone (from the water surface to approximately 0.3 ft above the streambed) and is expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

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

Suspended-sediment discharge is the quantity of suspended sediment passing through a stream cross section in a unit of time. It is computed by multiplying water discharge times suspended-sediment concentration times 0.0027.

Sodium-adsorption ratio (SAR) expresses the relative activity of sodium ions in exchange reactions with soil.

Solute is any substance dissolved in water.

Specific conductance is a measure of the ability of water to conduct electrical current and is expressed in microsiemens per centimeter at 25°C. It is related to the number and specific types of ions in solution, and is useful for approximating the concentration of dissolved solids in the water. Commonly, the concentration of dissolved solids mg/L is about 65 percent of the specific conductance.

Stage-discharge relation correlates height (stage) and the volume of water flowing in a channel per unit of time.

Streamflow uniquely describes discharge in the natural channel of a surface stream course as opposed to the term "discharge", which can be applied to the flow of a canal. Unlike the term "runoff", streamflow may be applied to discharge whether it is affected by diversion or regulation or not.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a water-sediment sample retained on a 0.45  $\mu$ m membrane filter has been digested by dilute acid that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter usually is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of dissolved and total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45  $\mu$ m membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of dissolved and total recoverable concentrations of the constituent.

Tons per acre-foot indicates the dry weight of a constituent in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the measure of a substance that passes a stream section in solution or suspension during a 24-hour period. It is computed by multiplying the concentration of the substance (mg/L) by 0.0027 times the discharge of the stream (cfs).

Total is the total amount of a given constituent in a water-sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." The term indicates the sample consists of a water-sediment mixture and that the analytical method determines all of the constituent in the sample.

Total, recoverable is the amount of a given constituent that is in solution after a water-sediment sample has been digested by dilute acid resulting in dissolution of only readily soluble substances. Complete dissolution of all particulate matter usually is not achieved, thus the determination represents something less than the "total" amount of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

WDR is the abbreviation for "Water-Data Report" used in the summary REVISIONS paragraph to indicate previously published State annual basic data report (WRD was used an abbreviation for "Water-Resources Data" in reports published prior to 1982).

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



## PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

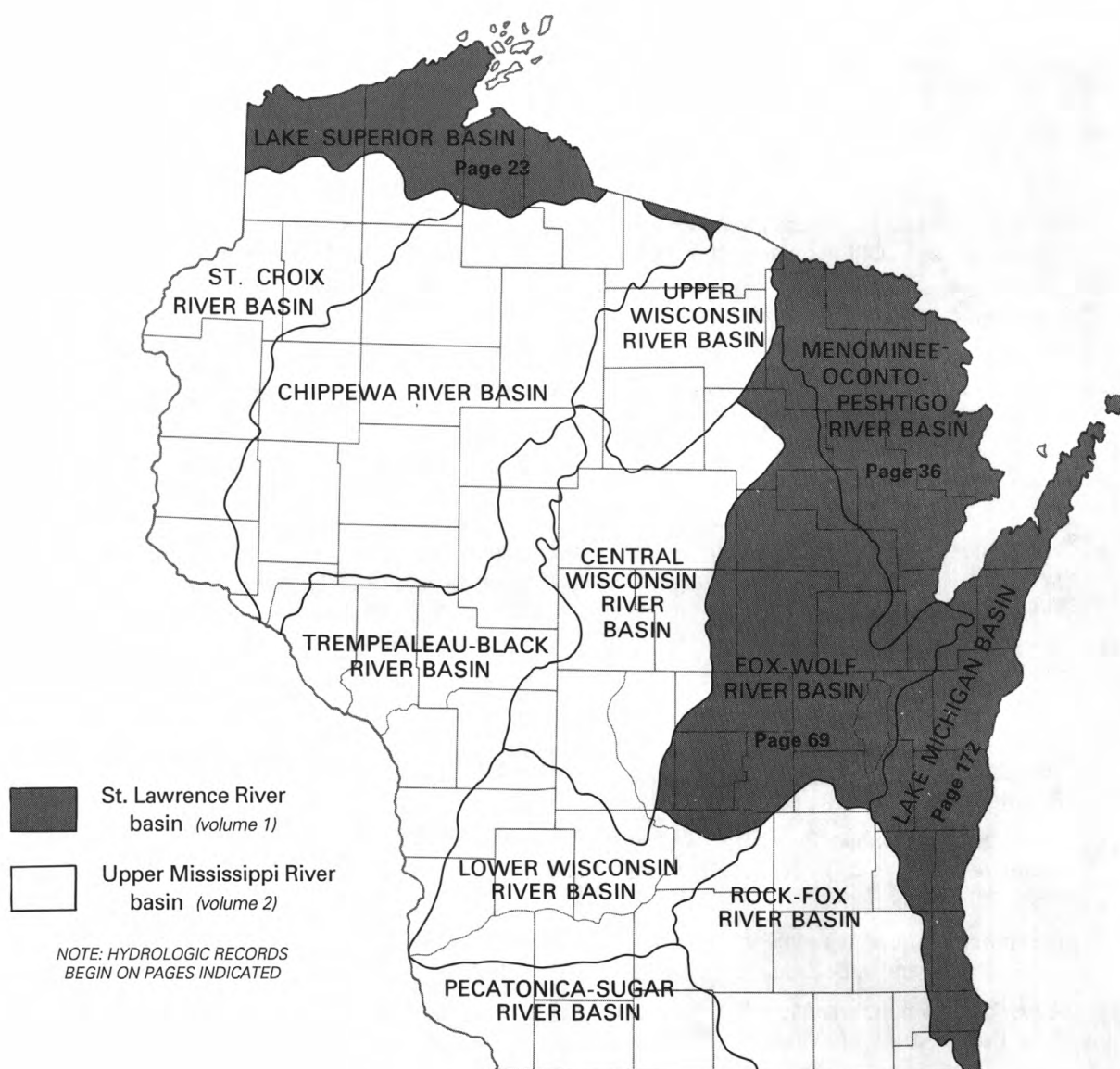
The reports listed below are for sale by the U.S. Geological Survey, Earth Science Information Center, Federal Center, Box 25286, MS 517, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficken, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS--TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS--TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS--TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L.M. McCary: USGS--TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W. S. Keys: USGS--TWRI Book 2, Chapter E2. 1990. 150 pages.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W. E. Teasdale: USGS--TWRI Book 2, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 pages.
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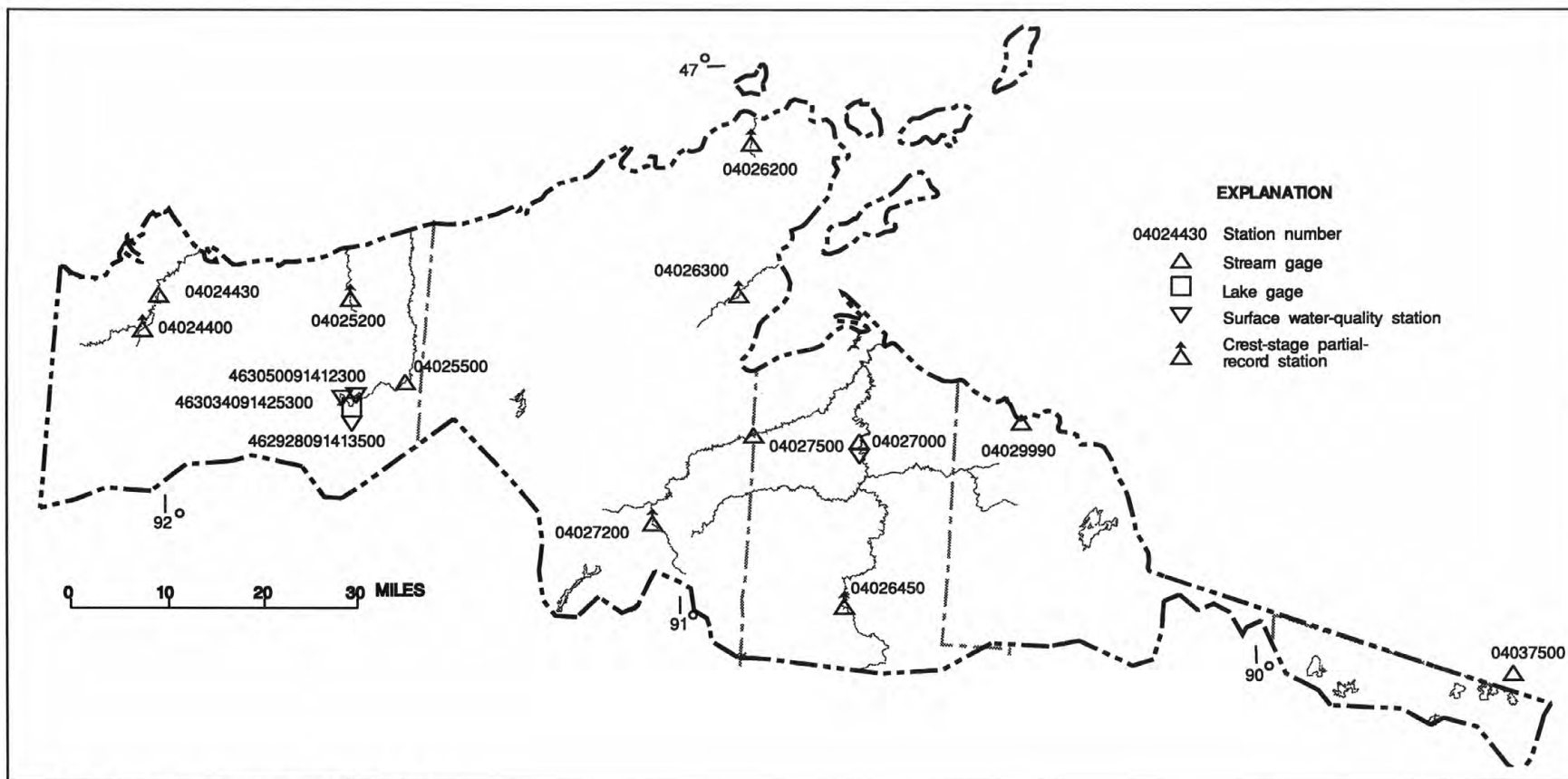
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**Figure 5.** Major surface-water drainage basins and index of hydrologic records.



Base from U.S. Geological Survey 1:100,000 digital data;  
modified by Wisconsin Department of Natural Resources.  
Wisconsin Transverse Mercator projection.

## LAKE SUPERIOR BASIN

## STREAMS TRIBUTARY TO LAKE SUPERIOR

04024430 NEMADJI RIVER NEAR SOUTH SUPERIOR, WI

LOCATION.--Lat 46°38'00", long 92°05'38", in SW 1/4 sec.14, T.48 N., R.14 W., Douglas County, Hydrologic Unit 04010301, on right bank at downstream side of bridge on County Trunk Highway C, 2.0 mi south of South Superior and 7.8 mi downstream from Black River.

DRAINAGE AREA.--420 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1973 to current year.

REVISED RECORDS.--WDR WI-75-1: 1974(M). WDR WI-82-1: Drainage area and 1981.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 601.13 ft above sea level.

REMARKS.--Estimated daily discharges: Ice-affected periods, Nov. 6-8, 14-22, and Nov. 27 to Apr. 8. Records good except those for ice-affected periods, which are fair.

EXTREMES OUTSIDE THE PERIOD OF RECORD.--A flood of Aug. 17, 1972, may have exceeded floods at this location since then.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	106	180	86	70	68	960	672	1890	429	111	156
2	86	148	170	82	72	72	860	994	1150	532	110	132
3	84	776	170	80	72	78	780	1040	834	649	105	124
4	80	674	160	82	72	94	740	786	653	1300	105	111
5	80	456	150	76	72	110	780	651	528	2950	102	98
6	78	320	150	72	70	130	800	564	446	1530	103	90
7	77	260	150	68	70	170	860	490	506	962	104	83
8	94	250	150	66	70	200	1200	436	698	2420	99	82
9	172	246	150	64	70	260	2250	513	1840	2890	109	89
10	405	346	150	62	68	250	1930	703	1590	2360	125	86
11	366	542	150	62	68	210	1320	856	970	1260	110	80
12	268	437	150	62	66	180	984	661	759	900	99	78
13	226	378	160	64	66	150	834	504	962	688	93	87
14	198	280	150	66	66	130	981	405	2420	602	90	90
15	176	310	150	64	64	110	1130	341	1450	506	96	93
16	163	450	140	64	64	110	913	289	840	414	100	96
17	160	420	140	64	64	120	754	250	760	358	96	94
18	158	400	130	66	64	110	682	229	1510	324	92	86
19	158	330	130	66	66	110	663	213	954	292	91	80
20	157	300	120	68	66	120	568	195	2830	256	88	83
21	151	270	120	68	68	120	485	181	3620	227	83	106
22	148	210	120	70	68	130	436	169	1460	206	82	133
23	139	209	110	72	70	130	411	168	875	179	116	124
24	132	222	110	72	68	220	983	2910	2470	163	155	113
25	127	223	100	70	66	450	2020	4790	3890	157	131	103
26	120	189	98	70	66	1200	1100	2100	1850	154	108	95
27	118	190	94	70	66	1800	791	1210	1060	145	104	97
28	113	200	90	70	68	1700	808	1570	783	135	146	94
29	109	200	88	70	---	1600	820	1100	616	130	139	110
30	106	190	90	70	---	1500	801	1070	505	125	120	126
31	104	---	90	70	---	1100	---	3110	---	115	138	---
TOTAL	4643	9532	4110	2156	1900	12732	28644	29170	40719	23358	3350	3019
MEAN	150	318	133	69.5	67.9	411	955	941	1357	753	108	101
MAX	405	776	180	86	72	1800	2250	4790	3890	2950	155	156
MIN	77	106	88	62	64	68	411	168	446	115	82	78
CFSM	.36	.76	.32	.17	.16	.98	2.27	2.24	3.23	1.79	.26	.24
IN.	.41	.84	.36	.19	.17	1.13	2.54	2.58	3.61	2.07	.30	.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1993, BY WATER YEAR (WY)

	MEAN	353	329	145	82.0	92.1	453	1366	649	532	364	201	391
MAX	1082	1200	418	177	336	910	2426	1355	1357	790	978	1485	
(WY)	1983	1992	1992	1984	1984	1992	1986	1979	1993	1986	1986	1986	
MIN	41.0	33.9	28.2	27.3	29.8	102	244	120	82.9	46.6	40.6	34.4	
(WY)	1977	1977	1977	1977	1977	1980	1987	1980	1988	1988	1976	1976	

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1974 - 1993
ANNUAL TOTAL	147776	163333	
ANNUAL MEAN	404	447	413
HIGHEST ANNUAL MEAN			786
LOWEST ANNUAL MEAN			200
HIGHEST DAILY MEAN	5020	Jul 3	4790 May 25
LOWEST DAILY MEAN	73	Aug 20	62 Jan 10-12
ANNUAL SEVEN-DAY MINIMUM	78	Aug 15	63 Jan 9
INSTANTANEOUS PEAK FLOW			5190 May 25
INSTANTANEOUS PEAK STAGE			20.06 May 25
ANNUAL RUNOFF (CFSM)	.96	1.07	(a)13700
ANNUAL RUNOFF (INCHES)	13.09	14.47	25.97
10 PERCENT EXCEEDS	1000	1140	1020
50 PERCENT EXCEEDS	174	150	150
90 PERCENT EXCEEDS	94	70	55

(a) From rating curve extended above 9,000 ft<sup>3</sup>/s



## STREAMS TRIBUTARY TO LAKE SUPERIOR

463034091425300 LAKE NEBAGAMON, WEST BAY, AT LAKE NEBAGAMON, WI

LOCATION.--Lat 46°30'34", long 91°42'53", in NE 1/4 SW 1/4 sec.35, T.46 N., R.11 W., Douglas County, Hydrologic Unit 04010301, at Lake Nebagamon.

PERIOD OF RECORD.--May 1992 to current year.

REMARKS.--Lake sampled in west bay at a depth of about 20 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MAY 10 TO AUGUST 10, 1993  
(Milligrams per liter unless otherwise indicated)

	May 10	June 27	July 15	Aug. 10
Depth of sample (ft)	1.5	1.5	1.5	1.5
Lake stage (ft)	87.72	87.62	87.62	86.82
Specific conductance ( $\mu$ S/cm)	86	83	82	88
pH (units)	7.7	7.1	7.5	7.5
Water temperature ( $^{\circ}$ C)	12.5	18.0	21.0	22.5
Secchi-depth (meters)	1.5	1.8	1.8	1.8
Dissolved oxygen	10.5	8.5	8.6	7.9
Phosphorus, total (as P)	<0.020	0.013	0.020	<0.020
Chlorophyll a, phytoplankton ( $\mu$ g/L)	8.7	8.8	5.9	6.1

463050091412300 LAKE NEBAGAMON, NORTHEAST BAY, AT LAKE NEBAGAMON, WI

LOCATION.--Lat 46°30'50", long 91°41'23", in NE 1/4 NW 1/4 sec.36, T.47 N., R.11 W., Douglas County, Hydrologic Unit 04010301, at Lake Nebagamon.

PERIOD OF RECORD.--May 1992 to current year.

REMARKS.--Lake sampled in northeast bay. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MAY 10 TO AUGUST 10, 1993  
(Milligrams per liter unless otherwise indicated)

	May 10	June 27	July 15	Aug. 10
Depth of sample (ft)	1.5	1.5	1.5	1.5
Lake stage (ft)	87.72	87.62	87.62	86.82
Specific conductance ( $\mu$ S/cm)	88	84	82	87
pH (units)	7.8	7.2	7.5	7.6
Water temperature ( $^{\circ}$ C)	12.0	18.5	21.5	23.0
Secchi-depth (meters)	1.5	1.8	2.1	1.8
Dissolved oxygen	10.5	8.6	8.4	8.1
Phosphorus, total (as P)	<0.020	0.015	0.012	0.017
Chlorophyll a, phytoplankton ( $\mu$ g/L)	11	8.9	4.2	6.6

## STREAMS TRIBUTARY TO LAKE SUPERIOR

462928091413500 LAKE NEBAGAMON, SOUTHEAST BAY AT DEEP HOLE, AT LAKE NEBAGAMON, WI

LOCATION.--Lat 46°29'28", long 91°41'35", in SW 1/4 SW 1/4 sec.1, T.46 N., R.11 W., Douglas County, Hydrologic Unit 04010301, at Lake Nebagamon.

DRAINAGE AREA.--40.9 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--March 1992 to current year.

GAGE.--Non-recording staff gage. Staff gage read by Edward Girzi; gage is located near observer's residence.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 89.88 ft, Apr. 23, 1992; minimum observed, 86.52 ft, Sept. 18, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 87.88 ft, June 2; minimum observed, 86.52 ft, Sept. 18.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	87.38	---	---
2	---	---	---	---	---	---	---	---	87.88	---	---	86.54
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	86.88	---
5	---	---	---	---	---	86.57	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	87.33	---	---
8	---	---	---	---	---	---	---	---	---	---	---	86.54
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	87.72	87.74	---	86.82	---
11	---	---	---	---	---	---	---	---	---	---	86.81	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	87.54	---	86.54
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	87.64	---	---	---
18	---	---	---	---	---	---	---	---	---	---	86.69	86.52
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	87.31	86.64	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	86.62
24	---	---	---	---	---	---	---	---	---	---	86.68	---
25	---	---	---	---	---	---	---	---	87.74	---	---	---
26	---	---	---	---	---	---	---	87.60	---	---	---	---
27	---	---	---	---	---	---	---	---	87.62	---	---	---
28	---	---	---	---	---	---	---	---	87.54	87.10	---	---
29	---	---	---	---	---	---	---	---	---	---	---	86.62
30	---	---	---	---	---	---	---	---	87.38	---	---	---
31	---	---	---	---	---	---	---	---	---	87.00	---	---

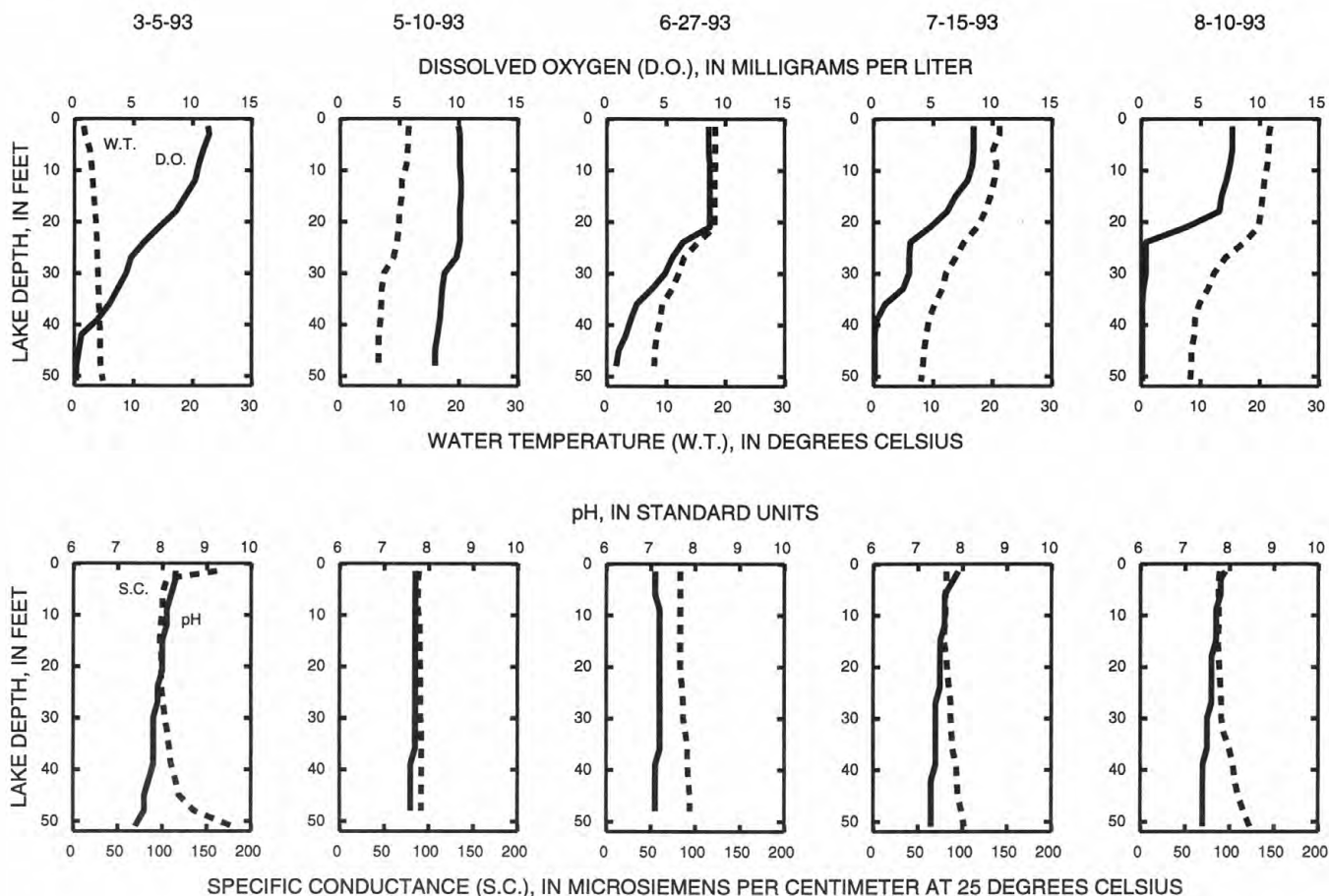
462928091413500 LAKE NEBAGAMON, SOUTHEAST BAY AT DEEP HOLE, AT LAKE NEBAGAMON, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1992 to current year.

REMARKS.--Lake sampled in southeast bay at a depth of about 52 ft. Lake ice-covered during March sampling.  
Water-quality analyses by Wisconsin State Laboratory of Hygiene.WATER-QUALITY DATA, MARCH 05 TO AUGUST 10, 1993  
(Milligrams per liter unless otherwise indicated)

	Mar. 05		May 10		June 27		July 15		Aug. 10	
Depth of sample (ft)	1.5	51	1.5	48	1.5	49	1.5	49	1.5	50
Lake stage (ft)	86.57	178	87.72	92	87.62	94	87.62	102	86.82	123
Specific conductance ( $\mu\text{S}/\text{cm}$ )	161	178	89	92	83	94	82	102	89	123
pH (units)	8.3	7.4	7.7	7.6	7.1	7.1	7.9	7.3	7.9	7.4
Water temperature ( $^{\circ}\text{C}$ )	1.5	5.0	11.5	6.5	18.5	8.0	21.0	8.0	22.0	8.5
Color (Pt-Co. scale)	---	---	50	50	---	---	---	---	---	---
Turbidity (NTU)	---	---	1.1	2.9	---	---	---	---	---	---
Secchi-depth (meters)	---	---	1.7	---	1.8	---	1.8	---	1.8	---
Dissolved oxygen	11.3	0.2	10.0	8.0	8.6	0.8	8.4	0.1	7.7	0.1
Hardness, as $\text{CaCO}_3$	---	---	43	46	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	11	12	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	3.7	3.9	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	2.4	2.4	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	0.7	0.7	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	38	41	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	6.0	6.0	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	2.0	2.0	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	<0.0	<0.0	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	10	11	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	72	74	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	0.05	0.09	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	0.05	0.09	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.02	0.07	---	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	0.47	0.43	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.50	0.50	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.55	0.59	---	---	---	---	---	---
Phosphorus, total (as P)	---	---	0.014	0.030	0.014	0.032	0.013	0.020	0.014	0.020
Phosphorus, ortho, dissolved (as P)	---	---	0.004	0.007	---	---	---	---	---	---
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	140	180	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	43	260	---	---	---	---	---	---
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	---	---	9.2	---	9.8	---	5.2	---	4.9	---





LOCATION.--Lat 46°32'16", long 91°35'43", in NW 1/4 SW 1/4 sec.23, T.47 N., R.10 W., Douglas County, Hydrologic Unit 04010301, on right bank, 1.4 mi southwest of Brule Post Office, 1.4 mi downstream from Negabamon Creek, and 1.7 mi upstream from Little Bois Brule River.

PERIOD OF RECORD.--October 1942 to September 1981, January 1984 to current year. Prior to January 1943, monthly discharge published in WSP 1307.

GAGE.--Water-stage recorder. Datum of gage is 948.49 ft above sea level. Prior to October 1964, nonrecording gage at same site and datum, supplemented by water-stage recorder part of 1959-62.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 5-10. Dec. 17 to Feb. 27, and Mar. 13-21.  
Records good except those for ice-affected periods, which are fair.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134	138	147	120	140	138	237	258	308	187	153	138
2	134	152	149	120	140	139	215	345	287	220	148	136
3	131	192	148	130	140	139	196	326	264	210	148	136
4	130	198	147	130	130	138	192	300	245	219	148	133
5	132	192	140	120	130	138	196	278	232	216	151	131
6	130	181	140	120	130	138	205	256	236	204	153	130
7	143	170	140	120	130	140	211	244	247	196	150	133
8	163	162	140	120	130	144	256	240	284	237	146	136
9	194	162	140	120	130	141	322	276	320	370	157	140
10	230	179	140	120	130	143	340	310	285	349	151	136
11	223	185	143	130	130	140	313	313	258	309	145	133
12	207	186	141	130	130	136	283	289	255	289	142	133
13	188	180	141	140	130	130	261	267	253	269	140	141
14	176	169	143	140	130	130	264	248	261	250	141	153
15	163	162	147	140	130	130	263	229	249	227	142	150
16	160	162	149	140	130	130	256	216	235	211	140	145
17	155	159	140	130	130	130	249	207	235	201	136	140
18	151	159	140	130	130	120	252	200	234	195	135	138
19	148	159	140	130	130	120	250	195	229	188	135	136
20	148	162	130	130	130	120	241	190	304	182	133	161
21	147	163	130	130	130	120	233	186	319	175	132	185
22	147	164	140	140	130	127	228	186	293	170	138	179
23	147	163	130	140	130	125	223	197	265	168	158	171
24	146	163	130	130	130	131	267	407	244	167	150	161
25	146	161	120	120	130	142	292	425	227	168	142	153
26	143	160	120	120	130	155	277	346	217	166	137	156
27	142	155	120	120	130	175	262	331	206	161	157	164
28	142	152	130	120	142	192	264	328	199	164	146	164
29	142	149	140	120	---	206	257	297	193	163	140	164
30	139	148	140	130	---	226	260	306	188	159	143	162
31	139	---	140	140	---	249	---	326	---	156	142	---
TOTAL	4820	4987	4285	3970	3682	4532	7565	8522	7572	6546	4479	4438
MEAN	155	166	138	128	131	146	252	275	252	211	144	148
MAX	230	198	149	140	142	249	340	425	320	370	158	185
MIN	130	138	120	120	130	120	192	186	188	156	132	130
CFSM	1.32	1.41	1.17	1.09	1.11	1.24	2.14	2.33	2.14	1.79	1.22	1.25
IN.	1.52	1.57	1.35	1.25	1.16	1.43	2.38	2.69	2.39	2.06	1.41	1.44

MEAN	159	161	142	133	132	153	278	237	197	167	148	158
MAX	259	295	205	164	187	265	399	495	416	345	252	297
(WY)	1978	1972	1972	1984	1966	1945	1976	1950	1944	1952	1986	1951
MIN	110	119	113	104	104	105	157	140	122	108	114	108
(WY)	1949	1949	1948	1948	1948	1943	1959	1958	1948	1964	1948	1948

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1943 - 1993	
ANNUAL TOTAL	66856		65398			
ANNUAL MEAN	183		179		172	
HIGHEST ANNUAL MEAN					223	1972
LOWEST ANNUAL MEAN					133	1948
HIGHEST DAILY MEAN	778	Apr 21	425	May 25	1270	Jun 5 1944
LOWEST DAILY MEAN	117	Aug 20	120	Many days	74	Mar 23 1943
ANNUAL SEVEN-DAY MINIMUM	119	Aug 14	121	Jan 4	89	Mar 23 1943
INSTANTANEOUS PEAK FLOW			(a)456	May 24	(c)1520	Jun 5 1944
INSTANTANEOUS PEAK STAGE			(b)4.24	Jan 2	(d)5.20	Jun 5 1944
INSTANTANEOUS LOW FLOW					67	Mar 13 1943
ANNUAL RUNOFF (CFSM)	1.55		1.52		1.45	
ANNUAL RUNOFF (INCHES)	21.08		20.62		19.76	
10 PERCENT EXCEEDS	264		267		258	
50 PERCENT EXCEEDS	151		151		146	
90 PERCENT EXCEEDS	130		130		119	

- (a) Gage height, 3.05 ft
- (b) Backwater from ice
- (c) From rating curve extended above 750 ft<sup>3</sup>/s
- (d) From graph based on gage readings

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LOCATION.--Lat 46°29'15", long 90°41'45", in SE 1/4 sec.2, T.46 N., R.3 W., Ashland County, Hydrologic Unit 04010302, Bad River Indian Reservation, on left bank just downstream from Elm Hoist bridge, 5.0 mi downstream from Potato River, 8.5 mi south of Odanah, and 23 mi from mouth.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1337: 1922. WDR WI-82-1: Drainage area.

REMARKS.--Estimated daily discharges: Oct. 1-20, Sept. 3-20, and ice-affected periods, Nov. 16-18 and Nov. 26 to Apr. 8. Records good except those for estimated daily discharges, which are poor.

EXTREMES OUTSIDE THE PERIOD OF RECORD.--Flood of June 24, 1946, reached a stage of at least 22.2 ft, top of former downstream bridge submerged. information from Indian Service.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	320	450	210	210	190	1800	1590	1740	404	254	219
2	210	326	390	200	220	190	1600	3420	1340	589	246	210
3	200	597	360	210	220	190	1400	3370	1010	665	234	230
4	200	973	330	220	220	210	1100	2580	800	656	244	190
5	190	902	320	220	210	240	1000	1950	653	771	249	180
6	190	780	300	210	210	270	1100	1540	567	692	249	170
7	400	634	280	210	210	300	1300	1230	648	574	247	170
8	800	612	260	210	200	320	1500	1070	951	1010	228	170
9	1100	558	250	210	200	320	2740	1030	1470	1060	204	190
10	1400	787	240	210	190	290	3050	895	1520	771	195	180
11	1900	1140	250	200	190	280	2760	811	1150	603	184	170
12	1500	1070	250	200	190	270	2200	707	843	500	172	170
13	1100	929	250	200	190	260	1770	611	657	410	177	170
14	900	778	250	200	180	250	1800	543	548	375	216	170
15	820	654	260	200	180	250	1790	478	525	347	205	250
16	740	620	270	200	170	260	1560	423	474	313	196	400
17	640	640	270	200	170	230	1290	381	478	287	192	340
18	580	600	230	200	180	210	1290	355	554	271	178	290
19	520	582	230	200	180	210	1550	336	543	255	170	260
20	500	558	230	200	180	220	1600	313	2010	238	161	240
21	491	1060	230	200	190	210	1470	296	3300	218	153	229
22	479	1310	220	210	190	200	1330	279	2960	200	151	222
23	488	1120	220	210	190	200	1240	284	2000	193	166	217
24	483	941	220	210	190	230	1500	2280	1260	187	173	209
25	450	808	220	200	190	270	2590	2520	1200	192	158	198
26	419	660	220	200	190	700	2110	1730	938	233	154	190
27	384	600	220	200	190	1300	1630	1270	746	233	159	213
28	370	540	220	190	190	2000	2000	1550	619	218	164	245
29	358	580	220	190	---	2400	1940	1380	520	228	165	274
30	342	500	220	190	---	2500	1860	1160	452	231	171	267
31	332	---	220	200	---	2200	---	1870	---	229	201	---
TOTAL	18706	22179	8100	6310	5420	17170	51870	38252	32476	13153	6016	6633
MEAN	603	739	261	204	194	554	1729	1234	1083	424	194	221
MAX	1900	1310	450	220	220	2500	3050	3420	3300	1060	254	400
MIN	190	320	220	190	170	190	1000	279	452	187	151	170
CFSM	1.01	1.24	.44	.34	.32	.93	2.90	2.07	1.81	.71	.33	.37
IN.	1.17	1.38	.50	.39	.34	1.07	3.23	2.38	2.02	.82		

MEAN	470	536	294	188	188	660	2194	1076	670	481	301	364
MAX	1861	2151	638	410	713	2494	4187	2752	2054	2311	1565	1775
(WY)	1986	1992	1992	1992	1984	1973	1960	1950	1951	1949	1972	1977
MIN	67.1	95.2	107	95.0	69.3	113	513	261	121	77.9	68.2	74.3
(WY)	1949	1949	1977	1917	1964	1917	1987	1980	1948	1964	1948	1976

STREAMS TRIBUTARY TO LAKE SUPERIOR  
04027000 BAD RIVER NEAR ODANAH, WI--CONTINUED

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1914 - 1993	
ANNUAL TOTAL	253549		226285		621	
ANNUAL MEAN	693		620		942	1983
HIGHEST ANNUAL MEAN					346	1990
LOWEST ANNUAL MEAN					22000	Apr 24 1960
HIGHEST DAILY MEAN	17800	Jul 3	3420	May 2	52	(a) Oct 1 1948
LOWEST DAILY MEAN	133	Aug 24	151	Aug 22	54	Feb 19 1964
ANNUAL SEVEN-DAY MINIMUM	143	Aug 18	159	Aug 21	(b) 27700	Apr 24 1960
INSTANTANEOUS PEAK FLOW			4020	May 2	(c) 21.70	Apr 24 1960
INSTANTANEOUS PEAK STAGE			8.34	May 2	(d) 34	Nov 8 1976
INSTANTANEOUS LOW FLOW			148	Aug 22	1.04	
ANNUAL RUNOFF (CFSM)	1.16		1.04		14.14	
ANNUAL RUNOFF (INCHES)	15.80		14.10		1450	
10 PERCENT EXCEEDS	1200		1550		270	
50 PERCENT EXCEEDS	360		280		115	
90 PERCENT EXCEEDS	200		190			

(a) Also occurred Aug. 6, 7, 1964

(b) From rating curve extended above 12,000 ft<sup>3</sup>/s and a comparison with contracted-opening measurement of peak flow 45,600 ft<sup>3</sup>/s at Odanah, drainage area, 990 mi<sup>2</sup>

(c) From floodmarks

(d) Result of freezeup



## STREAMS TRIBUTARY TO LAKE SUPERIOR

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04027000 BAD RIVER NEAR ODANAH, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1974 to January 1978 and October 1987 to September 1993 (discontinued). Water-quality data collected downstream at bridge on U.S. Highway 2 at Odanah (04027595 Bad River at Odanah) from February 1978 to September 1987.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)		
OCT 1992 20...	1315	--	494	110	3.0	MAY 1993 25...	1420	2560	90	13.0		
JAN 1993 13...	1035	200	--	170	0.0	JUL 15...	1115	342	135	19.0		
MAR 03...	0900	190	--	190	0.5	AUG 04...	0900	242	150	16.5		
APR 21...	0930	--	1540	76	6.0	SEP 02...	1045	208	188	18.0		
DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD) (UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	
OCT 1992 20...	1315	--	494	110	7.4	3.0	5.0	13.0	750	98	49	
MAR 1993 03...	0900	190	--	190	7.3	0.5	14	12.5	746	89	K22	
APR 21...	0930	--	1540	76	7.0	6.0	19	12.5	748	102	K6	
JUL 15...	1115	--	342	135	7.7	19.0	4.8	8.5	747	94	42	
SEP 02...	1045	--	208	188	7.4	18.0	1.6	8.1	735	89	--	
DATE	TIME	STREP-TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD HCO3 (MG/L AS) (00453)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT 1992 20...	42	51	14	3.8	2.3	0.70	47	38	3.8	2.7	<0.10	
MAR 1993 03...	50	77	21	5.9	3.7	0.90	83	68	4.9	3.7	<0.10	
APR 21...	K8	27	7.2	2.1	1.8	0.70	32	26	4.8	5.4	<0.10	
JUL 15...	34	58	16	4.5	2.6	0.70	67	55	2.3	2.2	<0.10	
SEP 02...	--	73	20	5.6	3.3	2.0	88	72	3.1	2.8	0.10	
DATE	TIME	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
OCT 1992 20...	9.8	78	<0.010	0.077	0.030	0.50	0.020	0.020	<0.010	70	15	
MAR 1993 03...	15	118	0.020	0.350	0.040	0.30	0.030	0.020	<0.010	40	19	
APR 21...	7.5	42	<0.010	0.100	0.040	0.40	0.030	0.050	<0.010	150	10	
JUL 15...	9.4	100	<0.010	0.082	0.030	0.50	0.030	0.020	<0.010	--	--	
SEP 02...	9.6	95	<0.010	<0.050	0.030	0.30	0.020	<0.010	<0.010	20	18	

K RESULTS BASED ON COUNT OUTSIDE OF THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

STREAMS TRIBUTARY TO LAKE SUPERIOR  
04027000 BAD RIVER NEAR ODANAH, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1992											
20...	<3	390	<4	14	<10	<1	<1	32	<6	14	72
MAR 1993											
03...	<3	400	<4	18	<10	<1	<1	45	<6	13	100
APR											
21...	<3	240	<4	8	<10	<1	<1	18	<6	54	83
JUL											
15...	--	--	--	--	--	--	--	--	--	11	97
SEP											
02...	<3	270	<4	17	<10	<1	<1	46	<6	13	79

## STREAMS TRIBUTARY TO LAKE SUPERIOR

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04027500 WHITE RIVER NEAR ASHLAND, WI

LOCATION.--Lat 46°29'50", long 90°54'15", in NE 1/4 sec.6, T.46 N., R.4 W., Ashland County, Hydrologic Unit 04010302, at downstream end of powerplant of Lake Superior District Power Co., 0.3 mi downstream from bridge on State Highway 112 over dam, and 4.5 mi south of Ashland city limits.

DRAINAGE AREA.--301 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-82-1: Drainage area. WDR WI-92-1: 1952-53(M), 1960(M), 1967(M), 1972(M), and 1978(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 660.15 ft above sea level (Lake Superior District Power Co. bench mark). Prior to May 20, 1976, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 27 to Mar. 23. Records good except for ice-affected period, which is fair. Diurnal fluctuation caused by hydroelectric plant at gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	205	218	190	190	190	501	465	587	233	194	197
2	164	216	203	180	200	190	388	988	565	271	176	177
3	143	313	221	170	210	210	334	651	478	277	190	174
4	155	376	226	170	210	220	345	667	377	292	177	188
5	156	350	185	190	210	230	377	595	340	268	200	173
6	158	332	130	210	210	240	428	500	309	254	172	156
7	175	287	131	180	200	250	471	367	321	263	195	187
8	217	268	172	170	210	260	544	354	656	480	193	158
9	403	245	226	170	210	260	818	317	525	426	191	192
10	455	282	256	180	200	240	770	319	579	423	193	188
11	437	294	245	190	200	210	739	383	491	412	201	180
12	425	286	233	180	200	190	660	389	434	383	203	156
13	362	275	225	180	180	180	570	372	355	288	179	203
14	307	253	224	190	190	180	541	315	292	267	177	191
15	273	234	225	190	170	190	552	265	266	238	161	206
16	241	194	233	190	160	200	528	246	247	242	177	216
17	249	215	223	190	170	180	483	231	253	216	196	196
18	244	221	153	190	170	180	506	207	261	216	154	195
19	236	213	122	190	180	190	484	224	268	226	193	190
20	241	253	118	190	180	220	446	211	478	207	171	173
21	238	301	137	190	180	210	410	222	479	205	164	187
22	232	351	198	190	180	220	342	208	507	195	182	187
23	232	328	216	190	190	230	331	267	463	189	182	188
24	229	324	197	190	190	220	483	1330	393	213	206	192
25	233	311	168	190	180	274	496	790	390	201	203	174
26	235	295	122	180	180	587	503	891	352	220	172	175
27	229	268	170	180	190	828	480	901	326	222	196	175
28	223	237	180	180	190	834	604	877	286	229	179	195
29	218	246	190	190	---	884	478	668	262	196	177	205
30	203	256	210	190	---	828	497	588	251	213	196	179
31	206	---	200	190	---	709	---	679	---	205	177	---
TOTAL	7669	8229	5957	5750	5330	10034	15109	15487	11791	8170	5727	5553
MEAN	247	274	192	185	190	324	504	500	393	264	185	185
MAX	455	376	256	210	210	884	818	1330	656	480	206	216
MIN	143	194	118	170	160	180	331	207	247	189	154	156
CFSM	.82	.91	.64	.62	.63	1.08	1.67	1.66	1.31	.88	.61	.61
IN.	.95	1.02	.74	.71	.66	1.24	1.87	1.91	1.46	1.01	.71	.69

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1993, BY WATER YEAR (WY)

	MEAN	239	252	204	188	193	309	572	373	292	264	230	245
MAX	445	509	285	248	318	666	1017	867	707	697	744	635	
(WY)	1983	1992	1961	1952	1984	1973	1960	1950	1952	1953	1972	1960	
MIN	152	160	150	146	136	178	238	197	139	142	147	146	
(WY)	1949	1977	1964	1991	1968	1965	1987	1980	1948	1988	1948	1948	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1948 - 1993

ANNUAL TOTAL	110413	104806	
ANNUAL MEAN	302	287	281
HIGHEST ANNUAL MEAN			426
LOWEST ANNUAL MEAN			217
HIGHEST DAILY MEAN	3640	Jul 2	1330
LOWEST DAILY MEAN	118	Dec 20	118
ANNUAL SEVEN-DAY MINIMUM	153	Jun 11	157
INSTANTANEOUS PEAK FLOW			2110
INSTANTANEOUS PEAK STAGE			4.01
ANNUAL RUNOFF (CFSM)	1.00		.95
ANNUAL RUNOFF (INCHES)	13.65		12.95
10 PERCENT EXCEEDS	455		502
50 PERCENT EXCEEDS	226		218
90 PERCENT EXCEEDS	170		174
			7.90
			.93
			12.68
			472
			210
			160

(a) From rating curve extended above 3,000 ft<sup>3</sup>/s



## STREAMS TRIBUTARY TO LAKE SUPERIOR

04029990 MONTREAL RIVER AT SAXON FALLS NEAR SAXON, WI

LOCATION.--Lat 46°32'13", long 90°22'47", in SW 1/4 NW 1/4 sec.21, T.47 N., R.1 E., Iron County, Hydrologic Unit 04010302, at Saxon Falls powerhouse, 3.4 mi northeast of Saxon, and 3.8 mi upstream from mouth.

DRAINAGE AREA.--262 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1938 to September 1970. October 1986 to current year. Published as "Montreal River near Saxon" (04030000), September 1938 to September 1970.

REVISED RECORDS.--WSP 894: 1938-39. WSP 924: 1939-40. WSP 1307: 1948(M). WSP 1627: 1958.

GAGE.--Headwater and tailwater gages read by Northern States Power Company. September 1938 to September 1970, water-stage recorder at site 1.8 mi downstream at elevation of 760 ft above sea level (from Power Company data).

REMARKS.--No estimated daily discharges. Diurnal fluctuation caused by Saxon Falls powerplant. Flow regulated by Gile Reservoir on West Branch Montreal River (capacity 1,290,000,000 ft<sup>3</sup>/s) since April 1941.

COOPERATION.--Records were provided by Northern States Power Company and reviewed by the Geological Survey.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	125	110	180	200	175	650	635	650	230	300	190
2	60	120	175	170	195	190	650	635	585	260	285	180
3	60	170	130	170	195	205	520	1040	480	280	230	180
4	60	335	145	180	195	180	520	985	325	280	285	180
5	50	335	131	170	195	180	470	870	305	280	225	180
6	50	295	131	170	195	180	555	955	305	325	205	180
7	45	180	150	180	195	180	745	790	420	280	235	130
8	435	170	165	180	195	173	785	675	525	305	235	130
9	495	195	155	180	195	180	950	675	720	325	220	130
10	695	280	180	180	180	180	1500	520	750	285	205	150
11	695	595	180	180	185	180	1500	490	585	285	225	150
12	440	505	160	180	185	180	1120	325	420	250	225	150
13	365	390	160	180	185	170	870	220	420	225	245	145
14	290	281	180	180	185	170	870	190	310	240	245	180
15	240	281	180	180	185	170	795	220	305	225	245	225
16	235	205	220	175	180	175	650	220	255	235	215	205
17	235	215	215	175	180	175	585	205	285	230	220	190
18	235	215	180	175	175	160	585	225	350	230	225	155
19	235	205	195	185	180	165	650	225	350	230	215	145
20	200	205	195	180	180	165	700	205	350	225	149	165
21	200	560	180	190	180	165	650	210	3260	210	162	145
22	180	560	195	180	180	170	585	215	2980	210	190	145
23	200	560	150	180	185	170	525	215	1650	210	226	145
24	200	495	150	180	185	170	525	725	955	215	185	130
25	200	380	150	180	180	175	525	860	735	215	150	130
26	170	380	145	195	180	200	950	645	595	255	154	130
27	150	175	145	195	180	225	655	420	595	235	148	165
28	150	170	195	195	180	225	785	475	325	235	154	155
29	145	170	180	195	---	585	865	475	260	300	154	185
30	125	170	180	195	---	870	785	475	230	300	154	190
31	125	---	180	195	---	950	---	475	---	255	172	---
TOTAL	7035	8922	5187	5630	5210	7438	22520	15495	20280	7865	6483	4860
MEAN	227	297	167	182	186	240	751	500	676	254	209	162
MAX	695	595	220	195	200	950	1500	1040	3260	325	300	225
MIN	45	120	110	170	175	160	470	190	230	210	148	130
CFSM	.87	1.14	.64	.69	.71	.92	2.87	1.91	2.58	.97	.80	.62
IN.	1.00	1.27	.74	.80	.74	1.06	3.20	2.20	2.88	1.12	.92	.69

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1993, BY WATER YEAR (WY)

	MEAN	202	260	181	164	155	302	955	517	387	286	196	202
MAX	495	800	391	295	321	888	1795	1180	1172	1068	432	894	
(WY)	1942	1992	1952	1969	1969	1945	1939	1954	1939	1992	1953	1941	
MIN	38.2	34.2	38.1	27.8	21.0	55.4	213	127	101	74.1	36.1	33.6	
(WY)	1949	1949	1949	1949	1949	1940	1987	1941	1987	1987	1987	1939	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1938 - 1993

ANNUAL TOTAL	142738	116925	
ANNUAL MEAN	390	320	
HIGHEST ANNUAL MEAN			317
LOWEST ANNUAL MEAN			487
HIGHEST DAILY MEAN	9880	3260	162
LOWEST DAILY MEAN	45	45	1987
ANNUAL SEVEN-DAY MINIMUM	56	56	1992
ANNUAL RUNOFF (CFSM)	1.49	1.22	7.2
ANNUAL RUNOFF (INCHES)	20.27	16.60	7.7
10 PERCENT EXCEEDS	650	650	1.21
50 PERCENT EXCEEDS	220	205	16.46
90 PERCENT EXCEEDS	110	150	191
			84

STREAMS TRIBUTARY TO LAKE SUPERIOR

35

04037500 CISCO BRANCH ONTONAGON RIVER AT CISCO LAKE OUTLET, MI

LOCATION.--Lat 46°15'12", long 89°27'05", in NE 1/4 sec.32, T.45 N., R.41 W., Gogebic County, Hydrologic Unit 04020102, on left bank 80 ft downstream from Cisco Lake Dam, 2.5 mi upstream from Langford Creek, 3.0 mi upstream from U.S. Highway 2, and 13 mi west of Watersmeet.

DRAINAGE AREA.--50.7 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1911: Drainage area.

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

REMARKS.--Estimated daily discharges: Feb. 1-10. Records good except estimated daily discharges, which are fair, and those below 3.0 ft<sup>3</sup>/s, which are poor. Flow regulated by Cisco Lake (station 04037400). Several measurements of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	55	7.0	25	40	40	82	114	31	1.7	24	23
2	28	56	7.3	25	22	39	62	117	31	1.7	24	22
3	27	75	7.7	26	16	26	43	119	61	1.7	24	21
4	27	101	8.2	47	10	6.1	43	121	86	2.3	24	21
5	27	100	8.9	65	10	6.4	43	62	83	2.2	24	20
6	25	99	9.3	64	10	6.4	43	5.8	82	30	45	19
7	53	97	27	63	10	6.8	43	4.0	82	72	66	12
8	98	95	46	62	10	7.5	45	2.6	82	93	65	.51
9	126	93	46	60	10	24	47	1.9	112	61	46	.51
10	123	91	57	58	10	42	98	1.5	137	23	22	.52
11	119	89	64	60	10	41	128	1.1	98	22	22	.52
12	52	88	63	48	25	41	121	.88	45	9.2	22	.58
13	2.0	87	62	21	44	41	110	12	44	.82	23	23
14	1.9	89	61	22	43	40	105	25	29	.73	23	74
15	1.9	87	61	22	43	40	103	24	21	.70	23	90
16	29	86	63	23	42	40	109	25	23	.62	22	89
17	72	85	62	23	42	39	111	36	24	.63	22	84
18	70	84	62	24	42	39	106	45	25	.61	22	43
19	70	82	61	33	35	39	105	45	26	.54	21	1.5
20	68	83	61	41	27	38	105	44	37	.43	10	1.3
21	68	104	60	41	27	38	103	44	116	.40	.67	1.2
22	68	128	37	50	19	22	100	43	181	.37	.51	.86
23	65	127	20	61	8.0	5.2	97	44	176	1.2	.50	.69
24	64	125	21	61	8.2	5.5	94	71	170	2.7	.45	.61
25	64	104	22	60	8.3	5.8	102	89	166	2.5	.41	.53
26	61	83	22	60	25	6.1	105	84	135	1.9	.39	.47
27	60	82	23	60	40	24	101	99	115	12	12	.48
28	59	81	22	59	40	41	105	56	60	25	22	.38
29	57	80	23	58	---	64	113	27	2.6	24	21	.38
30	56	41	24	57	---	84	115	28	2.3	25	22	22
31	56	---	25	57	---	83	---	30	---	25	22	---
TOTAL	1725.8	2677	1143.4	1436	676.5	980.8	2687	1421.78	2282.9	444.95	675.93	574.04
MEAN	55.7	89.2	36.9	46.3	24.2	31.6	89.6	45.9	76.1	14.4	21.8	19.1
MAX	126	128	64	65	44	84	128	121	181	93	66	90
MIN	1.9	41	7.0	21	8.0	5.2	43	.88	2.3	.37	.39	.38

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1993, BY WATER YEAR (WY)

	MEAN	69.5	68.2	49.5	39.2	35.4	43.6	60.4	45.3	47.2	31.6	26.3	38.4
MAX	151	116	84.1	62.6	81.0	92.1	111	137	123	113	99.7	104	
(WY)	1986	1968	1961	1983	1945	1973	1985	1960	1953	1953	1978	1977	
MIN	13.1	14.5	23.5	23.1	20.6	24.1	2.02	.17	.11	.25	.15	.23	
(WY)	1958	1945	1990	1959	1950	1956	1948	1977	1977	1977	1970	1976	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

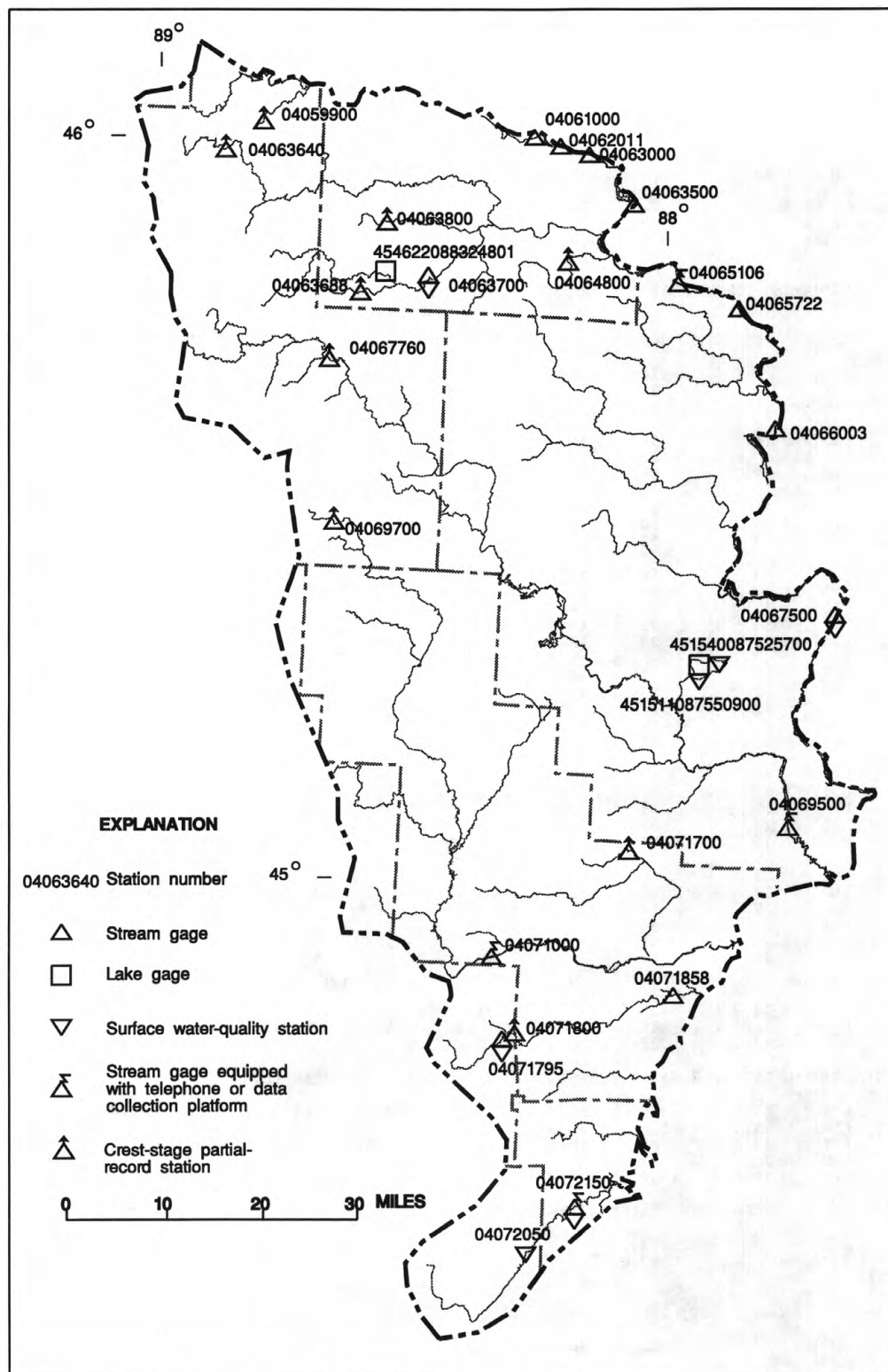
FOR 1993 WATER YEAR

WATER YEARS 1945 - 1993

ANNUAL TOTAL	15847.12	16726.10	
ANNUAL MEAN	43.3	45.8	46.2
HIGHEST ANNUAL MEAN			65.9
LOWEST ANNUAL MEAN			25.2
HIGHEST DAILY MEAN	190	Jul 3	288
LOWEST DAILY MEAN	.45	Jun 11	.08
ANNUAL SEVEN-DAY MINIMUM	.51	Jun 5	.09
INSTANTANEOUS PEAK FLOW		185	288
INSTANTANEOUS PEAK STAGE		5.62	(b)6.10
ANNUAL RUNOFF (CFSM)	.85	.90	.91
ANNUAL RUNOFF (INCHES)	11.63	12.27	12.39
10 PERCENT EXCEEDS	100	102	102
50 PERCENT EXCEEDS	37	40	38
90 PERCENT EXCEEDS	.81	1.6	1.0

(a) July 21, Aug. 2, 3, 1988

(b) Present datum



Base from U.S. Geological Survey 1:100,000 digital data;  
modified by Wisconsin Department of Natural Resources.  
Wisconsin Transverse Mercator projection.

### MENOMINEE-OCNTO-PESHTIGO RIVER BASIN



## STREAMS TRIBUTARY TO LAKE MICHIGAN

37

04061000 BRULE RIVER NEAR FLORENCE, WI

LOCATION.--Lat 45°57'31", long 88°15'57", in SE 1/4 SE 1/4 sec.11, T.41 N., R.32 W., Michigan Meridian, Iron County, Hydrologic Unit 04030106, on left bank 40 ft upstream from highway bridge, 1.0 mi upstream from Paint River, 2.5 mi north of Florence, and 5.0 mi upstream from confluence with Michigamme River.

DRAINAGE AREA.--373 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1387: 1914-16. WDR MI-92-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,200.55 ft above sea level (levels by Owen Ayres Associates). Prior to Aug. 29, 1944, nonrecording gage at bridge 40 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 14-22 and Nov. 27 to Mar. 31. Records excellent except for estimated daily discharges, which are fair. Discharge includes some mine pumpage prior to August 1977. Several measurements of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	259	232	310	290	247	200	559	702	665	354	255	253
2	248	271	300	285	247	208	462	646	538	375	244	241
3	245	364	290	280	245	209	411	761	464	350	246	283
4	245	372	290	280	240	215	384	998	423	326	261	265
5	238	331	260	286	235	225	377	1190	390	335	267	251
6	230	300	250	280	233	230	394	1090	367	312	296	243
7	227	273	260	270	233	230	412	858	374	288	290	235
8	227	267	270	260	233	230	457	721	417	278	272	241
9	266	273	280	255	233	225	603	636	511	289	251	252
10	324	288	280	250	225	220	743	598	499	288	249	264
11	315	306	290	250	220	215	745	632	519	279	242	253
12	287	305	290	245	215	210	661	539	456	274	229	247
13	269	310	300	240	215	212	612	473	394	263	227	320
14	253	300	300	235	215	210	618	438	365	271	233	708
15	249	280	310	235	210	207	624	411	348	273	229	601
16	253	275	310	235	210	208	583	388	333	252	245	431
17	254	300	310	235	205	208	521	369	404	241	298	356
18	254	310	300	230	205	208	552	406	513	239	254	322
19	248	320	290	230	200	205	668	409	453	244	249	293
20	250	380	280	230	195	205	719	385	632	242	236	278
21	266	860	280	230	195	204	695	367	740	231	228	277
22	302	860	270	235	195	202	648	356	571	224	219	276
23	295	658	260	235	195	200	615	357	453	225	215	270
24	279	537	260	240	193	225	652	479	423	222	225	274
25	264	468	250	240	193	260	769	518	549	253	224	269
26	253	425	250	240	191	330	686	446	481	276	211	259
27	251	400	250	240	191	390	590	407	409	256	247	252
28	241	360	260	240	190	450	708	455	384	297	268	252
29	239	340	270	245	---	500	836	447	362	318	246	257
30	234	330	275	245	---	570	790	445	370	281	248	257
31	229	---	290	245	---	600	---	687	---	259	277	---
TOTAL	7994	11295	8685	7736	6004	8211	18094	17614	13807	8615	7681	8980
MEAN	258	376	280	250	214	265	603	568	460	278	248	299
MAX	324	860	310	290	247	600	836	1190	740	375	298	708
MIN	227	232	250	230	190	200	377	356	333	222	211	235
CFSM	.66	.97	.72	.64	.55	.68	1.55	1.46	1.18	.71	.64	.77
IN.	.76	1.08	.83	.74	.57	.79	1.73	1.68	1.32	.82	.73	.86

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1993, BY WATER YEAR (WY)

	MEAN	327	339	279	253	246	323	652	504	401	336	291	316
MAX	612	600	424	369	406	833	1235	1104	712	983	604	582	
(WY)	1986	1916	1986	1986	1984	1973	1967	1965	1981	1953	1972	1959	
MIN	179	202	175	176	174	178	235	251	194	185	186	182	
(WY)	1949	1990	1990	1959	1959	1965	1990	1988	1988	1989	1948	1948	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1914 - 1993

ANNUAL TOTAL	115682	124716	
ANNUAL MEAN	316	342	354
HIGHEST ANNUAL MEAN			512
LOWEST ANNUAL MEAN			221
HIGHEST DAILY MEAN	1380	Apr 21	4420
LOWEST DAILY MEAN	188	Aug 17	130
ANNUAL SEVEN-DAY MINIMUM	198	Aug 15	151
INSTANTANEOUS PEAK FLOW			4700
INSTANTANEOUS PEAK STAGE		(a)6.60	(a)8.60
INSTANTANEOUS LOW FLOW			(b)118
ANNUAL RUNOFF (CFSM)	.81	.88	.91
ANNUAL RUNOFF (INCHES)	11.06	11.93	12.36
10 PERCENT EXCEEDS	461	602	560
50 PERCENT EXCEEDS	262	275	291
90 PERCENT EXCEEDS	221	217	205

(a) Backwater from ice

(b) Discharge measurement

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04062011 BRULE RIVER NEAR COMMONWEALTH, WI

LOCATION.--Lat 45°56'51", long 88°12'55", in NW 1/4 sec.14, T.40 N., R.18 E., Wisconsin Meridian, Florence County, Hydrologic Unit 04030106, on right bank 900 ft downstream from Brule Island Dam, 1.5 mi upstream from confluence with Michigamme River, and 2.8 mi north of Commonwealth, WI.

DRAINAGE AREA.--1,020 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1989 to current year.

REVISED RECORD.--WDR MI-91-1: 1990(M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,130 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 5-23. Records good. Flow regulated by powerplant 900 ft upstream and by Lower Paint Dam 8.2 mi upstream. Records not adjusted for diversion to Michigamme River by Paint River Diversion Canal. Several measurements of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	413	322	396	411	320	306	735	1610	1530	328	397	322
2	330	325	381	348	334	303	468	1220	1390	464	339	312
3	294	482	438	303	382	329	583	1460	1220	485	346	359
4	322	455	402	351	348	319	462	1740	736	370	342	379
5	339	550	262	438	324	324	462	2120	414	444	347	363
6	372	550	251	364	326	359	461	1940	416	414	477	282
7	370	410	331	331	327	353	589	1660	533	393	399	337
8	276	500	421	338	340	320	506	1440	491	390	308	369
9	366	520	314	339	344	313	665	1290	711	389	313	327
10	453	600	396	284	344	300	1000	1280	571	390	400	322
11	444	940	481	384	347	336	877	1420	602	393	393	343
12	384	760	332	282	318	338	1140	1120	563	393	276	342
13	353	440	390	316	315	266	1370	472	509	360	356	455
14	341	350	452	366	317	279	1150	468	390	349	349	1010
15	337	320	443	396	354	316	649	587	445	329	272	696
16	379	400	473	273	330	312	698	492	415	368	325	531
17	313	430	523	374	312	319	567	436	546	346	489	424
18	315	510	431	313	319	265	752	443	568	311	285	384
19	318	370	424	360	317	289	703	613	608	340	330	446
20	384	470	327	327	318	313	978	456	848	347	331	318
21	395	960	286	327	251	309	732	489	807	289	292	345
22	363	960	405	345	248	301	821	450	949	332	299	390
23	412	880	444	390	286	271	754	423	1190	338	351	415
24	382	1280	314	350	347	321	710	736	1040	319	339	334
25	356	965	255	317	303	396	949	571	819	329	337	353
26	386	570	293	337	280	388	870	567	1140	384	296	336
27	300	461	322	380	259	498	605	477	791	383	348	377
28	402	422	384	345	318	634	871	604	432	424	342	318
29	263	417	377	336	---	687	967	507	562	505	320	365
30	385	502	372	314	---	617	1350	570	444	359	385	302
31	361	---	418	369	---	787	---	1180	---	278	376	---
TOTAL	11108	17121	11738	10708	8928	11468	23444	28841	21680	11543	10759	11856
MEAN	358	571	379	345	319	370	781	930	723	372	347	395
MAX	453	1280	523	438	382	787	1370	2120	1530	505	489	1010
MIN	263	320	251	273	248	265	461	423	390	278	272	282

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1993, BY WATER YEAR (WY)

	1990	1991	1992	1993
MEAN	424	398	337	306
MAX	712	571	416	345
(WY)	1991	1993	1992	1993
MIN	276	307	270	259
(WY)	1990	1990	1990	1991

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1990 - 1993

ANNUAL TOTAL	167081	179194	430	
ANNUAL MEAN	457	491	491	1993
HIGHEST ANNUAL MEAN			325	1990
LOWEST ANNUAL MEAN			3060	Apr 10 1991
HIGHEST DAILY MEAN	2870	Apr 22	2120	May 5
LOWEST DAILY MEAN	239	Jul 25	248	Feb 22
ANNUAL SEVEN-DAY MINIMUM	287	Jan 15	282	Feb 21
INSTANTANEOUS PEAK FLOW			2380	May 5
INSTANTANEOUS PEAK STAGE			9.07	May 5
10 PERCENT EXCEEDS	601		873	657
50 PERCENT EXCEEDS	373		384	342
90 PERCENT EXCEEDS	294		303	257

## STREAMS TRIBUTARY TO LAKE MICHIGAN

39

04062085 PESHEKEE RIVER NEAR MARTINS LANDING, MI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 46°36'35", long 88°01'20", in SW 1/4 SE 1/4 sec.26, T.49 N., R.30 W., Marquette County, Hydrologic Unit 04030107, at bridge on Huron Bay Peshekee Grade Road, 0.8 mi upstream from Van Riper Lakes outlet, 5.4 mi northwest of Martins Landing, and 6.4 mi northeast of Michigamme.

DRAINAGE AREA.--43.9 mi<sup>2</sup>.

PERIOD OF RECORD.--April to September 1993.

REMARKS.--Stage-discharge data collected at gaging site downstream from sampling location. Cross-sectional samples were collected at or near bridge. Concentration data for organic compounds are not rounded.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)
APR 1993												
13...	1230	193	23	6.7	1.0	13.0	725	11	3.2	0.76	0.50	0.40
28...	1445	465	16	6.6	3.5	12.0	716	9	2.6	0.60	0.50	0.40
MAY												
04...	1330	643	18	6.5	10.0	11.5	718	8	2.3	0.55	0.60	0.30
18...	1245	59	29	7.2	10.0	10.5	718	15	4.4	1.0	0.60	0.40
JUN												
23...	1200	49	33	7.3	17.0	8.6	723	18	5.3	1.2	0.60	0.20
JUL												
28...	1230	7.9	63	7.7	22.0	7.7	702	29	8.6	1.9	0.90	0.50
AUG												
18...	1030	20	69	7.8	20.5	6.6	763	33	9.6	2.1	1.0	0.30
SEP												
01...	1200	13	64	7.7	15.0	9.0	720	32	9.3	2.1	0.90	0.40
14...	1415	42	41	7.4	13.0	9.5	712	21	6.1	1.4	0.70	0.30

DATE	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	ALKA-LINITY WAT DIS FIX END FIELD (MG/L AS CACO3) (39036)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
APR 1993											
13...	5	4	--	3.7	1.0	<0.10	5.5	42	0.140	<0.010	0.040
28...	5	4	--	3.4	0.50	0.10	4.4	37	0.110	<0.010	0.040
MAY											
04...	5	4	--	2.9	0.40	<0.10	3.6	27	0.084	<0.010	0.030
18...	12	10	--	2.3	0.70	0.10	3.4	38	<0.050	<0.010	0.040
JUN											
23...	15	12	--	1.4	0.80	<0.10	3.0	47	<0.050	<0.010	0.050
JUL											
28...	31	25	--	3.0	0.40	<0.10	5.6	47	<0.050	<0.010	0.030
AUG											
18...	40	33	32	2.0	0.40	<0.10	5.8	57	<0.050	<0.010	0.040
SEP											
01...	33	27	--	2.4	0.70	<0.10	6.0	57	<0.050	<0.010	0.020
14...	19	15	--	2.4	0.60	0.10	5.9	56	<0.050	<0.010	0.050

DATE	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS-PENDED TOTAL (MG/L AS C) (00689)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993											
13...	0.30	0.30	0.010	0.020	<0.010	220	17	12	0.3	78	100
28...	0.50	<0.20	0.040	<0.010	<0.010	150	19	8.8	0.2	7	44
MAY											
04...	0.20	0.20	0.010	0.020	<0.010	150	9	9.1	0.3	2	77
18...	0.40	0.40	<0.010	0.020	<0.010	310	18	11	0.2	2	84
JUN											
23...	0.40	0.40	0.030	<0.010	0.020	330	14	15	0.5	4	88
JUL											
28...	0.30	0.30	<0.010	0.030	<0.010	420	17	7.4	0.2	4	76
AUG											
18...	0.40	0.30	<0.010	<0.010	<0.010	330	11	9.5	0.2	3	92
SEP											
01...	0.30	0.30	0.020	0.010	<0.010	430	13	8.4	0.1	1	100
14...	0.50	0.50	<0.010	0.010	<0.010	350	11	16	0.2	3	91



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04062085 PESHEKEE RIVER NEAR MARTINS LANDING, MI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL-ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA-ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS, WATER, DISS, REC (UG/L) (04095)	ALPHA-BHC, DIS-SOLVED (UG/L) (34253)	
AUG 1993	18...	1030	19.600	<0.01500	<0.00800	<0.01000	<0.00800	<0.02000	<0.01300	<0.00800	<0.00700
DATE		P, P' DDE DISSOLV (UG/L) (34653)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	LINDANE DIS-SOLVED (UG/L) (39341)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	MALA-THION, DIS-SOLVED (UG/L) (39532)	PARA-THION, DIS-SOLVED (UG/L) (39542)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	ALA-CHLOR, WATER, DISS, REC (UG/L) (46342)
AUG 1993	18...	<0.01000	<0.00500	<0.01100	<0.02000	<0.00900	<0.01000	<0.02200	<0.00800	0.005000	<0.00900
DATE		METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI-ETHYL ANALINE WAT FLT GF, REC (UG/L) (82660)	TRI-FLUR-ALIN WAT FLT GF, REC (UG/L) (82661)	DIMETH-OATE WATER FLTRD GG, REC (UG/L) (82662)	ETHAL-FLUR-ALIN WAT FLT GF, REC (UG/L) (82663)	PHORATE WATER FLTRD GF, REC (UG/L) (82664)	TER-BACIL WATER FLTRD GF, REC (UG/L) (82665)	LIN-URON WATER FLTRD GF, REC (UG/L) (82666)	METHYL-PARA-THION WAT FLT GF, REC (UG/L) (82667)	EPTC WATER FLTRD GF, REC (UG/L) (82668)
AUG 1993	18...	<0.01200	<0.00600	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500
DATE		PEB-ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)
AUG 1993	18...	<0.00900	<0.01500	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800
DATE		PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL-AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	
AUG 1993	18...	<0.01600	<0.04600	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04062100 PESHEKEE RIVER NEAR MICHIGAMME, MI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 46°34'55", long 87°59'51", in SW 1/4 SE 1/4 sec.1, T.48 N., R.30 W., Marquette County, Hydrologic Unit 04030107, on right bank 10 ft downstream from bridge on county highway, 0.2 mi downstream from Dishno Creek, 5 mi north of Champion, and 6 mi northeast of Michigamme.

DRAINAGE AREA.--66.5 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1961 to September 1968, May to September 1993.

GAGE.--Water-stage recorder. Datum of gage is 1,598.01 ft above sea level. Prior to Aug. 11, 1961, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: May 1-27 and Sept. 16-26. Records good except for estimated daily discharges, which are fair. Several measurements of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	660	236	54	12	13
2	---	---	---	---	---	---	---	520	195	49	12	16
3	---	---	---	---	---	---	---	630	150	43	10	19
4	---	---	---	---	---	---	---	800	121	39	10	20
5	---	---	---	---	---	---	---	940	102	40	9.8	18
6	---	---	---	---	---	---	---	740	89	36	11	16
7	---	---	---	---	---	---	---	500	101	31	12	14
8	---	---	---	---	---	---	---	400	110	28	12	18
9	---	---	---	---	---	---	---	320	112	27	12	28
10	---	---	---	---	---	---	---	250	113	24	14	39
11	---	---	---	---	---	---	---	190	106	22	13	38
12	---	---	---	---	---	---	---	150	89	21	11	33
13	---	---	---	---	---	---	---	130	73	19	10	32
14	---	---	---	---	---	---	---	117	69	19	9.5	54
15	---	---	---	---	---	---	---	105	66	16	8.8	76
16	---	---	---	---	---	---	---	95	60	15	9.2	62
17	---	---	---	---	---	---	---	85	63	14	13	48
18	---	---	---	---	---	---	---	83	63	13	21	38
19	---	---	---	---	---	---	---	82	57	13	17	29
20	---	---	---	---	---	---	---	77	79	13	14	24
21	---	---	---	---	---	---	---	70	103	11	12	25
22	---	---	---	---	---	---	---	64	91	11	11	23
23	---	---	---	---	---	---	---	60	72	10	11	22
24	---	---	---	---	---	---	---	100	64	9.5	13	22
25	---	---	---	---	---	---	---	185	160	9.7	11	22
26	---	---	---	---	---	---	---	140	150	10	10	15
27	---	---	---	---	---	---	---	132	122	10	10	14
28	---	---	---	---	---	---	---	201	98	11	11	14
29	---	---	---	---	---	---	---	222	77	12	10	15
30	---	---	---	---	---	---	---	192	64	12	10	17
31	---	---	---	---	---	---	---	235	---	12	11	---
TOTAL	---	---	---	---	---	---	---	8475	3055	654.2	361.3	824
MEAN	---	---	---	---	---	---	---	273	102	21.1	11.7	27.5
MAX	---	---	---	---	---	---	---	940	236	54	21	76
MIN	---	---	---	---	---	---	---	60	57	9.5	8.8	13
CFSM	---	---	---	---	---	---	---	4.11	1.53	.32	.18	.41
IN.	---	---	---	---	---	---	---	4.74	1.71	.37	.20	.46

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1993, BY WATER YEAR (WY)

	MEAN	88.4	95.8	65.6	35.6	28.0	66.8	430	282	122	47.3	27.5	60.9
MAX	173	160	92.8	56.5	44.6	212	622	695	233	184	68.7	266	
(WY)	1968	1968	1963	1966	1966	1968	1967	1965	1967	1968	1964	1968	
MIN	9.01	68.5	45.6	20.3	17.5	26.2	261	120	54.8	7.82	7.47	8.87	
(WY)	1964	1962	1965	1962	1962	1962	1965	1968	1965	1966	1961	1967	

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

## WATER YEARS 1961 - 1993

ANNUAL MEAN			115	
HIGHEST ANNUAL MEAN			145	1968
LOWEST ANNUAL MEAN			83.3	1962
HIGHEST DAILY MEAN	940	(a) May 5	2710	May 8 1965
LOWEST DAILY MEAN	8.8	(a) Aug 15	3.9	Sep 9 1961
ANNUAL SEVEN-DAY MINIMUM			4.3	Sep 4 1961
INSTANTANEOUS PEAK FLOW			3060	May 8 1965
INSTANTANEOUS PEAK STAGE			11.46	May 8 1965
INSTANTANEOUS LOW FLOW	8.4	(a) Aug 17	3.6	Sep 1 1961
ANNUAL RUNOFF (CFSM)			1.73	
ANNUAL RUNOFF (INCHES)			23.45	
10 PERCENT EXCEEDS			250	
50 PERCENT EXCEEDS			48	
90 PERCENT EXCEEDS			11	

(a) During period May to September

04063000 MENOMINEE RIVER NEAR FLORENCE. WI

LOCATION.--Lat 45°57'04", long 88°11'13", in NE 1/4 sec.16, T.41 N., R.31 W., Michigan Meridian, Iron County, Hydrologic Unit 04030108, on left bank 0.5 mi downstream from confluence of Brule and Michigamme Rivers, 3.5 mi northeast of Florence, and at mile 117.

DRAINAGE AREA.--1.760 mi<sup>2</sup>

PERIOD OF RECORD.--January 1914 to current year. Published as "at Twin Falls near Iron Mountain, MI" January 1914 to June 1950.

REVISED RECORDS.--WSP 1707: 1953(M). WDR MI-92-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,119.23 ft above sea level (levels by Owen Ayres Associates). 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 Electric Power Co., 10.4 mi downstream.

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; ratings developed by U. S. Geological Survey. Flow regulated by powerplants, by Michigamme Reservoir, capacity, 119,950 acre-ft, by Peavy Pond, capacity, 33,860 acre-ft, on Michigamme River, and by many smaller reservoirs upstream from station. Several measurements of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2220	648	2410	1950	1890	1730	1790	3800	3980	1790	811	980
2	1990	1030	1870	1910	1810	1430	1800	3460	3840	1800	1040	1000
3	1360	1400	2110	1960	1590	1410	1590	3680	3660	1590	1040	953
4	1180	1270	1760	1920	1530	1860	1550	3950	3060	1570	1130	917
5	1180	1590	1800	1860	1920	1930	1560	4720	2560	1730	1170	1000
6	1220	1720	1560	1800	1880	1710	1560	5130	2350	1660	1300	1050
7	1420	1450	1690	1990	1910	1840	1680	5070	2060	1640	892	1060
8	1220	1070	1920	1870	1910	1910	1550	4460	1810	1730	969	989
9	1110	1280	2130	1810	1930	1950	1370	3660	2270	1670	1010	1100
10	485	1290	2230	1790	1700	1810	1200	3330	2590	1780	1040	1030
11	961	1310	2140	2080	1550	1860	1560	3440	2400	1670	1110	1020
12	1080	1270	1790	1810	1710	1920	2720	3310	2340	1730	1020	993
13	1470	1340	1550	1870	1990	1570	3330	2850	2330	1680	1040	1310
14	1310	1240	1860	1940	1920	1460	3210	2420	2170	1700	818	2050
15	1200	1460	1980	1880	2040	1890	2810	1820	2210	1670	807	2250
16	1330	1620	1970	1650	1950	1410	2860	1960	1890	1610	591	2190
17	1020	994	2020	1840	1960	1530	2580	1920	2300	1670	1080	1430
18	777	1070	2010	1920	1970	1410	2650	1680	2400	1600	1180	1380
19	851	1120	2130	1900	1980	1360	2280	1690	2210	1370	666	1790
20	876	1240	2030	1880	1780	1230	2310	1500	3130	1630	1190	1350
21	887	2280	2130	1850	2020	1190	2790	1590	3300	1310	803	1320
22	1350	3550	2070	1800	1960	1040	2870	1620	3470	1400	814	1340
23	772	3930	1570	2000	2030	950	2770	1570	3650	1230	776	1340
24	862	3960	1820	1850	1940	1030	2190	1700	3410	554	794	1260
25	1380	3200	1840	1950	1850	913	1940	2160	3200	784	995	817
26	1480	2760	1820	1950	1870	1010	2370	2180	3510	839	894	760
27	1170	2660	1760	1970	1810	851	2130	2210	3060	757	1010	1170
28	1180	2620	1970	1950	1860	681	2450	2320	2540	636	904	1320
29	1160	2360	1990	1950	---	731	2830	2060	2650	1050	991	1120
30	1230	2460	1850	1920	---	1130	3490	1860	2450	1010	971	1070
31	929	---	1900	1930	---	841	---	3150	---	825	913	---
TOTAL	36660	55192	59680	58750	52260	43587	67790	86270	82800	43685	29769	37359
MEAN	1183	1840	1925	1895	1866	1406	2260	2783	2760	1409	960	1245
MAX	2220	3960	2410	2080	2040	1950	3490	5130	3980	1800	1300	2250
MIN	485	648	1550	1650	1530	681	1200	1500	1810	554	591	760

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1993, BY WATER YEAR (WY)

MEAN	1482	1618	1456	1390	1358	1584	3214	3056	2153	1591	1294	1407
MAX	3537	3465	2640	2253	2514	3544	8159	6319	5035	4253	2359	3149
(WY)	1986	1986	1984	1983	1984	1973	1916	1960	1916	1953	1972	1968
MIN	726	725	765	691	647	692	735	595	799	721	545	718
(WY)	1949	1964	1925	1924	1926	1914	1990	1987	1988	1925	1925	1925

### SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

## WATER YEARS 1914 - 1993

ANNUAL TOTAL	625782		653802				
ANNUAL MEAN	1710		1791			1800	
HIGHEST ANNUAL MEAN						3069	1916
LOWEST ANNUAL MEAN						922	1925
HIGHEST DAILY MEAN	5530	Apr 22	5130	May 6		18800	Jul 2 1953
LOWEST DAILY MEAN	485	Oct 10	485	Oct 10		57	Sep 26 1975
ANNUAL SEVEN-DAY MINIMUM	911	Oct 18	804	Jul 24		277	Oct 18 1975
INSTANTANEOUS PEAK FLOW			5550	May 6		19500	Apr 26 1960
INSTANTANEOUS PEAK STAGE			7.28	May 6		(a)14.15	Apr 26 1960
INSTANTANEOUS LOW FLOW			281	Oct 29		(a)38	(b)Aug 21 1962
10 PERCENT EXCEEDS	2570		2820			3060	
50 PERCENT EXCEEDS	1560		1760			1470	
90 PERCENT EXCEEDS	975		942			840	

(a) Since July 1950

(b) Also occurred Sept. 26, 1975

## 43

LOCATION.--Lat 45°52'17", long 88°04'12", in NE 1/4 SE 1/4 sec.12, T.40 N., R.31 W., Michigan Meridian, Dickinson County, Hydrologic Unit 04030108, on left bank 150 ft downstream from Wisconsin Electric Power Company powerhouse at Twin Falls Dam, 3.6 mi north of Iron Mountain, and at mile 106.6. Prior to July 15, 1993, at site 150 ft upstream in powerhouse.

REVISED RECORDS.--WDR MI-91-1: 1990(M). WDR MI-92-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,062 ft above sea level (levels by Wisconsin Electric Power Co.). Prior to September 1957, headwater and tailwater gages and generation data entered hourly in daily log sheets by company employees. October 1957 to September 1989, water-stage recorder at site 10.4 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Dec. 5, 6, 16, 18, 19, Jan. 15-20, 25-28, and Feb. 1. Records good. Prior to September 1957, discharge determined from powerplant records computed on basis of load-discharge rating of hydroelectric units and rating for tailwater gage during periods of spill; ratings developed by U.S. Geological Survey. Flow regulated by powerplants, by Michigamme Reservoir, capacity, 119,950 acre-ft, by Peavy Pond, capacity, 33,860 acre-ft, on Michigamme River, and by many smaller reservoirs upstream from station. Several measurements of water temperature were made during the year.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2330	845	2480	2000	1980	1840	1730	4000	4230	2000	691	998
2	2010	1100	1950	1960	1970	1400	1940	3630	3910	1770	1050	1040
3	1600	1360	2210	2020	1510	1480	1850	3850	3760	1690	1110	981
4	1060	1370	1900	1940	1730	1890	1610	3950	3350	1620	1140	989
5	1300	1650	1850	1900	1800	1900	1590	4640	2550	1750	1190	996
6	1260	1760	1660	1920	1960	1900	1580	5190	2430	1890	1410	1070
7	1330	1580	1690	1920	2020	1900	1710	4940	2120	1770	1000	1060
8	1310	1180	2060	1940	1950	1930	1760	4590	1920	1610	935	984
9	1170	1410	2220	1830	2030	2010	1400	3840	2320	1840	1080	1100
10	678	1320	2390	1950	1750	1910	1260	3200	2710	1880	1170	1120
11	1000	1340	2220	1970	1690	1930	1840	3630	2670	1760	1110	1090
12	1130	1360	1850	1910	1760	1990	2530	3400	2440	1820	1110	1030
13	1430	1370	1720	1930	2040	1680	3620	2840	2380	1810	1060	1300
14	1310	1480	1880	1860	2000	1610	3370	2590	2370	1740	840	2340
15	1240	1550	2100	1900	2000	1800	3010	1870	2220	1690	806	2390
16	1470	1580	2130	1850	2010	1570	2690	1910	2150	1620	804	2250
17	1110	1140	2070	1860	2010	1460	2830	2050	2260	1620	1230	1450
18	866	1140	2140	1890	2020	1510	2600	1690	2630	1550	1200	1550
19	837	1040	2170	1960	2020	1350	2470	1700	2500	1510	824	1700
20	903	1300	2150	1920	2000	1290	2550	1770	3090	1620	1160	1320
21	980	2430	2240	1910	2050	1230	2820	1580	3560	1370	876	1340
22	1340	3580	2170	1900	1980	1020	3040	1600	3600	1350	884	1350
23	830	4160	1670	2000	2110	992	2830	1590	3700	1280	856	1310
24	976	4110	1790	1940	1970	1020	2220	1830	3680	714	843	1310
25	1280	3300	1930	1990	1910	1100	2100	2240	3330	812	912	843
26	1510	2930	1810	2000	1910	971	2400	2310	3770	846	884	854
27	1250	2920	1900	2060	1910	991	2220	2310	3130	774	988	1120
28	1240	2550	2070	2030	1910	765	2400	2320	2840	730	975	1340
29	1290	2560	2030	2050	---	947	3040	2200	2690	1050	975	1170
30	1220	2550	1960	2040	---	1120	3420	2050	2490	1070	993	1180
31	939	---	1950	2010	---	962	---	3140	---	983	964	---
TOTAL	38199	57965	62360	60360	54000	45468	70430	88450	86800	45539	31070	38575
MEAN	1232	1932	2012	1947	1929	1467	2348	2853	2893	1469	1002	1286
MAX	2330	4160	2480	2060	2110	2010	3620	5190	4230	2000	1410	2390
MIN	678	845	1660	1								

MEAN	1487	1628	1465	1398	1365	1596	3228	3065	2165	1601	1304	1416
MAX	3537	3465	2640	2253	2514	3544	8159	6319	5035	4309	2359	3149
(WY)	1986	1986	1984	1983	1984	1973	1916	1960	1916	1953	1972	1968
MIN	726	725	765	691	647	692	707	595	799	721	545	718
(WY)	1949	1964	1925	1924	1926	1914	1990	1987	1988	1925	1925	1925

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1914 - 1993	
ANNUAL TOTAL	639989		679216			
ANNUAL MEAN	1749		1861		1810	
HIGHEST ANNUAL MEAN					3069	
LOWEST ANNUAL MEAN					922	
HIGHEST DAILY MEAN	5400	Apr 23	5190	May 6	18100	Apr 26 1960
LOWEST DAILY MEAN	643	Sep 9	678	Oct 10	57	Sep 26 1975
ANNUAL SEVEN-DAY MINIMUM	909	Aug 15	857	Jul 24	277	Oct 18 1975
INSTANTANEOUS PEAK FLOW			5800	May 5	19500	Apr 26 1960
INSTANTANEOUS PEAK STAGE			9.91	May 5	(b)9.91	May 5 1993
INSTANTANEOUS LOW FLOW			503	(a)Oct 10	(b)399	Aug 30 1992
10 PERCENT EXCEEDS	2590		2920		3080	
50 PERCENT EXCEEDS	1600		1830		1470	
90 PERCENT EXCEEDS	983		982		848	

(a) Also occurred July 28 and Aug. 1  
(b) Since October 1989



## STREAMS TRIBUTARY TO LAKE MICHIGAN

454622088324801 MORGAN LAKE NEAR FENCE, WI

LOCATION.--Lat 45°46'22", long 88°32'48", in NE 1/4 NW 1/4 SW 1/4 sec.18, T.38 N., R.16 E., Florence County, Hydrologic Unit 04030108, at southwest end of lake on dirt road off Forest Service Road 2161, 6 mi west northwest of Fence.

DRAINAGE AREA.--Not determined. Area of lake, 44 acres.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is approximately 1,400.00 ft above sea level.

REMARKS.--Records good. Lake does not have surface inlet or outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, 66.36 ft, June 21-22, 1993; minimum observed gage height, 63.61 ft, Oct. 19, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 66.36 ft, June 21-22; minimum observed gage height, 65.09 ft, Oct. 31.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65.19	65.09	65.38	65.49	65.54	65.46	65.44	65.71	65.91	66.18	65.94	65.84
2	65.19	65.15	65.39	65.50	65.53	65.46	65.43	65.72	65.90	66.18	65.93	65.83
3	65.19	65.18	65.39	65.51	65.53	65.45	65.43	65.77	65.89	66.18	65.92	65.85
4	65.17	65.18	65.39	65.51	65.53	65.45	65.43	65.83	65.88	66.18	65.92	65.84
5	65.15	65.18	65.38	65.51	65.53	65.44	65.43	65.87	65.87	66.17	65.91	65.83
6	65.15	65.17	65.39	65.49	65.52	65.44	65.42	65.87	65.87	66.18	65.96	65.81
7	65.15	65.16	65.38	65.49	65.52	65.44	65.42	65.87	65.88	66.16	65.96	65.79
8	65.14	65.17	65.38	65.49	65.52	65.44	65.44	65.87	65.93	66.15	65.95	65.79
9	65.16	65.17	65.38	65.49	65.51	65.44	65.45	65.86	65.97	66.15	65.95	65.81
10	65.17	65.20	65.39	65.49	65.51	65.44	65.46	65.87	66.00	66.14	65.95	65.80
11	65.18	65.19	65.39	65.49	65.50	65.45	65.47	65.95	66.13	66.12	65.94	65.78
12	65.16	65.19	65.38	65.49	65.50	65.44	65.50	65.94	66.13	66.11	65.93	65.79
13	65.15	65.19	65.38	65.52	65.49	65.44	65.50	65.92	66.12	66.08	65.92	65.88
14	65.14	65.19	65.38	65.53	65.49	65.44	65.51	65.90	66.12	66.08	65.92	66.05
15	65.13	65.18	65.40	65.53	65.49	65.44	65.55	65.87	66.09	66.07	65.91	66.05
16	65.14	65.18	65.45	65.53	65.49	65.44	65.62	65.85	66.08	66.06	65.91	66.04
17	65.14	65.19	65.45	65.53	65.48	65.44	65.63	65.85	66.19	66.05	65.91	66.03
18	65.13	65.19	65.45	65.52	65.48	65.44	65.64	65.85	66.21	66.04	65.89	66.03
19	65.12	65.19	65.46	65.52	65.48	65.44	65.64	65.84	66.26	66.04	65.89	66.01
20	65.13	65.25	65.45	65.51	65.48	65.44	65.64	65.83	66.35	66.03	65.87	66.00
21	65.13	65.36	65.46	65.53	65.48	65.43	65.64	65.83	66.36	66.01	65.85	66.00
22	65.13	65.38	65.46	65.54	65.48	65.43	65.64	65.82	66.36	65.99	65.84	66.00
23	65.13	65.38	65.45	65.53	65.47	65.43	65.64	65.83	66.35	65.98	65.85	66.00
24	65.13	65.38	65.46	65.54	65.46	65.43	65.65	65.85	66.34	65.97	65.88	66.00
25	65.13	65.37	65.48	65.54	65.46	65.43	65.65	65.85	66.34	65.99	65.86	65.99
26	65.12	65.39	65.48	65.55	65.46	65.42	65.65	65.85	66.31	65.99	65.86	65.98
27	65.12	65.39	65.47	65.55	65.46	65.42	65.65	65.84	66.27	65.98	65.87	65.97
28	65.11	65.39	65.47	65.55	65.46	65.43	65.71	65.84	66.25	65.99	65.85	65.97
29	65.10	65.38	65.49	65.54	---	65.43	65.70	65.84	66.23	65.98	65.85	65.96
30	65.09	65.38	65.48	65.55	---	65.43	65.71	65.86	66.22	65.97	65.86	65.95
31	65.09	---	65.50	65.54	---	65.43	---	65.91	---	65.95	65.87	---
MEAN	65.14	65.25	65.43	65.52	65.49	65.44	65.56	65.85	66.13	66.07	65.90	65.92
MAX	65.19	65.39	65.50	65.55	65.54	65.46	65.71	65.95	66.36	66.18	65.96	66.05
MIN	65.09	65.09	65.38	65.49	65.46	65.42	65.42	65.71	65.87	65.95	65.84	65.78

## STREAMS TRIBUTARY TO LAKE MICHIGAN

45

04063700 POPPLE RIVER NEAR FENCE, WI  
(HYDROLOGIC BENCHMARK STATION)  
(NATIONAL RADIOCHEMICAL SURVEILLANCE NETWORK STATION)  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 45°45'49", long 88°27'47", in NW 1/4 sec.23, T.38 N., R.16 E., Florence County, Hydrologic Unit 04030108, on left bank 20 ft upstream from bridge on U. S. Forest Service Road 2159, 1.8 mi downstream from Mud Creek, 2.6 mi northwest of Fence, and 11.5 mi upstream from mouth.

DRAINAGE AREA.--139 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR WI-76-1: 1972(M). WDR WI-80-1: Drainage area. WDR WI-81-1: 1965 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,406.16 ft above sea level. Prior to June 18, 1964, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Ice periods, Nov. 26 to Dec. 8, Dec. 21-26, Jan. 2 to Feb. 4, Feb. 9 to Mar. 19, and Mar. 25 to Apr. 4. Records good except those for ice-affected periods, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	60	150	64	62	52	250	384	287	258	61	63
2	106	84	120	60	56	58	230	391	292	214	58	59
3	100	137	110	58	54	50	190	427	281	179	58	61
4	107	154	100	58	52	46	170	510	246	158	61	58
5	92	149	92	56	55	45	138	567	198	150	60	55
6	78	131	88	56	55	48	136	598	168	136	85	52
7	70	110	82	56	56	46	139	588	154	122	98	49
8	65	103	78	56	55	46	162	556	191	111	88	48
9	70	96	78	56	54	48	202	508	279	106	78	54
10	85	108	79	56	54	47	231	450	329	102	74	60
11	86	123	75	56	54	48	250	457	431	95	69	59
12	84	130	73	54	56	47	258	411	406	89	63	82
13	78	127	72	54	58	47	259	358	354	85	57	105
14	75	107	72	54	58	46	245	306	295	82	54	289
15	72	118	78	56	54	45	248	250	245	76	54	425
16	72	90	114	56	50	48	242	199	200	71	52	470
17	74	84	130	56	50	52	219	168	267	67	54	390
18	74	76	132	54	49	54	232	158	338	64	55	327
19	70	77	127	54	47	56	264	154	406	64	54	279
20	71	92	112	56	49	56	290	147	521	61	51	235
21	72	233	94	58	52	54	317	143	580	59	48	206
22	75	300	82	56	54	54	325	134	583	53	43	181
23	78	326	76	54	54	60	320	127	535	48	43	159
24	81	317	70	54	50	51	318	158	497	47	48	138
25	83	289	68	54	47	56	322	181	453	53	46	119
26	77	230	66	54	47	80	318	188	409	63	42	104
27	73	210	67	56	48	90	314	178	388	64	43	95
28	71	200	66	56	50	110	355	180	373	75	44	90
29	66	180	65	54	---	140	363	173	346	75	46	87
30	63	170	65	56	---	170	383	191	307	76	51	84
31	61	---	65	58	---	230	---	256	---	66	62	---
TOTAL	2451	4611	2746	1736	1480	2080	7690	9496	10359	2969	1800	4483
MEAN	79.1	154	88.6	56.0	52.9	67.1	256	306	345	95.8	58.1	149
MAX	122	326	150	64	62	230	383	598	583	258	98	470
MIN	61	60	65	54	47	45	136	127	154	47	42	48
CFSM	.57	1.11	.64	.40	.38	.48	1.84	2.20	2.48	.69	.42	1.08
IN.	.66	1.23	.73	.46	.40	.56	2.06	2.54	2.77	.79	.48	1.20

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1993, BY WATER YEAR (WY)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	121	119	67.8	48.5	47.5	87.3	314	225	146	75.7	66.8	114																		
MAX	265	220	116	86.6	107	356	613	617	345	235	147	356																		
(WY)	1972	1986	1992	1969	1984	1973	1979	1965	1993	1968	1978	1980																		
MIN	25.0	30.9	23.9	24.6	26.0	30.5	54.6	70.7	21.2	17.5	23.1	16.4																		
(WY)	1990	1977	1990	1977	1982	1964	1990	1977	1988	1988	1989	1989																		

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1964 - 1993
ANNUAL TOTAL	41909	51901	
ANNUAL MEAN	115	142	119
HIGHEST ANNUAL MEAN			175
LOWEST ANNUAL MEAN			64.3
HIGHEST DAILY MEAN	679	Apr 23	1610
LOWEST DAILY MEAN	23	Aug 7	10
ANNUAL SEVEN-DAY MINIMUM	28	Jul 27	12
INSTANTANEOUS PEAK FLOW		603	1640
INSTANTANEOUS PEAK STAGE		3.03	4.52
INSTANTANEOUS LOW FLOW		40	(b)5.9
ANNUAL RUNOFF (CFSM)	.82	1.02	.86
ANNUAL RUNOFF (INCHES)	11.22	13.89	11.66
10 PERCENT EXCEEDS	239	326	266
50 PERCENT EXCEEDS	75	81	72
90 PERCENT EXCEEDS	41	50	33

(a) Also occurred Sept. 20, 1989

(b) Result of temporary storage from beaver dam

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04063700 POPPLE RIVER NEAR FENCE, WI--CONTINUED  
(HYDROLOGIC BENCH-MARK STATION)  
(NATIONAL RADIOCHEMICAL SURVEILLANCE NETWORK STATION)  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1964 to current year. National Water-Quality Assessment Program sampling began in April 1993.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1992						MAY 1993				
03...	1610	--	58	174	11.0	19...	1120	158	112	12.0
23...	0940	--	77	163	8.0	JUN				
NOV						15...	1200	239	98	18.0
14...	1610	--	106	135	1.0	22...	1140	586	77	18.5
MAR 1993						JUL				
04...	1245	46	--	226	0.0	01...	0900	265	99	17.0
31...	1705	230	--	92	0.0	29...	0945	75	202	20.5
APR						AUG				
14...	1300	--	245	80	4.0	17...	0845	55	216	21.0
29...	1445	--	350	0	9.5	SEP				
MAY						02...	1300	56	218	16.5
06...	1300	--	616	67	15.0	09...	0930	53	210	14.5
07...	1035	--	591	72	14.0	15...	0900	419	118	13.0

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
OCT 1992											
23...	0940	--	77	163	7.9	8.0	1.4	10.6	725	94	K8
MAR 1993											
04...	1245	46	--	226	7.1	0.0	1.6	10.3	725	74	--
JUN											
15...	1200	--	239	98	7.5	18.0	1.3	7.8	727	86	26
SEP											
02...	1300	--	56	218	8.0	16.5	0.30	8.3	718	90	51

DATE	TIME	STREP-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD HCO3 (MG/L AS HCO3) (00453)	ALKA-LINITY WAT DIS TOT IT FIELD CACO3 (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT 1992												
23...	K3	89	20	9.4	1.5	2.7	92	75	--	--	--	--
MAR 1993												
04...	--	120	27	13	1.7	0.90	--	--	7.6	1.6	<0.10	<0.10
JUN												
15...	22	57	13	5.9	1.4	0.50	59	48	1.8	1.6	0.10	0.10
SEP												
02...	87	120	25	13	1.6	0.90	133	109	4.7	1.2	0.10	0.10

DATE	TIME	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L AS N) (70300)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
OCT 1992												
23...	8.8	--	<0.010	<0.050	0.040	0.70	0.020	0.010	0.020	20	9	9
MAR 1993												
04...	15	136	<0.010	0.200	0.090	0.30	0.010	0.010	<0.010	<10	9	9
JUN												
15...	4.8	98	<0.010	<0.050	0.020	0.90	0.100	0.090	<0.010	40	10	10
SEP												
02...	9.8	135	<0.010	<0.050	0.040	0.40	0.030	0.040	<0.010	<10	10	10

K RESULTS BASED ON COUNT OUTSIDE OF THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04063700 POPPLE RIVER NEAR FENCE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
OCT 1992												
23...	<3	320	<4	50	<10	1	<1	21	<6	3	83	
MAR 1993												
04...	<3	350	5	92	<10	<1	<1	24	<6	3	77	
JUN												
15...	<3	450	<4	85	<10	<1	<1	18	<6	5	92	
SEP												
02...	<3	160	<4	47	<10	<1	<1	28	<6	5	88	
DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT) (80030)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT) (80040)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137) (03516)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90) (80050)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90) (80060)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L) (09511)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	
MAR 1993												
04...	1245	46	--	0.6	<0.6	1.6	<0.6	1.2	<0.6	0.77	0.68	
SEP												
02...	1300	--	56	1.0	<0.6	2.0	<0.6	1.5	<0.6	<0.02	0.63	
DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993												
14...	1300	245	80	7.6	4.0	12.0	725	42	9.0	4.7	1.3	0.90
29...	1445	350	79	7.5	9.5	10.1	727	41	8.9	4.6	1.2	0.70
MAY												
06...	1300	616	67	7.2	15.0	8.4	732	36	7.8	3.9	1.0	0.80
19...	1120	158	112	7.7	12.0	10.0	724	59	13	6.5	1.2	0.70
JUN												
22...	1330	586	77	7.4	19.0	6.3	732	44	10	4.7	1.0	0.50
JUL												
01...	0900	265	99	7.5	17.0	7.6	729	57	13	6.0	1.2	0.50
29...	0945	75	202	8.0	20.5	6.7	722	110	23	12	1.5	0.70
AUG												
17...	0845	55	216	8.3	21.0	7.0	762	110	24	12	1.6	0.80
SEP												
09...	0930	53	210	8.0	14.5	8.6	709	110	24	13	1.6	0.80
15...	0900	419	118	7.5	13.0	7.6	732	63	14	6.8	1.0	0.90



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04063700 POPPLE RIVER NEAR FENCE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	
APR 1993											
14...	38	31	4.1	2.0	<0.10	6.6	80	0.068	<0.010	0.020	
29...	40	33	3.7	1.5	<0.10	4.1	77	<0.050	<0.010	0.040	
MAY											
06...	34	28	3.8	1.3	<0.10	3.6	76	<0.050	<0.010	0.040	
19...	63	52	2.9	1.5	0.10	4.6	97	<0.050	<0.010	0.030	
JUN											
22...	42	34	1.4	1.4	<0.10	5.8	94	<0.050	<0.010	0.040	
JUL											
01...	54	44	1.3	1.7	<0.10	6.8	119	<0.050	<0.010	0.070	
29...	120	98	4.6	1.2	<0.10	8.0	131	<0.050	<0.010	0.020	
AUG											
17...	130	107	4.1	1.5	0.10	8.2	130	<0.050	<0.010	0.020	
SEP											
09...	121	99	4.8	1.1	0.10	9.2	127	<0.050	<0.010	0.030	
15...	62	51	4.1	1.0	0.10	9.2	104	<0.050	<0.010	0.040	
DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993											
14...	0.60	0.50	0.020	<0.010	<0.010	230	18	14	0.5	5	81
29...	0.60	0.60	0.030	0.030	<0.010	210	20	16	0.4	5	78
MAY											
06...	0.70	0.60	0.020	0.020	<0.010	230	27	19	0.3	11	65
19...	0.70	0.50	<0.010	0.010	<0.010	430	86	20	0.3	8	94
JUN											
22...	0.70	0.70	0.040	<0.010	0.020	430	39	25	0.7	8	74
JUL											
01...	0.80	0.80	0.030	0.020	<0.010	690	110	30	0.3	19	61
29...	0.40	0.40	0.040	0.040	<0.010	240	37	11	0.2	4	85
AUG											
17...	0.40	0.40	0.010	<0.010	<0.010	180	68	12	0.3	4	93
SEP											
09...	0.30	0.40	0.020	0.030	<0.010	150	46	9.0	0.1	3	95
15...	0.80	0.70	0.030	0.020	<0.010	330	60	19	0.6	10	87

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04063700 POPPLE RIVER NEAR FENCE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)
AUG 1993 17...	0845	55.000	<0.01500	<0.00800	<0.01000	<0.00800	<0.02000	<0.01300	<0.00800	<0.00700
DATE	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE ALIN SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
AUG 1993 17...	<0.01000	<0.00500	<0.01100	<0.02000	<0.00900	<0.01000	<0.02200	<0.00800	0.004000	<0.00900
DATE	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANALINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	DIMETH- OATE WATER FLTRD 0.7 U GG, REC (UG/L) (82662)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)
AUG 1993 17...	<0.01200	<0.00600	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500
DATE	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)
AUG 1993 17...	<0.00900	<0.01500	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800
DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	
AUG 1993 17...	<0.01600	<0.04600	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04065106 MENOMINEE RIVER AT NIAGARA, WI

LOCATION.--Lat 45°46'04", long 87°58'50", in NE 1/4 NE 1/4 sec.15, T.38 N., R.20 E., Marinette County, Hydrologic Unit 04030108, on right bank 0.7 mi downstream from Little Quinnesec Falls Dam, at Niagara.

DRAINAGE AREA.--2,470 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1992 to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 880 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 5 and Nov. 22-27. Records good. Flow regulated by power-plants, by Michigamme Reservoir, capacity, 119,950 acre-ft, by Peavy Pond, capacity, 33,860 acre-ft, on Michigamme River, and by smaller reservoirs upstream of gage. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3000	1200	2860	2350	2240	2060	2590	5520	5520	3020	1180	1350
2	2500	1500	2590	2410	2130	1790	2630	5340	5480	2280	1480	1370
3	2100	1800	2760	2370	1870	1470	2630	5630	5070	2270	1450	1460
4	1400	1800	2160	2290	1960	2120	2350	6290	4530	2270	1420	1440
5	1600	2100	2310	2380	2060	2020	2090	6840	3390	2350	1490	1490
6	1600	2180	2070	2300	2170	2150	2300	7770	3150	2520	2230	1440
7	1700	2080	2070	2300	2240	2030	2130	7440	2660	2250	1540	1440
8	1700	1660	2460	2240	2240	2180	2340	6610	2750	2210	1310	1440
9	1500	1680	2490	2180	2290	2200	2240	5650	3490	2130	1410	1440
10	1200	1840	2710	2270	2110	2180	2020	5000	3800	2280	1570	1450
11	1400	1980	2580	2240	1850	2140	2760	5190	3920	2270	1670	1430
12	1500	1850	2230	2230	1970	2210	3340	5210	4140	2270	1340	1380
13	1800	1890	2010	2240	2260	1980	4690	4120	3730	2170	1450	1590
14	1700	1910	2170	2290	2230	1890	4730	3900	3400	1990	1120	3530
15	1700	1850	2500	2190	2250	1900	4140	2520	2970	2030	1120	4300
16	1800	1860	2780	2220	2200	1860	3950	2720	2820	2040	1160	4040
17	1500	1590	2760	2210	2130	1630	3450	2710	3350	1810	1650	2930
18	1300	1460	2730	2240	2010	1700	3710	2360	3660	1980	1690	2600
19	1200	1420	2760	2230	2060	1550	3850	2480	3940	1980	1200	2390
20	1200	1640	2580	2310	2040	1480	3920	2340	4950	1910	1380	2070
21	1400	3380	2780	2170	2040	1430	4000	2180	5780	1710	1230	2040
22	1600	4600	2500	2280	2000	1260	4370	2180	5580	1710	1120	2060
23	1400	5400	2090	2140	2000	1220	4130	2160	5560	1540	1200	1980
24	1400	5400	2380	2230	1980	1230	3410	2530	5210	1120	1240	1870
25	1600	4700	2440	2280	1960	1310	3490	3030	5740	1060	1120	1270
26	1900	4000	2470	2220	2000	1350	3670	3020	5220	1110	1140	1310
27	1800	3700	2370	2200	2000	1400	3600	3100	4630	1160	1180	1490
28	1600	3230	2430	2250	2000	1450	3720	3090	3840	1270	1290	1740
29	1700	2990	2420	2250	---	1760	4660	2620	3870	1460	1350	1570
30	1500	3250	2390	2240	---	1940	4940	2730	3360	1650	1280	1560
31	1300	---	2340	2250	---	2200	---	4280	---	1280	1400	---
TOTAL	50600	75940	76190	70000	58290	55090	101850	126560	125510	59100	42410	57470
MEAN	1632	2531	2458	2258	2082	1777	3395	4083	4184	1906	1368	1916
MAX	3000	5400	2860	2410	2290	2210	4940	7770	5780	3020	2230	4300
MIN	1200	1200	2010	2140	1850	1220	2020	2160	2660	1060	1120	1270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MEAN	1632	2531	2458	2258	2082	1777	3395	4083	4184	1906	1368	1916
MAX	1632	2531	2458	2258	2082	1777	3395	4083	4184	1906	1368	1916
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	1632	2531	2458	2258	2082	1777	3395	4083	4184	1906	1368	1916
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 WATER YEAR

ANNUAL TOTAL	899010
ANNUAL MEAN	2463
HIGHEST DAILY MEAN	7770 May 6
LOWEST DAILY MEAN	1060 Jul 25
ANNUAL SEVEN-DAY MINIMUM	1180 Aug 21
INSTANTANEOUS PEAK FLOW	8070 May 7
INSTANTANEOUS PEAK STAGE	11.02 May 7
10 PERCENT EXCEEDS	4140
50 PERCENT EXCEEDS	2180
90 PERCENT EXCEEDS	1350

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04065722 MENOMINEE RIVER NEAR VULCAN, MI

LOCATION.--Lat 45°44'12", long 87°51'48", sec.34, T.39 N., R.29 W., Michigan Meridian, Dickinson County, Hydrologic Unit 04030108, on left bank 0.35 mi downstream from Sturgeon Falls Dam, 3.0 mi south of Vulcan, and at mile 78.7.

DRAINAGE AREA.--2,900 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1987 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 820 ft above sea level, from topographic map.

REMARKS.--Records excellent. Flow regulated by powerplants, by Michigamme Reservoir, capacity, 119,950 acre-ft, by Peavy Pond, capacity, 33,860 acre-ft, on Michigamme River, and by smaller reservoirs upstream from station. Several measurements of water temperature were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3040	1380	3490	2610	2590	2330	3640	6310	6160	3750	1430	1700
2	2910	1740	3230	2770	2420	2020	3590	6230	6140	2930	1700	1620
3	2480	2140	3160	2710	2150	1640	3510	6680	5650	2850	1650	1770
4	1730	2430	2770	2550	2190	2320	3270	7750	5160	2800	1660	1670
5	2090	3000	2620	2640	2340	2230	2790	8310	4120	2730	1630	1760
6	1920	2750	2350	2630	2420	2370	3010	9210	3620	3020	2450	1680
7	1900	2700	2430	2560	2490	2340	2840	8840	3210	2820	2280	1640
8	1950	2110	2730	2530	2520	2400	2920	7830	3330	2670	1940	1700
9	1870	2150	2870	2410	2540	2440	3220	6800	3980	2480	1860	1610
10	1440	2270	3180	2530	2430	2410	2850	5840	4450	2630	1800	1670
11	1440	2480	2990	2540	2120	2360	3610	5970	4500	2660	2060	1680
12	2090	2170	2610	2460	2170	2490	3950	6400	4630	2580	1650	1570
13	2100	2430	2400	2460	2470	2160	5170	5100	4240	2500	1810	1760
14	1950	2370	2450	2530	2480	2130	5330	4820	3850	2330	1400	3660
15	1950	2220	2870	2430	2510	2090	4650	3470	3440	2250	1380	4940
16	1980	2250	3380	2460	2480	2120	4600	3440	3110	2380	1360	4780
17	1550	1930	3610	2430	2410	1630	3960	3390	3710	2060	1900	3820
18	1700	1880	3480	2480	2440	1940	4260	3020	4040	2230	1950	3340
19	1610	1750	3470	2470	2450	1830	4530	3100	4540	2370	1460	3180
20	1460	1920	3240	2560	2410	1760	4700	3010	5520	2280	1650	2710
21	1590	4040	3260	2410	2340	1690	4660	2840	6840	2040	1470	2570
22	2010	6370	3150	2560	2440	1460	5070	2630	6580	1960	1350	2550
23	1600	7380	2610	2410	2360	1500	4770	2700	6500	1860	1490	2380
24	1610	6740	2720	2500	2390	1470	4150	3040	5870	1420	1430	2290
25	1770	5960	2570	2580	2320	1590	4280	3690	6460	1260	1380	1710
26	2320	5050	2750	2460	2230	1690	4500	3660	5890	1410	1310	1600
27	1920	4420	2530	2520	2230	1810	4410	3630	5910	1330	1410	1870
28	1850	4250	2640	2580	2240	1980	4650	3610	4780	1440	1430	1930
29	1880	3590	2780	2590	---	2350	5580	3170	4660	1590	1580	1950
30	1810	3980	2630	2580	---	2750	5890	3300	4080	1930	1480	1820
31	1420	---	2760	2570	---	3150	---	4640	---	1520	1640	---
TOTAL	58940	95850	89730	78520	66580	64450	124360	152430	144970	70080	50990	68930
MEAN	1901	3195	2895	2533	2378	2079	4145	4917	4832	2261	1645	2298
MAX	3040	7380	3610	2770	2590	3150	5890	9210	6840	3750	2450	4940
MIN	1420	1380	2350	2410	2120	1460	2790	2630	3110	1260	1310	1570

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993
MEAN	1775	2621	2418	2074	1929	2463
MAX	2510	4412	3008	2533	2378	2849
(WY)	1991	1989	1989	1993	1993	1992
MIN	1081	1382	1555	1689	1773	2079
(WY)	1990	1990	1990	1991	1990	1993

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1988 - 1993

ANNUAL TOTAL	965740	1065830	
ANNUAL MEAN	2639	2920	
HIGHEST ANNUAL MEAN			2478
LOWEST ANNUAL MEAN			2920
HIGHEST DAILY MEAN	9860	Apr 23	1864
LOWEST DAILY MEAN	1140	Jun 14	10300
ANNUAL SEVEN-DAY MINIMUM	1300	Aug 15	846
INSTANTANEOUS PEAK FLOW			932
INSTANTANEOUS PEAK STAGE			10700
INSTANTANEOUS LOW FLOW			12.07
10 PERCENT EXCEEDS	4240		12.82
50 PERCENT EXCEEDS	2270		603
90 PERCENT EXCEEDS	1460		4150
			2000
			1220



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04066003 MENOMINEE RIVER BELOW PEMENE CREEK NEAR PEMBINE, WI

LOCATION.--Lat 45°34'46", long 87°47'13", in NE 1/4, sec.29, T. 37 N., R.28 W., Michigan Meridian, Menominee County, MI, Hydrologic Unit 04030108, on left bank 40 ft downstream from County Trunk Z bridge, 0.9 mi downstream from Pemene Creek, 3.9 mi west of Nathan, MI, 10.6 mi southeast of Pembine, and at mile 64.3.

DRAINAGE AREA.--3,140 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1949 to current year. Published as "near Pembine" (04066000) prior to August 1982. Monthly discharges for some periods published in WSP 1307.

GAGE.--Water-stage recorder. Elevation of gage is 740 ft above sea level, from topographic map. October 1949 to Oct. 27, 1972, water-stage recorder at site 1.0 mi upstream at elevation 745, from river-profile map, and Oct. 28, 1972, to August 1982, water-stage recorder at site 1.5 mi upstream at elevation 770, from river-profile map.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 3, 5-11, and Dec. 20 to Mar. 25. Records good except those for ice-affected periods, which are fair. Flow regulated by powerplants and by Michigamme Reservoir, capacity, 119,950 acre-ft, and Peavy Pond, capacity, 33,860 acre-ft, on the Michigamme River, and by many smaller reservoirs above station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3260	1510	3760	3000	2700	2600	3990	6680	6730	4080	1560	1840
2	3080	1810	3420	2800	2800	2300	3900	6910	6750	3210	1600	1690
3	2880	2380	3300	3000	2500	1900	3920	7270	6190	3020	1690	1780
4	1890	2810	3110	2800	2400	2300	3660	8700	5710	2990	1740	1820
5	2070	3360	2800	2900	2500	2600	3120	9410	4510	2940	1670	1790
6	2190	3000	2500	2900	2700	2600	3190	10400	3700	3250	2350	1770
7	1990	2950	2600	2800	2800	2600	3200	10000	3670	3100	2700	1750
8	1950	2370	2900	2700	2800	2700	3200	8780	3550	2860	2180	1680
9	2150	2290	3000	2600	2800	2700	3810	7530	4190	2690	1970	1650
10	1810	2460	3300	2700	2800	2700	3330	6350	4960	2760	1910	1640
11	1600	2610	3200	2700	2500	2700	4040	6190	4830	2850	2170	1620
12	2030	2470	3050	2700	2400	2800	4130	6930	5050	2720	1840	1610
13	2290	2600	2650	2700	2600	2500	5400	5710	4600	2660	1800	1650
14	2070	2610	2610	2800	2800	2400	5710	5250	4120	2550	1630	3420
15	2100	2440	2990	2700	2700	2300	4910	3970	3730	2310	1510	5080
16	2140	2450	3800	2700	2700	2400	4970	3690	3180	2530	1450	5160
17	1900	2140	4010	2700	2700	1800	4170	3640	3900	2280	1690	4170
18	1820	2040	3940	2700	2700	2600	4720	3350	4330	2340	2090	3540
19	1820	1880	3850	2700	2700	2600	4770	3290	5010	2510	1750	3280
20	1630	2040	3400	2800	2700	2000	5310	3310	5920	2450	1660	2850
21	1730	4360	3500	2600	2600	1900	5060	3120	7970	2220	1560	2640
22	1980	7080	3500	2700	2700	1700	5540	2860	7530	2040	1440	2600
23	2000	8370	3000	2700	2800	1700	5140	2930	7470	2080	1460	2470
24	1720	7720	2900	2700	2700	1700	4590	3190	6430	1750	1560	2350
25	1800	6770	2900	2800	2500	1800	4700	3890	7050	1450	1520	1810
26	2430	5630	2800	2700	2500	1910	4880	4040	6240	1490	1390	1600
27	2140	4830	2700	2700	2500	1970	4820	3750	6680	1460	1460	1770
28	1870	4620	2800	2800	2500	2110	4990	3970	5240	1490	1480	1860
29	2040	3790	3000	2800	---	2520	6020	3420	4970	1560	1650	2070
30	1950	4300	2900	2800	---	3070	6410	3530	4330	1890	1540	1760
31	1740	---	2900	2800	---	3530	---	4670	---	1790	1670	---
TOTAL	64070	105690	97090	85500	74100	73010	135600	166730	158540	75320	53690	70720
MEAN	2067	3523	3132	2758	2646	2355	4520	5378	5285	2430	1732	2357
MAX	3260	8370	4010	3000	2800	3530	6410	10400	7970	4080	2700	5160
MIN	1600	1510	2500	2600	2400	1700	3120	2860	3180	1450	1390	1600

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1993, BY WATER YEAR (WY)

	MEAN	2513	2688	2339	2130	2075	2614	5658	4841	3450	2535	2107	2356
MAX	5659	5766	3939	3035	3810	7461	10000	12100	6118	6523	3505	5335	
(WY)	1986	1986	1986	1986	1984	1973	1967	1960	1953	1953	1952	1968	
MIN	1028	1043	1167	1080	1201	1461	1432	1341	1152	1201	1003	1009	
(WY)	1977	1977	1977	1977	1964	1964	1990	1987	1988	1988	1977	1976	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1950 - 1993

ANNUAL TOTAL	1051240	1160060	
ANNUAL MEAN	2872	3178	
HIGHEST ANNUAL MEAN			2942
LOWEST ANNUAL MEAN			4318
HIGHEST DAILY MEAN	11500	Apr 22	10400
LOWEST DAILY MEAN	1190	Jun 14	1390
ANNUAL SEVEN-DAY MINIMUM	1450	Jun 13	1470
INSTANTANEOUS PEAK FLOW			(a)10700
INSTANTANEOUS PEAK STAGE			(b)16.21
10 PERCENT EXCEEDS	4630		5270
50 PERCENT EXCEEDS	2410		2700
90 PERCENT EXCEEDS	1600		1700

(a) Gage height, 12.18 ft

(b) Ice jam

(c) Site and datum then in use

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04067500 MENOMINEE RIVER NEAR MC ALLISTER, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 45°19'33", long 87°39'48", in SW 1/4 SE 1/4 sec.17, T.33 N., R.23 E., Marinette County, Hydrologic Unit 04030108, on right bank 85 ft downstream from bridge on County Highway JJ, 2.9 mi downstream from Grand Rapids Dam, 2.6 mi east of McAllister, 1.9 mi downstream from Little Cedar River, and at mile 22.6.

## WATER-DISCHARGE RECORDS

DRAINAGE AREA.--3,930 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1945 to September 1961; October 1961 to September 1979, miscellaneous measurements and peaks only; October 1979 to September 1986; October 1986 to March 1987, crest-stage partial-record station; April 1988 to September 1990; April to September 1993.

REVISED RECORDS.--WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 622.20 ft above sea level (Michigan Department of Transportation reference mark). Prior to May 15, 1945, nonrecording gage 1,400 ft downstream at same datum; May 16, 1945 to September 1961, water-stage recorder 1,000 ft downstream at same datum; October 1961 to September 1979, crest-stage gage 1,100 ft downstream at same datum; October 1979 to September 1986, water-stage recorder at same site and datum; October 1986 to March 1987, crest-stage gage at same site and datum. April 1988 to September 1990, water-stage recorder at same site and datum.

REMARKS.--Estimated daily discharges: Apr. 1-21 and May 8-20. Records good except for estimated daily discharges, which are fair. Flow regulated by powerplants, by Michigamme Reservoir, capacity, 119,950 acre-ft, and Peavy Pond, capacity, 33,860 acre-ft on the Michigamme River, and by many smaller reservoirs above station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	5700	8120	6600	5400	2040	1980
2	---	---	---	---	---	---	5600	8280	7920	4770	1960	2210
3	---	---	---	---	---	---	4900	8920	7590	3760	1920	2020
4	---	---	---	---	---	---	4700	10200	6980	3740	2070	1970
5	---	---	---	---	---	---	4400	11700	6400	3590	2040	2160
6	---	---	---	---	---	---	4000	12200	4910	4120	2240	1930
7	---	---	---	---	---	---	4200	12600	4270	4570	3050	2060
8	---	---	---	---	---	---	4200	11700	4670	4100	3030	1960
9	---	---	---	---	---	---	4400	10400	5070	3850	2510	2330
10	---	---	---	---	---	---	5500	8900	6030	3520	2430	2190
11	---	---	---	---	---	---	4300	7000	6490	3590	2360	2200
12	---	---	---	---	---	---	5500	7200	5790	3640	2440	2430
13	---	---	---	---	---	---	6100	7600	5930	3240	2240	2120
14	---	---	---	---	---	---	6700	6700	5770	3320	1990	2650
15	---	---	---	---	---	---	7100	6300	5370	3090	1770	4710
16	---	---	---	---	---	---	6600	4500	4450	2750	1880	6440
17	---	---	---	---	---	---	6100	4500	4530	2980	1790	6130
18	---	---	---	---	---	---	5600	4400	5800	2760	2310	5180
19	---	---	---	---	---	---	6700	4200	6550	2960	2510	4020
20	---	---	---	---	---	---	7100	4000	8670	3180	1940	3870
21	---	---	---	---	---	---	7200	3990	10600	3050	1820	3370
22	---	---	---	---	---	---	6950	3660	11700	2590	1800	3120
23	---	---	---	---	---	---	7080	3410	11100	2410	1830	3150
24	---	---	---	---	---	---	6720	3520	9800	2350	1790	2930
25	---	---	---	---	---	---	6110	4100	8830	2080	1690	2790
26	---	---	---	---	---	---	6240	4690	8840	1880	1790	2180
27	---	---	---	---	---	---	6550	4740	8030	1920	1640	2050
28	---	---	---	---	---	---	6940	4290	7560	1910	1910	2220
29	---	---	---	---	---	---	7080	4650	6460	1850	1690	2140
30	---	---	---	---	---	---	7980	3870	6040	2250	2010	2260
31	---	---	---	---	---	---	---	5030	---	2140	1990	---
TOTAL	---	---	---	---	---	---	178250	205370	208750	97360	64480	86770
MEAN	---	---	---	---	---	---	5942	6625	6958	3141	2080	2892
MAX	---	---	---	---	---	---	7980	12600	11700	5400	3050	6440
MIN	---	---	---	---	---	---	4000	3410	4270	1850	1640	1930

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1993, BY WATER YEAR (WY)

	3047	3425	2674	2441	2404	3004	6823	5500	4090	3232	2418	2724
MEAN	3047	3425	2674	2441	2404	3004	6823	5500	4090	3232	2418	2724
MAX	6755	7332	4561	3777	4710	5687	12800	15930	6958	7127	4056	5952
(WY)	1986	1986	1986	1983	1984	1983	1951	1960	1993	1951	1952	1959
MIN	1195	1753	1532	1621	1245	1897	1869	2257	1296	1374	1377	1390
(WY)	1949	1990	1990	1949	1948	1956	1990	1988	1988	1988	1957	1989

## SUMMARY STATISTICS

ANNUAL MEAN  
HIGHEST ANNUAL MEAN  
LOWEST ANNUAL MEAN  
HIGHEST DAILY MEAN  
LOWEST DAILY MEAN  
ANNUAL SEVEN-DAY MINIMUM  
INSTANTANEOUS PEAK FLOW  
INSTANTANEOUS PEAK STAGE  
INSTANTANEOUS LOW FLOW  
10 PERCENT EXCEEDS  
50 PERCENT EXCEEDS  
90 PERCENT EXCEEDS

## FOR 1993 WATER YEAR

12600 May 7  
1640 Aug 27  
1760 Aug 23  
12700 May 6  
14.89 May 6  
1420 Aug 29  
8010  
4100  
1930

## WATER YEARS 1945 - 1993

3503  
5496 1960  
2118 1948  
31800 May 9 1960  
810 Oct 26 1948  
952 Oct 24 1948  
32500 May 9 1960  
(a)20.00 May 9 1960  
(b)538 Oct 6 1946  
6370  
2700  
1650

(a) From graph based on gage readings

(b) Observed

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04067500 MENOMINEE RIVER NEAR MC ALLISTER, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--April to September 1993.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993												
14...	0900	6510	220	8.1	5.0	12.8	750	110	24	11	4.1	1.2
30...	1245	8670	194	8.1	10.0	11.4	748	95	22	9.8	4.2	1.0
MAY												
07...	1130	13100	163	7.8	13.0	10.3	752	85	20	8.5	2.9	1.0
20...	1400	4050	199	8.1	14.5	9.7	743	92	21	9.5	5.1	1.1
JUN												
24...	1100	9580	188	7.9	19.5	8.0	745	98	23	9.8	3.2	0.90
30...	1200	6050	196	8.0	19.5	8.2	751	97	23	9.7	3.9	1.0
JUL												
27...	1145	2080	250	8.2	23.0	7.6	744	120	28	12	5.7	1.2
AUG												
23...	1000	1850	269	8.0	23.0	8.1	740	130	30	13	7.8	1.3
SEP												
08...	1145	2400	281	8.3	17.5	8.8	747	130	30	14	9.1	1.5
15...	1400	5090	273	8.1	16.5	9.3	760	130	29	13	7.6	1.4

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
APR 1993										
14...	130	106	9.7	6.1	<0.10	8.0	135	0.170	<0.010	0.020
30...	99	81	9.7	4.4	<0.10	6.4	112	0.094	<0.010	0.020
MAY										
07...	89	73	7.2	3.4	<0.10	6.0	116	0.082	<0.010	0.020
20...	110	90	9.2	5.3	<0.10	5.7	133	0.100	<0.010	0.020
JUN										
24...	103	84	6.1	3.6	<0.10	7.1	105	0.071	<0.010	0.040
30...	111	91	7.2	3.8	<0.10	7.0	136	0.100	<0.010	0.040
JUL										
27...	146	120	11	5.6	0.10	6.7	158	0.061	<0.010	0.050
AUG										
23...	145	119	13	7.9	0.10	6.6	163	<0.050	<0.010	0.020
SEP										
08...	151	124	18	8.4	<0.10	6.9	169	<0.050	<0.010	0.020
15...	142	116	14	7.4	<0.10	7.3	165	<0.050	<0.010	0.030

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN (70331)
APR 1993											
14...	0.40	0.30	0.020	<0.010	<0.010	130	13	7.6	--	9	62
30...	0.50	0.40	0.040	0.040	<0.010	120	16	9.9	0.7	15	68
MAY											
07...	0.70	0.40	0.030	0.010	<0.010	120	19	12	0.4	18	58
20...	0.50	0.50	0.030	0.020	0.010	150	23	12	0.7	10	91
JUN											
24...	0.40	0.40	0.030	0.020	0.010	150	11	33	0.6	19	70
30...	0.50	0.40	0.020	0.010	<0.010	190	12	14	0.6	9	93
JUL											
27...	0.30	0.50	<0.010	0.040	<0.010	65	14	9.2	0.3	3	92
AUG											
23...	0.30	0.30	<0.010	<0.010	<0.010	28	9	8.0	0.2	1	82
SEP											
08...	0.30	0.30	0.020	0.030	<0.010	25	13	7.9	0.3	2	100
15...	0.50	0.30	0.030	<0.010	<0.010	27	15	8.2	0.6	9	82

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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451511087550900 LAKE NOQUEBAY NEAR CRIVITZ, WI

LOCATION.--Lat 45°15'11", long 87°55'09", in SE 1/4 SE 1/4 sec.7, T.32 N., R.21 E., Marinette County, Hydrologic Unit 04030105, near Crivitz.

DRAINAGE AREA.--132 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--February to September 1987, April 1991 to current year.

GAGE.--Staff gage read by Rev. Donald Burkart.

REMARKS.--Lake levels controlled at outlet. Lake levels are drawn down about 1.5 ft from October through April.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 3.17 ft, June 26, 1993; minimum observed, 0.69 ft, Mar. 4, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height observed, 3.17 ft, June 26; minimum observed, 0.69 ft, Mar. 4.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	2.42	---	---	---	---
2	---	---	---	.90	---	---	---	---	---	---	---	---
3	2.38	---	---	---	---	---	1.34	---	---	2.36	---	---
4	---	---	---	---	---	.69	---	---	---	---	---	2.42
5	---	---	1.52	---	---	---	---	---	2.52	---	---	---
6	---	---	---	---	.90	.70	---	---	---	---	---	---
7	---	1.66	---	---	---	---	---	---	---	---	2.34	---
8	---	---	---	---	---	---	---	2.40	---	---	---	---
9	---	---	---	.76	---	---	---	---	---	---	---	---
10	2.32	---	---	---	---	---	1.38	---	---	2.50	---	---
11	---	---	---	---	---	---	---	---	---	---	---	2.43
12	---	---	1.16	---	---	---	---	---	2.44	---	---	---
13	---	---	---	---	.92	.84	---	---	---	---	---	---
14	---	1.38	---	---	---	---	---	---	---	---	2.35	---
15	---	---	---	---	---	---	---	2.22	---	---	---	---
16	---	---	---	.82	---	---	---	---	---	---	2.32	---
17	2.29	---	---	---	---	---	1.54	---	---	2.18	---	---
18	---	---	---	---	---	---	---	---	---	---	---	2.32
19	---	---	1.36	---	---	---	---	---	2.64	---	---	---
20	---	---	---	---	.86	.82	---	---	---	---	---	---
21	---	1.44	---	---	---	---	---	---	---	---	2.22	---
22	---	---	---	---	---	---	---	2.44	---	---	---	---
23	---	---	---	.82	---	---	---	---	---	---	---	---
24	2.36	---	---	---	---	---	1.66	---	---	2.30	---	---
25	---	---	---	---	---	---	---	---	---	---	---	2.48
26	---	---	1.22	---	---	---	---	---	3.17	2.25	---	---
27	---	---	---	---	.76	.94	---	---	---	---	---	---
28	---	1.98	---	---	---	---	2.10	---	2.96	---	2.36	---
29	---	---	---	---	---	---	---	2.24	---	---	---	---
30	---	---	---	.88	---	---	---	---	---	---	---	---
31	1.74	---	---	---	---	---	---	---	---	2.28	---	---



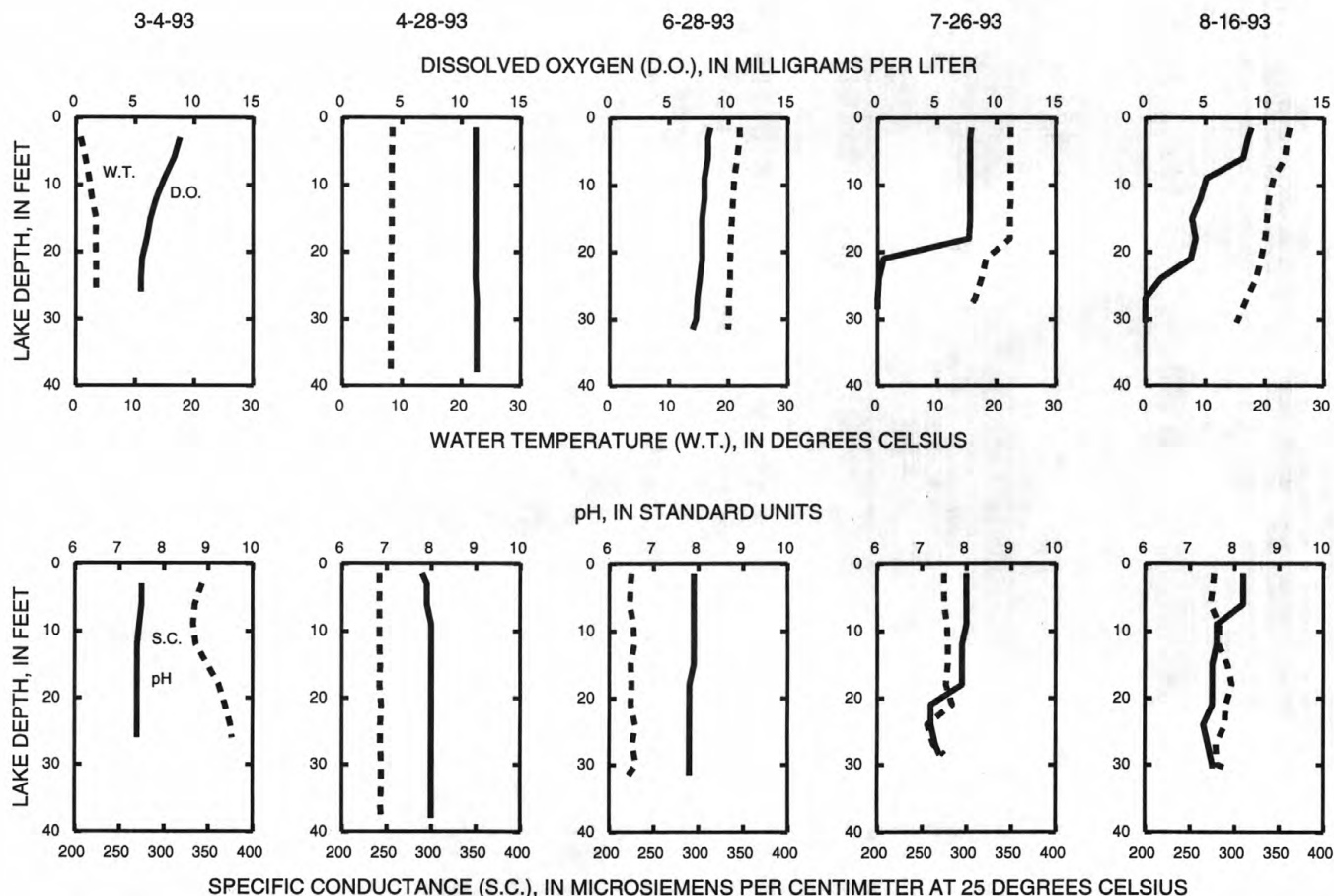
## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1987 to August 1988, April 1991 to current year.

REMARKS.--Lake sampled at a lake depth of approximately 31 ft approximately 4,000 ft northeast of dam outlet. Lake ice-covered during March sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MARCH 04 TO AUGUST 16, 1993  
(Milligrams per liter unless otherwise indicated)

	Mar. 04		Apr. 28		June 28		July 26		Aug. 16	
Depth of sample (ft)	3.0	26	1.5	38	1.5	31	1.5	28	1.5	30
Lake stage (ft)	0.69		2.10		2.96		2.25		2.32	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	343	377	242	244	225	222	275	275	277	289
pH (units)	7.5	7.4	7.8	8.0	7.9	7.8	8.0	7.4	8.2	7.5
Water temperature ( $^{\circ}\text{C}$ )	1.0	3.5	8.5	8.0	22.0	20.0	22.5	15.0	24.0	15.5
Color (Pt-Co. scale)	---	---	40	50	---	---	---	---	---	---
Turbidity (NTU)	---	---	1.4	0.90	---	---	---	---	---	---
Secchi-depth (meters)	---		3.0		1.6		1.8		2.4	
Dissolved oxygen	8.8	5.5	11.2	11.2	8.5	7.0	7.9	0.0	8.9	0.0
Hardness, as $\text{CaCO}_3$	---	---	130	130	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	31	31	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	13	13	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	1.7	1.8	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	0.7	1	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	120	120	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	7.0	6.0	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	3.0	2.0	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	<0.0	<0.0	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	6.4	6.5	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	156	152	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	0.07	0.05	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	0.07	0.05	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.02	0.02	---	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	0.38	0.38	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.40	0.40	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.47	0.45	---	---	---	---	---	---
Phosphorus, total (as P)	---	---	0.017	0.011	0.022	0.013	0.015	0.017	0.015	0.031
Phosphorus, ortho, dissolved (as P)	---	---	<0.002	<0.002	---	---	---	---	---	---
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	60	60	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	---	---	3.8	---	5.4	---	5.9	---	5.0	---



## STREAMS TRIBUTARY TO LAKE MICHIGAN

57

451540087525700 LAKE NOQUEBAY, EAST END, NEAR CRIVITZ, WI

LOCATION.--Lat 45°15'40", long 87°52'57", in SE 1/4 NE 1/4 sec.9, T.32 N., R.21 E., Marinette County, Hydrologic Unit 04030105, 5.9 mi northeast of Crivitz.

PERIOD OF RECORD.--April 1991 to current year.

REMARKS.--Lake sampled in east bay. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, APRIL 28 TO AUGUST 16, 1993  
(Milligrams per liter unless otherwise indicated)

	Apr. 28	June 28	July 26	Aug. 16
Depth of sample (ft)	1.5	1.5	1.5	1.5
Lake stage (ft)	2.10	2.96	2.25	2.32
Specific conductance ( $\mu$ S/cm)	238	225	241	258
pH (units)	8.1	7.9	8.0	8.3
Water temperature (°C)	9.0	21.0	23.0	25.5
Secchi-depth (meters)	2.9	1.7	1.4	2.2
Dissolved oxygen	11.4	8.2	8.3	8.7
Phosphorus, total (as P)	0.017	0.017	0.019	0.015
Chlorophyll a, phytoplankton ( $\mu$ g/L)	2.0	6.4	7.4	5.3

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04069500 PESHTIGO RIVER AT PESHTIGO, WI

LOCATION.--Lat 45°02'49", long 87°44'40", in NE 1/4 sec.30, T.30 N., R.23 E., Marinette County, Hydrologic Unit 04030105, on left bank 75 ft downstream from Chicago and Northwestern Railway bridge, 0.5 mi downstream from Wisconsin Public Service Corp. Powerplant at Peshtigo, and 11.5 mi upstream from mouth.

DRAINAGE AREA.--1,080 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-80-1: Drainage area. WDR WI-84-1: 1983 average discharge.

GAGE.--Water-stage recorder. Datum of gage is 584.64 ft above sea level.

REMARKS.--Estimated daily discharges: Ice-affected periods, Nov. 16-19, Nov. 29 to Dec. 4, Dec. 8 to Feb. 7, Feb. 9-13, 15-21, 23-27, and Mar. 9-19. Records good except those for ice-affected periods, which are fair. Diurnal fluctuation caused by two powerplants upstream. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1210	758	1600	820	740	578	2570	2370	2000	1840	875	815
2	1070	948	1300	820	780	532	2360	2360	2310	1830	637	671
3	884	1590	1100	860	820	629	1870	2860	2290	1610	795	694
4	659	1960	1200	840	740	623	1770	3610	1970	1400	752	621
5	776	1870	1040	820	760	646	1660	3780	1650	1670	595	579
6	855	1920	671	800	760	531	1320	3840	1320	2260	661	553
7	608	1580	699	780	760	532	1310	3630	1210	2640	873	573
8	647	1370	1100	760	738	582	1580	3530	1280	2360	722	543
9	544	1180	1000	780	740	740	2100	3130	1580	2070	668	528
10	619	1390	980	780	720	700	2240	2720	2120	2050	791	539
11	718	1290	940	780	740	680	2220	2280	2220	1770	729	585
12	841	1300	1000	740	700	680	1650	2190	2210	1650	637	544
13	801	1180	960	820	700	640	1870	2180	2110	1490	723	515
14	788	1330	920	780	708	680	1620	2220	2220	1290	623	695
15	737	1050	1100	820	720	660	1790	2240	2520	1340	599	1420
16	798	960	1400	820	680	600	2390	1790	2430	1130	594	1620
17	769	840	1800	780	660	620	2440	949	2250	1080	674	1860
18	712	800	1700	780	680	580	2400	1310	2600	1050	649	2060
19	611	840	1600	820	640	600	2440	1410	3140	1100	650	1770
20	837	1120	1200	820	600	598	2880	1280	4100	1150	659	1170
21	701	2470	1000	840	600	541	3010	1240	4790	960	629	1220
22	692	3570	1100	780	460	436	2770	1210	5550	947	468	1020
23	780	3670	1200	800	600	607	2390	1160	5330	828	486	1110
24	642	3510	1000	780	660	571	1890	1230	4440	691	541	963
25	756	3610	820	820	640	730	2130	1420	4030	708	542	934
26	694	3070	760	840	560	917	2000	1320	3910	888	608	774
27	762	2400	820	820	560	1160	2170	1240	3440	857	607	672
28	974	1940	860	780	577	1470	2160	1430	3040	941	584	759
29	671	1600	880	800	---	1960	2350	1130	2660	881	480	701
30	720	1400	880	800	---	2410	2300	1130	2320	857	556	772
31	797	---	820	740	---	2430	---	1630	---	886	687	---
TOTAL	23673	52516	33450	24820	19043	25663	63650	63819	83040	42224	20094	27280
MEAN	764	1751	1079	801	680	828	2122	2059	2768	1362	648	909
MAX	1210	3670	1800	860	820	2430	3010	3840	5550	2640	875	2060
MIN	544	758	671	740	460	436	1310	949	1210	691	468	515
CFSM	.71	1.62	1.00	.74	.63	.77	1.96	1.91	2.56	1.26	.60	.84
IN.	.82	1.81	1.15	.85	.66	.88	2.19	2.20	2.86	1.45	.69	.94

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1993, BY WATER YEAR (WY)

	MEAN	789	916	644	541	543	1093	2089	1509	1071	655	600	757
MAX	1728	2197	1128	1219	1449	3272	3813	4639	2768	1362	1242	1706	
(WY)	1986	1986	1966	1960	1984	1973	1979	1960	1993	1993	1974	1959	
MIN	310	328	250	268	282	424	485	538	228	300	285	264	
(WY)	1990	1977	1990	1990	1990	1964	1990	1977	1988	1989	1957	1989	

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1953 - 1993
ANNUAL TOTAL	365910	479272	
ANNUAL MEAN	1000	1313	
HIGHEST ANNUAL MEAN			934
LOWEST ANNUAL MEAN			1559
HIGHEST DAILY MEAN	4170	Apr 23	591
LOWEST DAILY MEAN	212	Aug 17	9600
ANNUAL SEVEN-DAY MINIMUM	304	Jul 28	84
INSTANTANEOUS PEAK FLOW			172
INSTANTANEOUS PEAK STAGE			(a)9790
INSTANTANEOUS LOW FLOW			11.59
ANNUAL RUNOFF (CFSM)	.93	1.22	17
ANNUAL RUNOFF (INCHES)	12.60	16.51	.87
10 PERCENT EXCEEDS	1930	2420	11.75
50 PERCENT EXCEEDS	749	888	677
90 PERCENT EXCEEDS	392	600	350

(a) From rating curve extended above 5,000 ft<sup>3</sup>/s on basis of computation of peak flow through dam gates

## STREAMS TRIBUTARY TO LAKE MICHIGAN

59

04071000 OCONTO RIVER NEAR GILLETT, WI

LOCATION.--Lat 44°51'53", long 88°18'00", in NW 1/4 sec.34, T.28 N., R.18 E., Oconto County, Hydrologic Unit 04030104, on left bank 300 ft upstream from County Trunk Highway BB bridge, 2.0 mi upstream from Christy Brook, 2.0 mi south of Gillett, and at mile 29.

DRAINAGE AREA.--705 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1906 to March 1909, October 1913 to current year. Monthly discharge for some periods published in WSP 1307.

REVISED RECORDS.--WSP 1207: 1922. WSP 1307: 1907-8(M), 1914-16(M), 1918-21(M), 1923-33(M), 1937-38(M), 1943(M). WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 732.87 ft above sea level (levels by Wisconsin Department of Transportation). See WSP 1727 for history of changes prior to Aug. 25, 1938.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 5 to Apr. 4. Records good except those for ice-affected period, which is fair. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	765	443	1110	600	520	400	1500	1530	1190	1300	561	644
2	667	570	1050	580	520	410	1400	1570	1460	1200	543	632
3	590	762	966	620	520	440	1300	1760	1540	1120	546	524
4	548	887	881	600	500	450	1100	2010	1400	1040	532	481
5	515	979	800	580	490	460	946	2120	1220	1050	512	467
6	489	1050	720	560	470	470	904	2120	1050	1210	484	448
7	474	1060	620	520	490	500	902	2040	930	1180	485	438
8	483	983	540	520	490	540	1090	1930	866	1280	540	403
9	484	884	600	500	490	600	1210	1790	989	1310	552	390
10	501	823	700	490	490	600	1360	1640	1050	1220	537	397
11	548	801	760	490	480	580	1560	1530	1230	1140	561	432
12	574	807	740	490	480	560	1560	1500	1400	1070	538	435
13	545	811	740	490	480	540	1450	1520	1350	1000	512	440
14	519	782	720	500	470	500	1330	1470	1470	951	607	587
15	503	734	940	500	470	480	1290	1410	1390	896	599	730
16	504	671	1200	500	490	460	1320	1320	1380	854	609	776
17	529	569	1200	500	450	450	1350	1190	1610	811	581	817
18	548	589	1100	500	410	440	1480	1050	1820	867	546	832
19	537	574	960	500	420	430	1600	945	2020	818	524	770
20	521	743	860	500	400	420	1800	900	2560	781	506	665
21	518	1380	780	520	410	420	1850	873	3160	742	518	630
22	526	1790	700	520	410	420	1740	819	3240	702	520	642
23	531	2420	640	520	400	430	1580	805	2990	667	524	633
24	526	2430	580	520	380	440	1480	812	2680	635	508	595
25	513	2140	600	520	370	500	1390	825	2590	657	502	563
26	496	1820	560	520	380	600	1330	846	2420	670	496	537
27	481	1570	580	520	390	700	1320	844	2150	675	568	512
28	471	1410	600	520	390	840	1370	804	1860	666	619	493
29	463	1240	620	480	---	1000	1410	767	1630	633	599	472
30	455	1160	660	500	---	1300	1500	809	1430	602	597	455
31	445	---	640	520	---	1600	---	1040	---	577	628	---
TOTAL	16269	32882	24167	16200	12660	17980	41422	40589	52075	28324	16954	16840
MEAN	525	1096	780	523	452	580	1381	1309	1736	914	547	561
MAX	765	2430	1200	620	520	1600	1850	2120	3240	1310	628	832
MIN	445	443	540	480	370	400	902	767	866	577	484	390
CFSM	.74	1.55	1.11	.74	.64	.82	1.96	1.86	2.46	1.30	.78	.80
IN.	.86	1.74	1.28	.85	.67	.95	2.19	2.14	2.75	1.49	.89	.89

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1993, BY WATER YEAR (WY)

MEAN	487	571	455	361	350	658	1233	883	679	465	383	455
MAX	1216	1377	900	700	643	1867	3435	2185	1744	1022	742	1347
(WY)	1942	1986	1907	1907	1984	1973	1922	1960	1916	1922	1960	1928
MIN	199	259	216	206	204	240	379	357	197	226	158	190
(WY)	1949	1934	1990	1957	1948	1934	1931	1931	1988	1988	1934	1933

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1906 - 1993
ANNUAL TOTAL	252769	316362	
ANNUAL MEAN	691	867	582
HIGHEST ANNUAL MEAN			930
LOWEST ANNUAL MEAN			315
HIGHEST DAILY MEAN	2430	3240	6790
LOWEST DAILY MEAN	288	370	95
ANNUAL SEVEN-DAY MINIMUM	299	387	137
INSTANTANEOUS PEAK FLOW		(a)3300	8400
INSTANTANEOUS PEAK STAGE		(b)7.43	(c)11.20
INSTANTANEOUS LOW FLOW		(b)370	(d)93
ANNUAL RUNOFF (CFSM)	.98	1.23	.83
ANNUAL RUNOFF (INCHES)	13.34	16.69	11.22
10 PERCENT EXCEEDS	1220	1550	1080
50 PERCENT EXCEEDS	538	633	443
90 PERCENT EXCEEDS	350	458	258

(a) Gage height, 5.53 ft

(b) Ice affected

(c) From floodmarks, caused by a failure of dam at Pulcifer 4 mi above station

(d) Flow retarded by anchor ice above station



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04071795 PENSANKEE RIVER NEAR KRAKOW, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 44°45'09", long 88°16'35", in SW 1/4 SE 1/4 sec.2, T.26 N., R.18 E., Shawano County, Hydrologic Unit 04030103, on left bank downstream from bridge on Nichols Road, 0.4 mi west of intersection of Nichols Road and Green Valley Road, and 2 mi from intersection of Angelica Street and Highway 32, in Krakow.

DRAINAGE AREA.--Undetermined.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 770 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: June 1-9, 17, Aug. 23-30, and Sept. 7-22. Records good except those for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	101	7.0	10	25
2	---	---	---	---	---	---	---	---	74	5.5	8.9	16
3	---	---	---	---	---	---	---	---	47	5.0	7.6	9.9
4	---	---	---	---	---	---	---	---	33	6.3	6.6	7.0
5	---	---	---	---	---	---	---	---	26	43	6.6	5.7
6	---	---	---	---	---	---	---	---	21	223	6.9	4.7
7	---	---	---	---	---	---	---	---	17	206	8.5	4.8
8	---	---	---	---	---	---	---	---	16	195	8.2	4.7
9	---	---	---	---	---	---	---	---	114	216	7.9	4.6
10	---	---	---	---	---	---	---	---	221	169	7.9	4.6
11	---	---	---	---	---	---	---	---	88	94	6.6	4.9
12	---	---	---	---	---	---	---	---	37	53	5.7	5.3
13	---	---	---	---	---	---	---	---	35	40	5.6	6.7
14	---	---	---	---	---	---	---	---	67	36	6.9	12
15	---	---	---	---	---	---	---	---	118	29	8.5	21
16	---	---	---	---	---	---	---	---	51	25	8.2	15
17	---	---	---	---	---	---	---	---	e60	20	6.3	14
18	---	---	---	---	---	---	---	---	141	262	6.2	11
19	---	---	---	---	---	---	---	---	181	410	6.0	10
20	---	---	---	---	---	---	---	---	308	270	5.9	9.2
21	---	---	---	---	---	---	---	---	295	109	5.5	15
22	---	---	---	---	---	---	---	---	141	46	4.7	14
23	---	---	---	---	---	---	---	---	63	26	4.1	13
24	---	---	---	---	---	---	---	---	38	35	3.4	12
25	---	---	---	---	---	---	---	---	24	63	2.7	9.7
26	---	---	---	---	---	---	---	14	18	98	2.1	7.4
27	---	---	---	---	---	---	---	17	18	64	4.0	6.2
28	---	---	---	---	---	---	---	20	18	32	5.1	6.1
29	---	---	---	---	---	---	---	25	11	20	3.8	6.4
30	---	---	---	---	---	---	---	29	5.9	14	4.2	6.2
31	---	---	---	---	---	---	---	e67	---	10	5.5	---
TOTAL	---	---	---	---	---	---	---	172	2387.9	2831.8	190.1	292.1
MEAN	---	---	---	---	---	---	---	28.7	79.6	91.3	6.13	9.74
MAX	---	---	---	---	---	---	---	67	308	410	10	25
MIN	---	---	---	---	---	---	---	14	5.9	5.0	2.1	4.6

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

	1993	1993	1993	1993
MEAN	---	---	---	---
MAX	---	---	---	---
(WY)	---	---	---	---
MIN	---	---	---	---
(WY)	---	---	---	---

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

HIGHEST DAILY MEAN	410	Jul 19
LOWEST DAILY MEAN	2.1	Aug 26
ANNUAL SEVEN-DAY MINIMUM	3.6	Aug 23
INSTANTANEOUS PEAK FLOW	465	Jul 19
INSTANTANEOUS PEAK STAGE	17.15	Jul 19
INSTANTANEOUS LOW FLOW	1.9	Aug 26
10 PERCENT EXCEEDS	144	
50 PERCENT EXCEEDS	14	
90 PERCENT EXCEEDS	4.8	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

61

04071795 PENSANKEE RIVER NEAR KRAKOW, WI--CONTINUED  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--April to September 1993.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD) UNITS (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CAO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993												
06...	1620	44	541	7.2	5.5	13.0	761	280	70	26	8.6	5.1
20...	1520	221	469	8.2	7.0	14.9	756	260	65	23	8.2	6.8
29...	1530	8.6	--	8.2	14.5	--	756	320	79	29	11	7.0
JUN												
10...	0825	259	345	8.0	17.0	5.1	760	160	43	13	4.5	5.5
15...	1530	128	456	7.6	19.5	6.3	759	230	60	19	6.4	7.0
JUL												
05...	2350	128	261	7.6	20.0	6.6	752	160	40	15	4.4	6.4
07...	1300	192	359	7.7	23.0	6.8	760	170	44	14	4.7	7.5
21...	0840	108	416	7.7	20.0	6.4	767	220	57	18	4.7	6.1
AUG												
19...	0835	6.1	723	8.0	22.5	7.1	759	380	91	36	11	4.6
SEP												
01...	1345	20	610	7.9	20.5	9.4	--	300	75	27	9.2	9.7

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L) (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
APR 1993												
06...	271	0	222	230	42	23	0.10	3.4	342	0.710	0.010	0.060
20...	268	0	220	220	32	26	0.10	3.9	292	1.40	0.020	0.040
29...	312	0	256	260	40	31	0.20	1.2	398	0.620	0.020	0.030
JUN												
10...	139	0	114	110	14	14	0.10	5.8	213	1.90	0.090	0.080
15...	229	0	188	190	17	17	0.10	8.5	288	0.750	0.040	0.080
JUL												
05...	166	0	136	140	16	13	0.20	4.6	203	0.380	0.030	0.130
07...	173	0	142	140	13	13	0.20	7.0	218	0.760	0.020	0.030
21...	242	0	198	200	11	11	0.10	8.4	274	0.390	0.020	0.060
AUG												
19...	415	0	340	340	22	28	0.10	12	--	0.920	0.040	0.070
SEP												
01...	295	0	242	240	49	24	0.20	12	387	0.380	0.010	0.050

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993											
06...	1.0	0.80	0.080	0.060	0.040	68	35	--	--	4	89
20...	1.0	1.1	0.120	0.100	0.070	51	10	--	--	65	94
29...	1.3	1.0	0.090	0.080	0.060	68	21	--	--	5	94
JUN											
10...	0.80	1.0	0.380	0.260	0.230	70	7	13	2.8	53	99
15...	1.1	1.1	0.250	0.190	0.160	110	17	16	1.1	24	99
JUL											
05...	1.3	1.0	0.340	0.260	0.230	110	33	13	5.4	166	100
07...	0.80	0.60	0.100	0.080	0.050	110	10	13	0.7	19	98
21...	1.2	1.0	0.270	0.240	0.230	170	27	16	0.4	12	98
AUG											
19...	1.0	0.80	0.180	0.160	0.150	63	43	14	0.5	83	19
SEP											
01...	1.5	1.1	0.320	0.220	0.200	91	52	16	0.5	11	99

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04071858 PENSBAUKEE RIVER NEAR PENSBAUKEE, WI

LOCATION.--Lat 44°49'08", long 87°57'12", in NW 1/4 NE 1/4 sec.16, T.27 N., R.21 E., Oconto County, Hydrologic Unit 04030103, on right bank 300 ft downstream from bridge on town road, 2.8 mi downstream from Brookside Creek, 2.6 mi west of Pensaukee, 3.5 mi upstream from mouth.

DRAINAGE AREA.--134 mi<sup>2</sup>.

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

REVISED RECORD.--WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 583.69 ft above sea level (Wisconsin Department of Transportation bench mark).

REMARKS.--Estimated daily discharges: Aug. 17 to Sept. 30 and ice-affected periods, Nov. 14-19 and Nov. 26 to Apr. 4. Records good except those for estimated daily discharges, which are fair, and periods of discharge below 10 ft<sup>3</sup>/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	23	110	40	33	26	280	183	438	59	62	48
2	53	87	94	38	32	25	220	222	322	54	54	43
3	41	191	86	38	32	35	200	440	203	53	46	33
4	29	172	80	38	33	38	220	567	142	56	46	27
5	19	137	76	38	33	40	248	499	113	110	44	25
6	17	107	70	36	32	64	238	363	89	973	42	23
7	10	88	68	35	31	100	215	250	72	788	40	22
8	5.7	76	66	33	30	140	349	202	71	487	36	21
9	5.3	78	62	32	30	160	675	177	492	384	32	20
10	13	83	60	31	30	150	540	146	876	429	33	19
11	18	88	58	30	30	120	365	128	476	302	33	21
12	21	84	54	30	29	80	303	114	232	203	46	23
13	25	86	56	30	28	66	279	99	144	147	31	29
14	23	70	58	30	28	56	232	87	167	128	28	52
15	19	56	80	29	27	50	249	77	365	111	27	90
16	24	49	320	28	26	47	465	67	258	93	36	80
17	35	50	640	27	25	44	494	60	300	76	37	62
18	40	44	430	26	24	42	576	55	872	599	34	50
19	41	41	250	28	25	40	658	55	1060	1670	32	43
20	39	137	180	29	26	39	757	53	1210	1360	30	40
21	47	935	170	30	27	38	755	49	1180	515	29	64
22	51	1540	190	32	27	37	501	44	706	250	29	60
23	54	960	140	32	26	39	328	53	369	154	34	52
24	51	495	110	32	24	42	253	91	229	117	34	43
25	44	340	90	31	23	70	222	102	492	167	31	37
26	38	250	76	30	24	130	189	85	237	343	34	35
27	36	200	64	30	25	240	163	70	142	261	43	32
28	29	160	56	29	26	440	272	67	104	169	48	29
29	27	140	50	28	---	540	333	60	83	118	42	27
30	26	120	44	30	---	680	243	68	69	92	44	25
31	26	---	42	32	---	450	---	289	---	74	52	---
TOTAL	971.0	6887	3930	982	786	4068	10822	4822	11513	10342	1189	1175
MEAN	31.3	230	127	31.7	28.1	131	361	156	384	334	38.4	39.2
MAX	64	1540	640	40	33	680	757	567	1210	1670	62	90
MIN	5.3	23	42	26	23	25	163	44	69	53	27	19
CFSM	.23	1.71	.95	.24	.21	.98	2.69	1.16	2.86	2.49	.29	.29
IN.	.27	1.91	1.09	.27	.22	1.13	3.00	1.34	3.20	2.87	.33	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1993, BY WATER YEAR (WY)

	MEAN	57.5	88.2	50.6	26.0	42.9	255	264	123	72.6	52.8	26.4	53.6
MAX	176	327	206	97.6	231	618	657	577	384	334	141	178	
(WY)	1987	1986	1983	1973	1984	1986	1975	1973	1993	1993	1984	1984	
MIN	8.61	7.75	3.30	3.26	3.19	63.8	38.4	19.0	2.77	3.04	2.14	1.06	
(WY)	1977	1977	1990	1977	1977	1975	1990	1977	1988	1988	1989	1989	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1973 - 1993

ANNUAL TOTAL	40313.0	57487.0	
ANNUAL MEAN	110	157	92.7
HIGHEST ANNUAL MEAN			162
LOWEST ANNUAL MEAN			25.2
HIGHEST DAILY MEAN	1570	1670	3700
LOWEST DAILY MEAN	1.5	5.3	.52
ANNUAL SEVEN-DAY MINIMUM	2.3	13	.64
INSTANTANEOUS PEAK FLOW		1840	4310
INSTANTANEOUS PEAK STAGE		9.48	13.58
ANNUAL RUNOFF (CFSM)	.82	1.18	.69
ANNUAL RUNOFF (INCHES)	11.19	15.96	9.40
10 PERCENT EXCEEDS	269	440	219
50 PERCENT EXCEEDS	37	58	30
90 PERCENT EXCEEDS	5.3	26	5.8

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04072050 DUCK CREEK, AT COUNTY TRUNK HIGHWAY J, NEAR ONEIDA, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 43°30'42", long 88°10'12", in SE 1/4 NE 1/4 sec.34, T.24 N., R.19 E., Brown County, Hydrologic Unit 04030103, at town road, 1.1 mi northeast of Oneida.

PERIOD OF RECORD.--March to September 1993.

REMARKS.--Stage-discharge data collected at gaging station 04072150 downstream from sampling location. Concentration data for organic compounds are not rounded.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS Ca) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg) (00925)	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	
MAR 1993													
11...	1050	413	394	7.7	0.5	3.7	--	--	--	--	--	--	
APR													
07...	0830	122	529	8.1	4.0	11.4	761	260	65	23	13	6.8	
20...	1100	725	469	8.2	2.0	12.6	756	250	65	22	10	7.9	
MAY													
04...	1045	418	624	8.0	13.0	9.2	754	300	77	27	12	9.1	
18...	1050	21	799	8.1	12.5	10.1	--	390	96	37	17	6.8	
JUN													
03...	0950	57	751	8.1	15.0	9.8	754	390	100	34	18	7.4	
09...	0800	643	277	7.7	16.5	7.3	752	110	29	9.3	5.2	5.9	
09...	1630	1280	693	7.6	17.5	6.9	752	120	32	10	5.2	6.4	
10...	1240	922	415	7.8	18.0	6.9	760	180	49	15	6.9	7.8	
16...	0720	153	648	8.0	16.5	8.0	768	320	85	26	12	8.1	
30...	1430	53	679	8.1	19.5	7.4	757	350	92	29	12	7.1	
JUL													
14...	0830	360	680	8.2	19.0	8.1	764	350	93	29	11	7.1	
26...	1030	312	476	8.0	21.5	6.6	756	220	57	18	8.4	8.1	
27...	0945	113	558	8.1	22.0	5.7	758	260	68	22	10	9.0	
AUG													
04...	0950	9.1	783	8.1	18.5	8.2	766	380	97	33	19	7.8	
12...	0810	7.9	848	8.1	23.0	--	761	400	97	39	20	7.2	
26...	0945	4.4	858	8.0	23.5	--	754	390	94	38	26	7.7	
SEP													
01...	0840	5.4	847	8.1	17.5	7.7	762	390	95	37	29	7.3	
07...	1120	3.9	823	8.2	17.0	8.8	764	390	97	37	25	8.1	
15...	0755	6.7	798	7.4	13.5	6.7	765	350	81	35	28	8.0	
21...	1035	25	682	8.1	13.0	8.8	763	310	73	30	20	10	
27...	1040	8.3	875	8.3	12.5	9.2	757	440	110	39	23	11	
DATE		BICARBONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKALINITY WAT DIS TOT IT FIELD (MG/L AS CaCO3) (39086)	ALKALINITY WAT DIS FIX END FIELD (MG/L AS CaCO3) (39036)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)
MAR 1993													
11...	--	--	--	--	--	--	--	--	--	--	--	--	--
APR													
07...	229	0	188	200	45	36	0.10	4.4	343	0.950	0.020	0.200	
20...	239	0	196	190	35	36	0.20	5.0	300	1.70	0.030	0.170	
MAY													
04...	293	0	240	240	43	40	0.20	4.1	401	1.30	0.030	0.100	
18...	342	0	280	330	100	48	0.20	1.0	532	1.30	0.020	0.060	
JUN													
03...	259	0	294	280	62	51	0.10	5.0	492	2.00	0.030	0.060	
09...	85	0	70	72	14	16	0.20	3.9	165	3.00	0.050	0.120	
09...	--	--	--	78	20	20	0.20	5.3	203	3.70	0.100	0.220	
10...	100	0	82	84	28	24	0.20	6.4	264	3.90	0.100	0.100	
16...	290	0	238	240	43	36	0.20	7.9	431	2.30	0.080	0.090	
30...	351	0	288	290	36	30	0.20	9.4	469	1.70	0.030	0.050	
JUL													
14...	388	0	318	--	31	26	0.20	11	461	1.80	0.050	0.060	
26...	217	0	178	--	26	21	0.20	6.1	297	1.10	0.040	0.060	
27...	256	0	210	--	29	25	0.20	7.3	349	1.30	0.050	0.070	
AUG													
04...	417	0	342	340	35	40	0.20	9.7	509	1.30	0.010	0.060	
12...	320	0	262	260	130	40	0.20	6.7	546	1.30	0.010	<0.010	
26...	395	0	324	--	61	57	0.20	8.4	526	1.30	0.010	0.040	
SEP													
01...	364	0	298	300	58	53	0.20	7.7	505	1.30	<0.010	0.040	
07...	381	0	312	--	71	48	0.20	7.4	515	1.50	<0.010	0.040	
15...	359	0	294	--	53	55	0.20	6.6	471	1.30	0.010	0.040	
21...	300	0	246	--	58	44	0.20	4.9	415	0.800	0.020	0.060	
27...	388	0	318	--	99	57	0.20	7.8	552	1.70	<0.010	0.030	



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04072050 DUCK CREEK, AT COUNTY TRUNK HIGHWAY J, NEAR ONEIDA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAR 1993											
11...	--	--	--	--	--	--	--	--	--	--	--
APR 07...	1.4	1.3	0.150	0.100	0.070	100	62	--	--	--	--
20...	1.4	1.4	0.170	0.150	0.100	49	15	--	--	49	73
MAY 04...	1.7	1.3	0.190	0.140	0.120	69	21	17	0.8	--	--
18...	1.6	1.4	0.180	0.130	0.100	120	62	22	0.2	8	84
JUN 03...	1.2	1.0	0.160	0.130	0.100	84	32	18	0.4	57	86
09...	1.1	0.70	0.270	0.150	0.130	56	6	11	>4.0	--	--
09...	1.5	0.90	0.320	0.200	0.190	100	6	12	>4.0	207	99
10...	1.3	0.90	0.270	0.180	0.170	55	7	14	3.6	73	97
16...	1.4	1.5	0.270	0.200	0.170	160	31	23	--	30	96
30...	1.7	1.6	0.220	0.160	0.140	250	75	27	1.3	44	99
JUL 14...	1.7	1.5	0.300	0.160	0.150	310	96	25	1.1	67	93
26...	1.3	1.3	0.290	0.200	0.160	98	18	17	1.2	111	64
27...	1.5	1.3	0.250	0.210	0.170	120	20	17	1.2	34	100
AUG 04...	1.8	1.4	0.210	0.160	0.150	100	66	27	0.7	99	75
12...	1.3	1.1	0.220	0.140	0.130	49	56	18	0.6	19	100
26...	1.3	1.2	0.190	0.180	0.160	34	71	20	0.6	74	91
SEP 01...	1.0	1.0	0.200	0.170	0.170	47	51	17	0.6	74	82
07...	1.2	1.1	0.170	0.150	0.130	38	46	20	0.4	39	87
15...	1.0	0.90	0.150	0.110	0.090	52	47	14	0.5	49	92
21...	--	0.90	--	0.180	0.150	35	38	13	1.7	35	100
27...	1.0	0.90	0.160	0.120	0.130	42	31	13	0.3	46	69

DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER, DISS, REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)
MAR 1993											
11...	<0.00200	<0.00200	--	<0.01000	<0.01000	<0.02000	0.04900	<0.00500	<0.01000	<0.02000	<0.00400
APR 07...	<0.01500	<0.00800	<0.05000	0.01500	0.01200	0.14000	0.06200	<0.00800	<0.00700	<0.02000	<0.00500
20...	<0.00200	<0.00200	<0.05000	0.02700	0.008000	0.24000	0.05300	<0.00500	<0.01000	<0.00200	<0.00400
MAY 04...	<0.00200	<0.00200	<0.05000	0.12000	0.009000	0.29000	0.07900	<0.00500	<0.01000	<0.00200	<0.00400
18...	<0.00200	0.002000	<0.05000	0.17000	0.01200	0.08700	0.02000	<0.00500	<0.01000	<0.00200	<0.00500
JUN 03...	<0.00200	<0.00200	<0.05000	0.09300	0.04800	0.10000	0.92000	0.01200	<0.01000	<0.00200	<0.00400
09...	0.002000	0.004000	<0.05000	0.06400	0.01100	0.14000	4.7000	0.02500	<0.01000	<0.00200	<0.00400
09...	<0.00200	<0.00200	<0.05000	0.04100	0.01000	0.12000	2.4000	0.04200	<0.01000	<0.00200	<0.00400
10...	<0.00200	<0.00200	<0.05000	0.12000	0.02000	0.26000	2.7000	0.02200	<0.01000	<0.00200	<0.00400
16...	<0.01500	<0.00800	<0.05000	0.03100	0.01000	0.18000	0.64000	0.009000	<0.00700	<0.01000	<0.00500
30...	<0.01500	<0.00800	<0.05000	0.01300	0.01400	0.04000	0.12000	<0.00800	<0.00700	<0.01000	<0.00500
JUL 14...	<0.01500	<0.00800	<0.05000	0.01300	0.01600	0.06700	0.13000	<0.00800	<0.00700	<0.02000	<0.00500
26...	<0.01500	<0.00800	--	0.02800	0.02500	0.07500	0.82000	<0.00800	<0.00700	<0.02000	<0.00500
27...	<0.01500	<0.00800	--	0.02100	0.01100	0.04600	0.27000	<0.00800	<0.00700	<0.02000	<0.00500
AUG 04...	<0.01500	<0.00800	--	0.01100	0.01000	<0.02000	0.07800	<0.00800	<0.00700	<0.02000	<0.00500
12...	<0.01500	<0.00800	--	0.01600	0.01100	<0.02000	0.06400	<0.00800	<0.00700	<0.02000	<0.00500
26...	<0.01500	<0.00800	--	<0.01000	0.01100	<0.02000	0.02500	<0.00800	<0.00700	<0.02000	<0.00500
SEP 01...	<0.01500	<0.00800	--	<0.01000	0.01100	0.02800	0.03900	<0.00800	<0.00700	<0.02000	<0.00500
07...	<0.01500	<0.00800	--	<0.01000	0.01100	<0.02000	0.04000	<0.00800	<0.00700	<0.01000	<0.00500
15...	<0.01500	0.003000	--	<0.01000	0.01700	0.02700	0.07800	<0.00800	<0.00700	<0.01000	<0.00500
21...	<0.01500	<0.00800	--	<0.01000	0.01600	<0.02000	0.01900	<0.00800	<0.00700	<0.01000	<0.00500
27...	<0.01500	<0.00800	--	0.01700	0.02000	0.04700	0.02600	<0.00800	<0.00700	<0.01000	<0.00500

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04072050 DUCK CREEK, AT COUNTY TRUNK HIGHWAY J, NEAR ONEIDA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANALINE WAT FLT 0.7 U GF, REC (82660)
MAR 1993										
11...	<0.00800	<0.02000	0.01800	<0.01000	<0.00800	<0.00500	0.11000	<0.00500	<0.00500	<0.00200
APR										
07...	<0.01100	<0.02000	0.09000	<0.01400	<0.02200	<0.00800	0.16000	0.01400	<0.01200	<0.00600
20...	<0.00800	<0.02000	0.12000	<0.01000	<0.00800	<0.00500	0.26000	0.01900	<0.00500	<0.00200
MAY										
04...	<0.00800	<0.02000	0.14000	<0.01000	<0.00800	<0.00500	0.37000	0.02500	<0.00500	<0.00200
18...	<0.00800	<0.02000	0.02500	<0.01000	<0.00800	<0.00500	0.08200	0.004000	<0.00500	<0.00200
JUN										
03...	<0.00800	<0.02000	0.71000	<0.01000	<0.00800	<0.00500	0.41000	0.07700	<0.00500	<0.00200
09...	0.01100	<0.02000	3.0000	<0.01000	<0.00800	0.006000	3.2000	4.9000	0.03500	<0.00200
09...	<0.00800	<0.02000	4.2000	<0.01000	<0.00800	<0.00500	1.9000	1.8000	0.01400	<0.00200
10...	<0.00800	<0.02000	10.000	<0.01000	<0.00800	<0.00500	6.4000	2.3000	0.01000	<0.00200
16...	<0.01100	<0.02000	2.9000	<0.01000	<0.02200	<0.00800	2.5000	0.14000	0.008000	<0.00600
30...	<0.01100	<0.02000	0.66000	0.009000	<0.02200	<0.00800	0.89000	0.03200	<0.01200	<0.00600
JUL										
14...	<0.01100	<0.02000	0.46000	<0.01400	<0.02200	<0.00800	0.70000	0.02200	<0.01200	<0.00600
26...	<0.01100	<0.02000	0.35000	<0.01400	<0.02200	<0.00800	2.2000	0.11000	<0.01200	<0.00600
27...	<0.01100	<0.02000	0.24000	<0.01400	<0.02200	<0.00800	0.87000	0.05600	<0.01200	<0.00600
AUG										
04...	<0.01100	<0.02000	0.12000	<0.01400	<0.02200	<0.00800	0.59000	<0.00900	<0.01200	<0.00600
12...	<0.01100	<0.02000	0.12000	<0.01400	<0.02200	<0.00800	0.29000	<0.00900	<0.01200	<0.00600
26...	<0.01100	<0.02000	0.06600	<0.01400	<0.02200	<0.00800	0.16000	<0.00900	<0.01200	<0.00600
SEP										
01...	<0.01100	<0.02000	0.03300	<0.01400	<0.02200	<0.00800	0.14000	<0.00900	<0.01200	<0.00600
07...	<0.01100	<0.02000	0.03500	<0.01000	<0.02200	<0.00800	0.08600	0.002000	<0.01200	<0.00600
15...	<0.01100	<0.02000	0.02900	<0.01000	<0.02200	<0.00800	0.12000	<0.00900	<0.01200	<0.00600
21...	<0.01100	<0.02000	0.05000	<0.01000	<0.02200	<0.00800	0.08400	<0.00900	<0.01200	<0.00600
27...	<0.01100	<0.02000	0.05200	<0.01000	<0.02200	<0.00800	0.14000	<0.00900	<0.01200	<0.00600
DATE	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	DIMETH- OATE WATER FLTRD 0.7 U GG, REC (UG/L) (82662)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
MAR 1993										
11...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	<0.00200	<0.01000	<0.01000
APR										
07...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
20...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.003000	<0.01000	<0.01000
MAY										
04...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	<0.00200	<0.01000	<0.01000
18...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.03200	<0.01000	<0.01000
JUN										
03...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.06700	<0.01000	<0.01000
09...	0.007000	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.42000	<0.01000	<0.01000
09...	0.007000	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.51000	<0.01000	<0.01000
10...	0.007000	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.09600	<0.01000	<0.01000
16...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	0.01300	<0.00900	<0.01500
30...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	0.006000	<0.00900	<0.01500
JUL										
14...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
26...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00800	<0.01500
27...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
AUG										
04...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
12...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
26...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
SEP										
01...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
07...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500
15...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500
21...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500
27...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04072050 DUCK CREEK, AT COUNTY TRUNK HIGHWAY J, NEAR ONEIDA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)
MAR 1993										
11...	<0.00500	<0.00500	<0.00900	<0.00500	<0.01000	<0.01000	<0.02000	<0.00400	<0.00500	<0.00800
APR										
07...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
20...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
MAY										
04...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
18...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
JUN										
03...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
09...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
09...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
10...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
16...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
30...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
JUL										
14...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
26...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
27...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
AUG										
04...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
12...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
26...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
SEP										
01...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
07...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
15...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
21...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
27...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
DATE	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4,5-T DIS- SOLVED (UG/L) (39742)	SILVEX, DIS- SOLVED (UG/L) (39762)
MAR 1993										
11...	<0.00800	<0.00500	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	--	--	--
APR										
07...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
20...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
MAY										
04...	<0.00800	0.002000	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
18...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
JUN										
03...	<0.00800	<0.00200	0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
09...	<0.00800	<0.00200	0.05200	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
09...	<0.00800	0.003000	0.02600	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
10...	<0.00800	0.002000	0.01600	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
16...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
30...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
JUL										
14...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
26...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
27...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
AUG										
04...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
12...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
26...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
SEP										
01...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
07...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
15...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
21...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
27...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04072150 DUCK CREEK NEAR HOWARD, WI

LOCATION.--Lat 44°32'01", long 88°07'46", in SW 1/4 sec.19, T.24 N., R.20 E., Brown County, Hydrologic Unit 04030103, at County Highway FF near Howard and about 1 mi upstream from mouth.

DRAINAGE AREA.--108 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1988 to current year.

GAGE.--Continuous water-stage recorder since April 1988. Elevation of gage is 615 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 5 to Mar. 31. Records fair except for ice-affected period, which is poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	7.8	60	30	5.6	3.5	131	85	111	44	19	6.3
2	7.7	58	53	23	6.6	4.8	75	100	75	37	15	8.5
3	6.0	288	48	19	7.6	6.8	69	297	50	36	12	8.7
4	5.2	246	43	15	6.2	9.0	103	351	37	42	11	6.6
5	4.7	116	42	13	5.4	14	179	306	31	179	9.0	6.3
6	4.5	68	40	11	4.6	31	129	171	26	1760	15	5.2
7	4.4	50	37	9.0	4.1	100	105	99	22	1470	16	4.4
8	4.2	40	35	7.8	3.8	74	426	78	97	1440	15	4.1
9	3.8	40	33	6.8	3.6	60	976	73	843	1210	16	3.9
10	3.0	56	32	5.8	3.4	49	459	63	829	672	14	3.6
11	3.3	66	31	5.2	3.2	30	257	52	403	405	12	3.2
12	3.8	55	31	5.4	3.0	19	223	44	221	221	9.5	3.5
13	5.8	63	32	5.6	2.9	16	306	37	102	104	8.0	5.0
14	6.2	66	35	5.4	2.8	14	258	33	99	80	7.1	7.1
15	6.3	46	70	5.2	2.7	12	215	31	195	70	18	7.1
16	6.9	37	170	4.9	2.6	11	759	27	114	58	18	7.0
17	6.4	32	600	5.0	2.5	12	675	24	454	47	13	6.9
18	6.3	29	410	4.6	2.5	14	494	22	2050	126	11	6.8
19	7.9	27	240	4.5	2.5	13	440	22	1530	265	9.0	5.6
20	10	107	140	4.7	2.7	12	670	20	979	123	7.4	10
21	11	1160	98	4.7	2.8	11	900	19	823	66	6.5	31
22	11	1530	64	5.0	2.7	11	435	16	444	43	5.9	42
23	18	669	50	5.4	2.5	18	227	22	232	33	6.8	29
24	14	417	44	7.0	2.3	25	152	30	119	27	6.3	20
25	13	313	54	7.2	2.1	68	111	34	230	101	5.3	15
26	11	218	76	6.4	2.1	210	86	31	362	235	5.0	12
27	10	142	100	6.0	2.4	520	73	27	197	94	5.9	9.2
28	9.0	107	84	5.4	2.8	440	159	23	102	60	5.7	9.1
29	8.5	93	62	5.2	---	370	233	21	68	40	5.6	8.8
30	8.0	66	49	5.0	---	280	121	29	52	30	8.3	8.2
31	7.9	---	37	6.4	---	230	---	80	---	23	6.7	---
TOTAL	238.8	6212.8	2900	254.6	98.0	2688.1	9446	2267	10897	9141	323.0	304.1
MEAN	7.70	207	93.5	8.21	3.50	86.7	315	73.1	363	295	10.4	10.1
MAX	18	1530	600	30	7.6	520	976	351	2050	1760	19	42
MIN	3.0	7.8	31	4.5	2.1	3.5	69	16	22	23	5.0	3.2
CFSM	.07	1.92	.87	.08	.03	.80	2.92	.68	3.36	2.73	.10	.09
IN.	.08	2.14	1.00	.09	.03	.93	3.25	.78	3.75	3.15	.11	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1993, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
MEAN	7.66	59.6	35.8	5.04	4.07	174	170	48.0	128	52.0	4.14	12.8
MAX	20.9	207	93.5	9.28	10.1	250	315	109	370	295	11.0	36.8
(WY)	1991	1993	1993	1992	1991	1991	1993	1990	1990	1993	1990	1990
MIN	.26	1.81	.59	.11	.51	86.7	9.40	2.79	.000	.000	.000	.000
(WY)	1989	1990	1990	1990	1989	1993	1990	1988	1988	1988	1988	1989

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1988 - 1993

ANNUAL TOTAL	26507.44	44770.4	62.5	1993
ANNUAL MEAN	72.4	123	22.3	1989
HIGHEST ANNUAL MEAN			123	1993
LOWEST ANNUAL MEAN			22.3	1989
HIGHEST DAILY MEAN	1530	Nov 22	3690	Jun 23 1990
LOWEST DAILY MEAN	.00	Many days	.00	Many days
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 7	.00	Many periods
INSTANTANEOUS PEAK FLOW			(a)4520	Jun 23 1990
INSTANTANEOUS PEAK STAGE			(b)21.00	Jun 23 1990
ANNUAL RUNOFF (CFSM)	.67		.58	
ANNUAL RUNOFF (INCHES)	9.13		7.86	
10 PERCENT EXCEEDS	207		114	
50 PERCENT EXCEEDS	11		6.4	
90 PERCENT EXCEEDS	.00		.00	

(a) Based on rating curve extended above 1,500 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow

(b) Estimated from floodmarks



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04072150 DUCK CREEK NEAR HOWARD, WI--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to December 1992 (discontinued).

INSTRUMENTATION.--Water-quality sampler since April 1988.

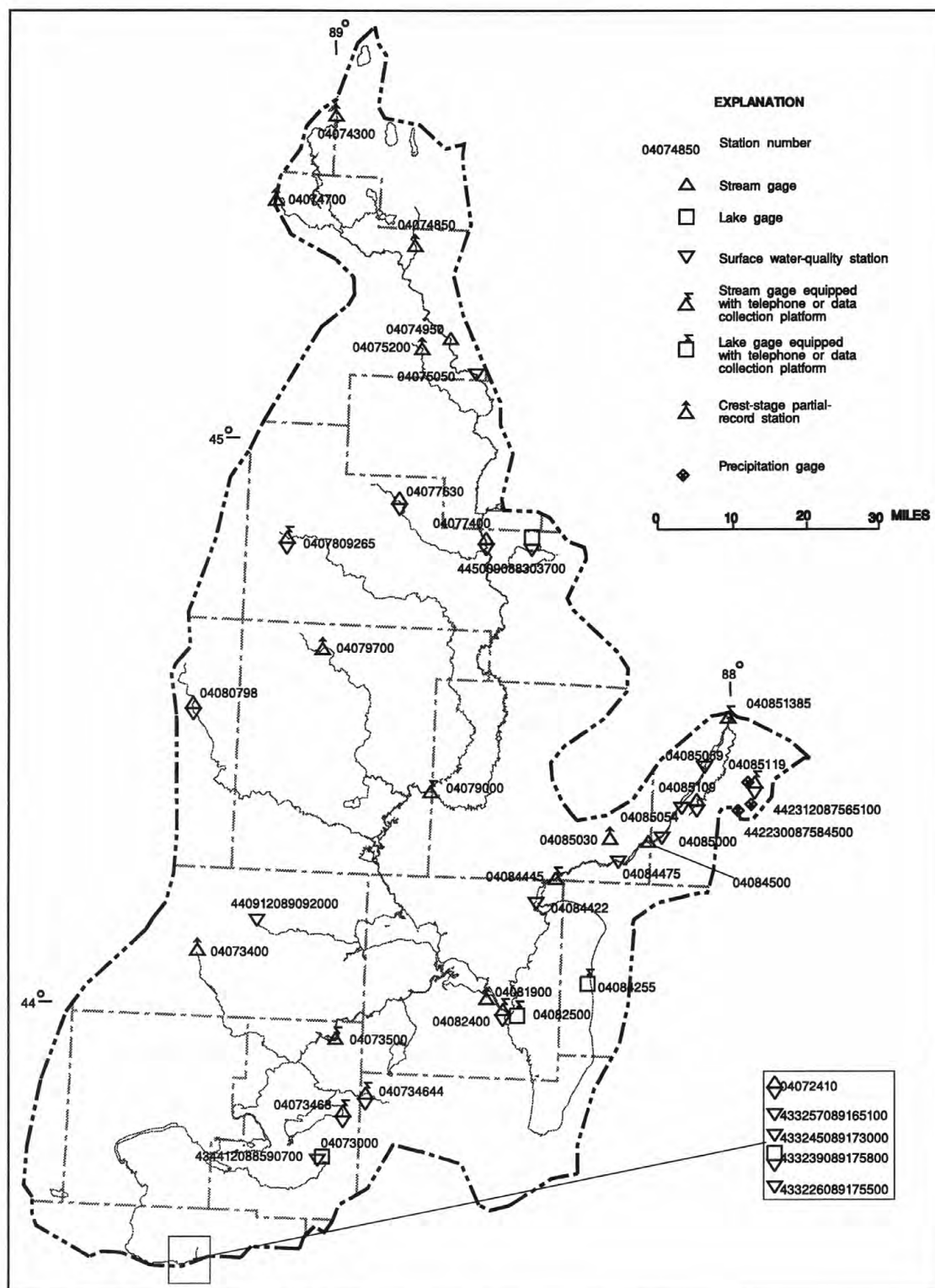
REMARKS.--Samples are point samples unless otherwise noted.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + DIS- ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1992							
22...	0500	10	0.170	0.020	0.90	0.130	0.100
23...	0400	19	0.300	0.030	1.0	0.140	0.080
27...	0300	9.9	0.350	0.020	1.0	0.080	0.050
28...	0300	9.1	0.370	0.020	1.0	0.070	0.040
29...	0300	8.3	0.240	0.020	0.90	0.060	0.030
*29...	1225	8.3	0.170	0.030	0.90	0.060	0.030
29...	1226	8.3	0.170	0.020	1.1	0.080	0.030
NOV							
01...	0300	7.4	0.300	0.040	1.2	0.080	0.020
02...	0100	15	0.380	0.040	1.1	0.100	0.020
02...	0445	45	0.400	0.040	2.3	0.320	0.020
02...	0500	67	0.420	0.040	2.1	0.330	0.030
02...	2100	101	1.60	0.040	1.2	0.310	0.270
03...	0745	284	1.80	0.060	1.4	0.240	0.250
03...	1300	320	2.40	0.030	2.6	0.590	0.210
04...	0100	309	3.20	0.020	2.3	0.540	0.240
18...	1400	28	3.50	0.040	1.0	0.100	0.060
20...	0615	38	3.10	0.030	1.0	0.110	0.050
20...	1100	56	2.30	0.040	0.90	0.130	0.060
20...	1315	79	2.10	0.020	0.90	0.150	0.060
20...	1515	110	1.90	0.010	1.0	0.210	0.080
20...	1730	143	2.00	0.020	1.1	0.260	0.110
20...	2100	221	2.70	0.040	1.2	0.270	0.160
24...	0400	460	4.00	0.060	1.4	0.230	0.150
DEC							
*09...	1620	36	4.30	0.090	1.0	0.070	0.050
09...	1621	36	4.30	0.090	1.0	0.090	0.050

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)
DEC 1992						
09...	1620	36	938	7.3	0.5	13.3

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04072410 FOX RIVER NEAR PARDEEVILLE, WI

LOCATION.--Lat 43°34'12", long 89°16'06" in NE 1/4 NE 1/4 sec.35, T.13 N., R.10 E., Columbia County, Hydrologic Unit 04030201, on left bank 30 ft upstream from bridge on State Highway 33, 2.7 mi northeast of Pardeeville.

DRAINAGE AREA.--48.4 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1992 to November 1993 (discontinued).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 810 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: June 20-23, Aug. 12, and ice-affected periods, Dec. 24-25, 31, Jan. 1, 5-8, 16-30, Feb. 12-14, 17-18, 24-28, and Mar. 11-16. Records good, except those for ice-affected periods and August to November, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	17	37	35	23	19	166	73	67	45	45	32
2	---	31	34	33	24	18	148	74	62	44	42	30
3	---	40	32	28	26	18	122	82	59	49	38	29
4	---	42	30	27	26	21	109	83	53	85	38	27
5	---	36	26	27	26	23	99	86	47	177	38	24
6	---	29	27	26	25	25	89	81	42	246	43	23
7	---	23	25	24	27	39	80	73	45	283	45	22
8	---	21	24	23	25	74	94	73	77	242	41	23
9	---	22	23	22	24	133	108	78	119	269	44	23
10	---	21	24	21	24	112	98	75	105	258	55	23
11	---	20	24	20	21	90	100	68	95	195	62	22
12	---	22	24	20	21	70	109	63	85	158	54	23
13	---	25	25	23	20	50	98	51	64	138	48	29
14	---	25	25	23	20	35	84	44	50	121	44	43
15	---	23	34	22	20	30	111	40	51	103	47	53
16	---	21	61	21	20	33	184	37	49	83	58	56
17	---	21	79	20	20	43	189	33	49	71	62	50
18	---	21	71	18	19	52	191	36	65	146	56	45
19	---	19	67	17	19	52	169	39	89	187	54	37
20	---	30	62	17	19	36	210	37	110	135	48	38
21	---	66	61	17	19	21	231	35	96	117	42	47
22	---	94	50	18	19	21	227	33	82	106	38	50
23	---	86	35	19	19	25	195	38	64	89	36	46
24	---	80	32	20	18	43	154	55	50	75	37	39
25	---	77	30	23	17	108	126	67	51	79	34	35
26	---	76	27	21	17	186	107	67	55	93	31	42
27	---	66	25	20	17	209	92	63	53	82	29	44
28	---	54	24	18	18	212	85	54	48	70	28	44
29	---	46	27	17	---	219	81	50	39	66	30	41
30	---	41	31	19	---	199	76	52	41	59	31	37
31	---	---	34	22	---	191	---	61	---	49	34	---
TOTAL	---	1195	1130	681	593	2407	3932	1801	1962	3920	1332	1077
MEAN	---	39.8	36.5	22.0	21.2	77.6	131	58.1	65.4	126	43.0	35.9
MAX	---	94	79	35	27	219	231	86	119	283	62	56
MIN	---	17	23	17	17	18	76	33	39	44	28	22
CFSM	---	.82	.75	.45	.44	1.60	2.71	1.20	1.35	2.61	.89	.74
IN.	---	.92	.87	.52	.46	1.85	3.02	1.38	1.51	3.01	1.02	.83

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04072410 FOX RIVER NEAR PARDEEVILLE, WI

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DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1993 TO SEPTEMBER 1994  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	28	---	---	---	---	---	---	---	---	---	---
2	33	29	---	---	---	---	---	---	---	---	---	---
3	31	28	---	---	---	---	---	---	---	---	---	---
4	29	29	---	---	---	---	---	---	---	---	---	---
5	28	29	---	---	---	---	---	---	---	---	---	---
6	29	29	---	---	---	---	---	---	---	---	---	---
7	27	28	---	---	---	---	---	---	---	---	---	---
8	28	29	---	---	---	---	---	---	---	---	---	---
9	38	30	---	---	---	---	---	---	---	---	---	---
10	39	28	---	---	---	---	---	---	---	---	---	---
11	38	28	---	---	---	---	---	---	---	---	---	---
12	36	29	---	---	---	---	---	---	---	---	---	---
13	32	35	---	---	---	---	---	---	---	---	---	---
14	30	38	---	---	---	---	---	---	---	---	---	---
15	29	40	---	---	---	---	---	---	---	---	---	---
16	33	39	---	---	---	---	---	---	---	---	---	---
17	34	37	---	---	---	---	---	---	---	---	---	---
18	35	35	---	---	---	---	---	---	---	---	---	---
19	34	33	---	---	---	---	---	---	---	---	---	---
20	33	30	---	---	---	---	---	---	---	---	---	---
21	41	28	---	---	---	---	---	---	---	---	---	---
22	44	28	---	---	---	---	---	---	---	---	---	---
23	43	28	---	---	---	---	---	---	---	---	---	---
24	40	29	---	---	---	---	---	---	---	---	---	---
25	36	29	---	---	---	---	---	---	---	---	---	---
26	33	40	---	---	---	---	---	---	---	---	---	---
27	31	47	---	---	---	---	---	---	---	---	---	---
28	31	44	---	---	---	---	---	---	---	---	---	---
29	32	39	---	---	---	---	---	---	---	---	---	---
30	31	32	---	---	---	---	---	---	---	---	---	---
31	29	---	---	---	---	---	---	---	---	---	---	---
TOTAL	1041	975	---	---	---	---	---	---	---	---	---	---
MEAN	33.6	32.5	---	---	---	---	---	---	---	---	---	---
MAX	44	47	---	---	---	---	---	---	---	---	---	---
MIN	27	28	---	---	---	---	---	---	---	---	---	---
CFSM	.69	.67	---	---	---	---	---	---	---	---	---	---
IN.	.80	.75	---	---	---	---	---	---	---	---	---	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1994, BY WATER YEAR (WY)

MEAN	33.6	36.2	36.5	22.0	21.2	77.6	131	58.1	65.4	126	43.0	35.9
MAX	33.6	39.8	36.5	22.0	21.2	77.6	131	58.1	65.4	126	43.0	35.9
(WY)	1994	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	33.6	32.5	36.5	22.0	21.2	77.6	131	58.1	65.4	126	43.0	35.9
(WY)	1994	1994	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

SUMMARY STATISTICS

FOR 1993 CALENDAR YEAR

FOR 1994 WATER YEAR

WATER YEARS 1993 - 1994

HIGHEST DAILY MEAN	283	Jul 7	47	Nov 27	283	Jul 7 1993
LOWEST DAILY MEAN	17	Jan 19	27	Oct 7	(a)17	Nov 1 1992
ANNUAL SEVEN-DAY MINIMUM	18	Feb 24	29	Nov 1	18	Feb 24 1993
INSTANTANEOUS PEAK FLOW			48	Nov 27	296	Jul 7 1993
INSTANTANEOUS PEAK STAGE			4.69	Nov 27	7.08	Jul 7 1993
10 PERCENT EXCEEDS	119		40		108	
50 PERCENT EXCEEDS	39		31		37	
90 PERCENT EXCEEDS	21		28		20	

(a) Also occurred Jan. 19-21, 29, and Feb. 25-27, 1993



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04072410 FOX RIVER NEAR PARDEEVILLE, WI--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1992 to December 1993 (discontinued).

WATER-QUALITY DATA, SEPTEMBER 1992 TO DECEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
SEP 1992				JUN 1993			
08...	1430	14	0.100	03...	1540	57	0.090
NOV				04...	1110	52	0.100
04...	0950	42	0.090	08...	1915	87	0.150
18...	1430	21	0.040	09...	1845	118	0.150
24...	1530	80	0.120	10...	1430	103	0.190
DEC				11...	0915	96	0.160
04...	1230	30	0.050	14...	1805	51	0.160
15...	1440	33	0.050	16...	1425	50	0.160
17...	1010	79	0.130	26...	0923	55	0.180
18...	1405	71	0.130	27...	1215	52	0.170
19...	1545	67	0.120	28...	2050	45	0.140
21...	1440	61	0.100	30...	1945	42	0.120
22...	1545	49	0.070	JUL			
23...	0910	38	0.060	01...	1805	45	0.110
JAN 1993				03...	1655	47	0.130
11...	1245	20	0.040	04...	1710	98	0.750
20...	0945	16	0.050	05...	2050	218	0.190
FEB				06...	1140	238	0.220
02...	1435	32	0.080	09...	1945	272	0.180
MAR				12...	1415	156	0.180
01...	1545	20	0.030	14...	1850	115	0.170
08...	1510	78	1.23	19...	1000	193	0.240
16...	1015	33*	0.120	20...	0835	140	0.190
24...	1040	40	0.340	22...	0905	108	0.180
25...	0955	99	0.430	25...	0955	76	0.170
25...	1525	150	0.270	30...	2045	55	0.130
25...	1805	136	0.570	AUG			
26...	1037	193	0.590	05...	2005	38	0.080
26...	1810	196	0.600	09...	1845	48	0.080
27...	1340	209	0.540	12...	1340	54*	0.130
28...	1330	204	0.430	17...	1815	62	0.130
29...	1525	220	0.360	22...	1805	37	0.100
31...	0955	186	0.220	27...	1920	29	0.090
31...	1140	188	0.210	SEP			
APR				01...	1345	33	0.100
02...	0950	152	0.150	04...	1925	25	0.080
04...	1445	110	0.120	10...	1815	24	0.070
06...	1020	89	0.100	18...	1745	43	0.070
08...	1015	93	0.090	23...	1925	44	0.070
10...	1920	95	0.100	OCT			
12...	1045	110	0.080	03...	1620	30	0.050
15...	0850	93	0.070	06...	1115	30	0.060
15...	1050	102	0.080	09...	1605	39	0.070
16...	1020	190	0.080	16...	1730	33	0.040
17...	0945	183	0.090	NOV			
19...	1035	163	0.060	01...	1050	28	0.040
21...	1115	233	0.070	02...	0845	28	0.040
27...	0807	93	0.060	07...	1330	28	0.030
28...	1055	86	0.060	09...	1225	31	0.040
MAY				13...	0910	34	0.040
04...	1005	82	0.080	15...	1010	40	0.040
11...	1640	68	0.180	DEC			
19...	1800	39	0.090	08...	0810	29	0.050
26...	1750	67	0.110				

\* DAILY MEAN DISCHARGE

STREAMS TRIBUTARY TO LAKE MICHIGAN

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433257089165100 PARK LAKE (SITE 4) AT PARDEEVILLE, WI

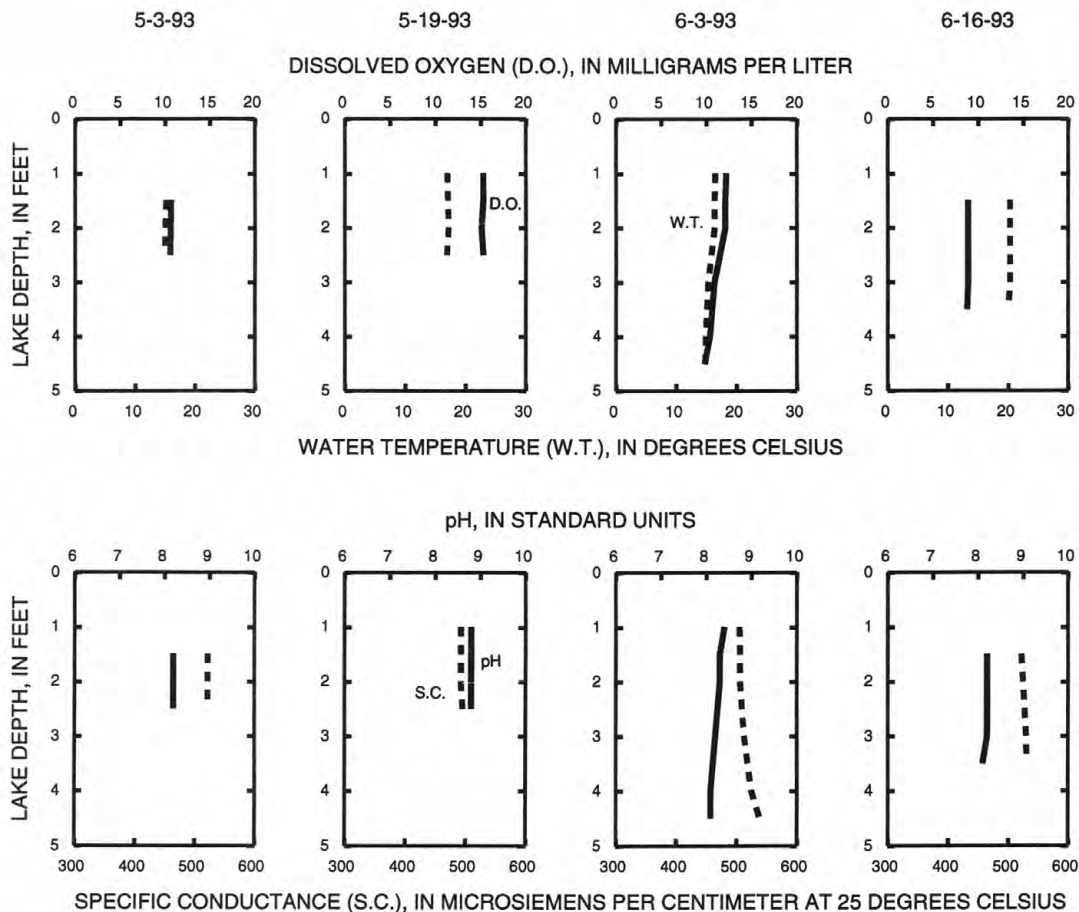
LOCATION.--Lat 43°32'57", long 89°16'51", in NE 1/4 NW 1/4 sec. 2, T.12 N., R.10 E, Columbia County, Hydrologic Unit 04030201, at Pardeeville.

PERIOD OF RECORD.--May to November 1993 (discontinued).

REMARKS.--Lake sampled at lake depth of about 5 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MAY 03 TO JUNE 16, 1993  
(Milligrams per liter unless otherwise indicated)

	May 03	May 19	June 03	June 16
Depth of sample (ft)	1.5	1.5	1.5	1.5
Lake stage (ft)	7.92	7.54	7.88	7.81
Specific conductance (μS/cm)	522	493	506	522
pH (units)	8.2	8.8	8.3	8.2
Water temperature (°C)	15.0	17.0	16.5	20.5
Secchi-depth (meters)	1.5	0.8	1.8	1.2
Dissolved oxygen	10.7	15.3	12.1	8.9
Phosphorus, total (as P)	0.068	0.111	0.054	0.098

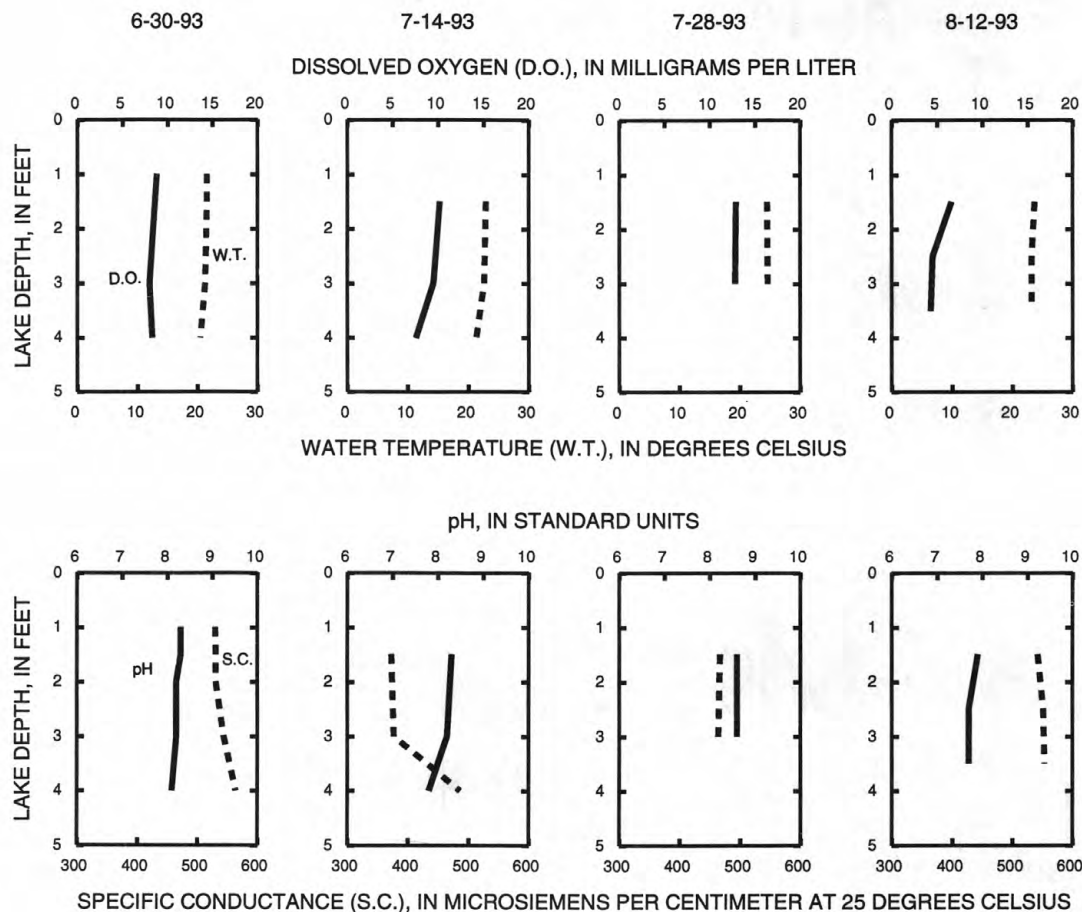


## STREAMS TRIBUTARY TO LAKE MICHIGAN

433257089165100 PARK LAKE (SITE 4) AT PARDEEVILLE, WI--CONTINUED

WATER-QUALITY DATA, JUNE 30 TO AUGUST 12, 1993  
(Milligrams per liter unless otherwise indicated)

	June 30	July 14	July 28	Aug. 12
Depth of sample (ft)	1.5	1.5	1.5	1.5
Lake stage (ft)	7.77	7.95	7.65	7.78
Specific conductance ( $\mu\text{S}/\text{cm}$ )	531	373	467	542
pH (units)	8.3	8.3	8.6	7.9
Water temperature ( $^{\circ}\text{C}$ )	21.5	23.0	24.5	23.5
Secchi-depth (meters)	1.0	0.7	0.7	1.1
Dissolved oxygen	8.6	10.2	12.9	6.6
Phosphorus, total (as P)	0.075	0.158	0.114	0.064



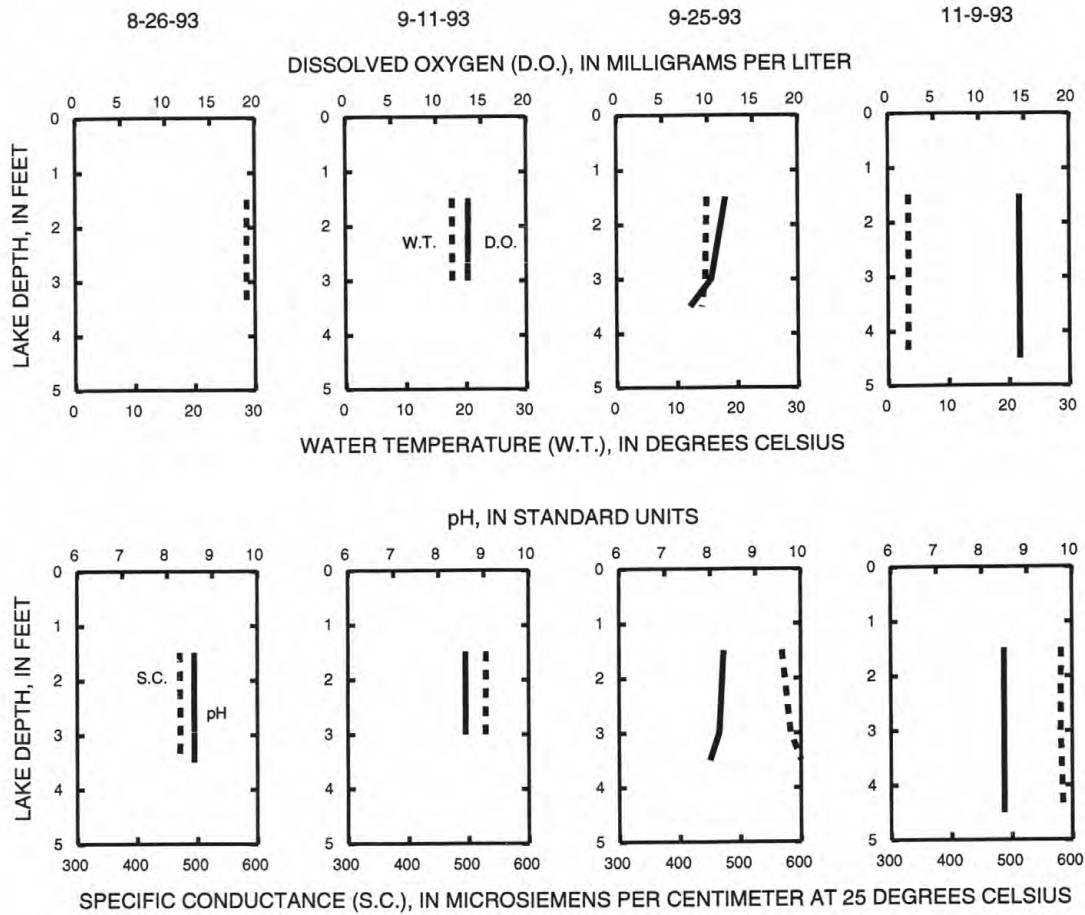
STREAMS TRIBUTARY TO LAKE MICHIGAN

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433257089165100 PARK LAKE (SITE 4) AT PARDEEVILLE, WI--CONTINUED

WATER-QUALITY DATA, AUGUST 26 TO NOVEMBER 09, 1993  
(Milligrams per liter unless otherwise indicated)

	Aug. 26	Sep. 11	Sep. 25	Nov. 09
Depth of sample (ft)	1.5	1.5	1.5	1.5
Lake stage (ft)	7.54	7.32	7.58	7.78
Specific conductance ( $\mu\text{S}/\text{cm}$ )	471	529	569	582
pH (units)	8.6	8.6	8.3	8.5
Water temperature ( $^{\circ}\text{C}$ )	28.5	17.5	15.0	3.5
Secchi-depth (meters)	0.6	0.6	0.8	1.7
Dissolved oxygen	>15.0	13.6	12.0	14.5
Phosphorus, total (as P)	0.125	0.081	0.104	0.028





## STREAMS TRIBUTARY TO LAKE MICHIGAN

433245089173000 PARK LAKE (SITE 3) AT PARDEEVILLE, WI

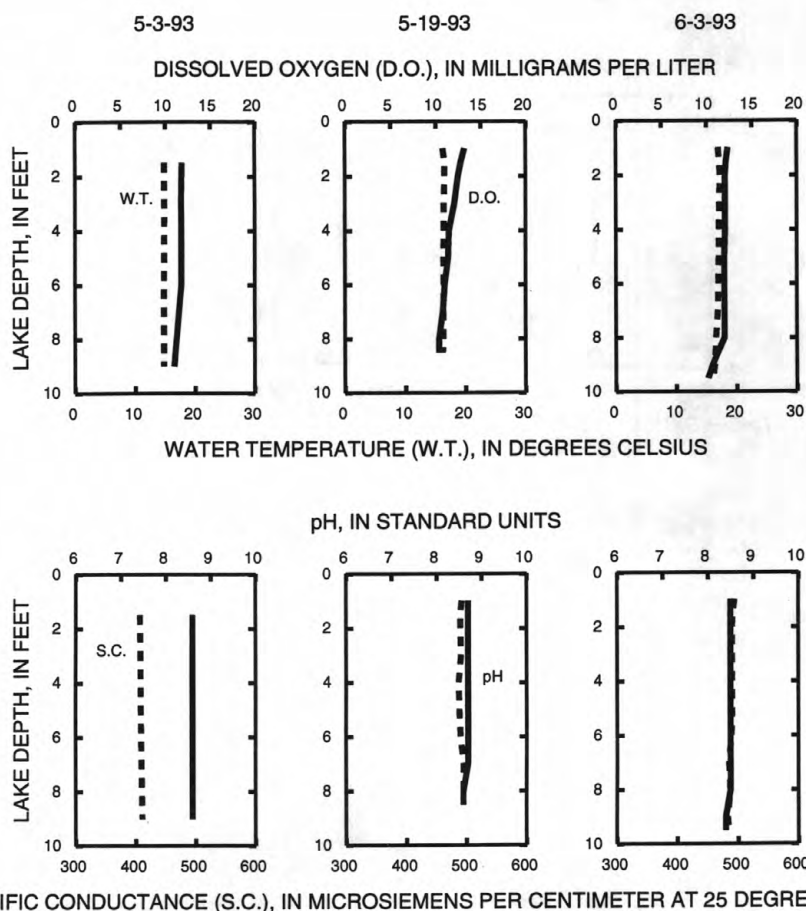
LOCATION.--Lat 43°32'45", long 89°17'30", in NW 1/4 NE 1/4 sec. 3, T.12 N., R.10 E, Columbia County, Hydrologic Unit 04030201, at Pardeeville.

PERIOD OF RECORD.--May to November 1993 (discontinued).

REMARKS.--Lake sampled at lake depth of about 10 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MAY 03 TO JUNE 03, 1993  
(Milligrams per liter unless otherwise indicated)

	May 03		May 19		June 03		
Depth of sample (ft)	1.5	9.0	1.5	8.5	1.5	7.0	9.5
Lake stage (ft)	7.92		7.54		7.88		
Specific conductance (μS/cm)	407	411	490	495	491	485	485
pH (units)	8.6	8.6	8.7	8.6	8.5	8.5	8.4
Water temperature (°C)	15.0	15.0	16.5	16.0	17.0	17.0	16.0
Color (Pt-Co. scale)	45	---	---	---	---	---	---
Turbidity (NTU)	3.4	---	---	---	---	---	---
Secchi-depth (meters)	0.9		0.6		1.2		
Dissolved oxygen	11.9	11.0	12.8	10.4	12.2	12.0	10.2
Hardness, as CaCO <sub>3</sub>	220	---	---	---	---	---	---
Calcium, dissolved (Ca)	47	---	---	---	---	---	---
Magnesium, dissolved (Mg)	25	---	---	---	---	---	---
Sodium, dissolved (Na)	3.8	---	---	---	---	---	---
Potassium, dissolved (K)	3	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	190	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	17	---	---	---	---	---	---
Chloride, dissolved (Cl)	11	---	---	---	---	---	---
Fluoride, dissolved (F)	0.1	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	2.9	---	---	---	---	---	---
Solids, dissolved, at 180°C	244	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	0.31	0.32	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	0.31	0.32	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	0.02	0.02	---	---	---	---	---
Nitrogen, organic, total (as N)	1.1	0.98	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	1.1	1.0	---	---	---	---	---
Nitrogen, total (as N)	1.4	1.3	---	---	---	---	---
Phosphorus, total (as P)	0.073	0.059	0.093	0.110	0.048	0.050	0.040
Phosphorus, ortho, dissolved (as P)	0.002	0.002	---	---	---	---	---
Iron, dissolved (Fe) μg/L	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) μg/L	<40	---	---	---	---	---	---
Chlorophyll a, phytoplankton (μg/L)	55	---	67	---	24	---	---



STREAMS TRIBUTARY TO LAKE MICHIGAN

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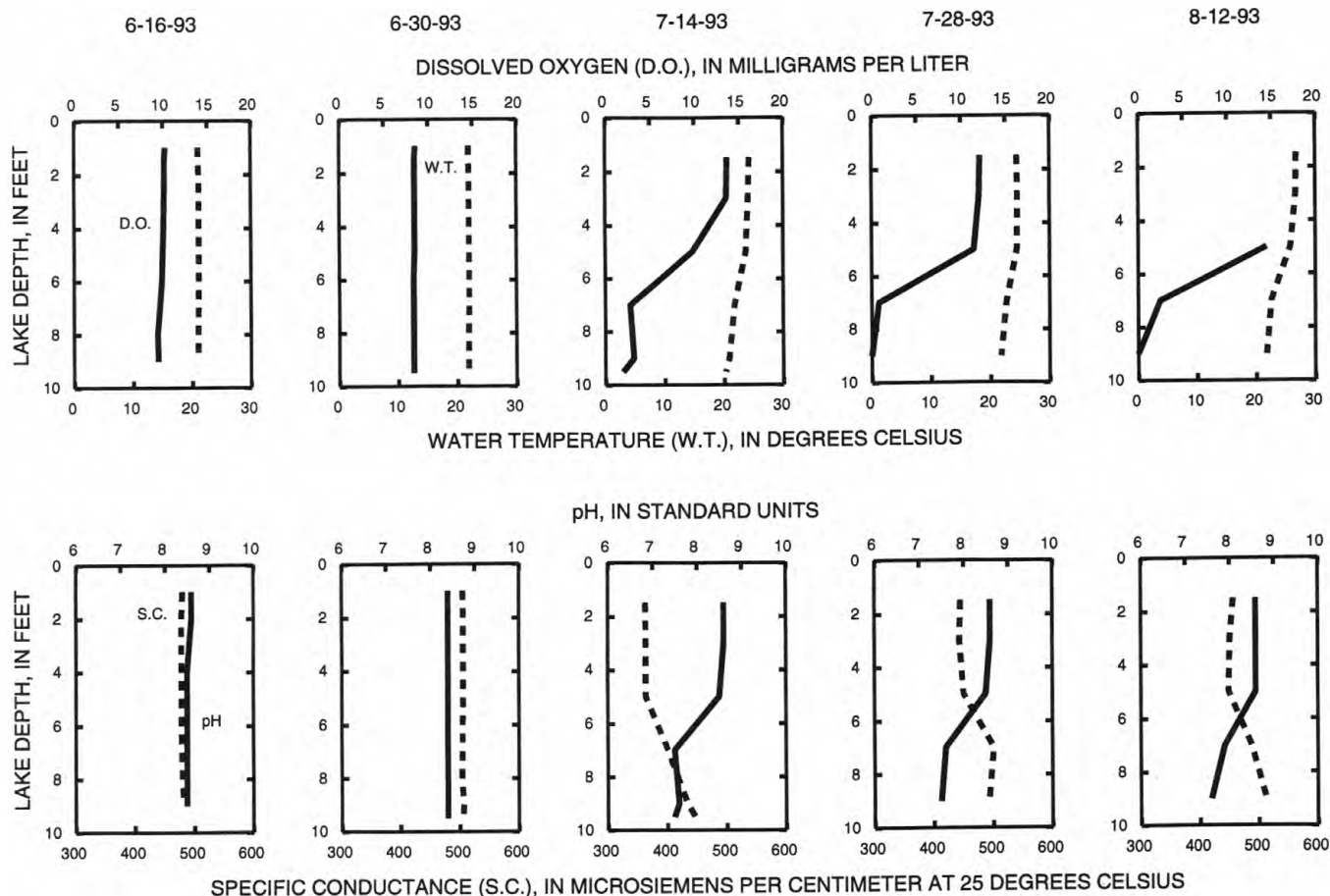
433245089173000 PARK LAKE (SITE 3) AT PARDEEVILLE, WI

WATER-QUALITY DATA, JUNE 16 TO AUGUST 12, 1993  
(Milligrams per liter unless otherwise indicated)

	June 16			June 30			July 14		
Depth of sample (ft)	1.5	6.0	9.0	1.5	7.0	9.5	1.5	7.0	9.5
Lake stage (ft)	7.81			7.77			7.95		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	479	478	482	506	505	506	363	401	447
pH (units)	8.6	8.5	8.5	8.4	8.4	8.4	8.6	7.5	7.5
Water temperature ( $^{\circ}\text{C}$ )	21.0	21.0	21.0	22.0	22.0	22.0	24.5	22.0	20.5
Secchi-depth (meters)	1.0			0.6			0.6		
Dissolved oxygen	10.2	9.9	9.5	8.5	8.4	8.4	13.7	2.8	2.0
Phosphorus, total (as P)	0.066	0.080	0.070	0.089	0.090	0.090	0.230	0.200	0.180
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	55	---	---	61	---	---	98	---	---

	July 28			Aug. 12		
Depth of sample (ft)	1.5	7.0	9.0	1.5	7.0	9.0
Lake stage (ft)	7.65			7.78		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	445	501	493	457	488	513
pH (units)	8.6	7.6	7.5	8.6	7.9	7.6
Water temperature ( $^{\circ}\text{C}$ )	24.5	22.5	22.0	27.0	22.5	22.0
Secchi-depth (meters)	0.7			0.6		
Dissolved oxygen	12.2	0.8	0.0	>15.0	2.5	0.0
Phosphorus, total (as P)	0.120	0.100	0.140	0.080	0.060	0.070
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	86	---	---	74	---	---

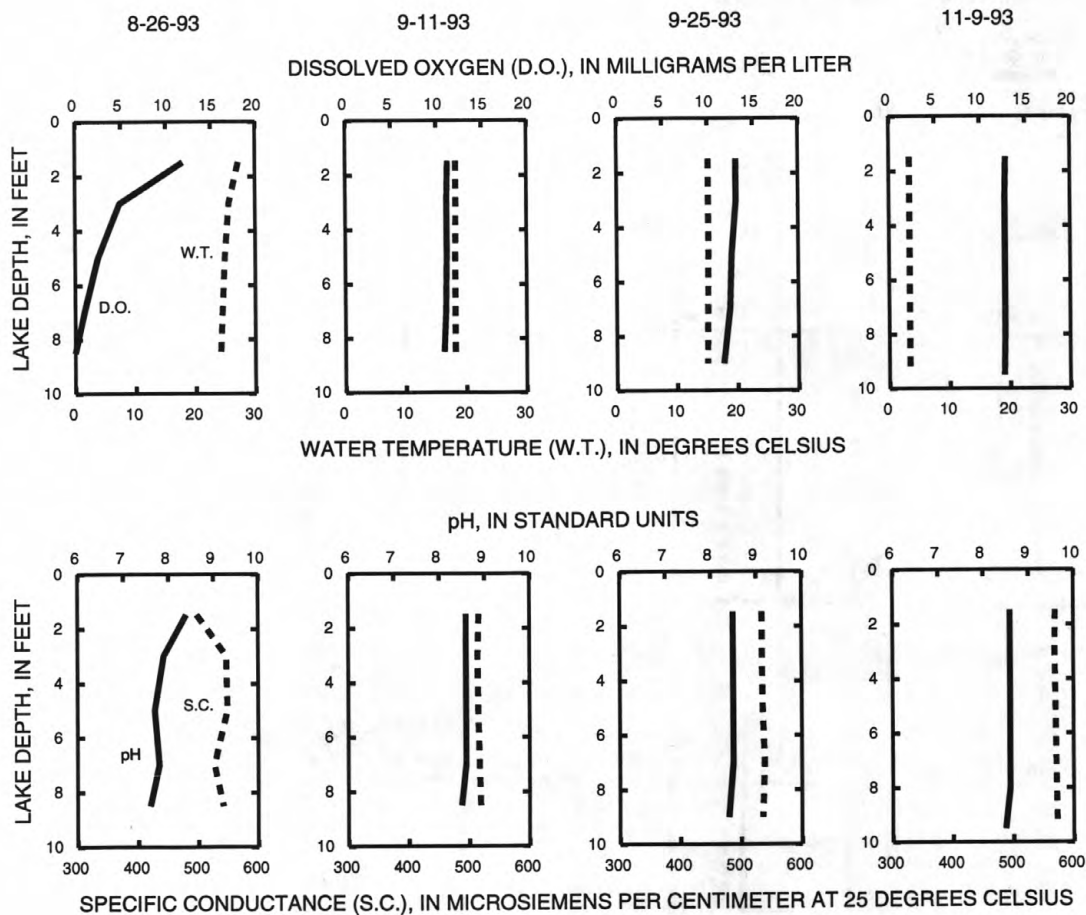


## STREAMS TRIBUTARY TO LAKE MICHIGAN

433245089173000 PARK LAKE (SITE 3) AT PARDEEVILLE, WI

WATER-QUALITY DATA, AUGUST 26 TO NOVEMBER 09, 1993  
(Milligrams per liter unless otherwise indicated)

	Aug. 26			Sep. 11			Sep. 25			Nov. 09	
Depth of sample (ft)	1.5	7.0	8.5	1.5	7.0	8.5	1.5	7.0	9.0	1.5	9.5
Lake stage (ft)		7.54			7.32			7.58			7.78
Specific conductance ( $\mu\text{S}/\text{cm}$ )	498	527	542	516	517	519	535	539	536	570	573
pH (units)	8.4	7.8	7.6	8.6	8.6	8.5	8.5	8.5	8.4	8.6	8.5
Water temperature ( $^{\circ}\text{C}$ )	27.0	24.5	24.0	18.5	18.0	18.0	15.0	15.0	15.0	3.5	3.5
Secchi-depth (meters)		0.9			0.5			0.8			1.3
Dissolved oxygen	11.9	1.0	0.0	11.3	11.1	10.9	13.2	12.5	11.8	12.9	12.7
Phosphorus, total (as P)	0.060	0.080	0.220	0.079	0.090	0.090	0.076	0.060	0.050	0.034	0.035
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	45	---	---	95	---	---	74	---	---	30	---



433239089175800 PARK LAKE AT PARDEEVILLE, WI

LOCATION.--Lat 43°32'39", long 89°17'58", in NE 1/4 NW 1/4 sec. 3, T.12 N., R.10 E, Columbia County, Hydrologic Unit 04030201, at Pardeeville.

DRAINAGE AREA.--48.4 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1986 to August 1987, May to November 1993 (discontinued).

REMARKS.--Lake sampled near dam at lake outlet. Water-quality analyses by U.S. Geological Survey National Water Quality Laboratory through April 1987, and Wisconsin State Laboratory of Hygiene thereafter.

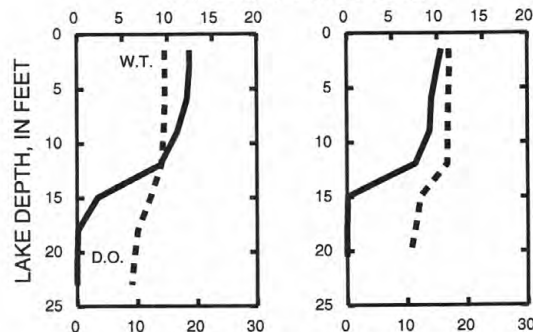
WATER-QUALITY DATA, MAY 03 TO 19, 1993  
(Milligrams per liter unless otherwise indicated)

	May 03		May 19				
Depth of sample (ft)	1.5	23	1.5	12	14	16	20
Lake stage (ft)	7.92		7.54				
Specific conductance (μS/cm)	389	381	477	481	---	---	411
pH (units)	8.7	7.5	8.6	8.4	---	---	7.5
Water temperature (°C)	14.5	9.0	17.0	16.5	---	---	10.5
Color (Pt-Co. scale)	45	---	---	---	---	---	---
Turbidity (NTU)	2.8	---	---	---	---	---	---
Secchi-depth (meters)	1.1	---	0.8	---	---	---	---
Dissolved oxygen	12.5	0.0	10.5	7.6	---	---	0.0
Hardness, as CaCO <sub>3</sub>	210	---	---	---	---	---	---
Calcium, dissolved (Ca)	44	---	---	---	---	---	---
Magnesium, dissolved (Mg)	24	---	---	---	---	---	---
Sodium, dissolved (Na)	4.1	---	---	---	---	---	---
Potassium, dissolved (K)	3	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	180	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	17	---	---	---	---	---	---
Chloride, dissolved (Cl)	10	---	---	---	---	---	---
Fluoride, dissolved (F)	0.1	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	2.7	---	---	---	---	---	---
Solids, dissolved, at 180°C	234	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	0.23	0.17	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	0.23	0.17	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	0.01	0.59	---	---	---	---	---
Nitrogen, organic, total (as N)	0.99	0.91	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	1.0	1.5	---	---	---	---	---
Nitrogen, total (as N)	1.2	1.7	---	---	---	---	---
Phosphorus, total (as P)	0.065	0.069	0.066	0.130	0.070	0.070	0.070
Phosphorus, ortho, dissolved (as P)	0.002	0.003	---	---	---	---	---
Iron, dissolved (Fe) μg/L	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) μg/L	<40	---	---	---	---	---	---
Chlorophyll a, phytoplankton (μg/L)	49	---	46	---	---	---	---

5-3-93

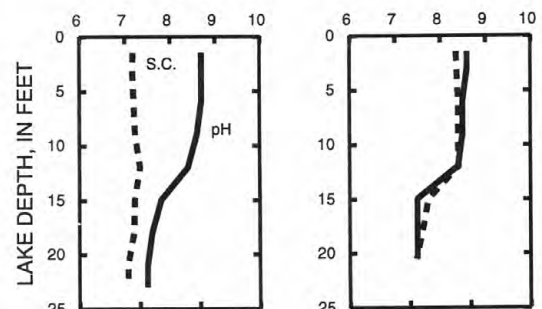
5-19-93

DISSOLVED OXYGEN (D.O.),  
IN MILLIGRAMS PER LITER



WATER TEMPERATURE (W.T.),  
IN DEGREES CELSIUS

pH, IN STANDARD UNITS



SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS  
PER CENTIMETER AT 25 DEGREES CELSIUS



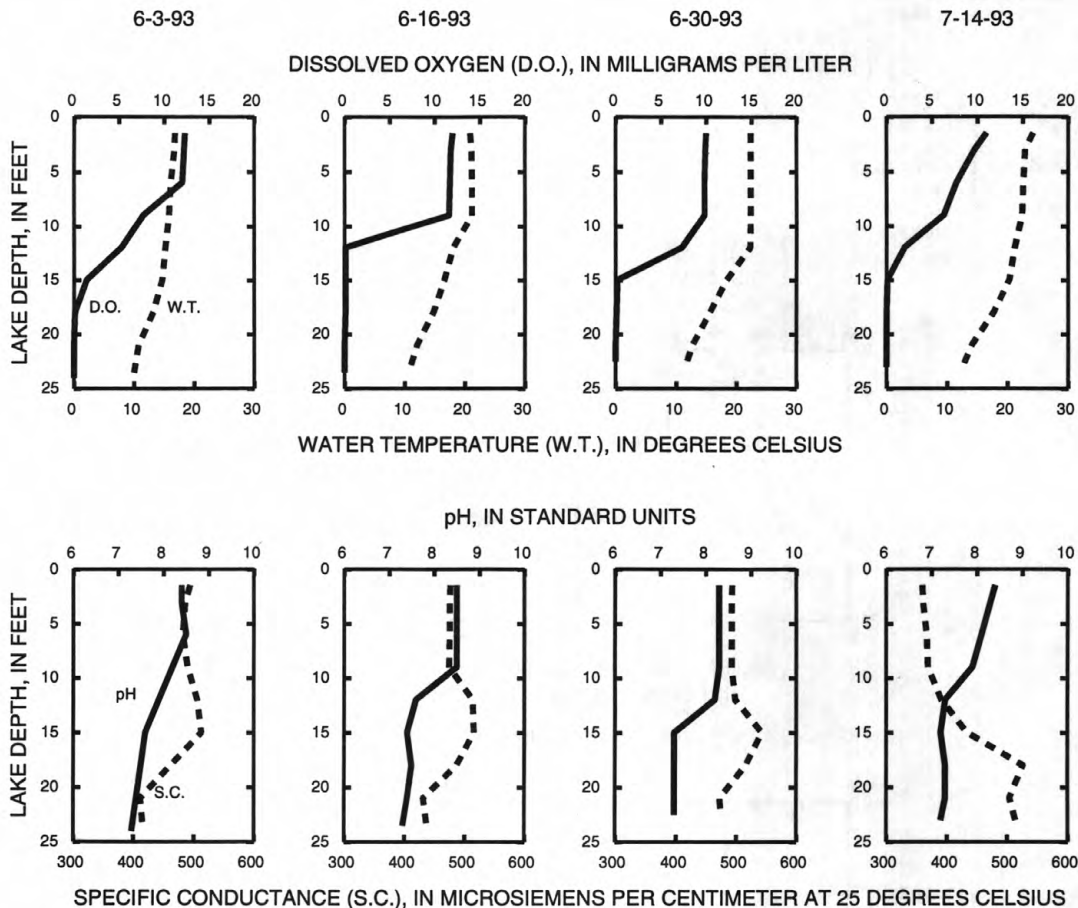
STREAMS TRIBUTARY TO LAKE MICHIGAN  
433239089175800 PARK LAKE AT PARDEEVILLE, WI--CONTINUED

WATER-QUALITY DATA, JUNE 03 TO JULY 14, 1993  
(Milligrams per liter unless otherwise indicated)

	June 03					June 16				
Depth of sample (ft)	1.5	15	18	21	24	1.5	9.0	15	21	23
Lake stage (ft)		7.88					7.81			
Specific conductance ( $\mu\text{S}/\text{cm}$ )	494	513	462	412	417	477	475	516	432	438
pH (units)	8.4	7.6	7.5	7.4	7.3	8.5	8.5	7.4	7.4	7.3
Water temperature ( $^{\circ}\text{C}$ )	17.0	14.5	13.0	11.0	10.0	21.0	21.0	16.5	12.0	10.5
Secchi-depth (meters)		1.4					1.0			
Dissolved oxygen	12.3	1.4	0.1	0.0	0.0	12.0	11.6	0.1	0.0	0.0
Phosphorus, total (as P)	0.043	0.070	0.080	0.100	0.200	0.060	0.060	0.050	0.050	0.210
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	22	---	---	---	---	46	---	---	---	---

	June 30					July 14				
Depth of sample (ft)	1.5	12	15	18	22	1.5	9.0	15	19	23
Lake stage (ft)		7.77					7.95			
Specific conductance ( $\mu\text{S}/\text{cm}$ )	494	499	543	516	475	360	369	433	---	514
pH (units)	8.3	8.2	7.3	7.3	7.3	8.4	7.9	7.2	---	7.2
Water temperature ( $^{\circ}\text{C}$ )	22.5	22.5	18.5	15.5	12.0	24.0	22.5	20.5	---	12.5
Secchi-depth (meters)		0.6					0.7			
Dissolved oxygen	10.0	7.3	0.2	0.1	0.0	11.0	6.3	0.1	---	0.0
Phosphorus, total (as P)	0.069	0.070	0.160	0.220	0.170	0.173	0.150	0.450	0.390	0.360
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	60	---	---	---	---	66	---	---	---	---



STREAMS TRIBUTARY TO LAKE MICHIGAN  
433239089175800 PARK LAKE AT PARDEEVILLE, WI--CONTINUED

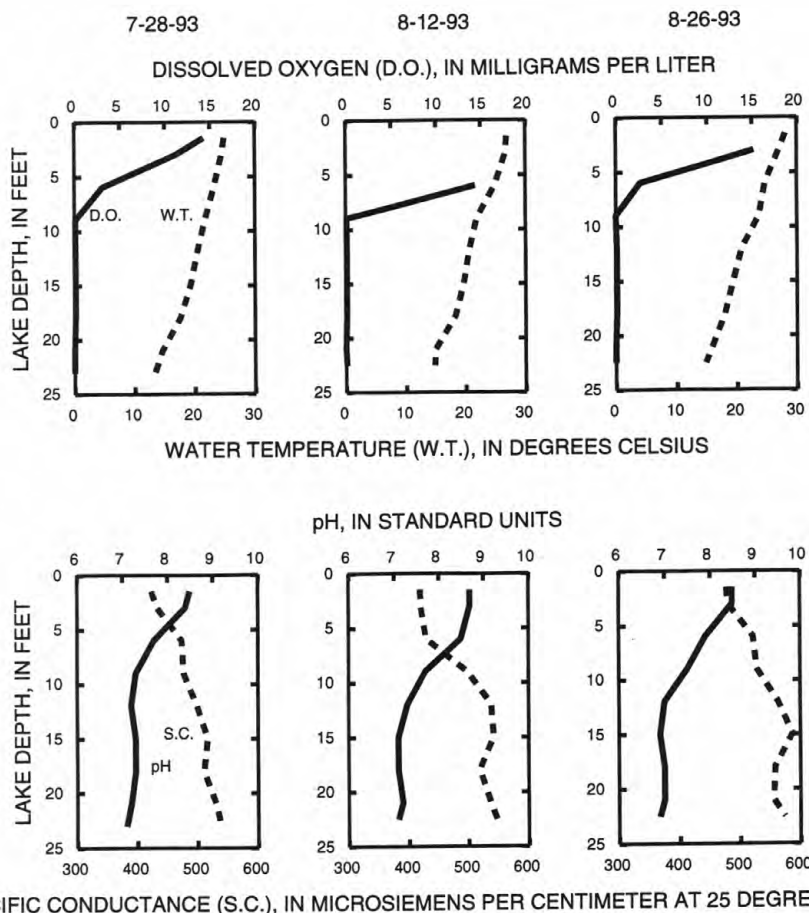
81

WATER-QUALITY DATA, JULY 28 TO AUGUST 26, 1993  
(Milligrams per liter unless otherwise indicated)

	July 28					Aug. 12				
	1.5	6.0	12	18	23	1.5	3.0	10	18	22
Depth of sample (ft)										
Lake stage (ft)		7.65					7.78			
Specific conductance ( $\mu\text{S}/\text{cm}$ )	424	474	499	511	539	419	420	---	519	547
pH (units)	8.5	7.7	7.2	7.3	7.1	8.7	8.7	---	7.1	7.1
Water temperature ( $^{\circ}\text{C}$ )	25.0	23.0	20.5	17.5	13.5	27.0	26.5	---	18.5	15.0
Secchi-depth (meters)		0.7					0.6			
Dissolved oxygen	14.3	3.1	0.1	0.1	0.0	18.5	>15.0	---	0.1	0.1
Phosphorus, total (as P)	0.097	0.080	0.330	0.770	0.690	0.070	0.060	0.050	0.750	0.770
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	77	---	---	---	---	51	---	---	---	---

	Aug. 26				
	1.5	3.0	10	18	22
Depth of sample (ft)					
Lake stage (ft)		7.54			
Specific conductance ( $\mu\text{S}/\text{cm}$ )	478	480	---	558	574
pH (units)	8.5	8.5	---	7.0	6.9
Water temperature ( $^{\circ}\text{C}$ )	28.0	27.0	---	18.0	15.0
Secchi-depth (meters)		1.0			
Dissolved oxygen	>15.0	15.2	---	0.1	0.0
Phosphorus, total (as P)	0.047	0.040	0.070	0.550	0.870
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	25	---	---	---	---

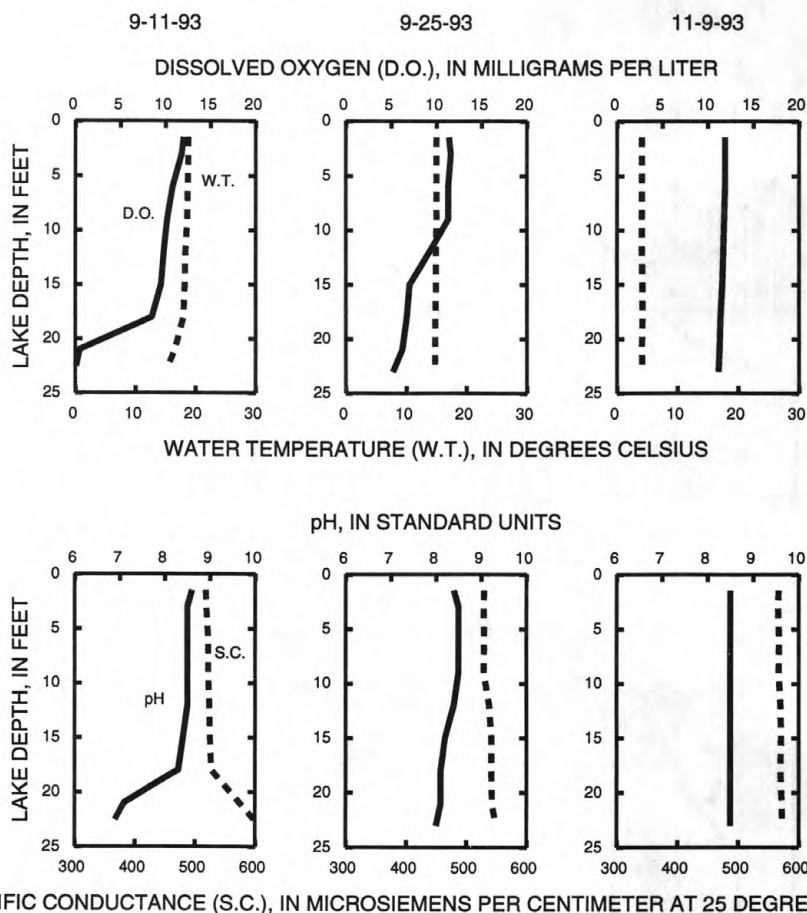


## STREAMS TRIBUTARY TO LAKE MICHIGAN

433239089175800 PARK LAKE AT PARDEEVILLE, WI--CONTINUED

WATER-QUALITY DATA, SEPTEMBER 11 TO NOVEMBER 09, 1993  
(Milligrams per liter unless otherwise indicated)

	Sep. 11				Sep. 25			Nov. 09	
Depth of sample (ft)	1.5	18	21	22	1.5	21	23	1.5	23
Lake stage (ft)		7.32				7.58			7.78
Specific conductance ( $\mu\text{S}/\text{cm}$ )	518	527	574	598	530	543	549	567	573
pH (units)	8.6	8.3	7.1	6.9	8.4	8.1	8.0	8.5	8.5
Water temperature ( $^{\circ}\text{C}$ )	19.0	18.0	16.5	15.5	15.0	15.0	15.0	4.0	4.0
Secchi-depth (meters)		0.6				1.0			1.2
Dissolved oxygen	12.0	8.5	0.5	0.1	11.4	6.2	5.2	11.9	11.2
Phosphorus, total (as P)	0.080	0.080	0.100	0.780	0.056	0.080	0.090	0.042	0.049
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	100	---	---	---	69	---	---	41	---



STREAMS TRIBUTARY TO LAKE MICHIGAN

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433226089175500 PARK LAKE (SITE 2) AT PARDEEVILLE, WI

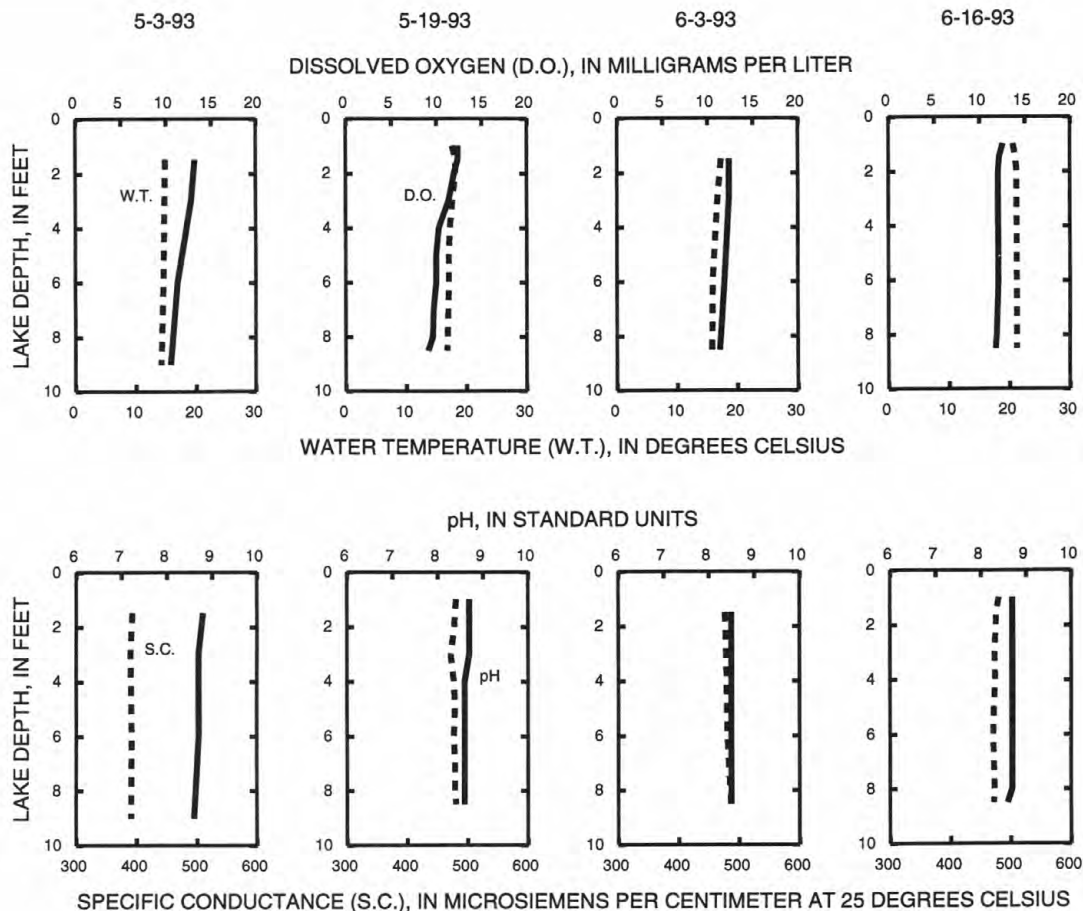
LOCATION.--Lat 43°32'26", long 89°17'55", in NE 1/4 NW 1/4 sec. 3, T.12 N., R.10 E, Columbia County, Hydrologic Unit 04030201, at Pardeeville.

PERIOD OF RECORD.--May to November 1993 (discontinued).

REMARKS.--Lake sampled at lake depth of about 10 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MAY 03 TO JUNE 16, 1993  
(Milligrams per liter unless otherwise indicated)

	May 03		May 19		June 03		June 16	
Depth of sample (ft)	1.5	9.0	1.5	8.5	1.5	8.5	1.5	8.5
Lake stage (ft)	7.92		7.54		7.88		7.81	
Specific conductance (μS/cm)	393	391	479	481	477	487	476	472
pH (units)	8.8	8.6	8.7	8.6	8.5	8.5	8.7	8.6
Water temperature (°C)	15.0	14.0	18.0	17.0	17.5	16.0	21.0	21.0
Secchi-depth (meters)	0.9		0.7		1.4		0.9	
Dissolved oxygen	13.2	10.5	12.4	9.1	12.4	11.4	12.2	11.8
Phosphorus, total (as P)	---	---	0.109	0.090	0.046	0.050	0.049	0.060



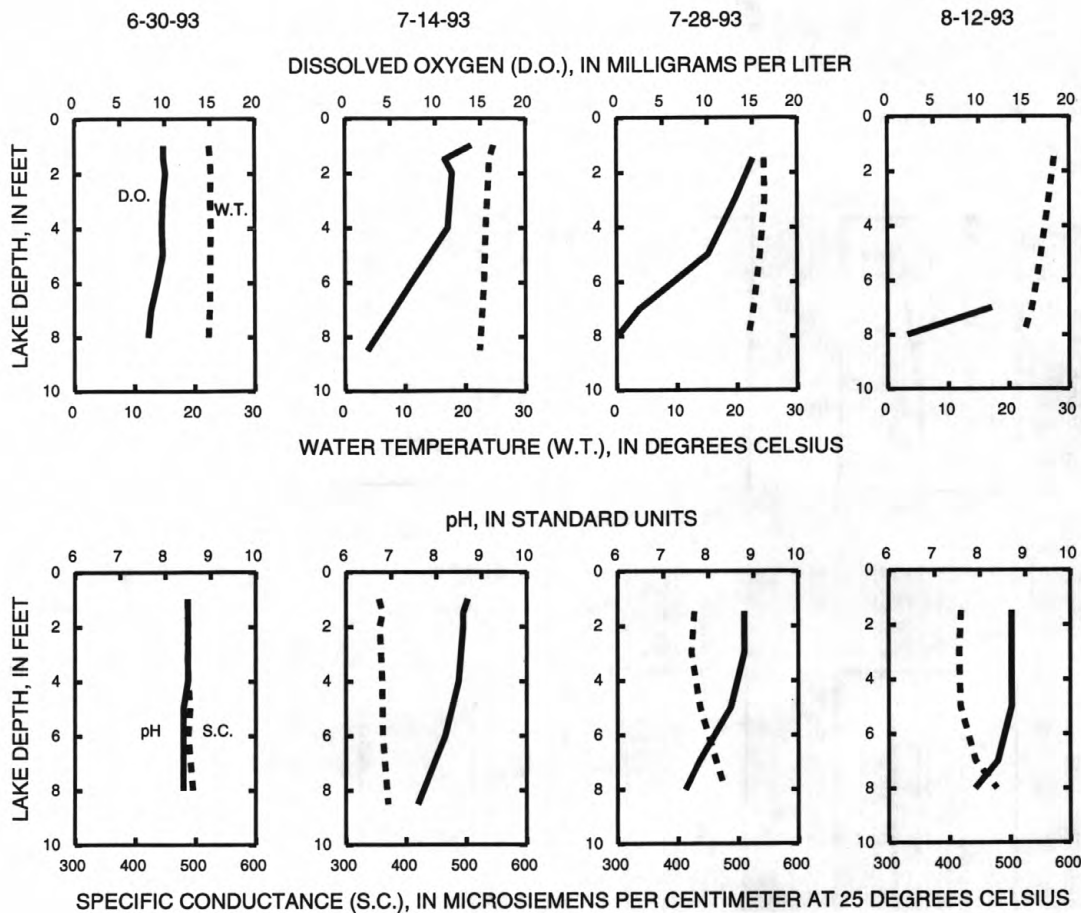


## STREAMS TRIBUTARY TO LAKE MICHIGAN

433226089175500 PARK LAKE (SITE 2) AT PARDEEVILLE, WI--CONTINUED

WATER-QUALITY DATA, JUNE 30 TO AUGUST 12, 1993  
(Milligrams per liter unless otherwise indicated)

	June 30		July 14		July 28		Aug. 12	
Depth of sample (ft)	1.5	8.0	1.5	8.5	1.5	8.0	1.5	8.0
Lake stage (ft)	7.77		7.95		7.65		7.78	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	487	496	361	370	427	478	419	478
pH (units)	8.5	8.4	8.6	7.6	8.8	7.5	8.7	7.9
Water temperature ( $^{\circ}\text{C}$ )	22.5	22.5	24.0	22.5	24.5	22.0	27.5	22.5
Secchi-depth (meters)	0.6		0.6		0.7		0.6	
Dissolved oxygen	9.9	8.2	11.1	2.5	15.1	0.1	>15.0	2.2
Phosphorus, total (as P)	0.068	0.050	0.191	0.130	0.087	0.090	0.042	0.050



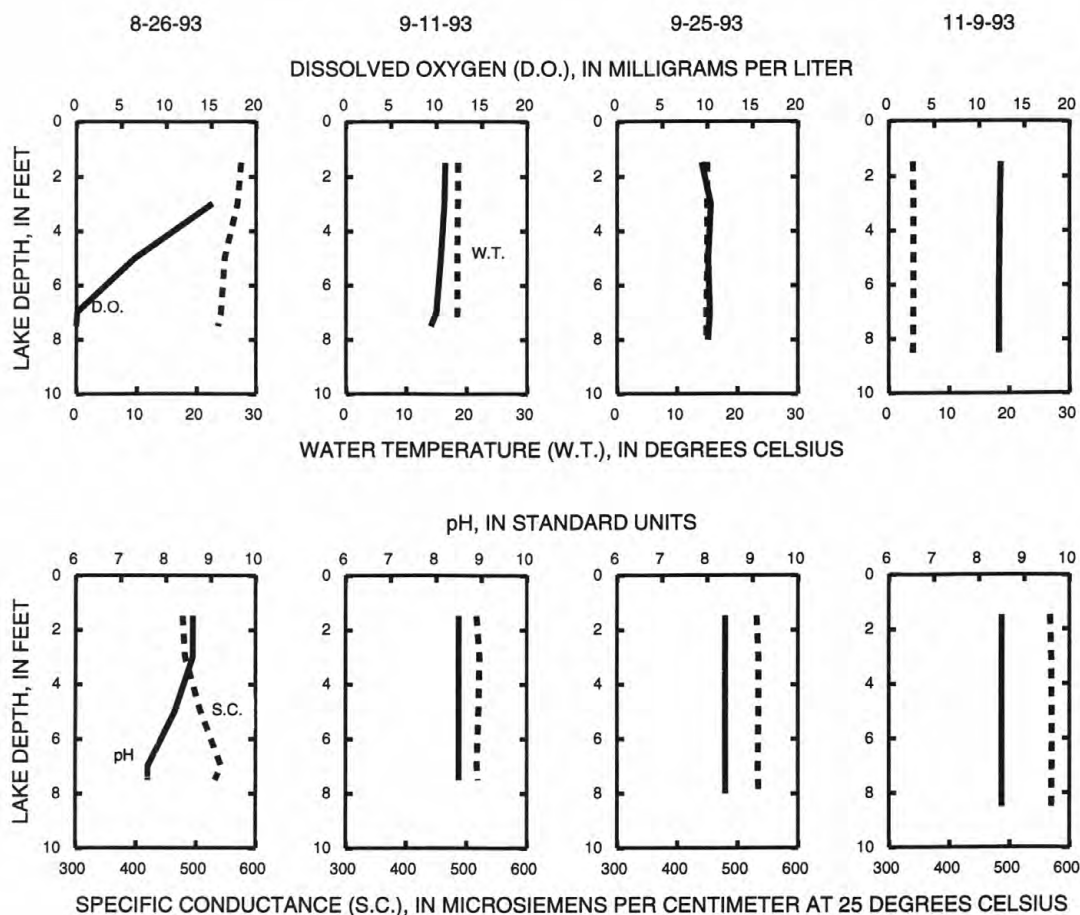
STREAMS TRIBUTARY TO LAKE MICHIGAN

85

433226089175500 PARK LAKE (SITE 2) AT PARDEEVILLE, WI--CONTINUED

WATER-QUALITY DATA, AUGUST 26 TO NOVEMBER 09, 1993  
(Milligrams per liter unless otherwise indicated)

	Aug. 26		Sep. 11		Sep. 25		Nov. 09	
Depth of sample (ft)	1.5	7.5	1.5	7.5	1.5	8.0	1.5	8.5
Lake stage (ft)		7.54		7.32		7.58		7.78
Specific conductance ( $\mu\text{S}/\text{cm}$ )	478	532	517	519	532	535	568	570
pH (units)	8.6	7.6	8.5	8.5	8.4	8.4	8.5	8.5
Water temperature ( $^{\circ}\text{C}$ )	27.5	23.5	18.5	18.5	15.0	15.0	4.0	4.0
Secchi-depth (meters)		1.0		0.6		1.0		1.0
Dissolved oxygen	>15.5	0.0	11.0	9.4	9.4	10.1	12.4	12.2
Phosphorus, total (as P)	0.052	0.060	0.071	0.070	0.052	0.050	0.039	0.070



## STREAMS TRIBUTARY TO LAKE MICHIGAN

434412088590700 LITTLE GREEN LAKE, AT CENTER, NEAR MARKESAN, WI

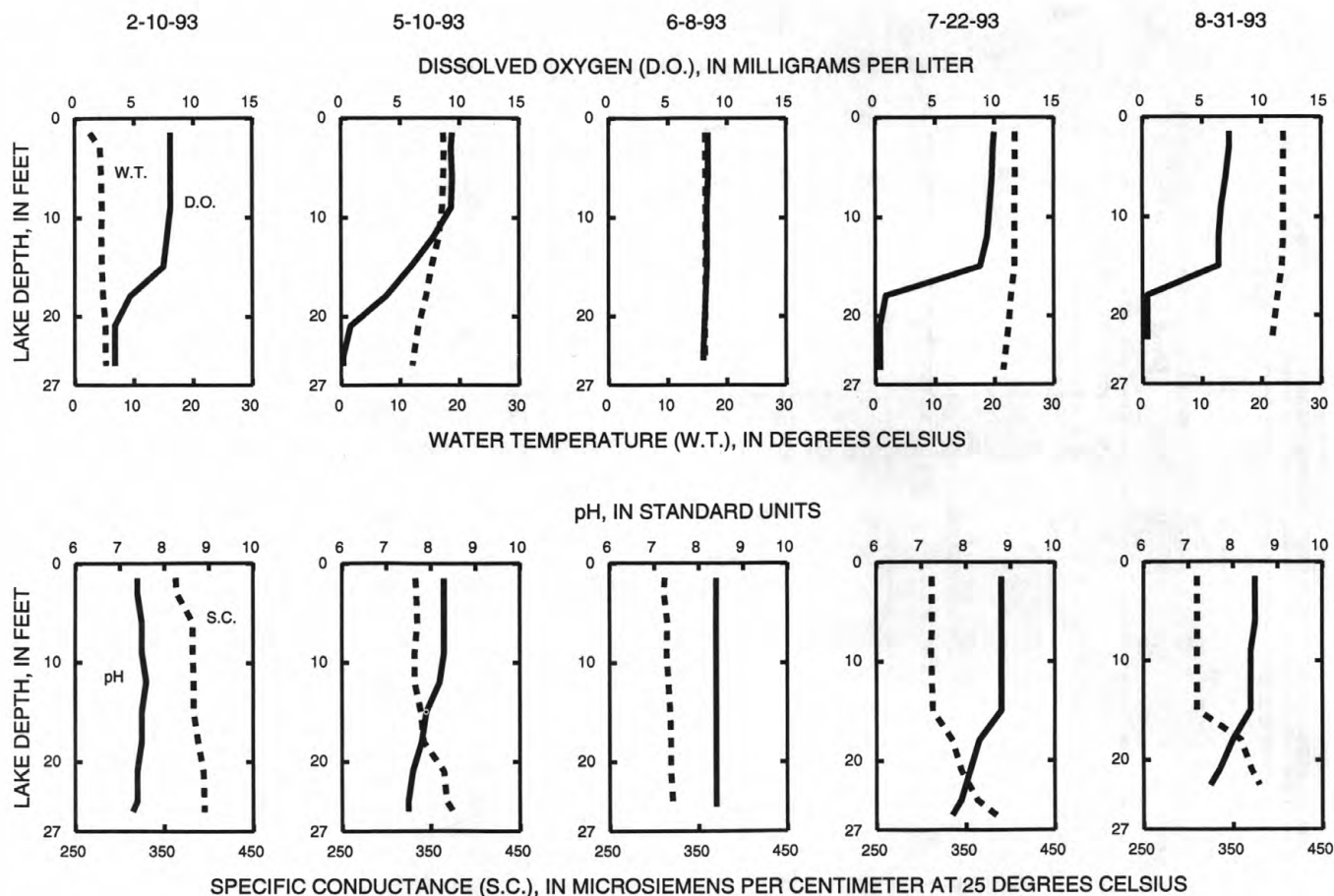
LOCATION--Lat 43°44'12", long 88°59'07", in SW 1/4 SW 1/4 sec.29, T.15 N., R.13 E., Green Lake County, Hydrologic Unit 04030201, 2 mi north of Markesan.

PERIOD OF RECORD--February 1991 to current year.

REMARKS--Lake sampled near center at a lake depth of about 27 ft. Lake ice-covered during February sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 10 TO AUGUST 31, 1993  
(Milligrams per liter unless otherwise indicated)

	Feb. 10		May 10		June 08		July 22		Aug. 31	
Depth of sample (ft)	1.5	25	1.5	25	1.5	24	1.5	25	1.5	23
Lake stage (ft)	6.40		6.64		6.53		6.98		6.27	
Specific conductance (µS/cm)	363	395	333	371	312	323	312	384	310	380
pH (units)	7.4	7.3	8.3	7.5	8.4	8.4	8.8	7.7	8.5	7.5
Water temperature (°C)	2.5	5.5	17.5	12.0	16.5	16.5	23.5	21.5	23.5	22.0
Color (Pt-Co. scale)	---	---	5	10	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.80	2.6	---	---	---	---	---	---
Secchi-depth (meters)	---	---	5.8		2.0		0.7		0.4	
Dissolved oxygen	8.1	3.4	9.4	0.2	8.4	8.0	10.0	0.4	7.3	0.4
Hardness, as CaCO <sub>3</sub>	---	---	160	170	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	30	35	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	20	20	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	6.1	6.2	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	4	4	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	---	---	140	160	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	---	---	10	10	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	14	13	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	---	---	0.8	3.8	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	188	204	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	0.14	0.06	---	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	---	---	0.14	0.06	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.10	0.47	---	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	0.60	0.63	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.70	1.1	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.84	1.2	---	---	---	---	---	---
Phosphorus, total (as P)	---	---	0.029	0.174	0.050	0.080	0.112	1.4	0.178	0.820
Phosphorus, ortho, dissolved (as P)	---	---	0.006	0.101	---	---	---	---	---	---
Iron, dissolved (Fe) µg/L	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) µg/L	---	---	<40	500	---	---	---	---	---	---
Chlorophyll a, phytoplankton (µg/L)	---	---	1.5	---	11	---	31	---	130	---



## 87

LOCATION--Lat 43°44'12", long 88°59'07", in SW 1/4 SW 1/4 sec.29, T.15 N., R.13 E., Green Lake County, Hydrologic Unit 04030201. 2 mi north of Markesan.

PERIOD OF RECORD.--August 1936 to September 1964 (fragmentary); April 1991 to current year.

GAGE.--Nonrecording gage located on southwest side of lake. Datum of gage is 90.00 ft above datum determined by Wisconsin Department of Natural Resources. Gage readings have been reduced to elevation above this datum. Staff gage read by Otis Wendt.

REMARKS.--Add 90 ft to obtain elevation above datum assumed for this lake by Wisconsin Department of Natural Resources.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 97.36 ft, July 23 and 24, 1960; minimum observed, 94.02 ft, Dec. 25-31, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 7.22 ft. July 9; minimum observed, 5.73 ft, Oct. 14.

[illegible]



STREAMS TRIBUTARY TO LAKE MICHIGAN

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040734644 SILVER CREEK AT SOUTH KORO ROAD NEAR RIPON, WI

LOCATION.--Lat 43°51'30", long 88°52'17" in NW 1/4 SE 1/4 sec.18, T.16 N., R.14 E., Fond du Lac County, Hydrologic Unit 04030201, on left bank at upstream side of culvert on South Koro Road, 1.8 mi west of Ripon.

DRAINAGE AREA.--36.2 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1987 to current year.

REVISED RECORDS.--WDR WI-88-1: (M).

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Elevation of gage is 810 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 21-24 and ice-affected periods, Dec. 24, 26, Jan. 1, 18-20, 29, 30, Feb. 15-19, 24-27, and Mar. 11-15. Records good, except for estimated daily discharges, which are fair. Approximately 2.7 ft<sup>3</sup>/s of daily flow is effluent from Ripon Wastewater Treatment Plant. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	19	35	26	20	14	107	107	59	76	53	27
2	16	34	35	22	20	15	113	103	57	119	50	26
3	14	33	30	25	20	17	105	105	52	143	49	24
4	13	29	31	30	20	20	98	119	46	181	47	23
5	13	24	22	28	21	29	99	119	41	236	45	22
6	12	21	23	25	20	50	98	112	37	390	44	21
7	12	22	23	22	20	74	107	103	46	404	42	21
8	12	22	22	20	20	105	151	100	133	330	39	21
9	12	24	22	19	19	102	169	91	202	272	47	21
10	12	24	21	18	19	69	162	85	200	232	44	21
11	13	23	21	17	17	60	150	78	154	213	42	23
12	12	25	22	17	18	42	139	70	116	182	41	23
13	12	22	22	18	18	35	134	62	89	166	38	28
14	12	21	25	17	17	30	125	58	98	148	35	37
15	14	21	46	17	15	27	149	53	117	129	42	38
16	17	21	72	17	15	31	186	49	138	113	40	38
17	15	21	82	17	14	29	200	46	137	100	45	38
18	15	21	81	17	14	29	174	49	195	108	53	36
19	15	23	78	17	13	25	174	48	251	94	53	32
20	16	41	57	17	13	23	205	46	238	87	49	40
21	17	66	48	21	14	23	237	44	198	82	43	38
22	17	90	44	20	13	24	221	42	166	75	38	40
23	16	86	40	21	13	32	195	52	137	69	38	41
24	15	78	33	21	12	51	169	58	120	65	34	38
25	15	70	26	20	12	124	149	61	128	71	31	34
26	15	60	24	19	12	153	133	59	125	66	29	34
27	14	51	22	18	12	154	122	60	122	63	27	31
28	14	46	22	18	13	161	125	56	107	74	25	29
29	13	42	27	17	---	165	120	49	92	63	24	28
30	13	39	32	17	---	171	116	53	86	58	34	27
31	13	---	32	18	---	164	---	59	---	56	32	---
TOTAL	436	1119	1120	616	454	2048	4432	2196	3687	4465	1253	900
MEAN	14.1	37.3	36.1	19.9	16.2	66.1	148	70.8	123	144	40.4	30.0
MAX	17	90	82	30	21	171	237	119	251	404	53	41
MIN	12	19	21	17	12	14	98	42	37	56	24	21
CFSM	.39	1.03	1.00	.55	.45	1.82	4.08	1.96	3.40	3.98	1.12	.83
IN.	.45	1.15	1.15	.63	.47	2.10	4.55	2.26	3.79	4.59	1.29	.92

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991	1992	1993
MEAN	12.6	20.3	18.3	10.7	12.1	55.1	54.9
MAX	20.3	37.3	36.1	21.5	18.0	73.1	148
(WY)	1991	1993	1993	1992	1992	1991	1993
MIN	5.49	9.37	3.88	4.66	5.28	34.1	21.0
(WY)	1989	1990	1990	1990	1989	1987	1990

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1987 - 1993
ANNUAL TOTAL	9835.1	22726	
ANNUAL MEAN	26.9	62.3	28.4
HIGHEST ANNUAL MEAN			62.3
LOWEST ANNUAL MEAN			13.4
HIGHEST DAILY MEAN	120	404	478
LOWEST DAILY MEAN	4.7	12	1.8
ANNUAL SEVEN-DAY MINIMUM	5.2	12	2.2
INSTANTANEOUS PEAK FLOW		426	545
INSTANTANEOUS PEAK STAGE		10.00	10.83
ANNUAL RUNOFF (CFSM)	.74	1.72	.78
ANNUAL RUNOFF (INCHES)	10.11	23.35	10.66
10 PERCENT EXCEEDS	61	150	61
50 PERCENT EXCEEDS	20	38	15
90 PERCENT EXCEEDS	7.4	15	4.9

(a) Also occurred Oct. 12-14 and Feb. 24-27

040734644 SILVER CREEK AT SOUTH KORO ROAD NEAR RIPON, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1987 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: February 1987 to current year.

TOTAL-PHOSPHORUS DISCHARGE: February 1987 to current year.

INSTRUMENTATION.--Automatic pumping sampler since April 1987.

REMARKS.--Records good except for October to February, August, and September, which are fair. Phosphorus analyses by the Wisconsin State Laboratory of Hygiene. Samples are point samples unless indicated otherwise.

COOPERATION.--Observer furnished by the Green Lake Sanitary District.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 3,330 mg/L, May 31, 1987; minimum observed, 1 mg/L, Aug. 29, 1988 and Oct. 10, 1989.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 378 tons, May 30, 1989; minimum daily, 0.00 ton, Aug. 12, 1988.

TOTAL-PHOSPHORUS CONCENTRATIONS: Maximum observed, 5.28 mg/L, Sept. 3, 1988; minimum observed, 0.04 mg/L, Apr. 30, 1992.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 1,620 lb, May 30, 1989; minimum daily, 2.3 lb, Aug. 7, 1988.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 1,600 mg/L, July 3; minimum observed, 2 mg/L, Oct. 8.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 106 tons, July 3; minimum daily, 0.08 ton, Oct. 8.

TOTAL-PHOSPHORUS CONCENTRATIONS: Maximum observed, 1.98 mg/L, July 3; minimum observed, 0.06 mg/L, Apr. 15, 19, 25, 29.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 748 lb, July 6; minimum daily, 5.6 lb, Oct. 13.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
NOV 1992					MAY 1993				
24...	1315	79	635	3.0	07...	1610	100	740	18.0
JAN 1993					JUN				
11...	1115	17	1110	1.5	04...	0750	41	770	14.0
FEB					AUG				
02...	1245	20	985	3.0	02...	1330	51	810	20.5
MAR					25...	1035	32	930	22.0
01...	1315	15	695	4.0					

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1992					
*08...	0940	--	12	0.090	2
NOV					
09...	0855	--	25	0.130	11
20...	1025	--	35	0.140	22
20...	1200	--	45	0.170	43
*24...	1215	78	--	0.100	8
DEC					
04...	1040	--	33	0.150	--
15...	1900	--	68	--	38
21...	1040	--	49	--	15
21...	1555	--	49	0.130	4
JAN 1993					
*11...	1115	--	17	0.110	52
FEB					
*02...	1240	--	21	0.180	42
MAR					
*01...	1300	--	15	0.140	--
05...	1520	--	34	--	56
06...	0320	--	37	0.290	24
06...	1550	--	69	0.550	100
07...	1055	--	64	--	28
07...	1600	--	90	0.530	80
08...	0400	--	97	--	51
08...	1000	--	99	0.440	--
08...	1335	--	111	--	65
08...	1935	--	116	0.540	50
09...	1335	--	103	0.500	--
09...	1935	--	103	--	33
10...	0955	--	57	--	25
11...	0355	60	--	0.330	24

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040734644 SILVER CREEK AT SOUTH KORO ROAD NEAR RIPON, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAR 1993					JUN 1993				
16...	1235	34	0.240	32	17...	0655	119	0.200	17
18...	0845	44	0.190	33	17...	2020	149	1.20	851
23...	1220	34	0.160	27	17...	2105	182	0.780	411
24...	2310	86	0.250	58	17...	2135	216	0.730	347
25...	2145	151	0.410	69	*18...	0840	189	0.260	38
26...	2145	161	0.400	41	18...	0845	189	0.260	41
28...	0945	150	0.290	23	19...	0345	230	0.240	27
29...	2025	173	0.240	28	19...	1305	260	0.170	24
31...	1425	163	--	18	21...	0615	203	0.180	13
APR					24...	0615	117	0.260	18
01...	0820	89	0.150	19	24...	2225	145	0.600	281
01...	1730	105	--	16	24...	2310	175	0.430	130
06...	0525	97	0.090	9	25...	1420	124	0.330	19
07...	0525	100	0.080	9	28...	0220	112	0.440	34
08...	0005	132	0.120	25	JUL				
08...	1905	157	--	11	01...	1420	76	0.270	20
09...	1905	173	0.110	13	02...	0420	78	0.480	130
10...	1905	157	0.100	16	02...	0530	124	1.32	830
11...	1905	150	--	12	02...	0855	143	0.400	106
*12...	1435	141	0.100	10	03...	0940	116	0.250	18
15...	0705	125	0.060	8	03...	1825	146	0.900	696
17...	0525	205	0.080	21	03...	1900	178	1.98	1600
19...	0525	166	0.060	23	03...	1930	216	--	1110
21...	0425	232	0.080	20	03...	1950	260	1.88	1190
25...	0425	154	0.060	10	04...	1150	183	0.250	38
29...	1245	120	0.060	6	05...	1150	177	0.290	28
MAY					05...	1515	211	0.750	521
03...	0045	101	0.090	9	05...	1610	267	0.940	800
04...	2145	121	0.100	15	05...	1720	302	0.640	293
*07...	1620	101	0.090	21	05...	2025	324	0.480	173
11...	2245	75	0.160	25	06...	0818	390	0.290	44
23...	1800	77	0.200	55	06...	1352	374	0.400	73
JUN					*06...	1549	374	0.410	73
*04...	0750	47	0.080	37	07...	0820	410	0.240	29
07...	2325	79	0.340	88	08...	2100	292	0.270	19
07...	2400	123	0.820	435	10...	0740	235	0.340	17
08...	0050	173	0.560	274	12...	0940	172	0.480	23
08...	0130	204	0.490	228	15...	2145	122	0.280	15
08...	0415	143	0.210	53	20...	1035	88	0.250	28
08...	1720	121	0.180	24	22...	1035	75	0.210	25
08...	2245	151	0.340	155	25...	0425	79	0.300	60
09...	0015	196	0.340	142	28...	0020	79	0.360	97
09...	1215	206	--	27	28...	0100	110	0.550	195
10...	0015	216	0.140	25	28...	0515	75	0.220	35
*10...	1050	203	0.140	24	AUG				
10...	1051	203	0.140	17	*02...	1330	51	0.200	47
12...	1600	111	0.180	15	09...	1125	80	0.530	128
15...	0115	95	0.230	15	*25...	1038	33	0.200	10
16...	0655	141	--	18	30...	0735	63	0.790	204

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040734644 SILVER CREEK AT SOUTH KORO ROAD NEAR RIPON, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.35	1.8	.80	1.1	2.3	.84	5.0	2.1	6.0	4.2	6.4	1.4
2	.27	2.5	.81	1.1	2.3	.86	4.4	2.4	5.7	39	6.2	1.3
3	.20	1.7	.70	1.3	2.2	.97	3.7	2.9	5.2	106	5.7	1.1
4	.16	1.4	.73	1.8	2.2	1.1	3.0	4.2	4.5	31	5.0	.99
5	.13	1.1	.52	1.9	2.2	3.0	2.7	5.1	3.7	96	4.4	.88
6	.11	.83	.57	1.9	2.1	6.7	2.5	5.5	3.2	68	3.9	.80
7	.09	.80	.56	1.9	2.0	11	3.3	5.7	8.8	32	3.4	.75
8	.08	.73	.54	2.0	1.9	16	6.5	5.9	29	19	2.9	.70
9	.09	.74	.55	2.1	1.8	11	5.8	5.6	26	13	5.6	.64
10	.09	.72	.53	2.2	1.8	4.8	6.5	5.3	11	11	3.4	.60
11	.10	.69	.54	2.3	1.5	4.0	5.3	5.1	6.7	12	3.0	1.5
12	.11	.73	.57	2.4	1.6	3.0	3.9	4.6	4.8	11	2.7	1.4
13	.11	.63	.59	2.4	1.5	2.6	3.3	4.0	3.6	9.1	2.4	3.8
14	.12	.60	.67	2.3	1.5	2.3	2.8	3.7	9.2	7.2	2.0	2.8
15	.33	.60	5.3	2.3	1.2	2.2	8.5	3.3	5.2	5.5	4.6	2.5
16	.76	.60	5.1	2.3	1.2	2.7	12	3.0	6.6	4.6	2.6	2.4
17	.60	.57	4.9	2.2	1.1	2.5	12	2.8	41	4.0	2.3	2.3
18	.58	.57	4.4	2.2	1.1	2.5	10	2.9	31	10	2.5	2.1
19	.55	.75	3.8	2.2	.98	2.0	11	2.8	16	7.8	2.3	1.8
20	.58	3.9	2.6	2.2	.95	1.7	12	2.6	11	6.5	2.0	7.1
21	.60	3.4	1.3	2.7	.97	1.5	12	2.5	7.4	5.8	1.6	3.6
22	.58	2.9	.55	2.5	.90	1.4	9.5	2.3	6.8	5.1	1.3	3.2
23	.55	2.3	.57	2.6	.91	2.2	6.9	4.5	6.2	4.3	1.2	3.1
24	.51	1.7	.53	2.6	.80	5.3	4.9	6.3	12	3.7	.96	2.7
25	.47	1.5	.46	2.4	.78	22	3.7	6.5	11	6.5	.82	2.4
26	.46	1.3	.49	2.3	.76	21	2.9	6.2	7.9	5.0	.76	2.2
27	.42	1.1	.51	2.2	.75	14	2.3	6.3	9.8	4.5	.72	2.0
28	.41	1.0	.58	2.2	.81	11	2.1	5.8	9.3	11	.67	1.8
29	.39	.94	.79	2.0	---	12	1.8	5.1	6.9	6.4	.64	1.6
30	.37	.89	1.0	2.0	---	11	2.0	5.5	5.5	6.2	5.3	1.5
31	.35	---	1.2	2.1	---	8.5	---	6.1	---	6.3	2.2	---
TOTAL	10.52	38.99	42.76	65.7	40.11	191.67	172.3	136.6	321.0	561.7	89.47	60.96

PHOSPHORUS TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	25	25	17	19	11	86	44	29	113	58	31
2	9.6	36	26	14	19	11	81	47	27	288	54	28
3	8.3	26	23	16	19	13	68	52	23	480	52	26
4	7.5	23	25	19	19	15	57	63	20	319	51	24
5	7.0	19	17	18	20	38	52	63	18	549	48	22
6	6.4	16	18	16	19	102	46	57	16	748	47	20
7	6.1	16	17	13	18	176	48	51	57	559	45	20
8	5.8	16	16	12	18	278	95	54	188	466	42	19
9	5.9	17	16	12	17	274	102	57	213	438	70	18
10	5.9	17	15	11	17	148	90	60	153	439	58	17
11	6.3	15	15	9.9	15	105	81	63	131	475	53	25
12	6.1	16	15	10	16	69	74	59	109	454	49	24
13	5.6	14	15	11	15	54	61	51	78	363	44	44
14	5.9	13	16	11	15	44	47	45	143	278	39	42
15	9.1	13	69	11	13	37	77	40	142	208	64	39
16	15	13	72	11	13	40	95	35	156	167	53	37
17	12	12	74	11	12	33	83	32	270	143	59	35
18	11	12	69	12	12	29	63	33	296	177	67	32
19	11	13	63	12	11	23	59	30	261	138	66	27
20	11	37	43	12	11	19	80	28	225	117	60	62
21	11	46	34	16	11	17	100	26	198	101	51	40
22	11	55	31	15	10	17	87	24	188	84	44	32
23	10	49	28	16	11	27	71	38	174	70	43	32
24	9.1	43	23	17	9.5	55	58	44	186	60	38	29
25	8.4	39	17	16	9.4	230	48	43	250	78	34	25
26	8.0	35	16	16	9.3	334	43	39	248	59	31	25
27	7.2	31	15	16	9.2	294	40	38	271	53	30	22
28	6.9	29	15	16	10	250	41	34	240	104	27	20
29	6.5	28	18	15	---	223	39	28	180	74	26	19
30	6.1	27	21	15	---	196	42	29	147	66	61	17
31	5.7	---	21	17	---	156	---	31	---	62	38	---
TOTAL	256.4	751	888	433.9	397.4	3318	2014	1338	4637	7730	1502	853



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04073468 GREEN LAKE INLET AT COUNTY TRUNK HIGHWAY A NEAR GREEN LAKE, WI

LOCATION.--Lat 43°49'18", long 88°55'36" in NE 1/4 SE 1/4 SE 1/4 sec.27, T.16 N., R.13 E., Green Lake County, Hydrologic Unit 04030201, on left bank at downstream side of County Trunk Highway A, 2.3 mi southeast of Green Lake.

DRAINAGE AREA.--53.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1987 to current year.

GAGE.--Acoustical Velocity Meter (AVM) system. Single-path, mid-depth transducer installation. Cross-path, dual-depth transducers installed on June 6, 1990. Elevation of gage is 785 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 14, 26, 27, Feb. 21, Feb. 27 to Mar. 2, July 3, July 27 to Aug. 25, and Sept. 4, 5. Estimated discharges are based on discharges from upstream station, Silver Creek near Ripon (040734644), adjusted for drainage area. Approximately 2.7 ft<sup>3</sup>/s of daily flow is effluent from Ripon Waste-Water Treatment Plant. Flows fluctuate due to seiche from Green Lake. Records are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	23	49	37	32	18	126	136	72	103	68	37
2	20	40	41	32	28	19	115	135	74	199	64	33
3	16	54	42	34	28	23	122	134	66	189	63	33
4	14	38	36	38	29	38	115	147	58	292	60	29
5	12	36	36	38	32	48	115	144	50	284	58	35
6	17	33	35	35	27	73	116	143	46	523	56	27
7	16	31	33	31	26	105	130	124	57	442	54	26
8	7.7	28	31	28	25	131	209	119	185	414	50	27
9	11	29	32	25	25	122	203	113	249	360	60	31
10	22	32	29	23	24	84	194	104	245	302	56	29
11	15	29	30	22	19	73	176	92	196	280	54	26
12	9.5	20	31	24	23	53	174	89	145	246	53	30
13	20	31	30	26	23	45	163	74	107	213	49	42
14	13	29	34	24	23	38	153	76	117	198	45	55
15	14	28	62	25	22	33	188	64	128	182	54	48
16	16	25	107	24	21	43	219	63	148	157	51	47
17	20	22	89	24	17	41	243	63	167	138	58	46
18	20	24	91	23	17	35	230	66	315	149	68	43
19	16	27	79	24	17	34	232	63	272	139	68	41
20	23	56	72	21	16	32	250	61	303	122	63	45
21	20	107	66	29	17	31	306	59	255	115	55	57
22	20	84	62	31	17	31	293	55	217	100	49	48
23	21	81	47	29	18	41	266	69	170	90	49	50
24	18	85	44	33	17	84	222	88	145	89	44	48
25	16	80	41	29	17	172	195	77	211	94	40	41
26	16	60	36	25	18	214	166	77	166	73	34	44
27	15	63	34	27	19	198	159	73	157	89	34	43
28	19	58	32	24	17	206	182	70	139	95	33	36
29	9.9	50	37	20	---	215	156	62	110	81	31	37
30	16	45	42	22	---	201	145	72	107	74	42	31
31	18	---	42	27	---	184	---	75	---	72	44	---
TOTAL	511.1	1348	1472	854	614	2665	5563	2787	4677	5904	1607	1165
MEAN	16.5	44.9	47.5	27.5	21.9	86.0	185	89.9	156	190	51.8	38.8
MAX	23	107	107	38	32	215	306	147	315	523	68	57
MIN	7.7	20	29	20	16	18	115	55	46	72	31	26
CFSM	.31	.84	.89	.51	.41	1.61	3.47	1.68	2.91	3.56	.97	.73
IN.	.36	.94	1.02	.59	.43	1.85	3.87	1.94	3.25	4.11	1.12	.81

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1993, BY WATER YEAR (WY)

	MEAN	27.3	24.8	14.0	16.1	73.9	71.3	43.0	52.1	41.6	24.3	21.0
MAX	27.4	45.1	47.5	27.5	22.2	97.1	185	89.9	156	190	67.5	38.8
(WY)	1991	1992	1993	1993	1992	1989	1993	1993	1993	1993	1990	1993
MIN	7.00	13.8	5.73	6.66	6.71	49.4	31.2	16.1	4.57	3.78	5.03	9.01
(WY)	1989	1990	1990	1989	1989	1987	1990	1988	1988	1988	1988	1988

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1987 - 1993

ANNUAL TOTAL	11624.40	29167.1	
ANNUAL MEAN	31.8	79.9	
HIGHEST ANNUAL MEAN			37.3
LOWEST ANNUAL MEAN			79.9
HIGHEST DAILY MEAN	139	Apr 20	18.7
LOWEST DAILY MEAN	-1.8	Aug 29	1993
ANNUAL SEVEN-DAY MINIMUM	2.9	Aug 29	705
ANNUAL RUNOFF (CFSM)	.59		May 31 1989
ANNUAL RUNOFF (INCHES)	8.08		-1.8
10 PERCENT EXCEEDS	73		Aug 29 1992
50 PERCENT EXCEEDS	24		2.1
90 PERCENT EXCEEDS	6.2		Jul 27 1988
		1.49	.70
		20.28	9.46
		197	79
		48	20
		20	5.7

04073468 GREEN LAKE INLET AT COUNTY TRUNK HIGHWAY A NEAR GREEN LAKE, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1987 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: February 1987 to current year.

TOTAL-PHOSPHORUS DISCHARGE: February 1987 to current year.

INSTRUMENTATION.--Observer takes samples during periods of low flow and more frequently during runoff periods.

REMARKS.--Records poor. Phosphorus analyses by the Wisconsin State Laboratory of Hygiene. All samples are equal-width increment (EWI). Fifteen-minute discharge values were used for this year's computation instead of daily values used in the past.

COOPERATION.--Observer furnished by the Green Lake Sanitary District.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 701 mg/L, May 30, 1989; minimum observed, 0 mg/L, Mar. 25, 1988.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 456 tons, May 31, 1989; minimum daily, -0.11 ton, Aug. 29, 1992.

TOTAL-PHOSPHORUS CONCENTRATIONS: Maximum observed, 1.45 mg/L, May 30, 1989; minimum observed, &lt;0.02 mg/L, Oct. 10, 1991.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 3,230 lb, May 31, 1989; minimum daily, -1.4 lb, Aug. 30, 1992.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 173 mg/L, May 4; minimum observed, 2 mg/L, Dec. 21.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 146 tons, July 6; minimum daily, 0.26 ton, Dec. 12.

TOTAL-PHOSPHORUS CONCENTRATIONS: Maximum observed, 0.44 mg/L, July 6; minimum observed, 0.04 mg/L, Nov. 20 and Jan. 11.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 1,100 lb, July 6; minimum daily, 4.0 lb, Oct. 29,

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1992					
06...	1105	--	-7.6	0.080	39
08...	0915	--	9.1	0.190	32
30...	1430	--	23	0.070	16
NOV					
02...	0945	--	23	0.110	18
20...	0900	--	-31	0.040	4
24...	1115	--	89	0.070	9
DEC					
07...	0950	--	31	0.050	--
17...	0900	--	86	0.090	56
21...	1100	--	23	0.060	2
JAN 1993					
08...	1115	--	15	0.050	--
11...	1005	--	25	0.040	15
FEB					
02...	0830	--	25	0.070	19
MAR					
01...	1405	18	--	0.060	18
09...	1310	--	116	0.400	16
25...	0855	--	141	0.310	29
27...	1005	--	188	0.370	17
29...	0845	--	196	0.240	12
30...	0820	--	200	0.280	16
31...	0850	--	206	0.160	13
APR					
05...	1720	--	117	0.120	15
07...	0905	--	111	0.090	10
08...	0900	--	205	0.090	--
09...	0805	--	189	0.100	16
12...	0830	--	161	0.090	15
12...	1210	--	170	0.100	10
15...	1730	--	245	0.150	75
19...	1650	--	257	0.150	90
20...	1130	--	187	0.130	51
21...	0840	--	307	0.120	25
23...	0840	--	273	0.100	32
26...	0830	--	195	0.130	50
28...	0840	--	194	0.140	56
MAY					
03...	0855	--	129	0.170	142
04...	0845	--	142	0.190	173
06...	0825	--	141	0.150	75
18...	0830	--	71	0.190	63
25...	0830	--	81	0.220	64
27...	0845	--	79	0.200	95

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04073468 GREEN LAKE INLET AT COUNTY TRUNK HIGHWAY A NEAR GREEN LAKE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUN 1993					
02...	0900	--	73	0.170	86
04...	0855	--	74	0.160	86
08...	0915	--	213	0.270	109
10...	0820	--	247	0.190	34
10...	1210	--	243	0.170	--
10...	1221	--	246	--	33
14...	0855	--	131	0.200	59
16...	0840	--	122	0.240	57
18...	0900	--	342	0.280	60
21...	0835	--	238	0.220	45
22...	0845	--	223	0.200	33
25...	0835	--	234	0.220	35
30...	1030	--	115	0.240	53
JUL					
02...	0915	--	283	0.180	34
06...	1100	--	545	0.440	123
06...	1630	--	526	0.380	--
06...	1635	--	518	--	99
07...	0850	--	430	0.340	69
09...	0800	--	242	--	67
09...	1325	--	363	0.290	--
12...	0800	--	241	0.260	--
12...	1325	--	237	--	30
15...	0850	--	201	0.260	21
20...	1120	--	126	0.170	61
AUG					
02...	1150	64	--	0.190	65
09...	1415	60	--	0.070	56
25...	1540	40	--	0.220	95
SEP					
22...	0845	--	37	0.140	39

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04073468 GREEN LAKE INLET AT COUNTY TRUNK HIGHWAY A NEAR GREEN LAKE, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	1.1	.79	.55	1.7	.89	4.7	36	17	12	12	7.1
2	1.7	2.0	.62	.51	1.5	.98	4.3	44	17	18	11	5.8
3	1.4	3.3	.60	.60	1.4	1.2	4.7	53	15	17	11	5.2
4	1.4	2.2	.48	.77	1.5	2.1	4.5	62	13	37	10	4.1
5	1.2	1.9	.46	.84	1.7	2.8	4.5	42	11	57	9.6	4.5
6	1.7	1.6	.42	.85	1.4	4.5	3.8	30	9.8	146	9.0	3.1
7	1.5	1.3	.38	.85	1.4	6.8	4.0	25	14	86	8.5	2.7
8	.67	1.1	.34	.84	1.3	8.3	10	23	52	76	7.8	2.5
9	1.1	1.0	.32	.84	1.3	5.5	8.9	22	53	62	9.1	2.5
10	2.4	1.0	.28	.84	1.2	3.5	8.3	20	24	41	8.0	2.2
11	1.6	.83	.27	.90	.99	3.0	7.4	17	17	30	7.2	1.8
12	.94	.51	.26	1.0	1.2	2.1	7.6	16	12	21	6.6	2.3
13	1.9	.71	.28	1.1	1.2	1.8	7.4	13	9.6	15	5.7	4.0
14	1.1	.60	.79	1.0	1.2	1.5	8.3	14	18	12	5.1	5.8
15	1.2	.52	4.2	1.1	1.1	1.2	30	11	20	11	7.4	4.9
16	1.3	.43	15	1.1	1.0	1.6	50	11	23	11	8.8	4.5
17	1.5	.33	12	1.1	.88	1.5	64	11	26	12	13	4.1
18	1.5	.33	5.4	1.0	.86	1.2	59	11	50	16	18	3.7
19	1.2	.33	2.0	1.1	.87	1.2	55	11	40	19	18	3.5
20	1.5	.85	.73	.96	.80	1.1	34	10	40	20	17	4.8
21	1.3	3.1	.34	1.3	.85	1.0	23	9.6	30	19	15	7.2
22	1.2	2.4	.32	1.4	.88	1.0	23	9.0	20	17	13	5.1
23	1.3	2.1	.27	1.4	.89	1.9	23	12	14	15	13	5.0
24	1.0	2.0	.28	1.6	.86	5.3	23	16	12	15	11	4.5
25	.88	1.8	.29	1.4	.87	14	23	14	20	16	10	3.7
26	.83	1.3	.28	1.2	.90	18	23	17	17	12	7.7	3.7
27	.75	1.3	.29	1.3	.94	9.8	23	19	18	15	6.9	3.5
28	.90	1.1	.31	1.2	.84	7.9	28	18	17	16	6.0	2.7
29	.44	.89	.40	.99	---	7.6	29	15	15	14	5.2	2.7
30	.68	.75	.49	1.1	---	8.1	33	18	15	13	7.9	2.1
31	.82	---	.55	1.4	---	6.8	---	18	---	13	9.2	---
TOTAL	38.61	38.68	49.44	32.14	31.53	134.17	631.4	647.6	659.4	884	307.7	119.3

PHOSPHORUS TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	12	16	11	12	6.0	102	116	68	115	69	46
2	12	24	13	9.1	11	8.0	88	120	67	193	64	38
3	8.9	39	13	9.5	10	13	89	126	58	179	56	34
4	7.5	26	10	11	11	28	80	146	50	330	47	28
5	5.6	24	10	11	12	47	75	129	42	431	39	31
6	8.0	20	9.5	9.5	9.9	97	66	117	39	1100	33	22
7	11	17	9.1	8.5	9.6	182	64	103	65	811	27	19
8	7.5	15	8.4	7.4	9.3	286	104	101	267	700	22	19
9	12	14	8.6	6.2	9.0	261	108	98	352	568	23	20
10	24	14	7.9	5.2	8.6	156	101	92	244	457	21	17
11	15	12	8.0	4.8	6.9	115	88	83	177	406	20	14
12	9.2	7.7	8.3	5.4	8.1	70	92	81	128	346	20	19
13	18	11	8.3	5.8	8.3	51	100	69	95	300	19	35
14	11	9.7	12	5.7	8.0	36	106	73	127	278	18	51
15	12	8.6	27	6.0	7.8	27	149	62	154	251	29	43
16	12	7.4	55	6.0	7.2	33	192	62	193	201	39	39
17	15	5.8	43	6.1	6.0	30	231	63	237	163	63	35
18	14	5.9	39	6.0	5.9	24	206	67	467	161	98	31
19	11	6.1	31	6.4	5.9	22	190	61	376	138	99	27
20	14	15	26	5.8	5.4	19	177	56	386	114	89	34
21	12	43	22	8.0	5.8	18	196	50	299	107	75	48
22	11	35	20	8.9	5.9	18	171	46	234	93	65	36
23	12	32	15	8.6	6.0	34	147	71	174	85	63	35
24	9.5	32	14	9.9	5.7	106	133	109	147	84	54	31
25	8.1	30	13	8.9	5.8	294	127	92	248	90	48	25
26	7.6	22	11	8.1	6.0	427	117	86	201	71	38	25
27	6.8	22	10	8.8	6.2	382	116	79	193	87	36	23
28	8.1	20	9.8	8.1	5.5	322	138	74	174	93	34	18
29	4.0	16	11	6.8	---	293	123	63	140	80	31	18
30	6.1	14	12	7.8	---	269	119	72	136	74	49	14
31	8.1	---	12	9.7	---	164	---	73	---	73	58	---
TOTAL	335.0	560.2	512.9	240.0	218.8	3838.0	3795	2640	5538	8179	1446	875



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04073500 FOX RIVER AT BERLIN, WI

LOCATION.--Lat 43°57'14", long 88°57'08", in NE 1/4 sec.16, T.17 N., R.13 E., Green Lake County, Hydrologic Unit 04030201, on left bank, 0.4 mi downstream from government dam, 1.0 mi south of Huron Street bridge in Berlin, 2.5 mi upstream from Barnes Creek, and at mile 89.0.

DRAINAGE AREA.--1,340 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1898 to current year.

REVISED RECORDS.--WSP 1337: 1910. WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 744.52 ft above mean tide at New York City (by U.S. Army Corps of Engineers). Prior to Oct. 27, 1954, nonrecording gage at site 0.3 mi upstream at same datum.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 5 to Mar. 22. Records good except for ice-affected period, which is fair. Usually less than about 20 ft<sup>3</sup>/s was diverted into the basin from the Wisconsin River at Portage Canal throughout the year. Data-collection platform and gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1950	976	2140	1200	1200	960	2860	4110	2360	3480	3420	1850
2	1920	1030	2120	1200	1100	980	2860	4050	2320	3490	3340	1810
3	1880	1140	2090	1300	1200	1000	2930	4010	2290	3520	3260	1780
4	1830	1210	2060	1200	1200	1000	3030	4000	2250	3650	3180	1730
5	1770	1230	2000	1200	1100	1100	3120	3970	2220	3820	3090	1680
6	1710	1240	2000	1100	1100	1100	3180	3930	2180	4190	3040	1620
7	1650	1240	1900	1100	1100	1100	3220	3890	2150	4380	2950	1580
8	1590	1240	2000	1100	1100	1100	3370	3910	2200	4540	2870	1530
9	1540	1260	2100	1200	1100	1100	3490	3930	2430	4600	2820	1490
10	1480	1270	2200	1200	1000	1100	3530	3910	2550	4630	2780	1450
11	1450	1280	2300	1200	1000	1100	3570	3850	2630	4650	2720	1400
12	1400	1280	2200	1200	1000	1100	3650	3760	2680	4660	2660	1380
13	1330	1270	2200	1200	1000	1100	3660	3670	2690	4630	2580	1380
14	1270	1270	2100	1200	1000	1100	3620	3580	2730	4590	2520	1400
15	1210	1250	2000	1100	1000	1200	3660	3490	2730	4530	2500	1390
16	1170	1220	1900	1100	1000	1200	3830	3370	2700	4440	2480	1380
17	1140	1190	1800	1100	1000	1200	3900	3260	2740	4350	2440	1370
18	1130	1150	1700	1100	1000	1300	3960	3160	3100	4280	2400	1360
19	1100	1140	1600	1100	1000	1300	4020	3060	3360	4220	2370	1350
20	1090	1210	1500	1100	1000	1300	4250	2950	3660	4160	2330	1370
21	1090	1440	1500	1100	1000	1400	4510	2840	3820	4080	2300	1400
22	1090	1600	1500	1200	980	1400	4600	2740	3890	4000	2260	1400
23	1090	1730	1400	1200	960	1470	4620	2680	3890	3910	2230	1410
24	1080	1850	1300	1100	940	1480	4640	2670	3880	3840	2180	1400
25	1060	1970	1300	1200	920	1670	4590	2610	3980	3810	2130	1400
26	1060	2070	1300	1200	920	1910	4510	2540	3970	3770	2080	1410
27	1030	2130	1300	1200	920	2080	4440	2490	3910	3700	2030	1430
28	1010	2150	1400	1100	940	2210	4430	2470	3810	3670	1990	1440
29	1000	2150	1300	1100	---	2380	4330	2410	3690	3620	1960	1440
30	984	2150	1300	1200	---	2580	4250	2390	3580	3540	1930	1440
31	974	---	1200	1200	---	2770	---	2390	---	3480	1910	---
TOTAL	41078	43336	54710	36000	28780	43790	114630	102090	90390	126230	78750	44470
MEAN	1325	1445	1765	1161	1028	1413	3821	3293	3013	4072	2540	1482
MAX	1950	2150	2300	1300	1200	2770	4640	4110	3980	4660	3420	1850
MIN	974	976	1200	1100	920	960	2860	2390	2150	3480	1910	1350
CFSM	.99	1.08	1.32	.87	.77	1.05	2.85	2.46	2.25	3.04	1.90	1.11
IN.	1.14	1.20	1.52	1.00	.80	1.22	3.18	2.83	2.51	3.50	2.19	1.23

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 1993, BY WATER YEAR (WY)

	MEAN	978	1071	893	694	753	1767	2230	1450	1175	896	782	891
MAX	3819	2463	1871	1631	1803	4272	4225	3801	4230	4072	2540	3491	
(WY)	1987	1986	1986	1939	1966	1973	1979	1973	1905	1993	1993	1938	
MIN	347	380	369	311	318	495	667	600	367	384	346	364	
(WY)	1959	1977	1977	1959	1959	1964	1902	1934	1988	1988	1958	1958	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1898 - 1993

ANNUAL TOTAL	465812	804254	
ANNUAL MEAN	1273	2203	1135
HIGHEST ANNUAL MEAN			2203
LOWEST ANNUAL MEAN			559
HIGHEST DAILY MEAN	2300	Dec 11	6900
LOWEST DAILY MEAN	459	Aug 28	217
ANNUAL SEVEN-DAY MINIMUM	480	Aug 23	937
INSTANTANEOUS PEAK FLOW			4680
INSTANTANEOUS PEAK STAGE			14.64
INSTANTANEOUS LOW FLOW			210
ANNUAL RUNOFF (CFSM)	.95	1.64	.85
ANNUAL RUNOFF (INCHES)	12.93	22.33	11.50
10 PERCENT EXCEEDS	2000	3960	2170
50 PERCENT EXCEEDS	1300	1900	860
90 PERCENT EXCEEDS	556	1090	500

(a) Ice-affected

## STREAMS TRIBUTARY TO LAKE MICHIGAN

97

04074950 WOLF RIVER AT LANGLADE, WI

LOCATION.--Lat 45°11'24", long 88°44'00", between secs. 3 and 10, T.31 N., R.14 E., Langlade County, Hydrologic Unit 04030202, on left bank, upstream of bridge on State Highway 64 at Langlade, 1.5 mi east of White Lake, 3.0 mi upstream from White Lake Creek, and at about mile 170 above mouth.

DRAINAGE AREA.--463 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1966 to September 1979, October 1980 to current year.

REVISED RECORDS.--WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,240 ft above sea level, from topographic map. Prior to Oct. 1, 1976, nonrecording gage 50 ft downstream at same elevation.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 22 to Mar. 29. Records good except those for ice-affected period, which is fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	571	302	672	390	320	280	709	953	723	855	601	483
2	563	432	610	370	320	290	734	943	675	824	511	462
3	554	587	514	380	320	310	690	1140	668	781	446	437
4	423	578	515	380	320	310	669	1340	657	756	425	395
5	339	541	394	370	310	320	613	1420	635	694	420	378
6	337	550	366	350	300	320	561	1340	607	648	481	366
7	357	543	484	340	290	320	563	1250	576	605	489	357
8	437	573	537	330	300	330	675	1170	641	573	458	351
9	524	522	533	320	300	340	779	1090	844	582	390	402
10	620	461	509	310	300	360	778	1050	889	580	400	447
11	547	508	488	300	300	370	789	1240	850	544	398	439
12	507	496	525	300	300	350	809	1250	826	490	417	407
13	437	480	461	300	300	340	816	1110	790	445	417	459
14	466	493	457	300	290	330	792	994	816	437	392	881
15	465	511	476	310	290	310	765	907	773	422	364	1020
16	469	492	611	310	280	300	739	842	720	404	348	1050
17	459	479	646	310	280	300	711	787	869	393	357	1060
18	420	457	667	310	280	310	757	725	1060	399	348	1050
19	322	459	621	310	280	300	903	653	1110	397	343	978
20	309	483	591	310	270	290	921	634	1650	375	328	916
21	314	825	484	320	270	300	887	610	1730	359	323	848
22	325	952	470	320	270	310	863	604	1570	344	319	750
23	328	835	440	330	270	310	842	596	1470	320	325	684
24	349	803	400	340	270	320	838	625	1370	321	340	637
25	405	822	360	360	270	340	871	608	1280	401	359	602
26	401	833	370	350	280	370	835	577	1200	464	358	573
27	320	800	350	340	270	410	821	544	1100	459	394	552
28	299	806	360	320	270	450	1030	523	1030	436	424	534
29	301	758	380	310	---	520	1030	506	971	569	426	502
30	296	751	400	300	---	653	978	535	913	606	443	426
31	296	---	410	310	---	712	---	709	---	620	468	---
TOTAL	12760	18132	15101	10200	8120	11075	23768	27275	29013	16103	12512	18446
MEAN	412	604	487	329	290	357	792	880	967	519	404	615
MAX	620	952	672	390	320	712	1030	1420	1730	855	601	1060
MIN	296	302	350	300	270	280	561	506	576	320	319	351
CFSM	.89	1.31	1.05	.71	.63	.77	1.71	1.90	2.09	1.12	.87	1.33
IN.	1.03	1.46	1.21	.82	.65	.89	1.91	2.19	2.33	1.29	1.01	1.48

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1993, BY WATER YEAR (WY)

MEAN	440	453	377	317	317	482	831	621	502	364	321	409
MAX	813	788	578	548	482	1227	1330	1312	1013	874	632	813
(WY)	1986	1986	1986	1969	1984	1973	1976	1973	1991	1968	1972	1968
MIN	196	203	226	193	213	278	263	319	173	183	188	171
(WY)	1977	1977	1977	1977	1982	1982	1990	1987	1988	1989	1989	1989

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1966 - 1993

ANNUAL TOTAL	177222	202505	455
ANNUAL MEAN	484	555	666
HIGHEST ANNUAL MEAN			1973
LOWEST ANNUAL MEAN			326
HIGHEST DAILY MEAN	1520	1730	2200
LOWEST DAILY MEAN	229	(a)270 (b)Feb 20	137
ANNUAL SEVEN-DAY MINIMUM	246	271	142
INSTANTANEOUS PEAK FLOW		(c)1780	(d)2200
INSTANTANEOUS PEAK STAGE		(a)9.95	(a)10.18
INSTANTANEOUS LOW FLOW		Dec 28	119
ANNUAL RUNOFF (CFSM)	1.05	1.20	.98
ANNUAL RUNOFF (INCHES)	14.24	16.27	13.35
10 PERCENT EXCEEDS	781	918	792
50 PERCENT EXCEEDS	439	466	370
90 PERCENT EXCEEDS	268	300	240

(a) Ice affected

(b) Also occurred on Feb. 21-25, 27, 28 (ice affected)

(c) Gage height, 9.84 ft

(d) Gage height, 9.48 ft

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04075050 WOLF RIVER AT HIGHWAY M NEAR LANGLADE, WI

LOCATION.--Lat 45°07'38", long 88°39'45", in SE 1/4 NE 1/4 sec.31, T.31 N., R.14 E., Langland County, Hydrologic Unit 04030202, at County Highway M bridge near State Highway 55, 5.7 mi southeast of Langlade.

DRAINAGE AREA.--489 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1986 to current year.

REMARKS.--Discharge values are estimated from record at station 04074950 Wolf River at Langlade.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	OXYGEN, DIS- SOLVED (MG/L) (00300)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)
NOV 1992									
03...	1610	618	178	7.4	3.0	55	13.0	24	11
DEC									
14...	1520	467	184	6.4	0.5	35	14.3	20	9.9
FEB 1993									
16...	1530	287	228	6.4	0.0	5	14.7	27	13
APR									
13...	1620	836	142	7.5	8.0	50	11.4	16	7.3
MAY									
21...	1125	622	164	7.3	12.5	53	10.3	17	8.2
JUL									
14...	1220	428	202	7.8	18.5	64	9.2	22	10
AUG									
26...	1220	356	218	7.7	22.5	35	8.3	24	12

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY LAB (MG/L AS CACO3) (90410)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV 1992									
03...	2.1	1.0	99	3.1	6.5	0.20	8.7	131	0.020
DEC									
14...	2.4	0.80	85	2.6	5.9	0.10	9.8	117	0.030
FEB 1993									
16...	2.9	1.0	110	3.0	26	0.10	14	157	0.020
APR									
13...	2.0	0.90	62	2.5	4.7	0.10	8.1	102	<0.010
MAY									
21...	1.9	0.70	76	2.6	4.8	0.10	5.5	106	<0.010
JUL									
14...	2.1	0.50	91	2.4	4.9	0.10	7.9	128	<0.010
AUG									
26...	2.5	0.70	105	2.3	5.2	0.10	7.7	122	<0.010

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
NOV 1992									
03...	0.160	0.030	0.30	0.020	<0.010	260	110	40	11
DEC									
14...	0.290	0.040	0.30	0.020	<0.010	360	120	50	5
FEB 1993									
16...	0.410	0.080	0.30	0.020	<0.010	200	140	40	7
APR									
13...	0.130	0.040	0.30	0.030	<0.010	430	210	60	9
MAY									
21...	0.088	0.050	0.30	0.030	<0.010	380	160	60	13
JUL									
14...	0.120	0.060	0.60	0.050	<0.010	490	300	60	13
AUG									
26...	0.083	0.030	0.40	0.020	0.010	200	78	50	10

## 99

LOCATION.--Lat 44°50'09", long 88°37'30", in SE 1/4 NW 1/4 sec.12, T.27 N., R.15 E., Shawano County, Hydrologic Unit 04030202, on left bank 350 ft downstream from dam, 3.7 mi north of Shawano, 1.5 mi upstream from Red River, and at mile 130.6.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1907 to March 1909, October 1910 to current year. Monthly discharge only for some periods, published in WSP 1307. Published as "at Keshena" prior to April 1928. Published as "at Keshena Falls" April 1928 to September 1981. Published as "at Keshena Falls near Keshena" October 1981 to September 1985. Prior to October 1985, all records published under station number 04077000.

GAGE.--Water-stage recorder. Elevation of gage is 810 ft above sea level, from topographic map. Prior to Mar. 23, 1928, nonrecording gage at bridge in Keshena 4.1 mi upstream at different datum, and from Mar. 23, 1928 to Sept. 30, 1985, water-stage recorder at site 5.8 mi upstream at different datum. Gage-height telemeter at station.

REMARKS.--Estimated daily discharges: Ice-affected period, Nov. 26 to Apr. 5. Records good except those for ice-affected period, which is fair. Minor regulation by power dam upstream.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	898	610	1100	660	600	560	1200	1870	1990	1590	1050	1020
2	870	821	1000	640	600	580	1100	1810	1800	1580	1000	971
3	851	1160	880	720	620	580	1100	2070	1450	1480	1010	891
4	816	1240	840	680	620	580	1000	2460	1330	1500	905	807
5	717	1120	800	660	600	600	1000	2760	1230	1520	842	714
6	632	937	640	660	580	600	952	2600	1210	1650	820	673
7	639	942	720	640	600	620	1050	2330	1200	1490	891	731
8	632	844	840	620	580	640	1390	2060	1250	1350	879	704
9	641	900	960	620	600	660	1790	1920	1820	1360	897	701
10	884	913	960	620	600	640	1820	1830	2010	1290	849	764
11	1010	867	1000	620	580	640	1700	2270	1860	1220	846	806
12	916	896	960	620	600	620	1630	2590	1610	1150	795	796
13	833	859	900	620	600	580	1580	2330	1510	1080	878	860
14	785	814	880	600	600	560	1530	1960	1780	1040	862	1090
15	762	691	960	600	560	560	1520	1690	1850	1020	792	1650
16	781	637	1100	600	540	560	1760	1520	1650	962	854	1710
17	793	795	1400	580	520	580	1620	1390	1770	942	803	1640
18	769	762	1200	580	520	560	1570	1380	2190	983	762	1570
19	734	732	900	580	520	540	1790	1310	2630	977	742	1470
20	665	940	740	600	540	560	2050	1190	3170	921	723	1410
21	636	2000	780	620	540	580	1950	1160	3620	831	673	1470
22	645	2460	840	640	540	580	1780	1120	3370	831	659	1370
23	661	2250	900	660	540	580	1690	1140	2820	798	584	1200
24	676	1780	940	660	540	620	1700	1280	2340	769	659	1070
25	688	1530	780	640	520	700	1740	1330	2490	904	685	989
26	715	1300	700	640	500	800	1750	1250	2240	1070	732	956
27	707	1100	660	640	520	880	1660	1150	2150	1090	907	921
28	625	1100	700	620	540	960	1940	1050	1880	1050	997	883
29	587	1200	720	600	---	1100	2170	944	1770	943	946	853
30	610	1200	700	600	---	1000	2070	1140	1700	1040	960	802
31	601	---	680	640	---	1200	---	1850	---	1040	1070	---
TOTAL	22779	33400	27180	19480	15820	20820	47602	52754	59690	35471	26072	31492
MEAN	735	1113	877	628	565	672	1587	1702	1990	1144	841	1050
MAX	1010	2460	1400	720	620	1200	2170	2760	3620	1650	1070	1710
MIN	587	610	640	580	500	540	952	944	1200	769	584	673
CFSM	.90	1.36	1.07	.77	.69	.82	1.94	2.09	2.44	1.40	1.03	1.29

MEAN	713	748	606	519	498	730	1343	1109	908	682	607	701
MAX	1573	1517	1115	937	888	1972	2526	2265	1990	1186	1277	1699
(WY)	1942	1912	1986	1986	1984	1973	1922	1960	1993	1968	1912	1941
MIN	376	383	335	323	315	385	574	510	328	366	294	330
(WY)	1949	1977	1928	1926	1936	1956	1990	1931	1988	1933	1934	1933



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04077400 WOLF RIVER NEAR SHAWANO, WI--CONTINUED

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1907 - 1993	
ANNUAL TOTAL	331842		392560		764	
ANNUAL MEAN	907		1076		1119	1973
HIGHEST ANNUAL MEAN					510	1934
LOWEST ANNUAL MEAN					5200	Mar 15 1973
HIGHEST DAILY MEAN	2770	May 18	3620	Jun 21	194	Feb 7 1936
LOWEST DAILY MEAN	362	Jun 24	(a)500	Feb 26	260	Feb 3 1936
ANNUAL SEVEN-DAY MINIMUM	520	Jan 15	529	Feb 21		
INSTANTANEOUS PEAK FLOW			3820	Jun 21		
INSTANTANEOUS PEAK STAGE			11.88	Jun 21	(b)15.59	Dec 2 1983
ANNUAL RUNOFF (CFSM)	1.11		1.32		.94	
ANNUAL RUNOFF (INCHES)	15.13		17.90		12.77	
10 PERCENT EXCEEDS	1460		1840		1300	
50 PERCENT EXCEEDS	775		897		638	
90 PERCENT EXCEEDS	560		586		410	

(a) Ice affected

(b) From high-water mark in well, at site and datum then in use, backwater from ice

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04077400 WOLF RIVER NEAR SHAWANO, WI--CONTINUED

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1989 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	COLOR (PLAT- INUM- COBALT UNITS) (00080)	OXYGEN, DIS- SOLVED (MG/L) (00300)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
NOV 1992									
04...	1410	817	209	7.7	3.0	47	12.5	20	9.5
DEC									
15...	0815	880	226	7.3	0.5	25	13.4	25	13
FEB 1993									
16...	1630	540	272	7.6	0.0	13	14.5	32	16
APR									
13...	1745	1530	172	7.5	7.0	55	12.2	20	9.4
MAY									
21...	1025	1170	212	7.6	12.0	55	9.7	23	11
JUL									
14...	1115	1080	245	7.5	18.5	58	8.3	27	13
AUG									
26...	1055	723	274	7.8	23.5	28	6.9	30	15

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINEITY LAB (MG/L AS CACO3) (90410)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
NOV 1992									
04...	2.3	0.90	84	3.3	5.5	0.20	8.1	124	0.020
DEC									
15...	2.6	0.90	110	3.1	7.2	0.20	11	143	0.030
FEB 1993									
16...	2.9	1.1	127	3.1	9.6	0.20	13	153	0.020
APR									
13...	2.0	0.90	78	2.8	5.9	0.10	8.4	116	<0.010
MAY									
21...	2.3	0.90	101	3.4	5.9	0.20	6.6	130	--
JUL									
14...	2.3	<0.10	116	3.5	5.7	0.20	8.6	154	<0.010
AUG									
26...	2.8	0.90	134	3.1	6.7	0.20	8.4	158	<0.010

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)
NOV 1992									
04...	0.260	0.040	0.30	0.020	<0.010	340	100	70	7
DEC									
15...	0.430	0.030	0.30	0.020	<0.010	290	110	30	8
FEB 1993									
16...	0.520	0.080	<0.20	<0.010	<0.010	2400	100	20	11
APR									
13...	0.190	0.030	0.50	0.020	<0.010	400	160	50	15
MAY									
21...	--	--	--	--	--	330	150	50	21
JUL									
14...	0.120	0.060	0.50	0.040	<0.010	500	280	60	30
AUG									
26...	0.110	0.040	0.30	0.030	<0.010	190	63	50	32

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04077630 RED RIVER, AT MORGAN ROAD, NEAR MORGAN, WI

LOCATION.--Lat 44°53'53", long 88°50'53", in NW 1/4 NE 1/4 sec.19, T.28 N., R.14 E., Shawano County, Hydrologic Unit 04030202, on left bank 1.7 mi northwest of Morgan, 1.1 mi downstream of the confluence with the West Branch of the Red River, and 2.2 mi upstream of Smith Creek.

DRAINAGE AREA.--114 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 990 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 1 to Dec. 15 and Aug. 28 to Sept. 10; and ice-affected period, Dec. 16 to Mar. 28. Records good except those for ice-affected period, which is fair, and periods of missing record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	120	220	140	120	92	257	275	358	194	163	170
2	190	170	200	150	120	96	221	248	317	202	158	150
3	170	240	180	150	120	100	186	294	278	209	153	140
4	150	260	150	140	110	100	176	377	221	217	155	140
5	120	250	130	140	110	110	178	388	196	219	149	130
6	110	240	140	130	120	120	184	344	187	233	152	140
7	130	240	180	130	110	120	188	300	183	230	158	140
8	170	230	210	120	120	130	259	273	228	204	151	140
9	200	210	210	120	120	130	308	244	307	199	152	140
10	220	160	200	120	110	130	308	235	309	196	167	140
11	190	180	190	120	110	120	292	310	278	185	164	141
12	150	170	190	120	110	110	264	384	230	178	150	144
13	140	160	170	120	110	110	237	327	196	173	144	152
14	170	170	170	130	110	100	220	282	253	181	143	219
15	160	180	160	120	110	98	223	234	283	181	149	259
16	160	170	160	120	110	94	255	204	273	171	161	233
17	160	160	160	120	100	98	250	193	272	164	155	200
18	140	150	150	120	98	100	257	193	319	185	146	175
19	110	160	150	120	94	94	281	196	385	185	145	157
20	100	190	150	120	92	92	294	189	488	172	138	153
21	110	260	150	130	90	92	280	183	512	162	116	177
22	120	320	150	130	88	96	254	180	447	154	121	176
23	120	300	140	130	86	100	226	194	380	151	134	169
24	130	280	140	130	84	110	212	235	326	160	132	157
25	150	280	140	130	82	130	217	246	324	192	117	146
26	130	300	140	120	84	140	212	230	288	241	121	142
27	110	290	140	120	86	170	209	201	270	230	176	141
28	96	280	150	110	88	200	284	189	243	201	170	140
29	94	270	160	120	---	259	309	181	216	177	160	139
30	94	250	160	120	---	274	301	209	203	165	170	136
31	96	---	150	130	---	278	---	338	---	159	180	---
TOTAL	4390	6640	5090	3920	2892	3993	7342	7876	8770	5870	4650	4786
MEAN	142	221	164	126	103	129	245	254	292	189	150	160
MAX	220	320	220	150	120	278	309	388	512	241	180	259
MIN	94	120	130	110	82	92	176	180	183	151	116	130

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MEAN	142	221	164	126	103	129	245	254	292	189	150	160
MAX	142	221	164	126	103	129	245	254	292	189	150	160
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993
MIN	142	221	164	126	103	129	245	254	292	189	150	160
(WY)	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993	1993

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

ANNUAL TOTAL	66219
ANNUAL MEAN	181
HIGHEST DAILY MEAN	512 Jun 21
LOWEST DAILY MEAN	(a)82 Feb 25
ANNUAL SEVEN-DAY MINIMUM	85 Feb 22
INSTANTANEOUS PEAK FLOW	526 Jun 20
INSTANTANEOUS PEAK STAGE	8.11 Jun 20
10 PERCENT EXCEEDS	280
50 PERCENT EXCEEDS	161
90 PERCENT EXCEEDS	110

(a) Ice affected

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04077630 RED RIVER, AT MORGAN ROAD, NEAR MORGAN, WI--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1992 to September 1993.

REMARKS.--Samples were taken at equal-width increments.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	SEDI- MENT, SUS- PENDE D (MG/L) (80154)
NOV 1992												
04...	1240	252	--	--	--	--	0.530	0.050	0.60	0.040	0.010	8
JAN 1993												
14...	1625	119	359	7.3	0.0	14.9	1.60	0.050	0.50	0.040	0.010	8
FEB												
17...	1400	95	327	6.9	0.0	14.8	1.70	0.060	0.30	0.030	<0.010	39
MAY												
20...	1335	190	304	8.0	11.5	10.7	0.680	0.060	0.20	0.020	0.010	5
JUL												
13...	1830	175	339	8.0	17.0	9.2	0.710	0.090	0.40	0.050	0.020	--



## STREAMS TRIBUTARY TO LAKE MICHIGAN

0407809265 MIDDLE BRANCH EMBARRASS RIVER NEAR WITTENBERG, WI

LOCATION.--Lat 44°49'31", long 89°07'05", in NW 1/4 NW 1/4 sec.13, T.27 N., R.11 E., Shawano County, Hydrologic Unit 04030202, on right bank 60 ft upstream from Cardinal Lane, 2.5 mi east of Wittenberg, and 2.5 mi upstream from Wilson Creek.

DRAINAGE AREA.--76.3 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,118.24 ft above sea level (levels by Wisconsin Department of Transportation).

REMARKS.--Estimated daily discharges: Ice-affected period, Nov. 26 to Mar. 21. Records good except those for ice-affected period, which is poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	50	86	43	42	43	186	197	303	93	59	173
2	66	78	84	42	44	45	169	165	304	97	58	136
3	61	148	80	45	42	44	128	222	215	106	54	101
4	56	170	78	45	44	43	112	320	138	110	54	89
5	53	174	76	45	43	42	103	365	111	114	52	73
6	52	138	80	44	42	42	105	315	99	118	53	64
7	52	93	88	44	42	43	109	245	94	117	59	59
8	51	77	74	43	42	47	155	200	145	98	56	56
9	58	74	66	43	41	46	204	171	268	99	54	57
10	95	82	62	42	40	45	240	161	260	99	61	59
11	118	98	60	42	40	42	220	216	231	90	60	60
12	111	99	60	43	40	39	183	214	163	83	53	60
13	83	85	58	44	40	36	158	204	119	77	46	64
14	69	74	56	43	38	38	143	153	153	78	45	118
15	63	61	62	42	37	40	141	118	199	78	49	161
16	64	52	110	42	35	40	151	103	194	71	68	167
17	68	58	130	41	35	39	151	96	184	67	64	122
18	70	64	150	40	34	38	168	94	245	69	55	88
19	65	62	110	40	34	38	196	98	343	70	51	76
20	63	93	92	41	35	39	228	95	476	66	49	69
21	64	255	80	42	37	40	225	87	520	61	46	81
22	72	336	76	43	37	42	183	87	475	56	44	92
23	76	372	66	43	37	43	146	99	351	55	44	84
24	72	290	58	43	36	44	129	157	238	54	44	73
25	66	208	52	41	35	49	124	175	146	77	43	65
26	61	140	50	42	35	59	123	151	199	126	45	62
27	59	100	47	43	37	82	120	114	157	124	127	59
28	56	110	45	40	40	120	180	104	125	83	161	58
29	54	100	45	39	---	170	218	96	110	70	137	57
30	52	90	45	39	---	197	240	115	100	63	123	56
31	50	---	45	40	---	218	---	236	---	58	170	---
TOTAL	2073	3831	2271	1309	1084	1893	4938	5173	6665	2627	2084	2539
MEAN	66.9	128	73.3	42.2	38.7	61.1	165	167	222	84.7	67.2	84.6
MAX	118	372	150	45	44	218	240	365	520	126	170	173
MIN	50	50	45	39	34	36	103	87	94	54	43	56
CFSM	.88	1.67	.96	.55	.51	.80	2.16	2.19	2.91	1.11	.88	1.11
IN.	1.01	1.87	1.11	.64	.53	.92	2.41	2.52	3.25	1.28	1.02	1.24

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1993, BY WATER YEAR (WY)

	1990	1991	1992	1993	1990	1991	1992	1993	1990	1991	1992	1993
MEAN	46.3	73.3	46.5	30.9	32.1	88.5	137	119	116	53.0	44.7	71.5
MAX	66.9	128	73.3	42.5	38.7	116	198	167	222	84.7	67.2	97.9
(WY)	1993	1993	1993	1992	1993	1990	1992	1993	1993	1993	1993	1992
MIN	23.2	27.2	13.5	18.5	24.9	61.1	40.4	74.2	44.6	41.6	32.8	41.0
(WY)	1990	1990	1990	1991	1991	1993	1990	1990	1992	1991	1992	1991

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1990 - 1993

ANNUAL TOTAL	28768	36487	71.6	
ANNUAL MEAN	78.6	100	100	1993
HIGHEST ANNUAL MEAN			50.0	1990
LOWEST ANNUAL MEAN			601	Mar 15 1990
HIGHEST DAILY MEAN	434	May 18	520	Jun 21
LOWEST DAILY MEAN	14	Aug 25	34	Feb 18-19
ANNUAL SEVEN-DAY MINIMUM	27	Aug 13	35	Feb 15
INSTANTANEOUS PEAK FLOW			592	Jun 21
INSTANTANEOUS PEAK STAGE			4.35	Jun 21
INSTANTANEOUS LOW FLOW			(c)25	Mar 17
ANNUAL RUNOFF (CFSM)	1.03	1.31	7.6	Nov 28 1989
ANNUAL RUNOFF (INCHES)	14.03	17.79	.94	
10 PERCENT EXCEEDS	147	199	152	
50 PERCENT EXCEEDS	56	71	46	
90 PERCENT EXCEEDS	33	41	23	

(a) Result of freezeup

(b) Backwater from ice

(c) Minimum recorded, but may have been less during period of no gage-height record, Mar. 13-14

## STREAMS TRIBUTARY TO LAKE MICHIGAN

0407809265 MIDDLE BRANCH EMBARRASS RIVER NEAR WITTENBERG, WI--CONTINUED

## WATER-QUALITY RECORDS

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: December 1989 to current year.

INSTRUMENTATION.--Continuous water temperature recorder since December 1989. Sensor located at midstream.

REMARKS.--Records represent water temperature at sensor within 0.5°C.

## EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 28.5°C, Aug. 30, 1991; minimum, 0.0°C, on many days during winter.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 25.5°C, Aug. 25; minimum, 0.0°C, on many days during winter.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
DEC 1992					MAY 1993				
01...	1425	83.9	320	0.5	04...	1815	351	180	12.0
FEB 1993					JUN				
18...	1645	35.3	126	0.0	21...	1600	552	168	18.0
APR					AUG				
27...	1315	126	255	8.0	20...	1234	48.8	417	20.0

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	13.5	9.0	11.0	4.0	1.5	3.5	.5	.0	.0	.0	.0	.0
2	15.0	11.0	13.0	3.0	1.5	3.0	.5	.0	.0	.0	.0	.0
3	15.5	11.5	13.0	3.0	2.5	3.0	.5	.0	.0	.0	.0	.0
4	15.5	11.5	13.0	3.0	2.0	2.5	.5	.0	.0	.0	.0	.0
5	15.0	11.0	12.5	2.0	1.5	2.0	.0	.0	.0	.0	.0	.0
6	13.5	11.0	12.0	1.5	1.0	1.0	.0	.0	.0	.0	.0	.0
7	14.5	11.0	12.5	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
8	12.5	11.5	12.0	2.0	.5	1.0	.0	.0	.0	.0	.0	.0
9	11.5	11.0	11.0	2.5	1.0	2.0	.0	.0	.0	.0	.0	.0
10	11.0	9.5	10.0	4.0	2.0	3.0	.0	.0	.0	.0	.0	.0
11	11.0	9.0	9.5	4.0	3.0	3.5	.0	.0	.0	.0	.0	.0
12	10.5	8.5	9.5	3.5	2.0	3.0	.0	.0	.0	.0	.0	.0
13	9.5	7.0	8.0	2.0	.5	1.0	.0	.0	.0	.0	.0	.0
14	9.0	7.5	8.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0
15	9.0	7.0	8.0	1.5	.0	.5	.5	.0	.0	.0	.0	.0
16	8.0	5.5	6.5	1.0	.0	.5	.0	.0	.0	.0	.0	.0
17	7.5	5.0	5.5	1.0	.5	.5	.0	.0	.0	.0	.0	.0
18	5.5	3.5	4.5	1.5	.0	.5	.0	.0	.0	.0	.0	.0
19	5.5	2.5	4.0	1.5	.0	.5	.0	.0	.0	.0	.0	.0
20	4.5	3.0	3.5	1.5	.5	1.0	.0	.0	.0	.0	.0	.0
21	5.5	3.0	4.0	1.5	1.0	1.0	.0	.0	.0	.0	.0	.0
22	8.0	3.5	5.5	1.0	.5	.5	.0	.0	.0	.0	.0	.0
23	11.5	6.5	9.0	1.0	.5	.5	.0	.0	.0	.0	.0	.0
24	11.5	9.0	10.0	1.0	.5	1.0	.0	.0	.0	.0	.0	.0
25	10.5	9.0	9.5	1.5	.0	1.0	.0	.0	.0	.0	.0	.0
26	10.5	7.0	9.0	1.0	.0	.5	.0	.0	.0	.0	.0	.0
27	9.5	6.5	7.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
28	9.0	5.5	7.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
29	7.0	4.5	6.0	.5	.0	.0	.0	.0	.0	.0	.0	.0
30	6.5	3.5	4.5	.5	.0	.0	.0	.0	.0	.0	.0	.0
31	5.5	3.5	4.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	15.5	2.5	8.5	4.0	.0	1.3	.5	.0	.0	.0	.0	.0

## STREAMS TRIBUTARY TO LAKE MICHIGAN

0407809265 MIDDLE BRANCH EMBARRASS RIVER NEAR WITTENBERG, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	2.0	.5	1.0	14.0	12.5	13.5
2	.0	.0	.0	.0	.0	.0	2.0	.5	1.0	12.5	11.5	12.0
3	.0	.0	.0	.5	.0	.0	4.0	.5	2.0	11.5	11.0	11.0
4	.0	.0	.0	.5	.0	.0	5.5	1.5	3.0	12.0	11.5	11.5
5	.0	.0	.0	.5	.0	.0	6.5	2.5	4.0	16.0	12.0	14.0
6	.0	.0	.0	.5	.0	.0	6.5	3.5	4.5	18.5	16.0	17.5
7	.0	.0	.0	.5	.0	.0	5.0	3.5	4.0	18.5	16.5	18.0
8	.0	.0	.0	.5	.0	.0	4.0	3.5	3.5	18.0	16.0	17.0
9	.0	.0	.0	.5	.0	.0	4.0	3.0	3.5	20.0	17.5	18.5
10	.0	.0	.0	.5	.0	.0	5.0	3.0	4.0	21.0	19.0	20.0
11	.0	.0	.0	.5	.0	.5	5.0	3.0	4.5	21.0	19.0	20.0
12	.0	.0	.0	.5	.0	.0	5.0	2.5	3.5	21.0	18.0	19.5
13	.0	.0	.0	.5	.0	.5	6.5	4.5	5.5	19.0	17.0	18.0
14	.0	.0	.0	.5	.0	.5	5.5	4.5	5.0	19.5	16.5	17.5
15	.0	.0	.0	.5	.5	.5	4.5	1.5	3.0	18.5	15.0	17.0
16	.0	.0	.0	.5	.5	.5	2.0	1.0	1.5	17.0	14.0	15.5
17	.0	.0	.0	.5	.5	.5	4.5	.5	2.5	15.0	12.5	13.5
18	.0	.0	.0	.5	.5	.5	6.5	2.5	5.0	16.5	12.5	14.0
19	.0	.0	.0	.5	.5	.5	6.5	4.5	6.0	15.5	12.5	13.5
20	.0	.0	.0	.5	.5	.5	5.5	3.5	4.5	15.0	11.5	13.0
21	.0	.0	.0	.5	.5	.5	8.0	5.5	6.5	16.5	11.5	13.5
22	.0	.0	.0	.5	.5	.5	9.0	7.0	8.0	17.0	11.5	14.0
23	.0	.0	.0	.5	.5	.5	10.0	7.0	8.5	15.5	14.0	14.5
24	.0	.0	.0	.5	.5	.5	11.0	8.5	9.5	15.0	13.0	14.5
25	.0	.0	.0	.5	.5	.5	10.5	8.5	9.5	15.5	12.5	14.0
26	.0	.0	.0	2.5	.5	1.0	10.5	7.5	8.5	17.5	13.5	15.5
27	.0	.0	.0	4.0	.5	1.5	8.0	7.5	8.0	15.0	14.0	14.5
28	.0	.0	.0	3.5	.5	1.5	10.5	7.0	9.0	16.5	13.0	14.5
29	---	---	---	3.5	.5	1.5	13.5	10.5	11.5	17.0	12.5	14.5
30	---	---	---	3.0	1.5	2.0	14.5	12.5	13.5	14.0	12.5	13.5
31	---	---	---	2.0	1.0	1.5	---	---	---	12.5	11.0	11.5
MONTH	.0	.0	.0	4.0	.0	.5	14.5	.5	5.5	21.0	11.0	15.1
	JUNE			JULY			AUGUST			SEPTEMBER		
1	12.5	10.5	11.5	18.5	17.0	17.5	23.5	18.5	20.5	17.5	16.0	16.5
2	13.5	11.5	12.5	21.0	17.0	18.5	21.5	18.5	20.0	17.0	16.0	16.5
3	15.5	13.0	14.0	20.5	17.0	18.5	20.5	17.5	18.5	18.5	15.5	16.5
4	15.5	13.5	14.5	20.0	17.5	19.0	20.0	16.0	17.5	18.0	15.0	16.5
5	18.0	13.0	15.5	19.5	18.5	19.0	19.5	15.0	17.0	17.5	14.5	16.0
6	15.5	13.5	14.5	22.5	18.0	19.5	18.5	15.5	17.0	17.5	13.5	15.5
7	14.5	14.0	14.0	21.5	18.5	19.5	20.0	15.0	17.0	17.5	13.0	15.0
8	15.0	13.5	14.5	19.5	18.0	19.0	20.5	15.5	17.5	17.5	13.0	15.0
9	16.0	14.5	15.5	22.0	18.0	19.5	19.0	16.5	17.5	17.5	14.0	15.5
10	18.5	15.5	17.0	22.5	18.5	20.0	23.0	17.5	20.0	15.5	9.5	11.0
11	19.5	17.0	18.0	22.0	19.0	20.0	23.5	18.5	20.5	11.0	10.0	10.5
12	20.5	18.5	19.5	22.0	18.0	19.5	24.0	19.5	21.0	11.0	8.0	10.0
13	20.5	18.5	19.5	18.5	17.0	18.0	24.0	20.0	21.5	11.0	8.0	9.0
14	21.5	18.5	19.5	20.0	16.5	18.0	21.0	19.5	20.5	9.0	8.0	8.5
15	19.5	17.5	18.5	20.5	16.0	18.0	20.0	19.0	19.5	10.5	7.0	9.0
16	17.5	15.5	16.5	22.0	16.5	19.0	20.5	18.0	19.0	10.5	8.5	9.5
17	15.5	15.0	15.5	20.0	18.5	19.0	21.0	17.5	19.0	10.5	8.5	9.5
18	15.5	15.0	15.5	20.0	18.0	19.0	20.0	18.5	19.0	13.0	8.5	10.5
19	15.5	15.0	15.0	23.0	18.0	20.0	22.5	18.5	20.0	13.0	10.5	12.0
20	16.0	14.5	15.0	23.0	18.0	20.0	21.0	18.5	19.5	12.0	9.0	11.0
21	18.0	15.0	16.5	22.5	17.5	20.0	22.0	16.5	19.0	9.0	7.5	8.0
22	19.5	17.5	18.5	23.0	17.5	20.0	20.5	16.5	18.5	7.5	7.0	7.5
23	20.0	18.0	19.0	20.0	18.5	19.0	23.5	18.0	20.0	12.5	6.5	9.0
24	21.0	19.5	20.0	20.5	18.0	19.0	24.0	19.0	21.5	14.0	10.5	12.0
25	23.0	19.0	20.5	21.0	18.0	19.5	25.5	19.5	22.0	12.0	10.5	11.0
26	21.0	19.0	19.5	20.0	19.0	19.5	24.0	20.5	22.0	11.5	9.5	10.5
27	20.0	18.0	19.0	20.0	18.5	19.5	22.5	20.0	21.0	10.5	9.0	9.5
28	19.0	16.5	17.5	22.0	19.0	20.0	20.5	18.5	19.5	10.0	8.5	9.0
29	19.0	16.0	17.5	22.5	19.0	20.5	19.5	18.0	18.5	10.0	8.0	9.0
30	19.0	16.0	17.5	23.5	18.0	20.5	19.0	18.0	18.5	10.5	7.5	8.5
31	---	---	---	20.5	18.5	19.5	19.0	17.0	18.0	---	---	---
MONTH	23.0	10.5	16.7	23.5	16.0	19.3	25.5	15.0	19.4	18.5	6.5	11.6

## STREAMS TRIBUTARY TO LAKE MICHIGAN

107

445009088303700 LOON LAKE NEAR SHAWANO, WI

LOCATION.--Lat 44°50'09", long 88°30'37", in NE 1/4 NE 1/4 sec. 11, T.27 N., R.16 E., Shawano County, Hydrologic Unit 04030202, 6.1 mi northeast of Shawano.

DRAINAGE AREA.--15.6 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--May 1991 to current year.

GAGE.--Nonrecording gage. Staff read by Harvey Stubenvoll. Elevation of lake is 803 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 3.19 ft, June 22, 1993; minimum observed, 1.35 ft, July 12, 27, 31, and Aug. 1, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 3.19 ft, June 22; minimum observed, 1.48 ft, Mar. 3,7.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	1.53	2.52	2.08	---	---	---	---	---	2.79	2.17	2.09
2	1.88	---	---	---	---	---	1.96	---	2.37	2.74	2.12	2.08
3	1.86	1.90	2.43	---	---	1.48	1.98	2.60	2.38	2.68	2.08	2.08
4	1.84	---	2.41	2.04	1.73	---	---	2.68	2.36	2.66	2.02	2.05
5	---	2.00	2.36	---	---	---	---	---	2.32	2.60	1.99	2.00
6	1.77	2.01	2.32	---	---	---	2.00	2.72	2.27	2.72	1.94	1.97
7	1.74	2.01	---	---	1.71	1.48	2.03	2.70	2.22	2.42	1.90	1.96
8	---	2.01	2.22	---	---	---	2.20	2.68	2.19	2.71	1.88	1.94
9	---	2.03	---	1.94	---	---	---	---	2.28	2.69	1.84	1.94
10	1.72	---	2.20	---	---	1.52	2.33	2.56	2.33	2.78	1.84	1.92
11	---	---	---	---	---	---	2.39	---	2.32	2.74	1.84	1.92
12	---	---	2.17	---	---	---	2.42	---	---	---	1.81	1.93
13	---	---	2.16	---	1.66	---	2.42	---	2.27	---	1.78	1.93
14	1.76	---	---	---	---	---	2.41	---	2.38	2.61	1.78	2.11
15	1.75	2.00	2.22	---	---	---	---	---	2.39	2.58	1.78	2.26
16	---	1.86	---	---	---	---	2.52	2.14	2.40	2.50	1.88	2.30
17	---	1.96	---	1.87	---	1.52	2.52	---	2.56	2.44	1.92	2.32
18	1.64	---	2.44	---	---	---	2.53	2.06	2.68	2.52	1.93	2.33
19	1.66	---	2.44	---	---	---	2.63	---	2.78	2.56	1.96	2.30
20	---	2.36	---	---	1.58	1.50	---	---	3.03	2.52	1.95	2.28
21	1.64	2.44	2.42	---	1.58	---	2.56	1.93	3.12	2.49	1.95	2.32
22	1.67	2.57	2.38	---	---	---	2.60	---	3.19	2.44	1.94	2.33
23	1.65	2.60	2.36	1.80	---	---	2.56	---	3.18	2.40	1.96	2.32
24	---	2.73	---	1.80	---	---	2.58	---	3.11	---	1.95	2.30
25	1.62	2.74	---	---	---	1.49	---	---	3.18	---	1.96	2.29
26	---	2.78	---	---	1.50	1.52	2.51	---	3.16	2.36	1.94	2.25
27	---	2.73	---	---	1.49	---	2.47	---	3.14	2.33	2.02	2.22
28	---	2.68	2.17	---	1.49	1.59	2.46	---	3.08	2.31	---	2.20
29	---	---	---	---	---	1.66	2.49	2.00	3.02	2.28	---	2.18
30	1.55	---	2.12	---	---	1.74	---	2.02	2.94	2.24	2.07	2.16
31	1.54	---	2.10	1.76	---	---	---	2.20	---	2.20	2.09	---



WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1991 to current year.

REMARKS.--Lake sampled near center of lake at lake depth of about 22 ft. Lake ice-covered during February sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 26 TO AUGUST 17, 1993  
(Milligrams per liter unless otherwise indicated)

	Feb. 26		Apr. 26		June 09		July 27		Aug. 17	
Depth of sample (ft)	3.0	20	1.5	18	1.5	20	1.5	18	1.5	18
Lake stage (ft)	156	160	104	106	106	105	110	146	117	157
Specific conductance ( $\mu\text{S}/\text{cm}$ )	6.8	6.9	6.8	7.0	6.6	6.6	6.8	7.2	7.4	7.4
pH (units)	2.0	4.5	9.5	8.5	18.0	13.0	23.0	14.5	23.5	16.0
Water temperature ( $^{\circ}\text{C}$ )	---	---	50	60	---	---	---	---	---	---
Color (Pt-Co. scale)	---	---	3.5	3.9	---	---	---	---	---	---
Turbidity (NTU)	---	---	---	---	---	---	---	---	---	---
Secchi-depth (meters)	---	---	1.5	---	1.4	---	0.7	---	0.9	---
Dissolved oxygen	7.4	1.9	10.6	10.3	8.7	3.2	7.0	0.0	7.9	0.0
Hardness, as $\text{CaCO}_3$	---	---	48	48	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	11	11	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	4.9	4.9	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	1.4	1.4	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	0.5	0.4	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	41	43	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	7.0	7.0	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	1.0	1.0	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	<0.0	<0.0	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	1.3	3.7	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	68	70	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	0.06	0.06	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	0.06	0.06	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.01	0.01	---	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	0.39	0.39	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.40	0.40	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.46	0.46	---	---	---	---	---	---
Phosphorus, total (as P)	---	---	0.021	0.024	0.031	0.033	0.033	0.041	0.030	0.030
Phosphorus, ortho, dissolved (as P)	---	---	0.002	<0.002	---	---	---	---	---	---
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	510	510	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	55	57	---	---	---	---	---	---
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	---	---	6.6	---	13	---	11	---	14	---

2-26-93

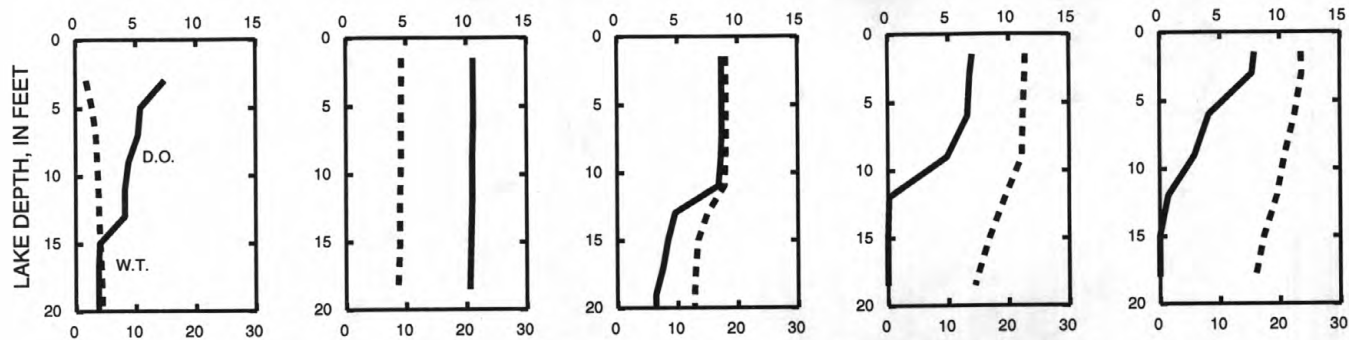
4-26-93

6-9-93

7-27-93

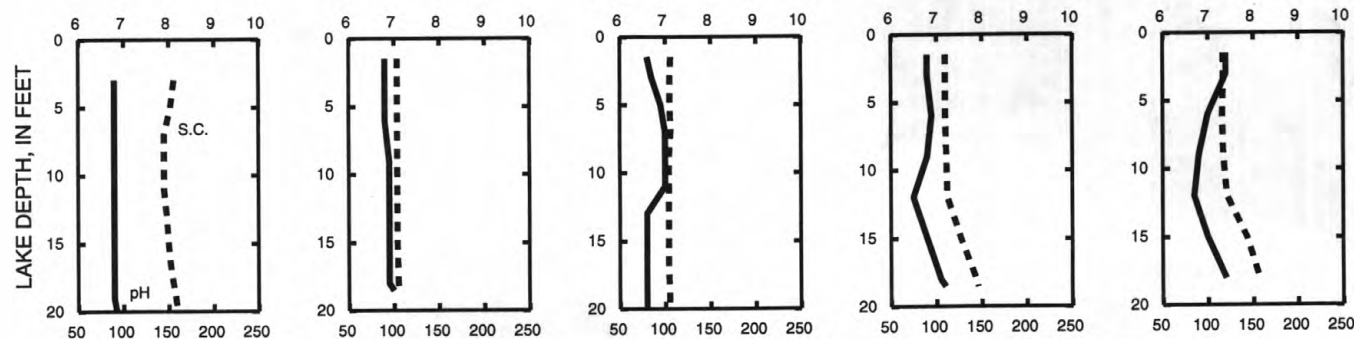
8-17-93

DISSOLVED OXYGEN (D.O.), IN MILLIGRAMS PER LITER



WATER TEMPERATURE (W.T.), IN DEGREES CELSIUS

pH, IN STANDARD UNITS



SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04079000 WOLF RIVER AT NEW LONDON, WI

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LOCATION.--Lat 44°23'32", long 88°44'25", in NE 1/4 SE 1/4 sec.12, T.22 N., R.14 E., Waupaca County, Hydrologic Unit 04030202, on right bank 100 ft downstream from Pearl Street bridge in New London, 0.2 mi downstream from Embarrass River, and at mile 56.3.

DRAINAGE AREA.--2,260 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1896 to current year. Prior to October 1913 monthly discharges only, published in WSP 1307.

REVISED RECORDS.--WSP 1114: 1943(M). WSP 1337: 1931. WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 747.94 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Oct. 4, 1951, nonrecording gage.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 5 to Apr. 17. Records good except those for ice affected period, which is fair. Gage-height telemeter and data-collection platform at station.

COOPERATION.--Values prior to October 1913 taken from House Document 276, 72nd Congress, First Session (computed by Corps of Engineers).

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Flood of Apr. 16, 1888, reached a stage of 11.6 ft, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2190	1200	5020	1900	1400	1200	2700	4690	3020	6290	3520	2110
2	2120	1300	4620	1900	1400	1200	2900	4610	3080	5710	3340	2210
3	2010	1530	4210	1800	1500	1200	3200	4770	3140	5230	3160	2250
4	1880	1760	3890	1800	1500	1300	3600	5080	3160	4880	3020	2280
5	1760	1970	3600	1700	1400	1300	4100	5380	3220	4710	2880	2270
6	1660	2120	3400	1700	1400	1400	4500	5620	3290	5350	2770	2220
7	1580	2200	3200	1600	1400	1400	4600	5790	3390	5690	2640	2130
8	1480	2250	3000	1600	1400	1400	4700	5990	3460	6340	2520	1990
9	1410	2320	2900	1600	1400	1400	4700	6100	3840	6770	2420	1790
10	1420	2380	2800	1500	1400	1400	4800	6020	4140	6930	2340	1630
11	1440	2410	2700	1500	1400	1400	4800	5840	4510	6840	2260	1530
12	1460	2400	2600	1500	1400	1400	5000	5550	4770	6610	2200	1500
13	1520	2380	2600	1500	1400	1300	5000	5260	4930	6230	2110	1510
14	1570	2340	2500	1400	1400	1300	5200	4960	5070	5760	2010	1600
15	1570	2290	2400	1400	1300	1400	5400	4680	5000	5280	1970	1810
16	1560	2230	2500	1400	1300	1400	5600	4490	4900	4820	1970	2070
17	1550	2150	2600	1300	1300	1400	5800	4360	5070	4370	1980	2270
18	1540	2040	2700	1300	1300	1400	6060	4220	5620	4150	2000	2360
19	1530	1900	2800	1300	1300	1500	6140	4010	6170	4000	2010	2360
20	1540	1910	2900	1400	1300	1500	6420	3770	7030	3950	1950	2440
21	1530	2450	2900	1400	1200	1600	6510	3530	7800	3920	1870	2480
22	1520	2910	2800	1400	1200	1600	6570	3330	8450	3960	1770	2520
23	1490	3250	2700	1400	1200	1700	6520	3200	8830	3990	1710	2540
24	1460	3630	2600	1500	1200	1800	6390	3130	9240	3940	1650	2560
25	1430	4350	2500	1500	1200	1900	6080	3080	9860	4120	1580	2560
26	1420	5190	2400	1500	1200	2000	5760	3040	9640	4350	1520	2520
27	1370	5650	2300	1500	1200	2100	5500	3000	9110	4470	1490	2460
28	1340	5810	2200	1500	1200	2300	5350	2970	8460	4490	1520	2400
29	1300	5640	2200	1400	---	2400	5110	2920	7720	4250	1620	2330
30	1280	5370	2100	1400	---	2600	4900	2920	6990	4000	1830	2250
31	1240	---	2000	1500	---	2600	---	2960	---	3760	1990	---
TOTAL	48170	85330	89640	47100	37200	49800	153910	135270	172910	155160	67620	64950
MEAN	1554	2844	2892	1519	1329	1606	5130	4364	5764	5005	2181	2165
MAX	2190	5810	5020	1900	1500	2600	6570	6100	9860	6930	3520	2560
MIN	1240	1200	2000	1300	1200	1200	2700	2920	3020	3760	1490	1500
CFSM	.69	1.26	1.28	.67	.59	.71	2.27	1.93	2.55	2.21	.97	.96
IN.	.79	1.40	1.48	.78	.61	.82	2.53	2.23	2.85	2.55	1.11	1.07

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1896 - 1993, BY WATER YEAR (WY)												
MEAN	1477	1624	1231	958	919	2139	3962	2786	2152	1471	1123	1339
MAX	4761	4738	3258	2149	2003	7566	9169	7452	5764	5005	4485	4544
(WY)	1987	1986	1912	1960	1984	1973	1922	1960	1993	1993	1912	1938
MIN	533	617	429	323	388	486	1157	901	595	427	443	429
(WY)	1949	1934	1899	1899	1900	1896	1931	1931	1988	1910	1933	1933

SUMMARY STATISTICS		FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1896 - 1993	
ANNUAL TOTAL		807341		1107060		1771	
ANNUAL MEAN		2206		3033		3200	
HIGHEST ANNUAL MEAN						866	
LOWEST ANNUAL MEAN						15500	
HIGHEST DAILY MEAN		7090	Apr 24	9860	Jun 25	15500	Apr 13 1922
LOWEST DAILY MEAN		774	Aug 18	1200	(a) Nov 1	150	Mar 1 1900
ANNUAL SEVEN-DAY MINIMUM		787	Aug 17	1200	Feb 21	337	Sep 3 1933
INSTANTANEOUS PEAK FLOW				9890	Jun 25		
INSTANTANEOUS PEAK STAGE				10.03	Jun 25	(b) 11.83	Apr 3 1979
INSTANTANEOUS LOW FLOW				1190	Nov 1		
ANNUAL RUNOFF (CFSM)	.98			1.34		.80	
ANNUAL RUNOFF (INCHES)	13.29			18.22		10.86	
10 PERCENT EXCEEDS		4140		5730		3570	
50 PERCENT EXCEEDS		1620		2380		1280	
90 PERCENT EXCEEDS		1000		1400		704	

(a) Also occurred Feb. 21 to Mar. 3 (ice affected)

(b) Backwater from ice

STREAMS TRIBUTARY TO LAKE MICHIGAN

440912089092000 HILLS LAKE NEAR WILD ROSE, WI

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LOCATION.--Lat 44°09'12", long 89°09'20", in SW 1/4 NE 1/4 sec. 2, T.19 N., R.11 E, Waushara County, Hydrologic Unit 04030202, 4.6 mi southeast of Wild Rose.

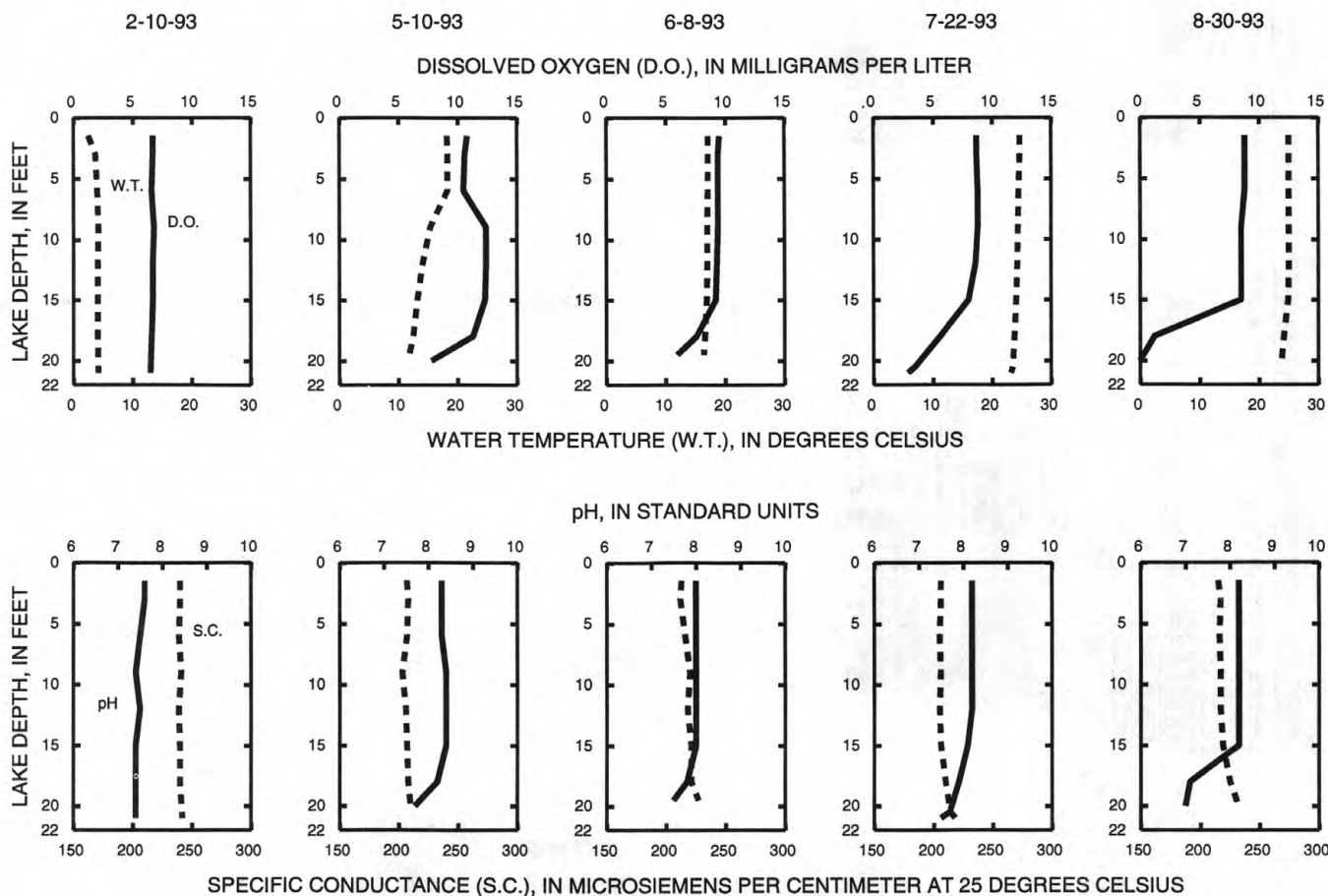
DRAINAGE AREA.--0.78 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1983 to August 1984, February to August 1987, February to August 1990, and February to August 1993.

REMARKS.--Lake sampled at east end at deep hole. Lake ice-covered during February sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 10 TO AUGUST 30, 1993  
(Milligrams per liter unless otherwise indicated)

	Feb. 10		May 10		June 08		July 22		Aug. 30	
Depth of sample (ft)	1.5	21	1.5	20	1.5	19	1.5	20	1.5	20
Lake stage (ft)	8.19		5.61		5.91		6.79		6.93	
Specific conductance (μS/cm)	240	242	207	210	213	227	206	214	215	232
pH (units)	7.6	7.4	8.3	7.7	8.0	7.5	8.2	7.7	8.2	7.0
Water temperature (°C)	2.5	4.0	18.0	11.5	17.0	16.5	24.5	23.5	25.0	24.0
Color (Pt-Co. scale)	---	---	5	5	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.50	0.70	---	---	---	---	---	---
Secchi-depth (meters)	---		4.0		4.4		2.4		2.1	
Dissolved oxygen	6.7	6.5	10.8	7.8	9.5	6.0	8.7	3.5	8.8	0.0
Hardness, as CaCO <sub>3</sub>	---	---	100	110	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	22	22	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	12	13	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	1.6	1.6	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	0.5	0.5	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	---	---	93	96	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	---	---	9.0	10	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	4.0	4.0	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	<0.0	<0.0	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	---	---	<0.2	<0.2	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	112	114	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	0.20	0.12	---	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	---	---	0.20	0.12	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.01	0.01	---	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	0.29	0.29	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.30	0.30	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	0.50	0.42	---	---	---	---	---	---
Phosphorus, total (as P)	---	---	0.006	0.011	0.009	0.010	0.013	0.014	0.010	0.020
Phosphorus, ortho, dissolved (as P)	---	---	<0.002	<0.002	---	---	---	---	---	---
Iron, dissolved (Fe) μg/L	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) μg/L	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phytoplankton (μg/L)	---	---	2.3	---	3.6	---	5.8	---	7.4	---



## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04080798 TOMORROW RIVER NEAR NELSONVILLE, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 44°31'28", long 89°20'16", in NE 1/4 SW 1/4 sec.30, T.24 N., R.10 E., Portage County, Hydrologic Unit 04030202, on right bank downstream from bridge on Clementz Road, 300 ft west of River Road, 0.5 mi north from intersection of County Highway Q and River Road, and 2.4 mi northwest of intersection of County Highway SS and State Highway 161 in Nelsonville.

DRAINAGE AREA.--Undetermined.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 960 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: June 18-21. Records good except those for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	48	63	42	47	42
2	---	---	---	---	---	---	---	49	60	41	52	42
3	---	---	---	---	---	---	---	66	51	42	53	41
4	---	---	---	---	---	---	---	76	43	55	48	41
5	---	---	---	---	---	---	---	83	39	42	44	39
6	---	---	---	---	---	---	---	79	37	59	41	38
7	---	---	---	---	---	---	---	72	36	55	39	37
8	---	---	---	---	---	---	---	63	57	51	45	37
9	---	---	---	---	---	---	---	51	212	54	43	37
10	---	---	---	---	---	---	---	47	165	51	41	38
11	---	---	---	---	---	---	---	44	174	49	40	39
12	---	---	---	---	---	---	---	44	118	45	39	43
13	---	---	---	---	---	---	---	43	87	45	39	51
14	---	---	---	---	---	---	---	39	66	43	43	50
15	---	---	---	---	---	---	---	37	43	40	48	48
16	---	---	---	---	---	---	---	35	48	39	46	47
17	---	---	---	---	---	---	---	33	76	43	46	39
18	---	---	---	---	---	---	---	31	91	49	44	32
19	---	---	---	---	---	---	---	29	100	45	41	33
20	---	---	---	---	---	---	---	28	114	42	40	42
21	---	---	---	---	---	---	---	28	128	41	38	36
22	---	---	---	---	---	---	---	28	145	39	38	36
23	---	---	---	---	---	---	---	28	103	39	36	34
24	---	---	---	---	---	---	---	39	73	49	35	33
25	---	---	---	---	---	---	---	41	79	46	37	30
26	---	---	---	---	---	---	---	39	64	43	41	30
27	---	---	---	---	---	---	---	38	55	43	38	29
28	---	---	---	---	---	---	---	37	50	42	37	31
29	---	---	---	---	---	---	---	36	45	43	48	30
30	---	---	---	---	---	---	---	87	42	44	46	29
31	---	---	---	---	---	---	---	76	---	51	41	---
TOTAL	---	---	---	---	---	---	---	1474	2464	1412	1314	1134
MEAN	---	---	---	---	---	---	---	47.5	82.1	45.5	42.4	37.8
MAX	---	---	---	---	---	---	---	87	212	59	53	51
MIN	---	---	---	---	---	---	---	28	36	39	35	29

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	---	47.5	82.1	45.5	42.4	37.8
MAX	---	---	---	---	---	---	---	47.5	82.1	45.5	42.4	37.8
(WY)	---	---	---	---	---	---	---	1993	1993	1993	1993	1993
MIN	---	---	---	---	---	---	---	47.5	82.1	45.5	42.4	37.8
(WY)	---	---	---	---	---	---	---	1993	1993	1993	1993	1993

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

HIGHEST DAILY MEAN	212	Jun 9
LOWEST DAILY MEAN	28	May 20-23
ANNUAL SEVEN-DAY MINIMUM	29	May 17
INSTANTANEOUS PEAK FLOW	212	Jun 9
INSTANTANEOUS LOW FLOW	27	Jul 3
10 PERCENT EXCEEDS	79	
50 PERCENT EXCEEDS	44	
90 PERCENT EXCEEDS	35	



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04080798 TOMORROW RIVER NEAR NELSONVILLE, WI--CONTINUED  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--April to September 1993.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993												
09...	1215	74	228	7.8	4.5	10.7	747	120	26	13	1.7	1.0
19...	1915	103	201	7.6	5.5	10.7	756	110	24	12	1.8	0.90
22...	1100	79	253	7.8	8.0	11.6	753	120	26	13	2.0	0.80
29...	1030	61	259	8.1	10.5	10.4	757	150	32	16	2.1	0.90
JUN												
15...	1000	58	300	8.8	15.5	8.6	759	160	37	17	2.1	0.70
JUL												
21...	1355	41	362	8.0	17.0	10.7	766	210	46	22	2.5	0.90
AUG												
16...	1245	46	380	8.2	16.5	6.8	746	210	48	22	2.4	1.3
27...	0815	39	415	7.8	16.5	--	755	210	46	24	2.3	1.4

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L) (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
APR 1993												
09...	132	0	108	110	6.7	4.4	0.20	7.7	147	0.980	<0.010	0.040
19...	117	0	96	96	5.2	3.5	0.20	6.0	124	0.650	0.010	0.040
22...	134	0	110	110	5.6	4.1	0.10	5.3	140	0.720	0.010	0.030
29...	112	0	92	92	6.1	4.4	0.20	6.5	176	1.00	<0.010	0.020
JUN												
15...	171	0	140	140	5.2	4.0	0.20	9.4	187	2.10	0.100	0.150
JUL												
21...	217	0	178	180	7.1	4.8	0.20	12	236	1.50	<0.010	0.030
AUG												
16...	220	0	180	180	6.2	5.0	0.20	13	203	1.40	0.010	0.040
27...	239	0	196	--	7.8	5.2	0.30	13	233	1.60	0.010	0.030

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993											
09...	0.60	0.50	0.020	<0.010	<0.010	100	4	--	--	5	73
19...	0.60	0.50	0.030	0.030	<0.010	78	5	--	--	9	66
22...	0.50	0.50	0.020	0.030	<0.010	66	5	--	--	4	75
29...	0.80	0.40	<0.010	0.010	<0.010	80	8	--	--	5	81
JUN											
15...	1.3	1.3	0.300	0.250	0.220	260	27	14	0.7	9	81
JUL											
21...	0.60	0.50	0.010	<0.010	<0.010	310	18	9.9	0.8	7	86
AUG											
16...	0.70	0.60	0.020	0.010	0.020	260	16	14	0.4	7	80
27...	0.50	0.50	0.030	0.040	0.020	120	20	7.4	1.3	16	74

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04082400 FOX RIVER AT OSHKOSH, WI

LOCATION.--Lat 44°00'49", long 88°32'27" in SW 1/4 SW 1/4 sec.24, T.18 N., R.16 E., Winnebago County, Hydrologic Unit 04030201, on right bank about 400 ft downstream from U.S. Highway 45 and State Highway 26 bridge, at Oshkosh.

DRAINAGE AREA.--5,310 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1991 to current year.

GAGE.--Acoustical Velocity Meter (AVM) system. Single-path transducer installation.

REMARKS.--No estimated daily discharges. Records fair, except for days with negative mean daily flow, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5730	-6270	9350	4460	2830	2330	10000	11300	7450	15100	11100	2250
2	5710	7630	10800	4500	2930	2360	9750	12800	6630	15400	10800	4790
3	4030	8640	8540	4590	3250	2310	9070	14000	6220	14600	10600	5110
4	3180	7220	9880	4930	3020	2670	8450	13800	7290	13300	8000	4330
5	6110	4200	6340	4500	3290	3190	8940	14400	9680	14100	7400	3610
6	5750	3090	6410	4280	2880	2960	9540	14000	7740	15300	7990	3790
7	3730	4730	6460	4230	3550	3740	8960	12900	4750	14200	6850	3740
8	63	3010	6610	4000	2810	4660	10900	12600	7690	15400	6840	3060
9	8380	5210	6560	3910	3000	3530	13500	13700	12100	16200	6680	6770
10	5330	6300	7010	3730	2550	4040	11200	14500	10300	16300	7880	3190
11	2760	5060	6440	3390	2860	4770	10700	14000	9690	16400	6220	-2340
12	6820	9330	5930	3310	3190	4660	13700	12100	10600	16500	6110	3110
13	-588	7210	6070	3430	3040	4710	12900	14500	10700	14500	6140	2030
14	1820	3050	6240	2980	3190	4140	11600	13400	14400	15400	4390	5960
15	2980	3660	6520	3080	2680	4170	10900	15200	11200	14700	5870	1540
16	8440	4180	8110	3110	3120	5060	16800	10500	7890	13700	5210	3740
17	268	5750	8380	3340	2870	3870	14300	10300	11500	13100	4500	4730
18	3950	5070	7400	2970	2160	4030	14000	10800	14500	13300	4500	4340
19	438	2420	8400	2990	2390	4180	10100	10600	14100	14300	5750	1500
20	4130	4290	5360	3000	2410	4780	16000	10300	15900	13200	4070	3320
21	1490	10800	5680	3160	2480	4320	17700	9010	16100	11200	4270	7250
22	3180	6890	6070	3140	2530	3230	16700	7930	14900	10600	2670	5830
23	4190	9120	7350	3040	2370	4510	14900	7800	14300	10100	5860	6770
24	2450	8740	5140	3600	2000	4810	17400	12500	15800	10800	5520	5130
25	2280	8130	6210	2850	2150	4910	15700	7350	18600	11500	3270	4810
26	4590	11300	5260	2990	2210	5450	14500	4840	18000	14200	4300	7100
27	2220	8000	5140	3000	2180	6000	13800	6960	17700	10300	6100	6760
28	3250	8820	5370	3440	2190	6500	15500	8910	15600	12800	1770	5120
29	2920	9750	5760	2600	---	7010	13900	5680	14700	11500	1940	4560
30	2290	9610	5990	2740	---	7450	14800	5330	13500	9210	5390	-501
31	1220	---	6350	3130	---	6050	---	10400	---	9460	5370	---
TOTAL	109111	184940	211130	108420	76130	136400	386210	342410	359530	416670	183360	121399
MEAN	3520	6165	6811	3497	2719	4400	12870	11050	11980	13440	5915	4047
MAX	8440	11300	10800	4930	3550	7450	17700	15200	18600	16500	11100	7250
MIN	-588	-6270	5140	2600	2000	2310	8450	4840	4750	9210	1770	-2340
CFSM	.66	1.16	1.28	.66	.51	.83	2.42	2.08	2.26	2.53	1.11	.76
IN.	.76	1.30	1.48	.76	.53	.96	2.71	2.40	2.52	2.92	1.28	.85

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1993, BY WATER YEAR (WY)

	MEAN	3087	5876	6000	3585	2870	5374	10180	8436	7581	8130	4104	4143
MAX	3520	6165	6811	3673	3016	6348	12870	11050	11980	13440	5915	4240	
(WY)	1993	1993	1993	1992	1992	1992	1993	1993	1993	1993	1993	1992	
MIN	2655	5587	5188	3497	2719	4400	7476	5827	3177	2818	2294	4047	
(WY)	1992	1992	1992	1993	1993	1993	1992	1992	1992	1992	1992	1993	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1992 - 1993

ANNUAL TOTAL	1689227	2635710	
ANNUAL MEAN	4615	7221	
HIGHEST ANNUAL MEAN			5787
LOWEST ANNUAL MEAN			7221
HIGHEST DAILY MEAN	11800	May 2	18600
LOWEST DAILY MEAN	-6270	Nov 1	-6270
ANNUAL SEVEN-DAY MINIMUM	1460	Oct 26	1460
ANNUAL RUNOFF (CFSM)	.87		1.36
ANNUAL RUNOFF (INCHES)	11.83		18.46
10 PERCENT EXCEEDS	8030		11500
50 PERCENT EXCEEDS	4190		4820
90 PERCENT EXCEEDS	1790		2170

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04082400 FOX RIVER AT OSHKOSH, WI--CONTINUED

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1992 to current year.

INSTRUMENTATION.--Continuous water temperature recorder since April 1992.

REMARKS.--Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 27.0°C, Aug. 26, 27, 1993; minimum observed, 0.0°C, for many days.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 27.0°C, Aug. 26, 27; minimum observed, 0.0°C, for many days December through April.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	15.0	13.5	15.0	7.5	6.0	7.5	.5	.5	.5	.5	.0	.5
2	16.0	14.0	16.0	6.5	6.0	6.5	1.0	.5	1.0	.5	.0	.5
3	16.5	15.5	16.5	6.0	5.0	6.0	.5	.0	.5	.5	.0	.5
4	16.0	15.5	16.0	5.5	4.5	5.5	.5	.0	.5	.5	.0	.5
5	16.0	15.0	16.0	4.5	3.5	4.5	.5	.0	.5	.5	.0	.5
6	15.5	14.5	15.5	3.5	2.5	3.5	.5	.0	.5	.5	.0	.5
7	15.0	14.5	15.0	2.5	2.5	2.5	.5	.0	.5	.5	.0	.5
8	15.0	15.0	15.0	2.5	2.5	2.5	.5	.0	.5	.5	.0	.5
9	15.0	13.5	15.0	3.5	2.5	3.5	.5	.0	.5	.5	.0	.5
10	13.5	12.5	13.5	4.5	3.5	4.5	.5	.0	.5	.5	.0	.5
11	12.5	11.5	12.5	4.5	4.0	4.5	.5	.0	.5	.5	.0	.5
12	12.0	11.0	12.0	4.5	3.5	4.5	.5	.0	.5	.5	.0	.5
13	11.0	10.5	11.0	3.5	2.0	3.5	.5	.0	.5	.5	.0	.5
14	11.0	10.0	11.0	2.0	1.0	2.0	.5	.5	.5	.0	.0	.0
15	10.0	9.5	10.0	1.0	.5	1.0	.5	.5	.5	.0	.0	.0
16	9.5	8.0	9.5	1.0	.5	1.0	1.0	.5	1.0	.0	.0	.0
17	8.5	7.0	8.5	1.0	.5	1.0	.5	.5	.5	.0	.0	.0
18	7.0	5.5	7.0	1.0	.5	1.0	.5	.0	.5	.0	.0	.0
19	6.5	5.5	6.5	1.0	1.0	1.0	.5	.0	.5	.0	.0	.0
20	5.5	5.0	5.5	3.0	1.0	3.0	.5	.0	.5	.0	.0	.0
21	5.5	5.0	5.5	3.5	2.5	3.5	.5	.0	.5	.0	.0	.0
22	6.5	5.0	6.5	3.5	2.5	3.5	.5	.0	.5	.0	.0	.0
23	9.0	6.5	9.0	3.0	2.5	3.0	.5	.0	.5	.5	.0	.5
24	9.0	9.0	9.0	2.5	2.0	2.5	.5	.0	.5	.5	.0	.5
25	9.5	9.0	9.5	2.5	2.0	2.5	.5	.0	.5	.5	.0	.5
26	10.5	9.5	10.5	2.0	1.0	2.0	.5	.0	.5	.5	.0	.5
27	10.5	10.0	10.5	1.0	.5	1.0	.5	.0	.5	.5	.0	.5
28	10.0	9.5	10.0	1.0	.5	1.0	.5	.5	.5	.5	.0	.5
29	9.5	9.0	9.5	1.0	.5	1.0	.5	.5	.5	.5	.0	.5
30	9.0	8.0	9.0	1.0	.5	1.0	.5	.5	.5	.5	.0	.5
31	8.0	7.5	8.0	---	---	---	.5	.0	.5	.5	.0	.5
MONTH	16.5	5.0	11.1	7.5	.5	3.0	1.0	.0	.5	.5	.0	.4

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04082400 FOX RIVER AT OSHKOSH, WI--CONTINUED

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WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.5	.5	.5	.5	.0	.5	1.0	.0	1.0	14.5	13.5	14.5
2	.5	.5	.5	.5	.0	.5	1.5	.0	1.5	14.5	13.5	14.5
3	.5	.5	.5	.5	.0	.5	3.0	1.0	3.0	15.0	14.0	15.0
4	1.0	.5	1.0	.5	.0	.5	3.5	2.0	3.5	15.5	14.5	15.5
5	1.0	.5	1.0	1.0	.0	1.0	4.5	2.5	4.5	16.5	15.0	16.5
6	.5	.0	.5	1.0	.5	1.0	4.5	3.5	4.5	17.5	16.0	17.5
7	.5	.5	.5	1.0	.5	1.0	4.5	4.0	4.5	17.5	17.0	17.5
8	.5	.0	.5	1.0	.5	1.0	4.5	3.5	4.5	18.0	16.5	18.0
9	.5	.0	.5	1.0	.5	1.0	5.5	3.5	5.5	19.0	17.5	19.0
10	.5	.5	.5	1.0	.5	1.0	6.0	3.5	6.0	20.5	18.5	20.5
11	.5	.0	.5	1.0	.5	1.0	6.0	4.0	6.0	21.0	19.5	21.0
12	.5	.0	.5	1.0	.0	1.0	5.5	4.0	5.5	21.0	19.5	21.0
13	.5	.0	.5	.5	.0	.5	6.5	4.5	6.5	19.5	18.0	19.5
14	.5	.5	.5	.5	.0	.5	6.5	5.5	6.5	19.0	18.0	19.0
15	.5	.0	.5	.5	.0	.5	6.0	3.5	6.0	18.0	16.5	18.0
16	.5	.5	.5	.5	.0	.5	3.5	2.0	3.5	17.0	16.0	17.0
17	.5	.0	.5	.5	.0	.5	3.5	2.0	3.5	16.5	15.5	16.5
18	.5	.0	.5	1.0	.0	1.0	6.0	3.5	6.0	15.5	15.0	15.5
19	.5	.5	.5	.5	.5	.5	6.0	5.0	6.0	16.0	15.0	16.0
20	.5	.5	.5	1.0	.5	1.0	5.0	3.5	5.0	16.0	15.0	16.0
21	.5	.5	.5	1.0	.5	1.0	6.5	4.0	6.5	16.5	15.0	16.5
22	.5	.0	.5	.5	.0	.5	8.5	6.5	8.5	17.0	16.0	17.0
23	.5	.0	.5	1.0	.5	1.0	9.5	8.0	9.5	17.0	16.5	17.0
24	.5	.0	.5	1.0	.5	1.0	11.0	9.0	11.0	17.0	15.5	17.0
25	.5	.0	.5	1.0	.5	1.0	11.5	10.5	11.5	15.5	15.0	15.5
26	.5	.0	.5	1.5	1.0	1.5	11.5	10.0	11.5	16.5	15.0	16.5
27	.0	.0	.0	1.5	1.0	1.5	11.0	10.5	11.0	16.0	15.5	16.0
28	.0	.0	.0	2.5	1.0	2.5	12.0	10.5	12.0	16.0	15.5	16.0
29	---	---	---	3.5	1.5	3.5	13.0	11.5	13.0	16.5	15.5	16.5
30	---	---	---	4.0	2.0	4.0	14.0	12.0	14.0	16.5	15.0	16.5
31	---	---	---	3.5	1.0	3.5	---	---	---	15.0	14.0	15.0
MONTH	1.0	.0	.5	4.0	.0	1.2	14.0	.0	6.7	21.0	13.5	17.0
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.0	14.0	15.0	21.0	20.0	21.0	24.5	23.5	24.5	23.0	22.5	23.0
2	15.0	14.5	15.0	22.0	20.0	22.0	24.5	23.0	24.5	22.5	22.0	22.5
3	16.5	14.5	16.5	23.0	21.5	23.0	23.0	22.0	23.0	22.0	21.5	22.0
4	16.5	15.5	16.5	23.5	22.5	23.5	22.0	21.0	22.0	22.0	21.0	22.0
5	17.5	15.5	17.5	23.5	22.5	23.5	21.5	21.0	21.5	21.0	20.0	21.0
6	17.5	17.0	17.5	23.5	21.5	23.5	21.5	20.5	21.5	20.0	19.5	20.0
7	17.5	17.0	17.5	24.0	22.5	24.0	21.5	20.0	21.5	20.0	19.5	20.0
8	18.5	16.5	18.5	24.0	23.0	24.0	22.0	21.0	22.0	20.0	19.5	20.0
9	18.5	17.5	18.5	24.0	23.0	24.0	22.0	21.0	22.0	20.0	18.5	20.0
10	21.0	18.0	21.0	25.0	23.0	25.0	24.0	21.0	24.0	18.5	16.5	18.5
11	21.0	19.5	21.0	24.5	23.5	24.5	25.0	23.5	25.0	17.5	17.0	17.5
12	22.5	20.5	22.5	24.0	23.0	24.0	25.0	23.5	25.0	17.0	16.0	17.0
13	22.5	21.5	22.5	23.5	22.5	23.5	26.5	24.5	26.5	18.5	17.0	18.5
14	23.0	21.5	23.0	24.0	22.0	24.0	26.5	26.0	26.5	19.0	18.0	19.0
15	22.0	20.5	22.0	24.0	23.0	24.0	26.0	25.0	26.0	18.0	16.5	18.0
16	21.0	19.5	21.0	24.5	23.0	24.5	26.0	25.0	26.0	16.5	16.0	16.5
17	20.0	19.0	20.0	24.0	23.5	24.0	26.5	25.5	26.5	16.0	15.0	16.0
18	19.0	18.5	19.0	23.5	23.0	23.5	26.0	25.5	26.0	17.0	16.0	17.0
19	19.0	18.0	19.0	24.0	22.5	24.0	26.5	25.5	26.5	16.5	16.0	16.5
20	19.0	18.0	19.0	24.0	22.5	24.0	26.5	24.5	26.5	16.0	15.0	16.0
21	20.5	18.0	20.5	24.0	22.5	24.0	24.5	24.0	24.5	15.0	15.0	15.0
22	21.5	20.5	21.5	24.0	23.0	24.0	24.5	23.5	24.5	15.5	14.5	15.5
23	22.5	21.0	22.5	23.5	22.5	23.5	24.5	23.0	24.5	15.5	14.5	15.5
24	23.5	22.0	23.5	23.0	22.5	23.0	25.0	24.0	25.0	15.5	14.5	15.5
25	23.5	22.5	23.5	23.5	22.5	23.5	26.0	24.5	26.0	15.5	14.5	15.5
26	23.0	22.0	23.0	24.0	23.0	24.0	27.0	25.5	27.0	15.0	14.0	15.0
27	22.5	22.0	22.5	24.5	23.0	24.5	27.0	26.5	27.0	15.0	13.5	15.0
28	22.5	21.5	22.5	24.5	24.0	24.5	26.5	25.5	26.5	13.5	12.5	13.5
29	22.0	21.0	22.0	24.0	23.0	24.0	25.5	24.5	25.5	12.5	11.5	12.5
30	21.5	21.0	21.5	24.0	22.5	24.0	24.5	24.0	24.5	12.0	11.0	12.0
31	---	---	---	24.0	23.5	24.0	24.0	23.0	24.0	---	---	---
MONTH	23.5	14.0	20.2	25.0	20.0	23.8	27.0	20.0	24.7	23.0	11.0	17.5



## STREAMS TRIBUTARY TO LAKE MICHIGAN

## 04082500 LAKE WINNEBAGO AT OSHKOSH, WI

LOCATION.--Lat 44°00'35", long 88°31'38", in NE 1/4 NE 1/4 sec.25, T.18 N., R.16 E., Winnebago County, Hydrologic Unit 04030203, at 905 Bay Shore Drive, 800 ft east of mouth of the upper Fox River.

DRAINAGE AREA.--5,880 mi<sup>2</sup>, at lake outlet at Menasha Dam. Area of Lake Winnebago, 215 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1938 to current year in reports of Geological Survey. Records from 1882 to 1938 in files of Geological Survey and U.S. Army Corps of Engineers. A report on Fox River by U.S. Army Corps of Engineers, published as House Document No. 146, 67th Congress, 2nd session, contains semi-monthly records of inflow of Lake Winnebago for the period 1896-1917.

REVISED RECORD.--WDR WI-83-1: Drainage area.

GAGE.--Water-stage recorder. Nonrecording gage read once daily October 1938 to October 1978. Datum of gage is 745.05 ft above mean tide at New York City (levels by U.S. Army Corps of Engineers). Datum of Deuchman gage is 745.00 ft above mean tide at New York City.

REMARKS.--Records good. Lake elevations controlled by dams at Menasha and Neenah, which are operated in the interest of navigation. Crests of both dams are at elevation 746.73 ft. Present limits of regulation are from 21 1/4 in. above the crest of Menasha dam to crest during navigation season, plus additional 18 in. below crest during winter. Oshkosh staff gage gives true level of lake, while Deuchman gage readings are affected by loss of head in the channel between lake and dam. Data-collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.33 ft (Deuchman gage) Nov. 8, 1881; minimum observed, -2.00 ft (Deuchman gage) Nov. 28, 1891.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.02 ft, July 9; minimum, 1.16 ft, Mar. 2-5.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.59	2.63	2.48	2.35	1.64	1.20	1.63	3.44	3.18	3.46	3.12	2.94
2	2.57	2.54	2.44	2.33	1.62	1.18	1.69	3.38	3.18	3.45	3.09	2.92
3	2.57	2.53	2.45	2.33	1.60	1.17	1.74	3.36	3.17	3.48	3.07	2.94
4	2.54	2.58	2.38	2.32	1.57	1.17	1.79	3.36	3.12	3.48	3.06	2.93
5	2.46	2.61	2.39	2.30	1.56	1.17	1.83	3.35	3.06	3.51	3.03	2.96
6	2.43	2.61	2.34	2.28	1.53	1.18	1.88	3.34	3.03	3.73	3.03	2.96
7	2.43	2.59	2.27	2.25	1.51	1.20	1.94	3.33	3.05	3.79	3.03	2.96
8	2.44	2.58	2.20	2.23	1.49	1.23	2.04	3.31	3.11	3.78	3.00	2.97
9	2.36	2.58	2.15	2.20	1.49	1.26	2.11	3.27	3.23	3.79	2.96	2.90
10	2.40	2.56	2.16	2.18	1.49	1.30	2.20	3.25	3.27	3.82	2.97	2.95
11	2.41	2.57	2.15	2.15	1.48	1.32	2.32	3.25	3.23	3.80	2.98	2.96
12	2.34	2.49	2.12	2.12	1.48	1.32	2.34	3.27	3.17	3.78	2.97	2.95
13	2.38	2.49	2.09	2.13	1.46	1.31	2.42	3.18	3.10	3.80	2.98	2.98
14	2.41	2.48	2.07	2.11	1.44	1.30	2.50	3.17	3.12	3.76	2.99	3.07
15	2.46	2.42	2.13	2.08	1.42	1.28	2.74	3.15	3.16	3.73	2.99	3.12
16	2.37	2.37	2.27	2.05	1.40	1.28	2.74	3.21	3.14	3.69	3.01	3.07
17	2.45	2.34	2.33	2.01	1.38	1.28	2.82	3.19	3.10	3.64	3.02	3.01
18	2.45	2.29	2.37	1.98	1.37	1.27	2.86	3.17	3.28	3.61	3.01	3.00
19	2.46	2.27	2.39	1.95	1.34	1.27	3.07	3.14	3.34	3.55	3.00	2.99
20	2.45	2.25	2.40	1.92	1.33	1.27	3.17	3.11	3.30	3.51	3.02	2.96
21	2.50	2.31	2.38	1.91	1.33	1.26	3.21	3.11	3.38	3.49	3.01	2.95
22	2.50	2.46	2.37	1.90	1.34	1.25	3.30	3.11	3.42	3.42	2.98	2.92
23	2.52	2.44	2.36	1.87	1.33	1.26	3.36	3.14	3.42	3.34	2.96	2.86
24	2.55	2.46	2.37	1.84	1.31	1.27	3.30	3.08	3.40	3.27	2.96	2.80
25	2.55	2.52	2.35	1.82	1.28	1.29	3.41	3.16	3.43	3.23	2.98	2.76
26	2.55	2.45	2.35	1.79	1.26	1.32	3.43	3.14	3.45	3.14	2.96	2.67
27	2.58	2.50	2.34	1.76	1.24	1.35	3.40	3.10	3.47	3.19	2.94	2.62
28	2.57	2.49	2.32	1.75	1.22	1.39	3.41	3.09	3.54	3.13	2.96	2.58
29	2.57	2.47	2.33	1.73	---	1.44	3.45	3.12	3.54	3.16	2.93	2.56
30	2.56	2.50	2.34	1.70	---	1.50	3.42	3.16	3.53	3.19	2.91	2.55
31	2.56	---	2.35	1.66	---	1.56	---	3.14	---	3.16	2.94	---
MEAN	2.48	2.48	2.30	2.03	1.43	1.29	2.65	3.21	3.26	3.51	3.00	2.89
MAX	2.59	2.63	2.48	2.35	1.64	1.56	3.45	3.44	3.82	3.82	3.12	3.12
MIN	2.34	2.25	2.07	1.66	1.22	1.17	1.63	3.08	3.03	3.13	2.91	2.55

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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## 04084255 LAKE WINNEBAGO NEAR STOCKBRIDGE, WI

LOCATION.--Lat 44°04'17", long 88°19'52", Stockbridge Indian Reservation, Calumet County, Hydrologic Unit 04030203, on east shore of Lake Winnebago, 300 ft south of County Highway E and 1.6 mi west of Stockbridge.

DRAINAGE AREA.--5,880 mi<sup>2</sup>, at lake outlet at Menasha Dam. Area of Lake Winnebago, 215 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 745.05 ft above mean tide of New York City (levels by U. S. Army Corps of Engineers).

REMARKS.--Records good. Lake elevations controlled by dams at Menasha and Neenah, which are operated in the interest of navigation. Crests of both dams are at elevation 746.73 ft. Present limits of regulation are from 21 1/4 in. above the crest of Menasha dam to crest during navigation season, plus additional 18 in. below crest during winter. Data-collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 4.13 ft, July 9, 1993; minimum observed, 0.30 ft, Mar. 1, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.13 ft, July 9; minimum, 1.10 ft, Mar. 2.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.57	2.32	2.53	2.31	1.60	1.15	1.63	3.38	3.23	3.42	3.15	2.94
2	2.55	2.48	2.47	2.28	1.57	1.14	1.69	3.37	3.21	3.46	3.15	2.92
3	2.49	2.64	2.44	2.28	1.55	1.13	1.74	3.37	3.15	3.47	3.10	2.92
4	2.41	2.64	2.42	2.28	1.53	1.13	1.78	3.36	3.08	3.53	3.06	2.96
5	2.42	2.60	2.37	2.26	1.51	1.13	1.83	3.37	3.07	3.57	3.04	2.93
6	2.41	2.55	2.29	2.24	1.49	1.14	1.87	3.37	3.04	3.83	3.01	2.94
7	2.40	2.55	2.23	2.21	1.47	1.16	1.92	3.33	2.99	3.79	2.99	2.95
8	2.35	2.55	2.16	2.19	1.45	1.19	2.03	3.29	3.10	3.81	2.98	2.98
9	2.45	2.55	2.11	2.16	1.45	1.22	2.15	3.26	3.36	3.85	2.98	3.06
10	2.47	2.56	2.12	2.14	1.45	1.26	2.19	3.25	3.30	3.83	2.96	3.02
11	2.43	2.55	2.11	2.10	1.44	1.28	2.17	3.23	3.24	3.85	2.95	2.96
12	2.44	2.59	2.08	2.08	1.44	1.27	2.33	3.17	3.17	3.83	2.93	2.95
13	2.40	2.66	2.05	2.10	1.42	1.27	2.39	3.18	3.10	3.79	2.94	3.01
14	2.29	2.51	2.03	2.07	1.40	1.25	2.37	3.24	3.22	3.75	2.94	3.07
15	2.29	2.42	2.09	2.04	1.38	1.24	2.34	3.26	3.19	3.72	2.97	3.05
16	2.48	2.32	2.25	2.00	1.36	1.24	2.65	3.23	3.09	3.67	2.98	3.04
17	2.49	2.24	2.31	1.98	1.35	1.24	2.84	3.20	3.07	3.62	2.98	3.01
18	2.46	2.23	2.34	1.94	1.33	1.23	2.89	3.16	3.24	3.59	2.99	2.97
19	2.45	2.17	2.36	1.91	1.30	1.22	2.80	3.15	3.29	3.58	3.00	2.87
20	2.48	2.17	2.37	1.87	1.28	1.23	2.97	3.14	3.40	3.54	2.98	2.85
21	2.47	2.32	2.33	1.87	1.29	1.22	3.24	3.12	3.40	3.46	2.96	2.91
22	2.47	2.29	2.32	1.86	1.30	1.21	3.32	3.13	3.40	3.37	2.95	2.90
23	2.50	2.37	2.33	1.83	1.29	1.21	3.35	3.17	3.40	3.29	2.97	2.85
24	2.51	2.40	2.32	1.81	1.26	1.23	3.42	3.29	3.41	3.22	2.99	2.80
25	2.52	2.35	2.33	1.78	1.24	1.25	3.40	3.21	3.50	3.23	2.96	2.71
26	2.54	2.48	2.31	1.74	1.22	1.28	3.39	3.14	3.54	3.26	2.95	2.68
27	2.54	2.49	2.29	1.72	1.19	1.31	3.41	3.09	3.54	3.18	2.97	2.65
28	2.53	2.49	2.28	1.71	1.17	1.35	3.45	3.10	3.49	3.26	2.93	2.59
29	2.49	2.52	2.29	1.69	---	1.40	3.43	3.10	3.46	3.22	2.89	2.55
30	2.49	2.50	2.30	1.65	---	1.48	3.44	3.08	3.43	3.17	2.90	2.54
31	2.46	---	2.32	1.62	---	1.54	---	3.14	---	3.16	2.93	---
MEAN	2.46	2.45	2.28	1.99	1.38	1.25	2.61	3.22	3.27	3.53	2.98	2.89
MAX	2.57	2.66	2.53	2.31	1.60	1.54	3.45	3.38	3.54	3.85	3.15	3.07
MIN	2.29	2.17	2.03	1.62	1.17	1.13	1.63	3.08	2.99	3.16	2.89	2.54

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI

LOCATION.--Neenah channel: Lat 44°11'14", long 88°26'31", in SW 1/4 SW 1/4 sec.23, T.20 N., R.17 E., Winnebago County, Hydrologic Unit 04030203, at exit of Fox River from Lake Winnebago 1.0 mi east of Neenah city hall.  
Menasha channel: Lat 44°12'08", long 88°25'41", in SE 1/4 SE 1/4 sec.14, T.20 N., R.17 E., Winnebago County, Hydrologic Unit 04030203, at exit of Fox River from Lake Winnebago 1.1 mi east of Menasha city hall.

DRAINAGE AREA.--5,880 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1989 to April 1990 (discontinued).

REMARKS.--Equal sample volumes were collected from each outlet channel and composited for analysis. Samples for chemical analysis were composite samples of water pumped from multiple fixed points in the stream cross section. Chemical analyses by Wisconsin State Laboratory of Hygiene. Other water-quality data for the 1989-90 water years are published in the report for the 1990 water year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)		
MAY 1989													
31...	1010	<0.16	0.23	<0.15	<0.15	<0.03	<0.03	<0.06	0.08	<0.03	0.05		
JUN													
15...	1425	<0.16	0.28	<0.15	<0.15	<0.03	<0.03	<0.06	0.09	<0.03	0.06		
28...	1300	<0.16	0.24	<0.15	<0.15	<0.03	<0.03	<0.06	0.06	<0.03	0.06		
JUL													
26...	0915	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	<0.03		
SEP													
05...	1740	<0.16	0.27	<0.15	<0.15	<0.03	<0.03	<0.06	0.09	<0.03	0.07		
19...	1040	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.04		
DATE		PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)	
MAY 1989													
31...	<0.05	0.07	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.06	0.16	
JUN													
15...	<0.05	0.09	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.06	<0.15	
28...	<0.05	0.07	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.06	<0.15	
JUL													
26...	<0.05	<0.05	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.06	<0.15	
SEP													
05...	<0.05	0.10	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.06	<0.15	
19...	<0.05	<0.05	<0.04	<0.04	<0.10	0.11	<0.04	<0.04	<0.06	<0.06	<0.06	<0.15	
DATE		PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)	
MAY 1989													
31...	0.18	0.10	0.11	<0.06	<0.06	<0.05	<0.05	0.06	0.08	<0.04	<0.04	<0.04	
JUN													
15...	0.24	0.08	0.11	<0.06	<0.06	<0.05	<0.05	<0.04	0.08	<0.04	<0.04	<0.04	
28...	0.20	0.08	0.07	<0.06	<0.06	<0.05	<0.05	<0.50	0.06	<0.04	<0.04	<0.04	
JUL													
26...	<0.15	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	0.04	<0.04	<0.04	<0.04	<0.04	
SEP													
05...	0.26	<0.06	0.11	<0.06	0.06	<0.05	<0.05	<0.04	0.10	<0.04	<0.04	<0.04	
19...	<0.15	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.04	0.06	<0.04	<0.04	<0.04	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
MAY 1989											
31...	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	0.05	0.07	0.20	<0.09	<0.07
JUN											
15...	<0.05	<0.05	<0.06	0.19	<0.04	<0.04	<0.04	0.08	0.10	<0.09	<0.07
28...	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.04	0.06	<0.09	<0.09	0.07
JUL											
26...	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.04	<0.04	<0.09	<0.09	<0.07
SEP											
05...	<0.05	<0.05	<0.06	0.09	<0.04	0.06	<0.04	0.11	<0.09	<0.09	<0.07
19...	<0.05	<0.05	<0.06	0.20	<0.04	<0.04	<0.04	0.07	<0.09	<0.09	<0.07
DATE	PCB COG 64 + 71 SED DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 SED DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 SED DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
MAY 1989											
31...	<0.07	0.14	0.19	0.10	0.13	<0.05	<0.05	0.10	0.13	<0.06	<0.06
JUN											
15...	0.08	<0.09	0.19	<0.07	0.13	<0.05	<0.05	<0.06	0.12	<0.06	<0.06
28...	<0.07	<0.30	0.16	<0.07	0.11	<0.80	<0.05	0.06	0.10	<0.06	<0.06
JUL											
26...	<0.07	<0.09	0.10	<0.07	<0.07	<0.05	<0.05	0.06	0.08	<0.06	<0.06
SEP											
05...	0.08	<0.09	<0.09	<0.07	0.14	<0.05	<0.05	<0.06	0.11	<0.06	<0.06
19...	<0.07	<0.09	<0.09	0.07	0.08	<0.05	<0.05	<0.06	0.10	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
MAY 1989											
31...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	0.04
JUN											
15...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
28...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
JUL											
26...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
SEP											
05...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
19...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
MAY 1989											
31...	<0.04	0.08	0.07	<0.05	0.06	0.09	0.12	<0.04	<0.04	<0.03	<0.03
JUN											
15...	<0.04	0.04	0.07	<0.05	0.06	<0.06	0.11	<0.04	<0.04	<0.03	<0.03
28...	<0.04	0.04	0.05	0.12	0.05	<0.10	0.06	<0.04	<0.04	<0.03	<0.03
JUL											
26...	<0.04	<0.04	0.05	<0.05	0.06	0.06	0.09	<0.04	<0.04	<0.03	<0.03
SEP											
05...	<0.04	<0.04	0.07	<0.05	<0.05	<0.06	0.07	<0.04	<0.04	0.04	0.05
19...	<0.04	<0.04	0.06	<0.05	<0.05	<0.06	0.06	<0.04	<0.04	0.04	0.04



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
MAY 1989											
31...	<0.05	<0.05	0.08	0.10	<0.03	<0.03	<0.06	<0.06	0.04	0.05	<0.04
JUN											
15...	<0.05	<0.05	<0.06	0.08	<0.03	<0.03	<0.06	<0.06	<0.04	0.05	<0.04
28...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<1.2	<0.06	0.04	<0.04	<0.04
JUL											
26...	<0.05	<0.05	<0.06	0.09	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
SEP											
05...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
19...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
MAY 1989											
31...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JUN											
15...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
28...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JUL											
26...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
SEP											
05...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
19...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
MAY 1989											
31...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JUN											
15...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
28...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JUL											
26...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
SEP											
05...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
19...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
MAY 1989											
31...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
JUN											
15...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
28...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.10	<0.08	<0.08	<0.08
JUL											
26...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
SEP											
05...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
19...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)	
OCT 1989												
04...	0900	<0.16	0.21	<0.15	0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.04	
04...	1145	<0.16	0.18	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.04	
18...	1155	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.30	<0.03	0.04	
31...	1330	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	<0.03	
NOV												
14...	1240	<0.16	0.16	<0.15	<0.15	<0.03	<0.03	<0.06	0.06	0.03	0.05	
DEC												
05...	1150	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.03	
JAN 1990												
17...	0945	<0.16	0.17	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.04	
FEB												
*13...	1000	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.03	
*13...	1005	<0.16	0.24	<0.15	<0.15	<0.03	<0.03	<0.06	0.09	<0.03	0.08	
MAR												
13...	0930	<0.16	0.16	<0.15	<0.15	<0.03	<0.03	<0.06	<0.06	<0.03	0.04	
APR												
02...	1000	<0.16	<0.16	<0.15	<0.15	<0.03	<0.03	<0.06	0.09	<0.03	0.04	
19...	1305	0.20	<0.16	<0.15	<0.15	<0.03	<0.03	0.12	<0.06	0.05	0.05	
DATE		PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
OCT 1989												
04...		<0.05	0.07	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
04...		<0.05	0.06	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
18...		<0.05	0.07	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
31...		<0.05	<0.05	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
NOV												
14...		<0.05	0.06	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
DEC												
05...		<0.05	<0.05	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
JAN 1990												
17...		<0.05	0.06	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
FEB												
13...		<0.05	<0.05	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
13...		<0.05	0.10	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
MAR												
13...		<0.05	0.05	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
APR												
02...		<0.05	0.05	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
19...		0.08	0.06	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	0.27
DATE		PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
OCT 1989												
04...		0.17	<0.06	0.08	<0.06	<0.06	<0.05	<0.05	<0.04	0.06	<0.04	<0.04
04...		<0.15	<0.06	0.07	<0.06	<0.06	<0.05	<0.05	<0.04	0.05	<0.04	<0.04
18...		0.16	<0.06	0.09	<0.06	<0.06	<0.05	<0.05	<0.04	0.08	<0.04	<0.04
31...		<0.15	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.04	0.05	<0.04	<0.04
NOV												
14...		0.18	<0.06	0.08	<0.06	<0.06	<0.05	<0.05	<0.04	0.08	<0.04	<0.04
DEC												
05...		<0.15	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	0.04	0.04	<0.04	<0.04
JAN 1990												
17...		0.16	<0.06	0.07	<0.06	<0.06	<0.05	<0.05	<0.04	0.06	<0.04	<0.04
FEB												
13...		<0.15	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.04	0.05	<0.04	<0.04
13...		0.33	<0.06	0.11	<0.06	<0.06	<0.05	<0.05	<0.04	0.09	<0.04	<0.04
MAR												
13...		0.17	<0.06	0.07	<0.06	<0.06	<0.05	<0.05	<0.04	0.07	<0.04	<0.04
APR												
02...		0.18	<0.06	0.07	<0.06	<0.06	<0.05	<0.05	<0.04	0.06	<0.04	<0.04
19...		0.17	0.09	0.06	0.06	<0.06	<0.05	<0.05	0.14	0.06	<0.04	<0.04

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
OCT 1989											
04...	<0.05	<0.05	<0.06	0.18	<0.04	<0.04	<0.04	0.07	<0.09	<0.09	<0.07
04...	<0.05	<0.05	<0.06	0.48	<0.04	<0.04	<0.04	0.06	<0.09	<0.09	<0.07
18...	<0.05	<0.05	<0.06	0.13	<0.04	0.04	<0.04	0.09	<0.09	<0.09	<0.07
31...	<0.05	<0.05	<0.06	0.10	<0.04	<0.04	<0.04	0.06	<0.09	<0.09	<0.07
NOV											
14...	<0.05	<0.05	<0.06	0.18	<0.04	0.05	0.07	0.10	<0.09	<0.09	<0.07
DEC											
05...	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	0.05	0.06	<0.09	<0.09	<0.07
JAN 1990											
17...	<0.05	<0.05	<0.06	0.17	<0.04	<0.04	<0.04	0.07	<0.09	<0.09	<0.07
FEB											
*13...	<0.05	<0.05	<0.06	0.08	<0.04	<0.04	<0.04	0.07	<0.09	<0.09	<0.09
*13...	<0.05	<0.05	<0.06	0.16	<0.04	0.06	<0.04	0.12	<0.09	<0.09	<0.07
MAR											
13...	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.04	0.08	<0.09	<0.09	<0.07
APR											
02...	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	0.04	0.07	<0.09	<0.09	<0.07
19...	<0.05	<0.05	<0.06	<0.06	0.07	<0.04	0.20	0.07	<0.09	<0.09	0.16
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
OCT 1989											
04...	<0.07	<0.09	0.14	<0.07	0.08	<0.10	<0.05	<0.06	0.07	<0.06	<0.06
04...	<0.07	<0.09	0.12	<0.07	<0.07	<0.10	<0.05	<0.06	<0.06	<0.06	<0.06
18...	<0.07	<0.09	0.18	<0.07	0.13	<0.05	<0.05	<0.06	0.12	<0.06	<0.06
31...	<0.07	<0.09	0.12	<0.07	0.09	<0.05	<0.05	<0.06	0.08	<0.06	<0.06
NOV											
14...	0.08	<0.09	0.18	<0.07	0.12	<0.05	<0.05	0.08	0.11	<0.06	<0.06
DEC											
05...	<0.07	<0.09	0.10	<0.07	<0.07	<0.05	<0.05	<0.06	<0.06	<0.06	<0.06
JAN 1990											
17...	<0.07	0.11	0.11	<0.07	0.07	<0.05	<0.05	<0.06	0.09	<0.06	<0.06
FEB											
13...	<0.07	<0.09	0.12	<0.07	<0.07	<0.05	<0.05	0.06	0.08	<0.06	<0.06
13...	0.07	<0.09	0.16	<0.07	0.17	<0.05	<0.05	<0.06	0.09	<0.06	<0.06
MAR											
13...	<0.07	<0.09	0.16	<0.14	0.09	<0.05	<0.05	<0.06	0.10	<0.06	<0.06
APR											
02...	<0.07	<0.09	0.13	<0.07	0.08	<0.05	<0.05	<0.06	0.07	<0.06	<0.06
19...	<0.07	0.38	0.13	0.14	0.09	0.06	<0.05	0.45	0.08	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
OCT 1989											
04...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
04...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
18...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
31...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
NOV											
14...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
DEC											
05...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
JAN 1990											
17...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
FEB											
13...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
13...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
MAR											
13...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
APR											
02...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
19...	0.22	<0.09	0.06	<0.06	0.19	<0.06	0.06	<0.05	0.10	<0.05	0.12

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
OCT 1989											
04...	<0.04	<0.04	0.05	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	<0.03
04...	<0.04	<0.04	<0.04	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	<0.03
18...	<0.04	<0.04	0.07	<0.05	0.06	<0.06	0.08	<0.04	<0.04	<0.03	0.05
31...	<0.04	<0.04	0.04	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	0.03
NOV											
14...	<0.04	0.04	0.07	0.05	<0.05	0.06	0.07	<0.04	<0.04	0.05	0.04
DEC											
05...	<0.04	<0.04	<0.04	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	<0.03
JAN 1990											
17...	<0.04	<0.04	0.04	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	0.03
FEB											
*13...	<0.04	0.04	0.05	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	<0.03
*13...	<0.04	<0.04	0.06	<0.05	<0.05	<0.06	0.08	<0.04	<0.04	<0.03	0.03
MAR											
13...	<0.04	<0.04	0.06	<0.05	<0.05	<0.06	0.07	<0.04	<0.04	<0.03	<0.03
APR											
02...	<0.04	<0.04	0.05	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	<0.04
19...	<0.04	0.26	0.05	0.20	<0.05	0.28	0.06	<0.04	<0.04	<0.19	<0.04
DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
OCT 1989											
04...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
04...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
18...	<0.05	<0.05	<0.06	0.07	<0.03	<0.03	<0.06	<0.06	<0.04	0.05	<0.04
31...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
NOV											
14...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	0.05	0.04	<0.04
DEC											
05...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
JAN 1990											
17...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	0.05	<0.04
FEB											
13...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
13...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	0.04	<0.04
MAR											
13...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
APR											
02...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
19...	<0.05	<0.05	0.29	<0.06	<0.03	<0.03	<0.06	<0.06	0.14	<0.04	<0.04
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
OCT 1989											
04...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
04...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
18...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
31...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
NOV											
14...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
DEC											
05...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JAN 1990											
17...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
FEB											
13...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
13...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
MAR											
13...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
APR											
02...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
19...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06

\* SAMPLES WITH SAME DATES ARE REPLICATES



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040844105 LAKE WINNEBAGO OUTLET AT NEENAH-MENASHA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
OCT 1989											
04...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
04...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
18...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
31...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
NOV											
14...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DEC											
05...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JAN 1990											
17...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
FEB											
*13...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
*13...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
MAR											
13...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
APR											
02...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
19...	<0.07	<0.07	0.07	<0.06	0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
OCT 1989											
04...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
04...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
18...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
31...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
NOV											
14...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
DEC											
05...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
JAN 1990											
17...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
FEB											
13...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
13...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
MAR											
13...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
APR											
02...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
19...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084445 FOX RIVER AT APPLETON, WI

LOCATION.--Lat 44°14'53", long 88°25'23" in NW 1/4 SE 1/4 sec.34, T.21 N., R.17 E., Outagamie County, Hydrologic Unit 04030204, on left bank at south end of Lutz Park, approximately 2,600 ft upstream of Memorial Drive bridge at Appleton.

DRAINAGE AREA.--5,950 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1986 to current year.

GAGE.--Acoustical Velocity Meter (AVM) system. Two-path transducer installation.

REMARKS.--Estimated daily discharges: Oct. 5-8, Dec. 18, 19, Dec. 22 to Feb. 18, Mar. 31 to Apr. 1, and Apr. 19, 20. Records good, except for estimated daily discharges, which are fair. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7490	3410	10700	4600	4600	4100	6200	15300	7080	15100	10500	3300
2	7400	4520	11800	5000	4600	3700	7130	15400	8040	15200	10400	3860
3	7220	4950	11600	5000	4800	3370	7190	15300	9690	15200	10400	2940
4	7010	5040	11600	4900	5000	3400	7250	15300	10000	15700	9520	2680
5	5600	5370	10600	5400	4700	3470	7460	15200	9930	16100	8700	2640
6	6600	5380	10400	5000	4800	3470	7560	15100	9910	18000	8000	2640
7	6600	5380	10700	5200	4900	3410	8220	15000	9390	17300	7860	2670
8	4300	5410	10800	5600	4300	3730	10200	15100	9260	17400	7980	2790
9	4580	5900	9620	5200	3800	3620	10500	14900	12000	17200	8310	2980
10	4600	6250	8210	5000	3700	4030	10700	14800	13500	17000	7880	2630
11	4480	6200	7990	5000	3800	5340	10600	14600	14600	17000	7120	2710
12	4420	7520	7930	5200	4100	5900	11100	14400	14300	16600	6010	2950
13	3370	9190	7790	5400	4700	5880	11600	13100	14100	16700	5430	3270
14	1850	9160	7020	5600	4700	5900	11400	12300	14400	16500	4880	2990
15	1250	9000	5670	6000	4800	5800	10900	11900	14200	16500	4940	4010
16	2260	8910	5920	5800	4800	5620	12200	12000	14200	16300	4920	6270
17	2360	8040	6550	5600	4300	5400	13000	11900	14600	16100	4900	7230
18	2340	8010	6200	5600	3800	5390	13300	11800	16000	16000	4980	6940
19	2360	7490	6600	5800	4290	5370	14000	11400	15100	15700	4990	6800
20	2460	7530	7110	5200	4200	5370	14000	10900	15400	15400	4830	6850
21	2400	8260	6860	5200	4170	5340	14800	9720	15200	15300	4780	7350
22	2420	7660	6000	5400	4260	5300	14700	8190	15100	15100	4940	8700
23	2470	7970	6200	5200	4290	5290	15200	8440	15200	14800	5220	9900
24	2440	9040	4800	5200	4140	5320	15500	9440	15400	14500	4860	9940
25	2480	8840	4500	5000	4210	5500	15300	10200	15700	14600	4820	9820
26	2450	8880	4400	4700	4170	5520	15200	10300	15600	14000	4890	9660
27	2890	9210	5200	4900	4140	5520	15600	9360	15400	12100	4880	9380
28	3490	9260	4800	4900	4140	5550	15800	7320	15300	10400	4770	8550
29	3420	9310	4800	4600	---	5650	15500	6760	15200	9990	4780	6230
30	3450	9230	5200	4100	---	5730	15500	6870	15200	10100	4370	4530
31	3450	---	5200	4600	---	5800	---	6590	---	10500	3180	---
TOTAL	119910	220320	232770	159900	122210	152790	357610	368890	399000	468390	194040	163210
MEAN	3868	7344	7509	5158	4365	4929	11920	11900	13300	15110	6259	5440
MAX	7490	9310	11800	6000	5000	5900	15800	15400	16000	18000	10500	9940
MIN	1250	3410	4400	4100	3700	3370	6200	6590	7080	9990	3180	2630
CFSM	.65	1.23	1.26	.87	.73	.83	2.00	2.00	2.24	2.54	1.05	.91
IN.	.75	1.38	1.46	1.00	.76	.96	2.24	2.31	2.49	2.93	1.21	1.02

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1993, BY WATER YEAR (WY)

MEAN	4351	5040	4659	4089	3841	4884	6112	5623	5713	4003	2884	3928
MAX	13510	7344	7509	5575	5422	6245	11920	11900	13300	15110	6259	8899
(WY)	1987	1993	1993	1987	1987	1992	1993	1993	1993	1993	1993	1986
MIN	1845	2923	2541	2535	2485	3598	2688	2682	1243	944	971	1226
(WY)	1990	1990	1990	1990	1990	1987	1990	1988	1988	1988	1988	1988

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1986 - 1993

ANNUAL TOTAL	1772440	2959040	
ANNUAL MEAN	4843	8107	
HIGHEST ANNUAL MEAN			4514
LOWEST ANNUAL MEAN			8107
HIGHEST DAILY MEAN	11800	Dec 2	18000
LOWEST DAILY MEAN	1250	Oct 15	1250
ANNUAL SEVEN-DAY MINIMUM	1450	Aug 26	2130
ANNUAL RUNOFF (CFSM)	.81		1.36
ANNUAL RUNOFF (INCHES)	11.08		18.50
10 PERCENT EXCEEDS	8940		8960
50 PERCENT EXCEEDS	4390		6600
90 PERCENT EXCEEDS	1770		3460

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 1986 to September 1990, June to November 1992 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: July 1986 to September 1990 (discontinued).

WATER TEMPERATURE: October 1986 to September 1990 (discontinued).

REMARKS.--Samples for chemical analysis were composite samples of water pumped from multiple fixed points in the stream cross section. Chemical analyses by Wisconsin State Laboratory of Hygiene. Other water-quality data for the 1989-90 water years are published in the reports for the 1989 and 1990 water years.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)
MAY 1989												
31...	1440	13900	1.2	0.46	0.18	<0.15	<0.03	<0.03	0.25	0.18	0.32	0.17
JUN												
14...	1055	7790	1.6	0.87	0.24	0.16	<0.03	<0.03	0.39	0.40	0.47	0.38
27...	1050	4250	2.2	1.9	0.43	0.39	<0.03	0.05	0.63	0.79	0.74	0.81
JUL												
25...	1200	1840	1.6	1.5	0.39	0.44	<0.03	<0.03	0.72	0.67	0.81	0.74
SEP												
05...	1315	1380	1.1	1.7	0.17	0.32	<0.03	<0.03	0.35	0.83	0.63	0.81
*20...	1145	1320	0.99	1.5	<0.15	0.26	<0.03	0.03	0.32	0.76	0.51	0.73
*20...	1410	1320	1.2	1.7	0.18	0.30	<0.03	0.03	0.37	0.82	0.62	0.81

DATE	PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
MAY 1989											
31...	0.31	0.20	<0.04	<0.04	0.59	0.12	0.05	<0.04	0.31	0.09	2.8
JUN											
14...	0.45	0.42	<0.04	<0.04	0.94	0.27	0.08	0.09	0.53	0.24	4.4
27...	0.73	0.83	<0.04	0.05	1.4	0.54	0.11	0.11	0.93	0.53	6.0
JUL											
25...	0.78	0.82	<0.04	0.05	1.1	0.42	0.12	0.13	0.89	0.40	5.8
SEP											
05...	0.65	0.92	<0.04	0.11	0.78	0.45	0.08	0.13	0.64	0.43	4.6
20...	0.51	0.81	<0.04	0.10	0.62	0.44	0.06	0.12	0.49	0.38	3.6
20...	0.59	0.90	<0.04	0.11	0.74	0.45	0.07	0.13	0.58	0.41	4.1

DATE	PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
MAY 1989											
31...	0.52	0.58	0.13	0.45	0.08	0.07	<0.05	0.42	0.13	0.05	<0.04
JUN											
14...	1.3	0.86	0.24	0.79	0.18	0.13	0.06	0.82	0.29	0.08	0.05
27...	2.6	1.1	0.48	1.1	0.34	0.18	0.11	0.95	0.52	0.14	0.08
JUL											
25...	2.3	0.97	0.37	0.97	0.27	0.21	0.09	1.1	0.46	0.12	0.08
SEP											
05...	2.5	0.55	0.43	0.91	0.33	0.23	0.13	1.1	0.56	0.14	0.11
20...	2.3	0.47	0.39	0.63	0.30	0.17	0.12	0.76	0.52	0.10	0.11
20...	2.4	0.60	0.42	0.72	0.33	0.19	0.13	0.86	0.55	0.12	0.12

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
MAY 1989											
31...	<0.05	<0.05	0.34	0.10	0.37	0.09	0.41	0.14	0.42	<0.09	0.41
JUN											
14...	0.05	<0.05	0.69	0.19	0.64	0.22	0.67	0.29	0.72	0.16	0.71
27...	0.06	<0.05	0.78	0.36	0.89	0.41	0.89	0.50	1.3	0.29	1.0
JUL											
25...	0.07	<0.05	1.0	0.39	1.1	0.38	1.1	0.47	0.85	0.18	1.1
SEP											
05...	0.08	0.07	1.2	0.40	1.1	0.45	1.1	0.58	0.75	0.22	0.93
*20...	0.07	0.07	0.63	0.60	0.75	0.41	0.79	0.52	0.54	0.20	>0.36
*20...	0.07	0.07	0.65	0.77	0.84	0.44	0.87	0.55	0.64	0.20	>0.38
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
MAY 1989											
31...	0.11	1.4	0.22	0.67	0.14	0.26	<0.05	0.43	0.12	<0.06	<0.06
JUN											
14...	0.25	1.8	0.35	1.2	0.24	0.47	0.08	0.73	0.19	<0.06	<0.06
27...	0.42	2.2	0.58	2.1	0.48	0.76	0.17	1.1	0.30	0.11	<0.06
JUL											
25...	0.35	2.1	0.53	1.5	0.33	0.47	0.11	1.0	0.25	0.07	<0.06
SEP											
05...	>0.15	2.0	>0.16	1.3	0.42	0.51	0.14	0.89	0.26	0.06	<0.06
20...	>0.16	1.5	0.19	0.93	0.35	0.36	0.12	0.68	0.24	<0.06	<0.06
20...	>0.16	1.6	0.20	1.0	0.36	0.40	0.13	0.74	0.25	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
MAY 1989											
31...	0.16	<0.09	<0.06	<0.06	0.10	<0.06	<0.05	<0.05	0.08	<0.05	0.11
JUN											
14...	0.30	0.13	0.08	<0.06	0.15	0.06	0.11	<0.05	0.14	<0.05	0.20
27...	0.37	0.13	0.11	<0.06	0.18	0.07	0.19	<0.05	0.18	0.06	0.30
JUL											
25...	0.43	0.14	0.11	<0.06	0.18	0.07	0.20	0.05	0.18	0.05	0.31
SEP											
05...	0.42	0.17	0.10	<0.06	0.16	0.07	0.16	<0.05	0.16	0.06	0.29
20...	0.32	0.17	0.08	<0.06	0.12	0.07	0.12	<0.05	0.13	0.05	0.21
20...	0.37	0.18	0.08	<0.06	0.13	0.07	0.13	<0.05	0.13	0.06	0.23
DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
MAY 1989											
31...	<0.04	0.18	0.06	0.23	0.06	0.29	0.10	<0.04	<0.04	<0.03	<0.03
JUN											
14...	0.06	0.33	0.11	0.31	0.09	0.38	0.12	<0.04	<0.04	<0.09	<0.03
27...	0.07	0.43	0.13	0.80	0.11	0.72	0.11	0.07	<0.04	<0.07	<0.03
JUL											
25...	0.07	0.47	0.14	0.53	0.12	0.57	0.16	0.07	<0.04	<0.06	<0.03
SEP											
05...	0.07	0.44	0.15	0.40	0.09	0.45	0.11	0.05	<0.04	0.10	0.05
20...	0.06	0.32	0.14	0.29	0.07	0.39	0.10	0.04	<0.04	0.08	0.05
20...	0.07	0.35	0.14	0.32	0.07	0.41	0.11	0.05	<0.04	0.08	0.05

\* SAMPLES WITH SAME DATES ARE REPLICATES



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
MAY 1989											
31...	<0.05	<0.05	0.23	0.08	0.04	<0.03	0.07	<0.06	0.12	0.05	<0.04
JUN											
14...	<0.05	<0.05	0.27	0.09	0.04	<0.03	<0.80	<0.06	0.16	0.06	0.04
27...	<0.05	<0.05	0.54	0.08	0.05	<0.03	0.21	<0.06	0.30	0.06	0.10
JUL											
25...	<0.05	<0.05	0.38	0.14	0.05	<0.03	0.18	<0.06	0.27	0.07	0.08
SEP											
05...	<0.05	<0.05	0.31	0.08	0.04	<0.03	0.14	<0.06	0.23	0.06	0.07
*20...	<0.05	<0.05	0.24	0.06	0.03	<0.03	<0.26	<0.06	0.17	0.06	0.05
*20...	<0.05	<0.05	0.27	0.07	0.03	<0.03	0.15	<0.06	0.19	0.06	0.06
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
MAY 1989											
31...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JUN											
14...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
27...	<0.04	0.20	<0.15	<0.06	<0.06	<0.08	<0.08	0.08	<0.05	0.07	<0.06
JUL											
25...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
SEP											
05...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.05	<0.05	<0.06	<0.06
20...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
20...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
MAY 1989											
31...	<0.07	<0.07	0.11	<0.06	0.06	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JUN											
14...	<0.07	<0.07	0.11	<0.06	0.07	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
27...	<0.07	<0.07	0.26	<0.06	0.15	<0.04	0.08	<0.07	<0.06	<0.06	0.09
JUL											
25...	<0.07	<0.07	0.14	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
SEP											
05...	<0.07	<0.07	0.12	<0.06	0.09	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
20...	<0.07	<0.07	0.11	<0.06	0.08	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
20...	<0.07	<0.07	0.11	<0.06	0.09	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
MAY 1989											
31...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
JUN											
14...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.20	<0.08	0.08	<0.08
27...	<0.06	<0.15	<0.15	0.15	<0.15	<0.04	<0.04	0.14	<0.08	0.09	<0.08
JUL											
25...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.09	<0.08	<0.08	<0.08
SEP											
05...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
20...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.09	<0.08	<0.08	<0.08
20...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)
OCT 1989												
03...	0945	965	1.2	1.5	0.24	0.36	<0.03	<0.03	0.38	0.56	0.62	0.67
17...	1000	1200	1.1	1.3	0.15	0.24	<0.03	<0.03	0.35	0.60	0.62	0.57
31...	1710	3620	1.6	0.92	0.23	0.16	<0.03	<0.03	0.43	0.46	0.57	0.42
NOV												
15...	0840	1950	0.30	0.31	<0.15	<0.15	<0.03	<0.03	0.09	0.15	0.14	0.14
DEC												
05...	1535	1990	<0.16	0.28	<0.15	<0.15	<0.03	<0.03	<0.06	0.09	0.05	0.10
JAN 1990												
18...	1215	2690	<0.16	0.26	<0.15	<0.15	<0.03	<0.03	<0.06	0.10	0.03	0.10
FEB												
13...	1400	2200	<0.16	0.31	<0.15	<0.15	<0.03	<0.03	<0.06	0.12	0.05	0.12
MAR												
13...	1425	3530	0.93	0.85	<0.15	<0.15	<0.03	<0.03	0.28	0.49	0.26	0.41
19...	1010	9310	0.28	0.36	<0.15	<0.15	<0.03	<0.03	0.08	0.15	0.07	0.12
23...	1315	8370	0.18	0.35	<0.15	<0.15	<0.05	<0.03	0.06	0.16	0.06	0.14
APR												
02...	1225	3890	0.37	0.39	<0.15	<0.15	<0.03	<0.03	0.14	0.22	0.11	0.16
18...	1630	1120	0.54	0.54	<0.15	<0.15	<0.03	<0.03	0.18	0.26	0.33	0.23
DATE		PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
OCT 1989												
03...		0.67	0.74	<0.04	<0.04	0.92	0.37	0.08	0.10	0.72	0.37	5.3
17...		0.53	0.59	<0.04	<0.04	0.73	0.32	0.08	0.09	0.60	0.34	4.2
31...		0.48	0.45	<0.04	<0.04	0.80	0.28	0.07	0.07	0.53	0.28	4.1
NOV												
15...		0.12	0.15	<0.04	<0.04	0.16	<0.10	<0.04	<0.04	0.11	0.07	0.85
DEC												
05...		<0.05	0.10	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
JAN 1990												
18...		<0.05	0.10	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
FEB												
13...		<0.05	0.12	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	0.06	0.23
MAR												
13...		0.21	0.39	0.05	0.06	0.42	0.28	0.07	0.13	0.24	0.22	1.9
19...		0.07	0.13	<0.04	<0.04	0.11	0.11	<0.04	<0.04	<0.06	0.06	0.47
23...		0.05	0.14	<0.04	<0.04	<0.10	0.12	<0.04	<0.04	<0.06	0.07	0.35
APR												
02...		0.11	0.18	<0.04	<0.04	0.16	0.10	<0.04	<0.04	0.09	0.08	0.81
18...		0.30	0.24	<0.04	0.04	0.30	0.13	0.06	0.05	0.26	0.11	1.8
DATE		PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
OCT 1989												
03...		2.0	0.73	0.37	1.1	0.25	0.21	0.08	1.0	0.41	0.14	0.07
17...		1.7	0.60	0.28	0.91	0.22	0.20	0.07	1.0	0.36	0.12	0.06
31...		1.5	0.71	0.26	0.88	0.21	0.17	0.06	0.89	0.33	0.10	0.05
NOV												
15...		0.38	0.14	0.09	0.18	0.06	<0.05	<0.05	0.20	0.10	<0.04	<0.04
DEC												
05...		0.27	<0.06	0.10	0.06	0.07	<0.05	<0.05	0.08	0.10	<0.04	<0.04
JAN 1990												
18...		0.27	<0.06	0.09	<0.06	<0.06	<0.05	<0.05	<0.04	0.09	<0.04	<0.04
FEB												
13...		0.39	<0.06	0.10	<0.06	0.06	<0.05	<0.05	0.06	0.10	<0.04	<0.04
MAR												
13...		1.2	0.41	0.27	0.53	0.20	0.11	0.05	0.49	0.27	0.08	0.05
19...		0.42	0.12	0.14	0.10	0.08	<0.05	<0.05	0.11	0.12	<0.04	<0.04
23...		0.43	0.07	0.12	0.08	0.07	<0.05	<0.05	0.10	0.11	<0.04	<0.04
APR												
02...		0.50	0.17	0.13	0.17	0.06	<0.05	<0.05	0.20	0.13	<0.04	<0.04
18...		0.59	0.26	0.13	0.36	0.06	0.10	<0.05	0.46	0.13	0.07	<0.04

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
OCT 1989											
03...	0.09	<0.05	0.92	0.35	1.1	0.34	1.0	0.43	0.85	0.15	1.0
17...	0.06	<0.05	0.97	0.25	0.95	0.29	1.0	0.38	0.75	0.15	0.95
31...	0.05	<0.05	0.87	0.26	0.84	0.28	0.90	0.36	0.74	0.16	0.82
NOV											
15...	<0.05	<0.05	0.18	0.14	0.18	0.07	0.24	0.12	0.14	<0.09	0.15
DEC											
05...	<0.05	<0.05	0.07	0.15	0.05	0.07	0.09	0.13	<0.09	<0.09	<0.07
JAN 1990											
18...	<0.05	<0.05	<0.06	0.10	<0.04	0.06	0.06	0.12	<0.09	<0.09	<0.07
FEB											
13...	<0.05	<0.05	<0.06	0.19	0.05	0.08	0.08	0.15	<0.09	<0.09	<0.07
MAR											
13...	<0.05	<0.05	0.43	0.29	0.42	0.19	0.51	0.33	0.32	0.12	0.43
19...	<0.05	<0.05	0.09	0.08	0.09	0.08	0.13	0.15	<0.09	<0.09	0.10
23...	<0.05	<0.05	0.16	<1.2	0.08	0.08	0.12	0.16	<0.09	<0.09	0.09
APR											
02...	<0.05	<0.05	0.15	0.10	0.17	0.08	0.23	0.15	0.12	<0.09	0.18
18...	<0.05	<0.05	0.40	0.08	0.43	0.10	0.49	0.15	0.26	<0.09	0.47
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
OCT 1989											
03...	0.42	2.1	0.44	1.4	0.28	0.38	0.10	1.1	0.17	<0.06	<0.06
17...	0.28	1.8	0.35	1.2	0.28	0.48	0.10	0.86	0.19	0.06	<0.06
31...	0.26	1.8	0.37	1.1	0.30	0.46	0.11	0.87	0.21	<0.06	<0.06
NOV											
15...	0.09	0.30	0.16	0.19	0.11	0.09	<0.05	0.20	0.10	<0.06	<0.06
DEC											
05...	0.08	0.11	0.21	0.10	0.14	<0.05	0.05	0.13	0.14	<0.06	<0.06
JAN 1990											
18...	<0.07	0.13	0.14	<0.07	0.10	<0.05	<0.05	<0.06	0.10	<0.06	<0.06
FEB											
13...	0.08	0.10	0.17	0.08	0.11	<0.05	<0.05	0.06	0.09	<0.06	<0.06
MAR											
13...	0.22	0.79	0.38	0.38	0.23	0.17	0.07	0.57	0.19	<0.06	<0.06
19...	0.10	0.25	0.25	0.13	0.15	0.05	<0.05	0.13	0.13	<0.06	<0.06
23...	0.09	0.17	0.19	0.10	0.11	<0.05	<0.05	0.10	0.09	<0.06	<0.06
APR											
02...	0.11	0.33	0.20	0.16	0.13	0.08	<0.05	0.19	0.10	<0.06	<0.06
18...	0.11	0.64	0.17	0.36	0.11	0.20	<0.05	0.35	0.08	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
OCT 1989											
03...	0.48	0.11	0.13	<0.06	0.19	<0.06	0.19	<0.05	0.19	<0.05	0.30
17...	0.43	0.11	0.10	<0.06	0.16	<0.06	0.14	<0.05	0.16	<0.05	0.26
31...	0.38	0.12	0.09	<0.06	0.16	0.06	0.13	<0.05	0.15	<0.05	0.25
NOV											
15...	0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	0.05
DEC											
05...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
JAN 1990											
18...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
FEB											
13...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
MAR											
13...	0.26	0.11	0.07	<0.06	0.13	0.07	0.09	<0.05	0.10	<0.05	0.15
19...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
23...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
APR											
02...	0.11	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	0.05
18...	0.22	<0.09	<0.06	<0.06	0.07	<0.06	0.08	<0.05	0.07	<0.05	0.12

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
OCT 1989											
03...	0.04	0.44	0.09	0.37	0.06	0.41	0.08	0.05	<0.04	<0.10	<0.03
17...	0.05	0.41	0.10	0.45	0.08	0.45	0.09	0.06	<0.04	0.10	0.04
31...	0.06	0.39	0.11	0.44	0.09	0.43	0.11	0.06	<0.04	0.09	0.05
NOV											
15...	<0.04	0.10	0.06	0.11	<0.05	0.14	<0.06	<0.04	<0.04	0.05	0.03
DEC											
05...	<0.04	0.06	0.07	0.06	0.06	0.09	0.10	<0.04	<0.04	0.03	0.04
JAN 1990											
18...	<0.04	<0.04	0.05	<0.05	0.05	<0.06	0.06	<0.04	<0.04	<0.03	0.04
FEB											
13...	<0.04	<0.04	0.06	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	0.03
MAR											
13...	0.05	0.26	0.11	0.27	0.08	0.36	0.10	0.04	<0.04	0.10	0.05
19...	<0.04	0.07	0.08	0.05	0.05	0.09	0.07	<0.04	<0.04	0.03	0.05
23...	<0.04	0.05	0.06	<0.05	<0.05	0.06	<0.06	<0.04	<0.04	<0.03	0.03
APR											
02...	<0.04	0.10	0.06	0.08	<0.05	0.11	<0.06	<0.04	<0.04	<0.05	<0.04
18...	<0.04	0.18	0.05	0.14	<0.05	0.18	<0.06	<0.04	<0.04	<0.07	<0.03
DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 SED DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
OCT 1989											
03...	<0.05	<0.05	0.36	<0.06	0.05	<0.03	0.12	<0.06	0.20	0.05	0.06
17...	<0.05	<0.05	0.33	0.08	0.04	<0.03	0.16	<0.06	0.24	0.05	0.07
31...	<0.05	<0.05	0.34	0.09	0.04	<0.03	0.15	<0.06	0.22	0.06	0.07
NOV											
15...	<0.05	<0.05	0.11	<0.06	<0.03	<0.03	<0.06	<0.06	0.08	<0.04	<0.04
DEC											
05...	<0.05	<0.05	0.07	0.07	<0.03	<0.03	<0.06	<0.06	0.05	0.07	<0.04
JAN 1990											
18...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.21	<0.06	<0.04	0.06	<0.04
FEB											
13...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
MAR											
13...	<0.05	<0.05	0.32	0.09	0.04	<0.03	0.09	<0.06	0.19	0.06	0.05
19...	<0.05	<0.05	0.06	0.06	<0.03	<0.03	<0.06	<0.06	0.05	0.05	<0.04
23...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
APR											
02...	<0.05	<0.05	0.08	<0.06	<0.03	<0.03	<0.06	<0.06	0.06	<0.04	<0.04
18...	<0.05	<0.05	0.13	<0.06	<0.03	<0.03	<0.06	<0.06	0.10	<0.04	<0.04
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
OCT 1989											
03...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
17...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
31...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
NOV											
15...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
DEC											
05...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JAN 1990											
18...	<0.05	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
FEB											
13...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
MAR											
13...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.05	<0.05	<0.06	<0.06
19...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
23...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
APR											
02...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
18...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
OCT 1989											
03...	<0.07	<0.07	0.12	<0.06	0.09	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
17...	<0.07	<0.07	0.13	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
31...	<0.07	<0.07	0.14	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
NOV											
15...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DEC											
05...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JAN 1990											
18...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
FEB											
13...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
MAR											
13...	<0.07	<0.07	0.12	<0.06	0.09	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
19...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
23...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
APR											
02...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
18...	<0.07	<0.07	<0.06	<0.06	0.05	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
OCT 1989											
03...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
17...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.09	<0.08	<0.08	<0.08
31...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.08	<0.08	<0.08	<0.08
NOV											
15...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
DEC											
05...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
JAN 1990											
18...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
FEB											
13...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
MAR											
13...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
19...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
23...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
APR											
02...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
18...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084475 FOX RIVER AT STATE HIGHWAY 55 AT KAUKAUNA, WI

LOCATION.--Lat 44°16'50", long 88°16'07", in N 1/2 sec.22, T.21 N., R.18 E., Outagamie County, Hydrologic Unit 04030204, at State Highway 55.

DRAINAGE AREA.--5,980 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1989 to September 1990, June to November 1992 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: May 1989 to September 1990 (discontinued).

REMARKS.--Daily mean discharges estimated by using daily mean discharges from Fox River at Appleton, 04084445, multiplied times the drainage area ratio between the two sites of 1.005. Samples for chemical analysis were composite samples of water pumped from multiple fixed points in the stream cross section. Chemical analyses by Wisconsin State Laboratory of Hygiene. Other water-quality data for the 1989-90 water years are published in the report for the 1990 water year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)
JUN 1989												
01...	1400	14400	2.7	0.54	0.37	<0.15	0.04	<0.03	0.63	0.26	0.66	0.26
14...	1525	7830	2.3	1.1	0.33	0.19	<0.03	<0.03	0.60	0.53	0.67	0.52
*27...	1435	4270	2.9	1.8	0.47	0.37	0.04	0.05	0.83	0.92	0.86	0.93
*27...	1630	4270	2.4	1.7	0.42	0.33	<0.03	<0.03	0.69	0.87	0.68	0.91
JUL												
26...	1440	1840	1.9	1.1	0.40	0.33	<0.03	<0.03	0.96	0.71	1.0	0.75
SEP												
06...	0800	1350	1.2	0.86	0.16	0.18	<0.03	<0.03	0.41	0.49	0.55	0.51
20...	0815	1330	1.3	1.2	0.16	0.22	<0.03	<0.03	0.46	0.64	0.58	0.66
DATE		PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
JUN 1989												
01...		0.69	0.30	<0.04	<0.04	1.3	0.20	0.09	0.05	0.65	0.15	6.1
14...		0.68	0.60	<0.04	<0.04	1.4	0.28	0.11	0.10	0.69	0.29	6.2
27...		0.90	1.0	<0.04	0.06	1.9	0.62	0.10	0.13	1.0	0.57	8.0
27...		0.72	0.99	<0.04	0.04	1.3	0.61	0.11	0.12	0.79	0.55	5.7
JUL												
26...		1.1	0.88	<0.04	0.05	1.5	0.46	0.15	0.13	1.0	0.39	7.5
SEP												
06...		0.61	0.62	<0.04	0.06	0.81	0.30	0.07	0.08	0.53	0.25	4.1
20...		0.63	0.79	0.04	0.11	0.75	0.37	0.07	0.11	0.48	0.32	3.9
DATE		PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
JUN 1989												
01...		0.95	1.3	0.19	0.98	0.13	0.23	<0.05	0.88	0.22	0.10	<0.04
14...		1.5	1.3	0.32	1.2	0.25	0.20	0.08	1.1	0.41	0.11	0.06
27...		3.1	1.6	0.53	1.5	0.41	0.27	0.14	1.3	0.62	0.18	0.11
27...		3.0	1.2	0.51	1.1	0.39	0.22	0.13	1.0	0.60	0.14	0.10
JUL												
26...		2.4	1.3	0.39	1.3	0.31	0.31	0.11	1.5	0.52	0.18	0.10
SEP												
06...		1.5	0.70	0.26	0.77	0.23	0.20	<0.05	0.90	0.39	0.12	0.08
20...		2.0	0.66	0.33	0.70	0.28	0.20	0.11	0.86	0.48	0.12	0.10

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04084475 FOX RIVER AT STATE HIGHWAY 55 AT KAUKAUNA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
JUN 1989											
01...	0.05	<0.05	0.72	0.24	0.76	0.17	0.84	0.23	1.4	0.12	1.1
14...	0.05	<0.05	0.85	0.38	0.87	0.30	0.89	0.39	1.2	0.25	1.1
*27...	0.08	0.06	1.1	0.47	1.2	0.47	1.2	0.58	2.1	0.37	1.5
*27...	0.07	0.05	0.82	0.55	0.86	0.46	0.88	0.57	1.5	0.33	1.1
JUL											
26...	0.09	0.05	1.3	0.44	1.4	0.41	1.5	0.50	1.3	0.21	1.6
SEP											
06...	0.06	<0.05	0.90	0.29	0.85	0.30	0.89	0.39	0.77	0.17	>0.53
20...	0.06	0.06	0.69	0.31	0.79	0.39	0.86	0.50	0.73	0.20	>0.49
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
JUN 1989											
01...	0.18	3.2	0.30	1.6	0.20	0.61	0.07	0.80	0.14	0.09	<0.06
14...	0.34	2.7	0.45	1.8	0.33	0.70	0.11	0.98	0.22	<0.06	<0.06
27...	0.53	3.5	0.67	2.1	0.59	0.80	0.22	1.5	0.32	0.11	<0.06
27...	0.50	2.4	0.63	2.2	0.53	0.78	0.19	1.1	0.29	0.09	<0.06
JUL											
26...	0.41	2.9	0.56	2.0	0.37	0.70	0.14	1.2	0.25	0.10	<0.06
SEP											
06...	>0.12	2.0	>0.13	1.2	0.30	0.46	0.10	0.71	0.17	0.07	<0.06
20...	>0.18	1.8	0.18	1.1	0.34	0.42	0.13	0.71	0.22	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
JUN 1989											
01...	0.54	<0.09	0.11	<0.06	0.19	0.06	0.14	<0.05	0.17	<0.05	0.28
14...	0.37	0.16	0.13	<0.06	0.21	0.08	0.14	0.05	0.19	<0.05	0.26
27...	0.51	0.15	0.16	<0.06	0.30	0.09	0.28	0.05	0.27	0.06	0.42
27...	0.36	0.13	0.12	<0.06	0.19	0.08	0.20	<0.05	0.18	0.06	0.28
JUL											
26...	0.52	0.15	0.16	<0.06	0.24	0.08	0.22	0.05	0.23	0.06	0.37
SEP											
06...	0.33	0.11	0.09	<0.06	0.15	<0.06	0.12	<0.05	0.14	<0.05	0.22
20...	0.34	0.15	0.09	<0.06	0.16	0.07	0.12	<0.05	0.14	0.05	0.22
DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
JUN 1989											
01...	<0.04	0.42	0.08	0.53	0.06	0.56	0.08	0.06	<0.04	<0.03	<0.03
14...	0.06	0.42	0.13	0.36	0.10	0.42	0.14	0.04	<0.04	<0.10	<0.03
27...	0.08	0.63	0.16	0.94	0.13	0.90	0.15	0.09	<0.04	<0.08	<0.03
27...	0.07	0.41	0.14	0.88	0.12	0.76	0.12	0.07	<0.04	<0.07	<0.03
JUL											
26...	0.07	0.59	0.14	0.62	0.13	0.75	0.18	0.08	<0.04	<0.08	<0.03
SEP											
06...	0.05	0.36	0.10	0.39	0.07	0.48	0.10	0.05	<0.04	0.08	0.04
20...	0.06	0.36	0.13	0.33	0.08	0.44	0.12	0.05	<0.04	0.09	0.04

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084475 FOX RIVER AT STATE HIGHWAY 55 AT KAUKAUNA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
JUN 1989											
01...	<0.05	<0.05	0.44	0.06	0.06	<0.03	0.20	<0.06	0.25	<0.04	0.08
14...	<0.05	<0.05	0.34	0.09	0.04	<0.03	<0.30	<0.06	0.18	0.07	0.06
*27...	<0.05	<0.05	0.72	0.11	0.07	<0.03	0.30	<0.06	0.37	0.07	0.11
*27...	<0.05	<0.05	0.54	0.09	0.07	<0.03	<1.2	<0.06	0.32	0.06	0.09
JUL											
26...	<0.05	<0.05	0.52	0.15	0.07	<0.03	0.27	<0.06	0.34	0.08	0.11
SEP											
06...	<0.05	<0.05	0.34	0.07	0.05	<0.03	0.16	<0.06	0.23	0.05	0.07
20...	<0.05	<0.05	0.30	0.08	0.04	<0.03	0.18	<0.06	0.19	0.07	0.06
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 WATER DISS REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
JUN 1989											
01...	<0.04	0.17	<0.15	<0.06	<0.06	<0.08	<0.08	0.08	<0.05	0.06	<0.06
14...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.07	<0.05	<0.06	<0.06
27...	<0.04	0.29	<0.15	<0.06	<0.06	<0.08	<0.08	0.11	<0.05	0.09	<0.06
27...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.09	<0.05	0.08	<0.06
JUL											
26...	<0.04	0.21	<0.15	<0.06	<0.06	<0.08	<0.08	0.10	<0.05	0.08	<0.06
SEP											
06...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
20...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
JUN 1989											
01...	<0.07	<0.07	0.22	<0.06	0.13	<0.04	0.14	<0.07	<0.06	<0.06	<0.06
14...	<0.07	<0.07	0.16	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
27...	<0.07	<0.07	0.37	<0.06	0.16	<0.04	0.09	<0.07	<0.06	<0.06	0.12
27...	<0.07	<0.07	0.29	<0.06	0.14	<0.04	0.09	<0.07	<0.06	<0.06	0.09
JUL											
26...	<0.07	<0.07	0.26	<0.06	0.17	<0.04	0.09	<0.07	<0.06	<0.06	0.09
SEP											
06...	<0.07	<0.07	0.17	<0.06	0.12	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
20...	<0.07	<0.07	0.14	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
JUN 1989											
01...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.12	<0.08	0.09	<0.08
14...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.13	<0.08	0.08	<0.08
27...	<0.06	<0.15	<0.15	0.20	<0.15	<0.04	<0.04	0.17	<0.08	0.12	<0.08
27...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.15	<0.08	0.09	<0.08
JUL											
26...	<0.06	<0.15	<0.15	0.18	<0.15	<0.04	<0.04	0.15	<0.08	0.10	<0.08
SEP											
06...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.09	<0.08	<0.08	<0.08
20...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.08	<0.08	<0.08	<0.08

\* SAMPLES WITH SAME DATES ARE REPLICATES



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04084475 FOX RIVER AT STATE HIGHWAY 55 AT KAUKAUNA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)
OCT 1989												
03...	1235	970	1.7	1.3	0.31	0.37	0.03	<0.03	0.56	0.62	0.73	0.72
17...	1305	1200	1.5	0.92	0.21	0.18	<0.03	<0.03	0.51	0.48	0.69	0.46
NOV												
01...	0830	4410	1.9	0.67	0.28	<0.15	<0.03	<0.03	0.51	0.39	0.64	0.37
15...	1530	1960	0.33	0.29	<0.15	<0.15	<0.03	<0.03	0.10	0.14	0.12	0.13
DEC												
*06...	1225	2000	<0.16	0.24	<0.15	<0.15	<0.03	<0.03	<0.06	0.08	0.06	0.08
*06...	1300	2000	<0.16	0.25	<0.15	<0.15	<0.03	<0.03	<0.06	0.10	0.07	0.10
JAN 1990												
18...	0830	2710	<0.16	0.41	<0.15	<0.15	<0.03	<0.03	<0.06	0.14	0.04	0.15
FEB												
14...	1050	2690	--	0.27	--	<0.15	--	<0.03	--	0.14	--	0.13
MAR												
13...	1645	3550	0.77	0.49	<0.15	<0.15	<0.03	<0.03	0.27	0.26	0.21	0.26
APR												
02...	1455	3910	0.44	0.38	<0.15	<0.15	<0.03	<0.03	0.09	0.20	0.09	0.18
18...	1430	1120	0.78	0.80	<0.15	0.18	<0.03	0.04	0.22	0.34	0.29	0.33

DATE	PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
OCT 1989											
03...	0.84	0.81	<0.04	0.05	1.3	0.43	0.10	0.11	0.79	0.38	6.3
17...	0.72	0.53	<0.04	<0.04	0.92	0.27	0.09	0.08	0.60	0.24	4.7
NOV											
01...	0.62	0.42	<0.04	<0.04	1.0	0.23	0.09	0.06	0.59	0.24	4.7
15...	0.10	0.15	<0.04	<0.04	0.16	<0.10	<0.04	<0.04	0.12	0.06	0.66
DEC											
06...	<0.05	0.09	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	0.19
06...	0.06	0.11	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	0.24
JAN 1990											
18...	<0.05	0.12	<0.04	<0.04	<0.10	0.10	<0.04	<0.06	<0.06	0.07	0.19
FEB											
14...	--	0.14	--	<0.04	--	<0.10	--	<0.04	--	0.07	--
MAR											
13...	0.19	0.25	0.04	0.04	0.41	0.15	0.05	0.07	0.20	0.13	1.6
APR											
02...	0.08	0.18	<0.04	<0.04	0.14	0.12	<0.04	0.05	0.07	0.09	0.62
18...	0.27	0.33	0.05	0.07	0.41	0.16	0.04	0.07	0.21	0.15	1.6

DATE	PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
OCT 1989											
03...	2.2	1.0	0.38	1.3	0.28	0.27	0.09	1.2	0.45	0.16	0.08
17...	1.3	0.85	0.24	1.0	0.18	0.21	0.07	1.1	0.31	0.14	0.06
NOV											
01...	1.3	0.92	0.21	1.0	0.18	0.20	0.05	1.0	0.31	0.12	0.05
15...	0.39	0.16	0.10	0.19	0.07	<0.05	<0.05	0.20	0.11	<0.04	<0.04
DEC											
06...	0.22	<0.06	0.08	0.07	<0.06	<0.05	<0.05	0.07	0.08	<0.04	<0.04
06...	0.32	0.07	0.11	0.09	0.07	<0.05	<0.05	0.09	0.10	<0.04	<0.04
JAN 1990											
18...	0.40	0.06	0.11	0.07	0.08	<0.05	<0.05	0.06	0.11	<0.04	<0.04
FEB											
14...	0.39	--	0.09	--	0.06	--	<0.05	--	0.10	--	<0.04
MAR											
13...	0.65	0.39	0.13	0.45	0.12	0.08	<0.05	0.36	0.17	0.05	<0.04
APR											
02...	0.49	0.14	0.12	0.14	0.09	<0.05	<0.05	0.17	0.14	<0.04	<0.04
18...	0.76	0.35	0.15	0.57	0.13	0.13	<0.05	0.56	0.20	0.09	<0.04

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084475 FOX RIVER AT STATE HIGHWAY 55 AT KAUKAUNA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
OCT 1989											
03...	0.07	<0.05	1.0	0.42	1.2	0.36	1.2	0.45	1.1	0.18	1.3
17...	0.07	<0.05	0.98	0.31	0.98	0.23	1.1	0.32	0.88	0.13	1.0
NOV											
01...	0.06	<0.05	0.97	0.33	0.93	0.25	0.99	0.33	0.94	0.14	1.0
15...	<0.05	<0.05	0.18	0.24	0.17	0.08	0.25	0.14	0.17	<0.09	0.17
DEC											
*06...	<0.05	<0.05	0.07	0.16	0.06	0.05	0.10	0.10	<0.09	<0.09	<0.07
*06...	<0.05	<0.05	0.09	0.17	0.07	0.07	0.11	0.13	<0.09	<0.09	0.08
JAN 1990											
18...	<0.05	<0.05	<0.06	0.14	<0.04	0.07	0.09	0.14	<0.09	<0.09	<0.07
FEB											
14...	--	<0.05	--	0.09	--	0.07	--	0.15	--	<0.09	--
MAR											
13...	<0.05	<0.05	0.31	0.11	0.30	0.13	0.46	0.41	0.36	0.10	0.32
APR											
02...	<0.05	<0.05	0.13	0.12	0.13	0.10	0.18	0.17	0.11	0.09	0.13
18...	0.06	<0.05	0.47	0.11	0.45	0.14	0.59	0.23	0.44	0.10	0.50
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 WATER DISS REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
OCT 1989											
03...	0.33	2.5	0.46	1.7	0.30	0.57	0.11	1.1	0.18	0.07	<0.06
17...	0.24	2.0	0.30	1.4	0.23	0.53	0.08	0.85	0.16	0.07	<0.06
NOV											
01...	0.24	2.3	0.33	1.4	0.25	0.56	0.09	0.95	0.18	0.07	<0.06
15...	0.10	0.30	0.19	0.22	0.13	0.10	<0.05	0.22	0.12	<0.06	<0.06
DEC											
06...	<0.07	0.09	0.17	0.10	0.10	<0.05	<0.05	0.08	0.09	<0.06	<0.06
06...	0.08	0.11	0.18	0.13	0.14	<0.05	<0.05	0.09	0.09	<0.06	<0.06
JAN 1990											
18...	<0.07	0.16	0.17	<0.07	0.12	<0.05	<0.05	0.08	0.12	<0.06	<0.06
FEB											
14...	0.08	--	0.15	--	0.09	--	<0.05	--	0.07	--	<0.06
MAR											
13...	0.16	0.71	0.26	0.44	0.17	0.17	0.06	0.45	0.12	<0.06	<0.06
APR											
02...	0.13	0.29	0.23	0.10	0.16	0.06	<0.05	0.16	0.10	<0.06	<0.06
18...	0.18	0.92	0.27	0.63	0.18	0.25	0.06	0.54	0.12	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
OCT 1989											
03...	0.45	0.11	0.13	<0.06	0.21	<0.06	0.16	<0.05	0.20	<0.05	0.30
17...	0.42	0.10	0.11	<0.06	0.17	<0.06	0.14	<0.05	0.16	<0.05	0.26
NOV											
01...	0.43	0.10	0.11	<0.06	0.18	<0.06	0.15	<0.05	0.17	<0.05	0.28
15...	0.10	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	0.06
DEC											
06...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
06...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
JAN 1990											
18...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
FEB											
14...	--	<0.09	--	<0.06	--	<0.06	--	<0.05	--	<0.05	--
MAR											
13...	0.19	<0.09	<0.06	<0.06	0.09	<0.06	0.09	<0.05	0.08	<0.05	0.12
APR											
02...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	0.05
18...	0.24	<0.09	0.07	<0.06	0.11	<0.06	0.12	<0.05	0.09	<0.05	0.15

\* SAMPLES WITH SAME DATES ARE REPLICATES

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
OCT 1989											
03...	0.05	0.47	0.09	0.40	0.06	0.49	0.07	0.06	<0.04	<0.10	<0.03
17...	0.04	0.42	0.09	0.47	0.07	0.49	0.07	0.06	<0.04	0.11	0.04
NOV											
01...	0.05	0.43	0.10	0.51	0.07	0.51	0.09	0.06	<0.04	0.10	0.04
15...	<0.04	0.11	0.07	0.11	<0.05	0.14	0.06	<0.04	<0.04	0.05	0.05
DEC											
*06...	<0.04	0.05	0.06	<0.05	<0.05	<0.06	<0.06	<0.04	<0.04	<0.03	0.03
*06...	<0.04	0.05	0.06	<0.05	<0.05	0.07	<0.06	<0.04	<0.04	0.03	0.03
JAN 1990											
18...	<0.04	0.05	0.06	<0.05	0.05	<0.06	0.06	<0.04	<0.04	<0.03	0.04
FEB											
14...	<0.04	--	0.04	--	<0.05	--	<0.06	--	<0.04	--	<0.03
MAR											
13...	<0.04	0.21	0.07	0.15	<0.05	0.20	<0.06	<0.04	<0.04	<0.11	<0.04
APR											
02...	<0.04	0.08	0.06	0.06	<0.05	0.09	<0.06	<0.04	<0.04	<0.04	<0.04
18...	<0.04	0.26	0.07	0.21	<0.05	0.27	<0.06	<0.04	<0.04	<0.09	<0.03
DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
OCT 1989											
03...	<0.05	<0.05	0.35	<0.06	0.04	<0.03	0.21	<0.06	0.22	0.04	0.07
17...	<0.05	<0.05	0.38	0.06	0.05	<0.03	0.22	<0.06	0.26	0.04	0.08
NOV											
01...	<0.05	<0.05	0.40	0.07	0.05	<0.03	0.20	<0.06	0.26	0.05	0.08
15...	<0.05	<0.05	0.11	<0.06	<0.03	<0.03	<0.06	<0.06	0.08	0.04	<0.04
DEC											
06...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
06...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
JAN 1990											
18...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	0.05	<0.04
FEB											
14...	--	<0.05	--	<0.06	--	<0.03	--	<0.06	--	<0.04	--
MAR											
13...	<0.05	<0.05	0.18	<0.06	<0.03	<0.03	<0.06	<0.06	0.10	<0.04	<0.04
APR											
02...	<0.05	<0.05	0.07	<0.06	<0.03	<0.03	<0.06	<0.06	0.05	<0.04	<0.04
18...	<0.05	<0.05	0.24	<0.06	0.04	<0.03	0.07	<0.06	0.15	<0.04	0.06
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
OCT 1989											
03...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.07	<0.05	<0.06	<0.06
17...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.07	<0.05	<0.06	<0.06
NOV											
01...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.08	<0.05	<0.06	<0.06
15...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
DEC											
06...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
06...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JAN 1990											
18...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
FEB											
14...	<0.04	--	<0.15	--	<0.06	--	<0.08	--	<0.05	--	<0.06
MAR											
13...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
APR											
02...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
18...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084475 FOX RIVER AT STATE HIGHWAY 55 AT KAUKAUNA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
OCT 1989											
03...	<0.07	<0.07	0.16	<0.06	0.11	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
17...	<0.07	<0.07	0.16	<0.06	0.12	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
NOV											
01...	<0.07	<0.07	0.18	<0.06	0.12	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
15...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DEC											
*06...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
*06...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JAN 1990											
18...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
FEB											
14...	--	<0.07	--	<0.06	--	<0.04	--	<0.07	--	<0.06	--
MAR											
13...	<0.07	<0.07	0.09	<0.06	0.05	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
APR											
02...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
18...	<0.07	<0.07	0.10	<0.06	0.06	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
OCT 1989											
03...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.10	<0.08	<0.08	<0.08
17...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.09	<0.08	<0.08	<0.08
NOV											
01...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.10	<0.08	<0.08	<0.08
15...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
DEC											
06...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
06...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
JAN 1990											
18...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
FEB											
14...	<0.06	--	<0.15	--	<0.15	--	<0.04	--	<0.08	--	<0.08
MAR											
13...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
APR											
02...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
18...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08

\* SAMPLES WITH SAME DATES ARE REPLICATES



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04084500 FOX RIVER AT RAPIDE CROCHE DAM, NEAR WRIGHTSTOWN, WI

LOCATION.--Lat 44°19'03", long 88°11'50", in SE 1/4 sec.4, T.21 N., R.19 E., Outagamie County, Hydrologic Unit 04030204, at Rapide Croche Dam, 2.0 mi upstream from Wrightstown, and 18 mi upstream from mouth.

DRAINAGE AREA.--6,010 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1896 to September 1917 (monthly discharge only), October 1917 to current year.

REVISED RECORD.--WDR WI-80-1: Drainage area. WDR WI-81-1: 1980.

GAGE.--Recording headwater and tailwater gages and electric generation are read three times a day and used to compute the discharge records.

REMARKS.--Flow regulated by storage in Lake Winnebago (see sta. 04082500 and 04084255). Daily discharges determined from records of flow through turbines, head, gate openings, and lockages through navigation canal. Usually less than about 20 ft<sup>3</sup>/s is diverted into basin from Wisconsin River at Portage Canal throughout the year.

COOPERATION.--Figures of daily discharge furnished by Kaukauna Electric and Water Department. Records reviewed by Geological Survey.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6970	3220	10400	4720	4730	4220	6510	15500	8250	15600	11800	3580
2	7250	4280	10900	5130	4800	3940	6990	14900	9550	15900	11600	3980
3	7070	4790	10500	5170	4980	3500	6580	16000	9910	15600	11600	3790
4	7210	4670	11500	5110	5220	3750	6670	16200	10300	16200	10800	3340
5	5570	4960	10000	5600	4860	3660	6740	16300	10100	17400	10300	3410
6	6780	5330	10100	5100	4930	3800	7170	16000	9910	18500	9730	3390
7	6760	5270	11500	5360	5000	3660	7490	16600	9310	18100	9460	3290
8	4260	5030	10600	5650	4350	3910	10900	16500	9460	18700	9660	3300
9	4250	5740	9440	5400	3830	3870	11500	16400	13200	16700	10000	3200
10	4240	5710	8400	5090	3720	4140	12200	16100	15800	16700	9530	3070
11	4190	5660	7950	5110	3850	4790	12000	15900	14600	16600	8930	3500
12	4160	6870	7800	5320	4300	5750	11500	15400	13800	16300	7350	3680
13	3370	8830	7100	5310	5010	5760	12500	14800	13800	16500	6910	3880
14	2070	8380	8580	5470	4980	5770	12100	12700	14600	16000	5960	3680
15	1080	8540	5090	5490	5040	5790	12600	12500	14100	16400	5990	3810
16	2200	8200	6130	5490	4860	5730	14300	12700	13800	16300	5770	6240
17	2260	7590	6550	5380	4370	5450	14700	13400	14200	16200	5660	10000
18	2350	7190	6500	5710	3740	5390	15100	13300	16500	16300	5570	9830
19	2210	7430	6890	6090	4080	5360	13600	12600	15400	15600	5590	9230
20	2480	7600	6030	5350	4160	5390	14300	12100	15400	15800	5540	8400
21	2420	7980	6850	5310	4170	5320	15300	11000	14500	15800	5510	8990
22	2360	7330	6100	5410	4280	5330	16000	9470	14300	15500	5570	9840
23	2380	7190	6420	5350	4170	5380	15000	9960	14400	15500	5590	11300
24	2470	8710	4740	5270	4170	5460	15200	10400	15200	15300	5210	11000
25	2360	8980	4470	5080	4360	5840	15300	11300	15900	15500	5140	11200
26	2590	9040	4270	4710	4300	5770	15400	11400	15200	14600	5330	11000
27	2680	8720	5350	5020	4220	5740	15200	10700	15000	13700	5440	11000
28	3360	8200	5020	5030	4280	5720	16400	8810	14700	12000	5340	9690
29	3420	9680	5040	4770	---	5800	16600	7950	14500	11400	4510	7540
30	3270	8570	5290	4090	---	5330	16300	8060	14300	11000	4650	5510
31	3250	---	5450	4720	---	5930	---	8050	---	11800	3870	---
TOTAL	117290	209690	230960	161810	124760	155250	372150	403000	399990	483500	223910	193670
MEAN	3784	6990	7450	5220	4456	5008	12400	13000	13330	15600	7223	6456
MAX	7250	9680	11500	6090	5220	5930	16600	16600	16500	18700	11800	11300
MIN	1080	3220	4270	4090	3720	3500	6510	7950	8250	11000	3870	3070

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1896 - 1993, BY WATER YEAR (WY)

	MEAN	3278	3930	4004	4030	4068	4911	7178	6097	5044	3413	2650	2844
MAX	14230	12740	9879	7831	7831	12440	19360	20160	13330	15600	9623	11020	
(WY)	1987	1985	1983	1960	1939	1973	1929	1960	1993	1993	1924	1938	
MIN	728	1242	1562	1432	1767	1596	1590	1260	1097	983	761	709	
(WY)	1933	1931	1959	1977	1977	1964	1954	1931	1931	1931	1936	1933	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1896 - 1993

ANNUAL TOTAL	1763740	3075980	
ANNUAL MEAN	4819	8427	
HIGHEST ANNUAL MEAN			4296
LOWEST ANNUAL MEAN			8427
HIGHEST DAILY MEAN	12600	Sep 18	18700
LOWEST DAILY MEAN	1080	Oct 15	1080
ANNUAL SEVEN-DAY MINIMUM	1480	Aug 26	2090
10 PERCENT EXCEEDS	8570		15600
50 PERCENT EXCEEDS	4430		6850
90 PERCENT EXCEEDS	1830		3750
			4296
			8427
			1626
			24000
			138
			499
			7770
			3560
			1670
			1993
			1931
			Apr 18 1952
			Aug 2 1936
			Sep 20 1933

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085000 FOX RIVER AT WRIGHTSTOWN, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

LOCATION.--Lat 44°19'36", long 88°09'54", in NE 1/4 NW 1/4 sec.2, T.21 N., R.19 E., Brown County, Hydrologic Unit 04030204, at bridge on State Highway 96 at Wrightstown.

DRAINAGE AREA.--6,050 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--Water years 1970, 1974 to current year.

REMARKS.--Records of discharge used are for 04084500 Fox River at Rapide Croche Dam near Wrightstown.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCHI, KF AGAR (COLS. PER 100 ML) (31673)	
OCT 1992												
21...	0958	2420	380	8.5	7.0	--	10.9	752	91	190	K3400	
MAR 1993												
12...	1145	5750	465	8.0	2.0	2.0	12.8	750	94	E330	65	
MAY												
13...	1038	14800	355	8.6	15.0	9.3	7.6	745	77	K2000	K13	
AUG												
24...	1320	5210	342	8.3	25.0	1.9	8.6	742	107	610	110	
DATE		HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT 1992												
21...	170	35	21	15	0.60	170	5	148	26	20	0.20	
MAR 1993												
12...	180	39	21	13	3.0	193	--	158	23	23	<0.10	
MAY												
13...	160	36	18	8.1	2.7	171	2	144	19	15	0.20	
AUG												
24...	180	42	18	8.4	2.8	187	--	154	17	14	0.20	
DATE		SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (MG/L AS AL) (01106)	BARIUM, DIS-SOLVED (MG/L AS BA) (01005)
OCT 1992												
21...	0.10	120	0.020	0.200	0.200	1.6	0.110	0.030	0.010	20	21	
MAR 1993												
12...	3.6	246	0.010	0.480	0.320	1.2	0.060	0.020	0.020	20	20	
MAY												
13...	0.22	202	0.020	0.510	0.080	0.60	0.040	<0.010	<0.010	<10	20	
AUG												
24...	2.0	214	0.010	0.097	0.020	0.80	0.070	0.020	0.030	10	23	
DATE		COBALT, DIS-SOLVED (UG/L AS CO) (01035)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1992												
21...	<3	10	<4	3	<10	<1	<1	220	<6	12	92	
MAR 1993												
12...	<3	24	<4	54	<10	<1	<1	150	<6	12	66	
MAY												
13...	<3	12	<4	2	<10	<1	<1	92	<6	25	93	
AUG												
24...	<3	8	8	<1	<10	<1	<1	150	<6	25	81	

K RESULTS BASED ON COUNT OUTSIDE OF THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085054 FOX RIVER AT LITTLE RAPIDS, WI

LOCATION.--Lat 44°22'37", long 88°07'00", in NE 1/4 SW 1/4 sec.18, T.22 N., R.20 E., Brown County, Hydrologic Unit 04030204, at dam at Little Rapids.

DRAINAGE AREA.--6,100 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1989 to September 1990, June to November 1992, July 1993 (discontinued).

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: April 1989 to September 1990 (discontinued).

REMARKS.--Daily mean discharges estimated by using daily mean discharges from Fox River at Appleton, 04084445, multiplied times the drainage area ratio between the two sites of 1.025. Samples for chemical analysis were composite samples of water pumped from multiple fixed points in the stream cross section. Chemical analyses by Wisconsin State Laboratory of Hygiene. Other water-quality data for the 1989-90 water years are published in the report for the 1990 water year.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)
JUN 1989												
01...	0930	14700	6.6	1.3	0.82	0.15	0.09	<0.03	1.5	0.51	1.6	0.53
15...	0935	6470	4.9	1.1	0.74	0.18	0.05	0.03	1.4	0.63	1.3	0.58
28...	0845	3670	2.4	1.4	0.31	0.25	<0.03	0.04	0.55	0.82	0.53	0.86
JUL												
*27...	0900	1880	1.8	0.84	0.34	0.26	<0.03	<0.03	0.76	0.66	0.84	0.66
*27...	1120	1880	1.8	0.83	0.33	0.25	<0.03	<0.03	0.77	0.54	0.90	0.64
SEP												
07...	1340	1380	1.1	0.54	<0.15	<0.15	<0.03	<0.03	0.37	0.38	0.45	0.36
19...	1400	1380	1.2	1.2	<0.15	0.17	<0.03	<0.03	0.42	0.61	0.52	0.58
DATE		PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
JUN 1989												
01...		1.7	0.61	<0.04	<0.04	3.7	<3.0	0.24	0.09	1.6	0.29	16
15...		1.4	0.70	<0.04	<0.04	3.1	0.43	0.22	0.12	1.3	0.33	13
28...		0.57	0.99	<0.04	0.05	1.3	0.65	0.07	0.12	0.64	0.50	5.3
JUL												
27...		0.91	0.83	<0.04	0.07	1.4	0.43	0.12	0.11	0.81	0.32	6.6
27...		0.98	0.79	<0.04	<0.04	1.4	0.43	0.12	0.11	0.86	0.31	7.0
SEP												
07...		0.53	0.49	<0.04	0.05	0.69	0.27	0.07	0.06	0.43	0.17	3.6
19...		0.59	0.70	<0.04	0.10	0.67	0.36	0.07	0.09	0.44	0.27	3.7
DATE		PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
JUN 1989												
01...		1.7	3.5	0.43	2.7	0.26	0.71	0.07	2.3	0.40	0.25	0.07
15...		2.0	2.9	0.40	2.5	0.28	0.40	0.09	2.1	0.45	0.26	0.08
28...		3.0	1.3	0.58	1.2	0.43	0.29	0.14	1.1	0.65	0.15	0.11
JUL												
27...		2.2	1.3	0.38	1.1	0.30	0.25	0.12	1.2	0.50	0.15	0.10
27...		2.2	1.3	0.38	1.2	0.29	0.26	0.10	1.3	0.48	0.16	0.09
SEP												
07...		1.2	0.69	0.24	0.84	0.21	0.22	0.09	0.95	0.34	0.13	0.07
19...		1.8	0.71	0.32	0.75	0.27	0.21	0.11	0.89	0.45	0.13	0.10

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085054 FOX RIVER AT LITTLE RAPIDS, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
JUN 1989											
01...	0.12	<0.05	2.6	<3.0	1.9	0.38	2.1	0.42	3.3	0.20	2.6
15...	0.10	<0.05	1.6	0.66	1.7	0.33	1.9	0.43	2.5	0.24	2.4
28...	0.07	0.06	0.84	0.67	0.88	0.47	0.95	0.58	1.7	0.42	1.3
JUL											
*27...	0.08	0.05	1.0	0.34	1.1	0.36	1.2	0.47	1.2	0.23	1.3
*27...	0.08	<0.05	1.1	0.32	1.2	0.37	1.3	0.46	1.2	0.22	1.4
SEP											
07...	0.07	<0.05	0.90	0.21	0.82	0.24	0.90	0.32	0.88	0.18	>0.52
19...	0.07	0.05	0.55	0.43	0.80	0.34	0.89	0.45	0.77	0.23	>0.47
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
JUN 1989											
01...	0.30	7.5	0.57	3.8	0.36	1.5	0.11	2.1	0.22	0.23	<0.06
15...	0.38	5.5	0.46	3.5	0.36	1.3	0.13	1.9	0.18	0.15	<0.06
28...	0.55	2.8	0.71	1.8	0.63	0.63	0.22	1.2	0.30	0.10	<0.06
JUL											
27...	0.41	2.6	0.52	1.8	0.37	0.61	0.13	0.94	0.24	0.09	<0.06
27...	0.40	2.8	0.54	1.9	0.38	0.64	0.13	1.0	0.24	0.09	<0.06
SEP											
07...	>0.12	2.2	>0.15	1.4	0.29	0.45	0.09	0.79	0.16	<0.06	<0.06
19...	>0.18	1.9	>0.22	1.2	0.38	0.41	0.13	0.68	0.27	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
JUN 1989											
01...	0.95	0.13	0.29	<0.06	0.46	0.08	0.58	0.06	0.40	0.05	0.59
15...	0.67	0.14	0.26	<0.06	0.40	0.06	0.28	<0.05	0.37	<0.05	0.48
28...	0.40	0.15	0.15	<0.06	0.25	0.08	0.22	0.07	0.22	0.06	0.33
JUL											
27...	0.39	0.14	0.14	<0.06	0.20	0.07	0.17	<0.05	0.19	0.05	0.30
27...	0.42	0.13	0.15	<0.06	0.22	0.07	0.17	<0.05	0.21	0.05	0.32
SEP											
07...	0.34	0.10	0.12	<0.06	0.18	<0.06	0.12	<0.05	0.16	<0.05	0.24
19...	0.33	0.16	0.10	<0.06	0.15	0.08	0.11	<0.05	0.14	0.06	0.21
DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
JUN 1989											
01...	0.06	0.93	0.13	1.2	0.09	1.4	0.13	0.15	<0.04	<0.20	<0.03
15...	0.05	0.80	0.11	0.83	0.08	0.99	0.10	0.10	<0.04	<0.20	<0.03
28...	0.07	0.49	0.15	0.75	0.12	0.72	0.13	0.07	<0.04	<0.08	<0.03
JUL											
27...	0.06	0.46	0.13	0.56	0.11	0.72	0.14	0.07	<0.04	<0.06	<0.03
27...	0.06	0.50	0.13	0.57	0.11	0.64	0.15	0.07	<0.04	<0.07	<0.03
SEP											
07...	0.04	0.39	0.09	0.34	0.05	0.46	0.07	0.04	<0.04	0.09	0.03
19...	0.07	0.35	0.15	0.32	0.09	0.40	0.15	0.04	<0.04	0.08	0.07

\* SAMPLES WITH SAME DATES ARE REPLICATES



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085054 FOX RIVER AT LITTLE RAPIDS, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
JUN 1989											
01...	<0.05	<0.05	1.1	0.10	0.14	<0.03	0.55	<0.06	0.57	0.07	0.20
15...	<0.05	<0.05	0.77	0.07	0.11	<0.03	0.54	<0.06	0.44	0.05	0.14
28...	<0.05	<0.05	0.56	0.09	0.07	<0.03	<0.60	<0.06	0.27	0.06	0.09
JUL											
*27...	<0.05	<0.05	0.52	0.12	0.08	<0.03	0.30	<0.06	0.31	0.07	0.09
*27...	<0.05	<0.05	0.45	0.13	0.06	<0.03	0.30	<0.06	0.29	0.07	0.09
SEP											
07...	<0.05	<0.05	0.30	<0.06	0.04	<0.03	<0.40	<0.06	0.19	<0.04	0.06
19...	<0.05	<0.05	0.30	0.11	0.04	<0.03	0.18	<0.06	0.19	0.08	0.06
DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
JUN 1989											
01...	<0.04	0.46	<0.15	0.11	<0.06	<0.08	<0.08	0.20	<0.05	0.16	<0.06
15...	<0.04	0.34	<0.15	0.09	<0.06	<0.08	<0.08	0.16	<0.05	0.12	<0.06
28...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.09	<0.05	0.07	<0.06
JUL											
27...	<0.04	0.33	<0.15	0.07	<0.06	<0.08	<0.08	0.14	<0.05	0.11	<0.06
27...	<0.04	0.17	<0.15	<0.06	<0.06	<0.08	<0.08	0.08	<0.05	0.07	<0.06
SEP											
07...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
19...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
JUN 1989											
01...	<0.07	<0.07	0.53	<0.06	0.30	<0.04	0.25	<0.07	<0.06	<0.06	0.17
15...	<0.07	<0.07	0.38	<0.06	0.23	<0.04	0.12	<0.07	<0.06	<0.06	0.13
28...	<0.07	<0.07	0.25	<0.06	0.15	<0.04	0.10	<0.07	<0.06	<0.06	0.08
JUL											
27...	0.07	<0.07	0.43	<0.06	0.22	<0.04	0.13	<0.07	<0.06	<0.06	0.14
27...	<0.07	<0.07	0.20	<0.06	0.13	<0.04	<0.07	<0.07	<0.06	<0.06	0.07
SEP											
07...	<0.07	<0.07	0.15	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
19...	<0.07	<0.07	0.15	<0.06	0.11	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
JUN 1989											
01...	<0.06	0.28	<0.15	0.40	<0.15	<0.04	<0.04	0.32	<0.08	0.26	<0.08
15...	<0.06	0.22	<0.15	0.30	<0.15	<0.04	<0.04	0.26	<0.08	0.21	<0.08
28...	<0.06	<0.15	<0.15	0.16	<0.15	<0.04	<0.04	0.14	<0.08	0.10	<0.08
JUL											
27...	<0.06	0.18	<0.15	0.28	<0.15	<0.04	<0.04	0.22	<0.08	0.13	<0.08
27...	<0.06	<0.15	<0.15	0.15	<0.15	<0.04	<0.04	0.13	<0.08	0.11	<0.08
SEP											
07...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.10	<0.08	<0.08	<0.08
19...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	0.08	<0.08	<0.08	<0.08

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085054 FOX RIVER AT LITTLE RAPIDS, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PCB COG 5 + 8 SED SUSP REC (NG/L) (19067)	PCB COG 5 + 8 WATER DISS REC (NG/L) (19004)	PCB COG 6 SED SUSP REC (NG/L) (19066)	PCB COG 6 WATER DISS REC (NG/L) (19003)	PCB COG 7 SED SUSP REC (NG/L) (19065)	PCB COG 7 WATER DISS REC (NG/L) (19002)	PCB COG 16 + 32 SED SUSP REC (NG/L) (19072)	PCB COG 16 + 32 WATER DISS REC (NG/L) (19009)	PCB COG 17 SED SUSP REC (NG/L) (19070)	PCB COG 17 WATER DISS REC (NG/L) (19007)
OCT 1989												
03...	1510	989	0.97	0.73	0.21	0.24	<0.03	<0.03	0.30	0.43	0.39	0.52
17...	1545	1230	1.1	0.70	<0.15	<0.15	<0.03	<0.03	0.40	0.42	0.45	0.40
NOV												
01...	1250	4500	2.9	0.66	0.36	<0.15	0.03	<0.03	0.80	0.40	0.71	0.38
15...	1230	1990	0.65	0.39	<0.15	<0.15	<0.03	<0.03	0.18	0.22	0.17	0.19
DEC												
06...	0830	2040	<0.16	0.38	<0.15	<0.15	<0.03	<0.03	<0.06	0.14	0.04	0.13
JAN 1990												
17...	1330	2730	<0.16	0.27	<0.15	<0.15	<0.03	<0.03	<0.06	0.12	0.04	0.11
FEB												
14...	0800	2740	<0.16	0.34	<0.15	<0.15	<0.03	<0.03	<0.06	0.17	<0.05	0.16
MAR												
14...	1135	8270	5.0	0.54	0.68	<0.15	0.09	<0.03	2.2	0.26	1.4	0.27
APR												
04...	1400	4520	0.50	0.80	<0.15	0.16	<0.03	<0.03	0.14	0.46	0.13	0.40
*19...	0815	1170	0.62	0.69	<0.15	<0.15	<0.03	<0.03	0.26	0.42	0.31	0.36
*19...	0925	1170	0.66	0.61	<0.15	<0.15	<0.03	<0.03	0.24	0.37	0.31	0.34

DATE	PCB COG 18 SED SUSP REC (NG/L) (19069)	PCB COG 18 WATER DISS REC (NG/L) (19006)	PCB COG 19 SED SUSP REC (NG/L) (19068)	PCB COG 19 WATER DISS REC (NG/L) (19005)	PCB COG 22 SED SUSP REC (NG/L) (19076)	PCB COG 22 WATER DISS REC (NG/L) (19013)	PCB COG 24 + 27 SED SUSP REC (NG/L) (19071)	PCB COG 24 + 27 WATER DISS REC (NG/L) (19008)	PCB COG 26 SED SUSP REC (NG/L) (19073)	PCB COG 26 WATER DISS REC (NG/L) (19010)	PCB COG 28 + 31 SED SUSP REC (NG/L) (19074)
OCT 1989											
03...	0.52	0.64	<0.04	<0.04	0.67	0.32	0.07	0.08	0.41	0.25	3.3
17...	0.51	0.51	<0.04	<0.04	0.68	0.28	0.08	0.07	0.43	0.23	3.5
NOV											
01...	0.71	0.45	<0.04	<0.04	1.5	0.28	0.11	0.06	0.66	0.24	6.2
15...	0.15	0.22	<0.04	<0.04	0.31	0.13	<0.04	<0.04	0.15	0.11	1.3
DEC											
06...	<0.05	0.14	<0.04	<0.04	<0.10	0.15	<0.04	<0.04	<0.06	0.06	0.16
JAN 1990											
17...	<0.05	0.12	<0.04	<0.04	<0.10	<0.10	<0.04	<0.04	<0.06	<0.06	<0.15
FEB											
14...	<0.05	0.18	<0.04	<0.04	<0.10	0.11	<0.04	<0.04	<0.06	0.08	<0.15
MAR											
14...	1.3	0.29	0.13	0.05	3.3	0.18	0.28	0.08	1.3	0.13	11
APR											
04...	0.11	0.35	0.04	0.05	0.24	0.23	<0.04	0.09	0.12	0.22	0.99
19...	0.32	0.36	<0.04	0.05	0.37	0.23	0.06	0.07	0.24	0.20	1.9
19...	0.32	0.35	0.05	0.04	0.37	0.20	0.06	0.06	0.24	0.18	1.9

DATE	PCB COG 28 + 31 WATER DISS REC (NG/L) (19011)	PCB COG 33 SED SUSP REC (NG/L) (19075)	PCB COG 33 WATER DISS REC (NG/L) (19012)	PCB COG 37 + 42 SED SUSP REC (NG/L) (19083)	PCB COG 37 + 42 WATER DISS REC (NG/L) (19020)	PCB COG 40 SED SUSP REC (NG/L) (19085)	PCB COG 40 WATER DISS REC (NG/L) (19022)	PCB COG 44 SED SUSP REC (NG/L) (19082)	PCB COG 44 WATER DISS REC (NG/L) (19019)	PCB COG 45 SED SUSP REC (NG/L) (19077)	PCB COG 45 WATER DISS REC (NG/L) (19014)
OCT 1989											
03...	1.6	0.67	0.31	0.84	0.25	0.19	0.08	0.89	0.41	0.14	0.07
17...	1.4	0.73	0.26	0.86	0.22	0.20	0.07	0.93	0.34	0.12	0.06
NOV											
01...	1.4	1.6	0.28	1.2	0.24	0.22	0.07	1.0	0.38	0.14	0.05
15...	0.64	0.32	0.14	0.30	0.11	0.07	<0.05	0.24	0.17	0.04	<0.04
DEC											
06...	0.48	0.06	0.18	0.06	0.10	<0.05	<0.05	0.05	0.14	<0.04	<0.04
JAN 1990											
17...	0.34	<0.06	0.11	<0.06	0.07	<0.05	<0.05	<0.04	0.10	<0.04	<0.04
FEB											
14...	0.49	<0.06	0.12	<0.06	0.08	<0.05	<0.05	0.04	0.12	<0.04	<0.04
MAR											
14...	0.69	3.0	0.17	2.8	0.14	0.46	<0.05	1.6	0.21	0.31	<0.04
APR											
04...	0.96	0.23	0.19	0.38	0.19	0.10	<0.05	0.41	0.23	0.08	0.04
19...	1.0	0.33	0.21	0.58	0.19	0.14	0.07	0.62	0.25	0.10	0.06
19...	0.91	0.34	0.18	0.59	0.17	0.14	<0.05	0.61	0.22	0.09	0.05

\* SAMPLES WITH SAME DATES ARE REPLICATES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085054 FOX RIVER AT LITTLE RAPIDS, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 46 SED SUSP REC (NG/L) (19078)	PCB COG 46 WATER DISS REC (NG/L) (19015)	PCB COG 47 + 48 SED SUSP REC (NG/L) (19081)	PCB COG 47 + 48 WATER DISS REC (NG/L) (19018)	PCB COG 49 SED SUSP REC (NG/L) (19080)	PCB COG 49 WATER DISS REC (NG/L) (19017)	PCB COG 52 SED SUSP REC (NG/L) (19079)	PCB COG 52 WATER DISS REC (NG/L) (19016)	PCB COG 56 + 60 SED SUSP REC (NG/L) (19090)	PCB COG 56 + 60 WATER DISS REC (NG/L) (19027)	PCB COG +64+71 SED SUSP REC (NG/L) (19084)
OCT 1989											
03...	0.07	<0.05	0.73	0.37	0.81	0.32	0.90	0.41	0.75	0.20	0.85
17...	0.07	<0.05	0.85	0.57	0.82	0.26	0.94	0.35	0.86	0.18	0.96
NOV											
01...	0.07	<0.05	0.99	0.29	0.88	0.29	1.2	0.38	1.3	0.22	1.1
15...	<0.05	<0.05	0.24	0.22	0.21	0.13	0.32	0.20	0.26	0.11	0.25
DEC											
06...	<0.05	<0.05	<0.06	0.39	0.04	0.10	0.10	0.19	<0.09	0.10	<0.07
JAN 1990											
17...	<0.05	<0.05	<0.06	<1.1	<0.04	0.08	0.04	0.13	<0.09	<0.09	<0.07
FEB											
14...	<0.05	<0.05	0.06	0.32	<0.04	0.09	0.15	0.20	<0.09	<0.09	<0.07
MAR											
14...	0.15	<0.05	1.3	0.12	1.2	0.15	1.7	0.33	2.7	0.13	1.9
APR											
04...	<0.05	<0.05	0.38	0.18	0.36	0.17	0.46	0.26	0.19	0.14	0.26
*19...	0.06	<0.05	0.52	0.21	0.54	0.19	0.63	0.30	0.47	0.15	0.67
*19...	0.06	<0.05	0.53	0.24	0.55	0.17	0.63	0.27	0.48	0.13	0.67
DATE	PCB COG 64 + 71 WATER DISS REC (NG/L) (19021)	PCB COG 66 + 95 SED SUSP REC (NG/L) (19088)	PCB COG 66 + 95 WATER DISS REC (NG/L) (19025)	PCB COG 70 + 76 SED SUSP REC (NG/L) (19087)	PCB COG 70 + 76 WATER DISS REC (NG/L) (19024)	PCB COG 74 SED SUSP REC (NG/L) (19086)	PCB COG 74 WATER DISS REC (NG/L) (19023)	PCB COG 77+110 SED SUSP REC (NG/L) (19098)	PCB COG 77+110 WATER DISS REC (NG/L) (19035)	PCB COG 82 SED SUSP REC (NG/L) (19099)	PCB COG 82 WATER DISS REC (NG/L) (19036)
OCT 1989											
03...	0.33	1.8	0.48	1.2	0.32	0.46	0.11	0.71	0.20	<0.06	<0.06
17...	0.28	1.9	0.39	1.2	0.31	0.44	0.11	0.79	0.20	0.07	<0.06
NOV											
01...	0.32	2.8	0.46	1.7	0.38	0.59	0.13	1.1	0.26	0.09	<0.06
15...	0.16	0.55	0.26	0.34	0.19	0.13	0.06	0.28	0.15	<0.06	<0.06
DEC											
06...	0.12	0.15	0.26	0.10	0.19	<0.05	0.05	0.09	0.13	<0.06	<0.06
JAN 1990											
17...	0.11	0.09	0.16	<0.07	0.12	<0.05	<0.05	<0.06	0.10	<0.06	<0.06
FEB											
14...	0.10	0.11	0.19	<0.07	0.12	<0.05	<0.05	0.07	0.09	<0.06	<0.06
MAR											
14...	0.19	5.0	0.34	3.1	0.23	1.2	0.07	2.9	0.16	0.16	<0.06
APR											
04...	0.21	0.69	0.32	0.29	0.25	0.09	0.09	0.39	0.14	<0.06	<0.06
19...	0.41	1.0	0.31	0.76	0.24	0.27	0.08	0.52	0.13	<0.06	<0.06
19...	0.19	1.1	0.29	0.76	0.22	0.27	0.08	0.53	0.13	<0.06	<0.06
DATE	PCB COG 84 + 92 SED SUSP REC (NG/L) (19091)	PCB COG 84 + 92 WATER DISS REC (NG/L) (19028)	PCB COG 85 SED SUSP REC (NG/L) (19096)	PCB COG 85 WATER DISS REC (NG/L) (19033)	PCB COG 87 SED SUSP REC (NG/L) (19095)	PCB COG 87 WATER DISS REC (NG/L) (19032)	PCB COG 91 SED SUSP REC (NG/L) (19089)	PCB COG 91 WATER DISS REC (NG/L) (19026)	PCB COG 97 SED SUSP REC (NG/L) (19094)	PCB COG 97 WATER DISS REC (NG/L) (19031)	PCB COG 99 SED SUSP REC (NG/L) (19093)
OCT 1989											
03...	0.31	0.12	0.10	<0.06	<0.06	<0.06	0.12	<0.05	0.14	<0.05	0.22
17...	0.38	0.11	0.12	<0.06	0.17	<0.06	0.12	<0.05	0.16	<0.05	0.24
NOV											
01...	0.46	0.14	0.14	<0.06	0.22	0.08	0.15	<0.05	0.20	0.06	0.30
15...	0.14	<0.09	<0.06	<0.06	0.06	<0.06	<0.05	<0.05	0.06	<0.05	0.08
DEC											
06...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
JAN 1990											
17...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
FEB											
14...	<0.09	<0.09	<0.06	<0.06	<0.06	<0.06	<0.05	<0.05	<0.05	<0.05	<0.04
MAR											
14...	1.2	<0.09	0.43	<0.06	0.71	<0.06	0.37	<0.05	0.48	<0.05	0.68
APR											
04...	0.20	<0.09	<0.06	<0.06	0.07	<0.06	0.08	<0.05	0.07	<0.05	0.11
19...	0.24	0.09	0.07	<0.06	0.11	<0.06	0.09	<0.05	0.09	<0.05	0.15
19...	0.26	<0.09	0.07	<0.06	0.11	<0.06	0.09	<0.05	0.10	<0.05	0.16

\* SAMPLES WITH SAME DATES ARE REPLICATES

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04085054 FOX RIVER AT LITTLE RAPIDS, WI--CONTINUED

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 99 WATER DISS REC (NG/L) (19030)	PCB COG 101 SED SUSP REC (NG/L) (19092)	PCB COG 101 WATER DISS REC (NG/L) (19029)	PCB COG 118 SED SUSP REC (NG/L) (19103)	PCB COG 118 WATER DISS REC (NG/L) (19040)	PCB COG 132+153 SED SUSP REC (NG/L) (19105)	PCB COG 132+153 WATER DISS REC (NG/L) (19042)	PCB COG 135+144 SED SUSP REC (NG/L) (19101)	PCB COG 135+144 WATER DISS REC (NG/L) (19038)	PCB COG 136 SED SUSP REC (NG/L) (19097)	PCB COG 136 WATER DISS REC (NG/L) (19034)
OCT 1989											
03...	0.06	0.35	0.11	0.28	0.07	0.36	0.10	0.04	<0.04	<0.06	<0.03
17...	0.05	0.39	0.10	0.43	0.08	0.45	0.09	0.06	<0.04	0.10	0.04
NOV											
01...	0.07	0.49	0.14	0.59	0.10	0.61	0.13	0.07	<0.04	0.11	0.06
15...	<0.04	0.14	0.09	0.16	0.05	0.18	0.08	<0.04	<0.04	0.05	0.05
DEC											
06...	<0.04	0.05	0.08	<0.05	0.05	0.06	0.07	<0.04	<0.04	<0.03	0.05
JAN 1990											
17...	<0.04	<0.04	0.06	<0.05	<0.05	<0.06	0.06	<0.04	<0.04	<0.03	0.04
FEB											
14...	<0.04	0.04	0.06	<0.05	<0.05	<0.06	0.06	<0.04	<0.04	<0.03	0.03
MAR											
14...	<0.04	1.2	0.09	1.0	0.06	1.2	0.07	0.12	<0.04	<0.66	<0.06
APR											
04...	<0.04	0.19	0.08	0.14	0.05	0.19	<0.06	<0.04	<0.04	<0.05	<0.05
*19...	<0.04	0.25	0.08	0.19	<0.05	0.21	<0.06	0.04	<0.04	<0.08	<0.03
*19...	<0.04	0.27	0.07	0.21	<0.05	0.22	<0.06	<0.04	<0.04	<0.08	<0.03

DATE	PCB COG 137+176 SED SUSP REC (NG/L) (19107)	PCB COG 137+176 WATER DISS REC (NG/L) (19044)	PCB COG 138+163 SED SUSP REC (NG/L) (19108)	PCB COG 138+163 WATER DISS REC (NG/L) (19045)	PCB COG 141 SED SUSP REC (NG/L) (19106)	PCB COG 141 WATER DISS REC (NG/L) (19043)	PCB COG 146 SED SUSP REC (NG/L) (19104)	PCB COG 146 WATER DISS REC (NG/L) (19041)	PCB COG 149 SED SUSP REC (NG/L) (19102)	PCB COG 149 WATER DISS REC (NG/L) (19039)	PCB COG 151 SED SUSP REC (NG/L) (19100)
OCT 1989											
03...	<0.05	<0.05	0.26	0.07	0.04	<0.03	0.17	<0.06	0.17	0.05	0.06
17...	<0.05	<0.05	0.34	0.07	0.05	<0.03	0.22	<0.06	0.24	0.05	0.07
NOV											
01...	<0.05	<0.05	0.50	0.10	0.06	<0.03	0.30	<0.06	0.30	0.08	0.09
15...	<0.05	<0.05	0.14	0.06	<0.03	<0.03	0.09	<0.06	0.11	0.05	<0.04
DEC											
06...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	0.04	<0.04
JAN 1990											
17...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	0.05	<0.04
FEB											
14...	<0.05	<0.05	<0.06	<0.06	<0.03	<0.03	<0.06	<0.06	<0.04	<0.04	<0.04
MAR											
14...	<0.07	<0.05	1.2	0.06	0.15	<0.03	0.33	<0.06	0.53	0.04	0.17
APR											
04...	<0.05	<0.05	0.15	<0.06	<0.03	<0.03	<0.06	<0.06	0.11	<0.04	<0.04
19...	<0.05	<0.05	0.18	<0.06	<0.03	<0.03	0.07	<0.06	0.12	<0.04	0.09
19...	<0.05	<0.05	0.20	<0.06	0.03	<0.03	0.08	<0.06	0.13	<0.04	0.06

DATE	PCB COG 151 WATER DISS REC (NG/L) (19037)	PCB COG 170+190 SED SUSP REC (NG/L) (19119)	PCB COG 170+190 WATER DISS REC (NG/L) (19056)	PCB COG 171+202 SED SUSP REC (NG/L) (19115)	PCB COG 171+202 WATER DISS REC (NG/L) (19052)	PCB COG 172+197 SED SUSP REC (NG/L) (19116)	PCB COG 172+197 WATER DISS REC (NG/L) (19053)	PCB COG 174 SED SUSP REC (NG/L) (19113)	PCB COG 174 WATER DISS REC (NG/L) (19050)	PCB COG 177 SED SUSP REC (NG/L) (19114)	PCB COG 177 WATER DISS REC (NG/L) (19051)
OCT 1989											
03...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.06	<0.05	<0.06	<0.06
17...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	0.07	<0.05	<0.06	<0.06
NOV											
01...	<0.04	0.21	<0.15	<0.06	<0.06	<0.08	<0.08	0.10	<0.05	0.07	<0.06
15...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
DEC											
06...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
JAN 1990											
17...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
FEB											
14...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
MAR											
14...	<0.04	0.56	<0.15	0.11	<0.06	<0.08	<0.08	0.22	<0.05	0.15	<0.06
APR											
04...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
19...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06
19...	<0.04	<0.15	<0.15	<0.06	<0.06	<0.08	<0.08	<0.05	<0.05	<0.06	<0.06

\* SAMPLES WITH SAME DATES ARE REPLICATES



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04085054 FOX RIVER AT LITTLE RAPIDS, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	PCB COG 178 SED SUSP REC (NG/L) (19109)	PCB COG 178 WATER DISS REC (NG/L) (19046)	PCB COG 180 SED SUSP REC (NG/L) (19117)	PCB COG 180 WATER DISS REC (NG/L) (19054)	PCB COG 182+187 SED SUSP REC (NG/L) (19110)	PCB COG 182+187 WATER DISS REC (NG/L) (19047)	PCB COG 183 SED SUSP REC (NG/L) (19111)	PCB COG 183 WATER DISS REC (NG/L) (19048)	PCB COG 185 SED SUSP REC (NG/L) (19112)	PCB COG 185 WATER DISS REC (NG/L) (19049)	PCB COG 194 SED SUSP REC (NG/L) (19123)
OCT 1989											
03...	<0.07	<0.07	0.15	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	0.07
17...	<0.07	<0.07	0.15	<0.06	0.10	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
NOV											
01...	<0.07	<0.07	0.26	<0.06	0.15	<0.04	0.07	<0.07	<0.06	<0.06	0.08
15...	<0.07	<0.07	0.07	<0.06	0.06	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
DEC											
06...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
JAN 1990											
17...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
FEB											
14...	<0.07	<0.07	<0.06	<0.06	<0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
MAR											
14...	0.08	<0.07	0.61	<0.06	0.30	<0.04	0.16	<0.07	<0.06	<0.06	0.19
APR											
04...	<0.07	<0.07	0.07	<0.06	0.04	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
*19...	<0.07	<0.07	0.08	<0.06	0.05	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06
*19...	<0.07	<0.07	0.08	<0.06	0.05	<0.04	<0.07	<0.07	<0.06	<0.06	<0.06

DATE	PCB COG 194 WATER DISS REC (NG/L) (19060)	PCB COG 195+208 SED SUSP REC (NG/L) (19122)	PCB COG 195+208 WATER DISS REC (NG/L) (19059)	PCB COG 196+203 SED SUSP REC (NG/L) (19121)	PCB COG 196+203 WATER DISS REC (NG/L) (19058)	PCB COG 199 SED SUSP REC (NG/L) (19118)	PCB COG 199 WATER DISS REC (NG/L) (19055)	PCB COG 201 SED SUSP REC (NG/L) (19120)	PCB COG 201 WATER DISS REC (NG/L) (19057)	PCB COG 206 SED SUSP REC (NG/L) (19124)	PCB COG 206 WATER DISS REC (NG/L) (19061)
OCT 1989											
03...	<0.06	<0.15	<0.15	0.19	<0.15	<0.04	<0.04	0.16	<0.08	0.18	<0.08
17...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
NOV											
01...	<0.06	<0.15	<0.15	0.16	<0.15	<0.04	<0.04	0.14	<0.08	0.11	<0.08
15...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
DEC											
06...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
JAN 1990											
17...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
FEB											
14...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
MAR											
14...	<0.06	0.29	<0.15	0.41	<0.15	<0.04	<0.04	0.35	<0.08	0.27	<0.08
APR											
04...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
19...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08
19...	<0.06	<0.15	<0.15	<0.15	<0.15	<0.04	<0.04	<0.08	<0.08	<0.08	<0.08

\* SAMPLES WITH SAME DATES ARE REPLICATES

DATE	TIME	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JUL 1993					
10...	1100	11	>5.0	40	86

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085109 EAST RIVER AT MIDWAY ROAD NEAR DE PERE, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 44°23'12", long 88°04'47", in NE 1/4 NE 1/4 sec.16, T.22 N., R.20 E., Brown County, Hydrologic Unit 04030204, on left bank downstream from bridge on Midway Road, 0.5 mi east of intersection of Midway Road and State Highway 57, 4.4 mi southwest of post office in De Pere.

DRAINAGE AREA.--Undetermined.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 610 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: May 23, 24, July 6-8, 20-24, 27-31, Aug. 1-5, 7-13, 15-26, and Sept. 1-14, 17-20, 24-30. Records good except those for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	66	35	37	11	8.5	60
2	---	---	---	---	---	---	47	32	22	10	7.0	35
3	---	---	---	---	---	---	27	35	14	11	6.5	25
4	---	---	---	---	---	---	111	76	8.8	14	6.0	20
5	---	---	---	---	---	---	222	56	5.5	397	5.5	14
6	---	---	---	---	---	---	111	32	3.9	1420	84	10
7	---	---	---	---	---	---	148	22	3.6	570	30	8.0
8	---	---	---	---	---	---	247	19	40	642	20	7.5
9	---	---	---	---	---	---	177	16	1550	396	10	6.8
10	---	---	---	---	---	---	153	12	1120	218	7.0	6.2
11	---	---	---	---	---	---	172	11	302	84	6.0	6.0
12	---	---	---	---	---	---	165	9.3	85	56	5.0	5.8
13	---	---	---	---	---	---	142	8.1	36	35	4.5	5.6
14	---	---	---	---	---	---	139	7.1	128	30	21	5.4
15	---	---	---	---	---	---	98	5.9	88	23	10	15
16	---	---	---	---	---	---	637	5.4	36	16	7.0	8.3
17	---	---	---	---	---	---	450	5.0	201	13	5.5	7.0
18	---	---	---	---	---	---	234	4.8	1440	11	4.8	6.0
19	---	---	---	---	---	---	162	5.1	596	10	4.3	5.0
20	---	---	---	---	---	---	508	4.7	350	9.0	4.0	6.0
21	---	---	---	---	---	---	558	4.2	210	8.5	3.8	143
22	---	---	---	---	---	---	303	3.9	85	8.0	3.5	51
23	---	---	---	---	---	---	119	7.3	53	7.5	3.4	14
24	---	---	---	---	---	---	71	10	37	7.2	3.2	9.0
25	---	---	---	---	---	---	49	13	31	262	3.1	7.0
26	---	---	---	---	---	---	36	8.1	25	162	3.0	6.0
27	---	---	---	---	---	---	35	4.6	18	100	2.9	5.0
28	---	---	---	---	---	---	131	3.7	14	50	3.6	4.5
29	---	---	---	---	---	---	115	3.6	13	25	4.5	4.2
30	---	---	---	---	---	---	61	5.7	11	15	50	4.0
31	---	---	---	---	---	---	---	40	---	11	91	---
TOTAL	---	---	---	---	---	---	5494	505.5	6563.8	4632.2	428.6	510.3
MEAN	---	---	---	---	---	---	183	16.3	219	149	13.8	17.0
MAX	---	---	---	---	---	---	637	76	1550	1420	91	143
MIN	---	---	---	---	---	---	27	3.6	3.6	7.2	2.9	4.0

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

MEAN	---	---	---	---	---	---	183	16.3	219	149	13.8	17.0
MAX	---	---	---	---	---	---	183	16.3	219	149	13.8	17.0
(WY)	---	---	---	---	---	---	1993	1993	1993	1993	1993	1993
MIN	---	---	---	---	---	---	183	16.3	219	149	13.8	17.0
(WY)	---	---	---	---	---	---	1993	1993	1993	1993	1993	1993

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

HIGHEST DAILY MEAN	1550	Jun 9
LOWEST DAILY MEAN	2.9	Aug 27
ANNUAL SEVEN-DAY MINIMUM	3.2	Aug 22
INSTANTANEOUS PEAK FLOW	2280	Jul 5
INSTANTANEOUS PEAK STAGE	23.67	Jul 5
INSTANTANEOUS LOW FLOW	2.5	Aug 27
10 PERCENT EXCEEDS	242	
50 PERCENT EXCEEDS	15	
90 PERCENT EXCEEDS	4.4	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085109 EAST RIVER AT MIDWAY ROAD NEAR DE PERE, WI--CONTINUED  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

PERIOD OF RECORD.--April to September 1993.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993												
06...	1050	101	456	8.1	3.5	12.0	761	200	44	23	13	7.5
30...	0730	63	--	8.3	10.0	--	755	310	69	34	14	7.2
JUN												
09...	1145	1560	320	7.5	17.5	5.6	752	120	28	12	6.5	7.4
10...	1335	4.0	--	7.7	--	--	760	150	35	16	6.9	21
16...	1100	45	604	7.8	16.5	7.3	758	290	66	30	13	8.3
JUL												
06...	0810	1430	243	7.6	21.0	5.5	756	98	23	9.8	5.3	7.6
07...	0800	509	287	7.6	21.0	6.4	760	130	29	13	5.3	7.1
20...	1720	6.2	692	8.0	22.0	7.1	760	370	82	39	14	5.5
AUG												
19...	1235	4.3	735	8.1	23.0	6.3	759	360	81	39	18	7.2
31...	1625	28	414	7.9	22.0	5.7	760	170	37	18	10	7.6

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L) (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
APR 1993												
06...	178	0	146	160	29	33	0.10	6.4	301	1.00	0.030	0.330
30...	298	0	244	250	44	33	0.20	4.7	391	0.930	0.020	0.120
JUN												
09...	100	0	82	82	15	19	0.20	6.9	225	7.80	0.100	0.250
10...	151	0	124	120	20	18	0.30	7.0	230	4.10	0.130	0.140
16...	286	0	234	330	35	33	0.10	8.3	385	1.00	<0.010	0.060
JUL												
06...	88	0	72	--	11	12	0.20	6.0	162	2.70	0.090	0.180
07...	122	0	100	100	14	12	0.20	6.4	169	1.10	0.040	0.100
20...	369	0	302	--	33	28	0.20	11	457	1.50	0.040	0.060
AUG												
19...	383	0	314	310	36	37	0.20	9.2	443	1.10	0.020	0.060
31...	176	0	144	140	25	22	0.20	6.3	235	1.20	0.050	0.140

DATE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993											
06...	2.0	1.7	0.270	0.180	0.130	69	32	--	--	42	100
30...	1.3	1.0	0.210	0.140	0.130	57	51	--	--	88	99
JUN											
09...	1.5	1.2	0.420	0.300	0.280	76	16	13	>4.0	1000	92
10...	1.4	1.0	0.320	0.210	0.220	90	10	16	--	--	--
16...	0.60	0.50	0.030	0.060	<0.010	110	39	19	0.6	66	98
JUL											
06...	1.7	1.2	0.450	0.270	0.240	67	3	12	14	--	--
07...	0.60	0.60	0.120	0.090	0.070	38	3	11	4.9	321	99
20...	1.2	1.1	0.290	0.190	0.170	52	51	15	1.5	127	92
AUG											
19...	0.90	0.80	0.260	0.240	0.230	19	52	12	1.0	51	97
31...	1.2	1.0	0.440	0.310	0.300	49	9	11	4.0	206	100

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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442312087565100 BOWER CREEK RAIN GAGE #2 NEAR DE PERE, WI

LOCATION.--Lat 44°23'12", long 87°56'51", in NE 1/4 SW 1/4 sec.17, T.22 N., R.21 E., Brown County, Hydrologic Unit 04030204, on CTH X, 0.3 mi south of junction with Zion Road, near De Pere.

PERIOD OF RECORD.--January 1991 to current year (non-frozen precipitation).

REMARKS.--Gage established on Jan. 29, 1991. Rainfall estimated to be 0.00 for Nov. 23-25, 27, Dec. 11, Jan. 4, 26, and Mar. 8, 21 because recorded precipitation interpreted as collector snowmelt.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 3.32 in., June 17, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 3.32 in., June 17.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.56	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.65	.00	.00	.00	.00	.00	.12	.00	.33	.00	.00
3	.00	.01	.00	.09	.00	.00	.00	.20	.00	.38	.21	.00
4	.00	.03	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.56	.97	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.02	.38	.28	.00
7	.00	.00	.00	.00	.00	.00	.21	.00	.27	.25	.00	.00
8	.02	.26	.00	.00	.00	.00	.67	.33	2.09	.00	.00	.00
9	.18	.06	.00	.00	.00	.00	.01	.00	.01	.23	.17	.25
10	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.15	.00	.00	.08	.00	.14
12	.00	.39	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.24	.01	.41
14	.00	.00	.07	.00	.00	.00	.04	.05	1.08	.00	.00	.77
15	.23	.00	.95	.00	.00	.00	1.15	.00	.00	.00	.08	.01
16	.20	.06	.05	.00	.00	.01	.09	.00	.00	.00	.00	.00
17	.00	.02	.00	.00	.00	.00	.00	.00	3.32	.03	.00	.03
18	.00	.00	.00	.00	.00	.00	.00	.09	.31	.23	.00	.01
19	.00	.11	.00	.00	.00	.00	.52	.00	.28	.00	.00	.01
20	.20	.92	.00	.00	.00	.00	.07	.00	.11	.00	.00	.58
21	.00	.56	.00	.48	.00	.00	.00	.00	.01	.00	.00	.00
22	.00	.01	.00	.01	.00	.00	.00	.02	.00	.00	.00	.01
23	.00	.00	.00	.00	.00	.04	.00	.83	.00	.00	.11	.00
24	.00	.00	.00	.00	.00	.00	.05	.02	.52	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.02	.83	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.18	.00
27	.00	.00	.00	.00	.00	.00	.53	.06	.01	.00	.18	.11
28	.00	.00	.00	.00	.00	.00	.12	.00	.00	.02	.00	.01
29	.02	.00	.29	.00	---	.00	.04	.00	.00	.04	.00	.02
30	.00	.00	.16	.00	---	.00	.00	.92	.02	.00	.88	.00
31	.00	---	.00	.00	---	.00	---	.19	---	.01	.09	---
TOTAL	0.87	3.64	1.52	0.58	0.00	0.05	3.67	2.83	8.08	5.62	3.16	2.36



## STREAMS TRIBUTARY TO LAKE MICHIGAN

442230087584500 BOWER CREEK RAIN GAGE #1 NEAR DE PERE, WI

LOCATION.--Lat 44°22'30", long 87°58'45", in SE 1/4 SE 1/4 sec.9, T.22 N., R.21 E., Brown County, Hydrologic Unit 04030204, on CTH'G, just west of the junction with Langers Corner Road, near De Pere.

PERIOD OF RECORD.--January 1991 to current year (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger.

REMARKS.--Gage established on Jan. 29, 1991. Rainfall estimated to be 0.00 for Nov. 23, 24, 27, Dec. 10, 11, Jan. 4, Mar. 8, 10, 20, 31, and Apr. 1 because recorded precipitation interpreted as collector snowmelt.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 3.25 in., June 17, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 3.25 in., June 17.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.62	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.73	.00	.00	.00	.00	.00	.18	.01	.37	.00	.00
3	.00	.00	.00	.11	.00	.00	.00	.12	.00	.40	.21	.00
4	.00	.03	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.81	.93	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.35	.37	.00
7	.00	.00	.00	.00	.00	.00	.26	.01	.34	.45	.00	.00
8	.07	.30	.00	.00	.00	.00	.68	.02	2.30	.00	.00	.00
9	.20	.05	.00	.00	.00	.00	.00	.00	.01	.20	.16	.15
10	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.19	.00	.00	.07	.00	.16
12	.00	.34	.01	.00	.00	.00	.03	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.27	.01	.44
14	.00	.00	.07	.00	.00	.00	.05	.05	1.06	.00	.00	.96
15	.25	.00	1.05	.00	.00	.00	1.28	.00	.00	.00	.07	.02
16	.16	.09	.04	.00	.00	.00	.09	.00	.00	.00	.00	.00
17	.00	.01	.00	.00	.00	.00	.00	.00	3.25	.02	.00	.02
18	.00	.00	.00	.00	.00	.00	.00	.08	.38	.25	.00	.01
19	.00	.13	.00	.00	.00	.00	.58	.01	.28	.00	.00	.01
20	.22	1.02	.00	.00	.00	.00	.09	.00	.10	.00	.00	.62
21	.00	.62	.00	.53	.00	.00	.00	.00	.01	.00	.00	.01
22	.00	.01	.00	.00	.00	.00	.00	.03	.00	.00	.00	.01
23	.00	.00	.00	.01	.00	.04	.00	.87	.00	.00	.15	.00
24	.00	.00	.00	.00	.00	.00	.04	.01	.48	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.01	.84	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.16	.00
27	.00	.00	.00	.00	.00	.00	.63	.06	.00	.00	.17	.12
28	.00	.00	.00	.00	.00	.00	.13	.00	.00	.02	.00	.00
29	.04	.00	.32	.00	---	.00	.02	.00	.00	.00	.00	.01
30	.00	.00	.17	.00	---	.00	.00	1.03	.01	.00	.97	.00
31	.00	---	.00	.00	---	.00	---	.20	---	.00	.08	---
TOTAL	0.95	3.95	1.66	0.65	0.00	0.04	4.07	2.67	8.24	6.06	3.28	2.54

04085119 BOWER CREEK, AT COUNTY MM, NEAR DE PERE, WI

LOCATION.--Lat 44°25'21", long 87°56'24", in NE 1/4 SW 1/4 sec.34 (revised), T.23 N., R.21 E., Brown County, Hydrologic Unit 04030204, on right bank upstream from bridge on Highway MM, 1.1 mi east from intersection of Highways G and MM, and 6.2 mi southeast of post office in De Pere.

DRAINAGE AREA.--14.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1990 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 790 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 6-8, 20, 21, 24-27, Dec. 29 to Jan. 14, Jan. 16 to Feb. 13, Feb. 15-22, 24-27, and Mar. 1-30. Records are good except those for ice-affected periods, which are poor. Gage-height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1990, maximum discharge, 4,020 ft<sup>3</sup>/s, gage height, 14.11 ft, estimated from floodmarks, based on step-backwater model.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	1.5	2.3	8.4	17	.30	6.7	5.0	15	.55	.33	.52
2	.77	59	2.0	7.0	8.0	7.8	4.6	4.1	5.8	.88	.21	.15
3	.57	35	1.5	3.0	5.7	50	6.1	4.8	2.6	1.5	.21	.09
4	.48	14	1.3	11	6.2	37	40	10	1.5	2.4	.19	.05
5	.54	8.7	1.2	8.4	8.0	30	42	7.7	1.2	160	.05	.02
6	.67	5.4	.92	4.7	6.0	46	24	4.1	.77	473	10	.00
7	.58	3.6	.84	1.5	2.9	37	25	2.6	.63	98	7.0	.00
8	.55	2.6	.74	1.2	1.2	28	251	6.2	22	85	1.0	.00
9	.60	16	.77	.88	.80	13	57	5.7	392	30	.33	.00
10	.88	19	.89	.70	.66	7.4	19	2.1	24	15	.30	.00
11	.88	11	.89	.56	.58	5.8	14	1.3	8.4	6.1	.17	.00
12	.77	20	.93	.48	.50	5.1	48	.99	4.0	3.5	.16	.00
13	.70	33	1.2	.43	.45	4.2	28	.75	2.4	2.2	.20	.00
14	.65	11	2.0	.37	.42	3.6	12	.46	64	2.1	.16	.12
15	.74	4.8	130	.33	.40	4.1	181	.38	16	1.4	.15	3.0
16	1.3	2.8	356	.32	.38	27	220	.33	4.8	.96	.08	3.1
17	1.5	2.0	57	.28	.36	24	71	.28	460	.66	.03	2.3
18	1.6	1.6	20	.26	.35	9.8	56	.25	525	.90	.00	1.1
19	1.7	1.6	11	.25	.34	5.8	72	.30	94	1.1	.00	.58
20	2.1	118	6.4	.24	.32	2.7	154	.33	62	.97	.00	.58
21	3.6	305	4.2	2.3	.31	1.6	114	.25	26	1.2	.00	4.6
22	4.0	46	2.6	10	.30	2.7	34	.19	11	1.1	.00	7.7
23	3.1	29	1.7	11	.29	3.9	14	.64	5.2	1.0	.00	2.8
24	2.4	22	1.5	13	.28	19	9.1	1.8	6.5	.91	.00	.77
25	2.3	16	1.3	11	.28	45	6.8	2.4	12	9.0	.00	.41
26	1.8	12	1.2	10	.27	43	4.8	1.2	4.8	6.8	.00	.21
27	1.6	8.9	1.0	4.0	.27	32	4.6	.87	1.8	1.8	.00	.12
28	1.6	5.9	.91	1.5	.27	36	86	.76	.90	.80	.00	.11
29	1.3	4.0	1.5	1.3	---	38	15	.52	.61	.44	.00	.08
30	1.3	3.0	9.0	2.2	---	29	8.4	2.2	.54	.39	.12	.04
31	1.3	---	9.6	3.3	---	23	---	23	---	.37	.70	---
TOTAL	42.88	822.4	632.39	119.90	62.83	621.80	1628.1	91.50	1775.45	910.03	21.39	28.45
MEAN	1.38	27.4	20.4	3.87	2.24	20.1	54.3	2.95	59.2	29.4	.69	.95
MAX	4.0	305	356	13	17	50	251	23	525	473	10	7.7
MIN	.48	1.5	.74	.24	.27	.30	4.6	.19	.54	.37	.00	.00
CFSM	.09	1.85	1.38	.26	.15	1.36	3.67	.20	4.00	1.98	.05	.06
IN.	.11	2.07	1.59	.30	.16	1.56	4.09	.23	4.46	2.29	.05	.07

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1993, BY WATER YEAR (WY)

	1991	1992	1993	1991	1992	1993	1991	1992	1993	1991	1992	1993
MEAN	1.65	12.2	10.6	2.87	5.72	27.0	32.4	1.78	20.1	9.86	.23	2.76
MAX	3.16	27.4	20.4	4.31	11.5	41.1	54.3	2.95	59.2	29.4	.69	7.33
(WY)	1991	1993	1993	1992	1991	1991	1993	1993	1993	1993	1993	1992
MIN	.40	3.32	3.39	.45	2.24	20.0	16.9	.52	.000	.000	.000	.000
(WY)	1992	1991	1991	1991	1993	1992	1991	1992	1992	1991	1991	1991

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1991 - 1993

ANNUAL TOTAL	3375.25	6757.12	10.6
ANNUAL MEAN	9.22	18.5	18.5
HIGHEST ANNUAL MEAN			6.31
LOWEST ANNUAL MEAN			1993
HIGHEST DAILY MEAN	356	Dec 16	525
LOWEST DAILY MEAN	.00	Many days	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Many periods	.00
INSTANTANEOUS PEAK FLOW			1540
INSTANTANEOUS PEAK STAGE			10.79
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (CFSM)	.62	1.25	.71
ANNUAL RUNOFF (INCHES)	8.48	16.98	9.70
10 PERCENT EXCEEDS	20	37	22
50 PERCENT EXCEEDS	.88	2.0	1.0
90 PERCENT EXCEEDS	.00	.17	.00

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1990 to current year.

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1990 to current year.

DISSOLVED OXYGEN: April to June 1991.

SUSPENDED-SOLIDS DISCHARGE: October 1990 to current year.

TOTAL-PHOSPHORUS DISCHARGE: October 1990 to current year.

INSTRUMENTATION.--Stage-activated water-quality sampler since October 1990. Continuous water-temperature recorder since October 1990. Dissolved-oxygen recorder during open-water periods from April to June 1991.

REMARKS.--Chemical analyses by the Wisconsin State Laboratory of Hygiene. Samples are point samples unless otherwise indicated. Dissolved-oxygen concentrations greater than 20.0 mg/L are out of calibration range of meter. Records represent water temperature at sensor within 0.5°C.

## EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 30.0°C, June 19, 1991; minimum observed, 0.0°C, many days.

SUSPENDED-SOLIDS DISCHARGE: Maximum daily, 3,000 tons, June 18, 1993; minimum daily, 0.0 ton, many days.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 6,400 lb, June 18, 1993; minimum daily, 0.0 lb., many days.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 25.5°C, Aug. 27; minimum observed, 0.0°C, many days during winter period.

SUSPENDED-SOLIDS DISCHARGE: Maximum daily, 3,000 tons, June 18; minimum daily, 0.0 ton, many days during summer period.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 6,400 lb, June 18; minimum daily, 0.0 lb., many days during summer period.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CALCIUM TOTAL RECOV- ERABLE (MG/L) AS CA) (00916)	MAGNE- SIUM, TOTAL RECOVER -ABLE (MG/L) (00921)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)
OCT 1992										
04...	1345	0.47	17	--	--	--	34	572	180	11
18...	0930	1.4	2.6	180	--	--	2	564	196	0
NOV										
01...	0820	1.3	1.4	20	--	--	3	604	186	1
02...	0315	8.5	3.6	--	--	--	24	628	152	16
02...	0615	28	7.8	--	--	--	73	646	174	57
02...	0940	58	15	--	--	--	136	622	178	110
02...	1130	78	14	--	--	--	266	654	164	222
*02...	1415	101	13	--	--	--	234	648	162	196
02...	1416	101	14	--	--	--	240	662	168	198
02...	1545	100	18	--	--	--	228	650	200	188
02...	1610	100	17	--	--	--	164	574	194	132
02...	2210	71	>20	--	--	--	220	644	202	180
03...	0920	36	9.2	--	--	--	76	480	166	60
04...	0320	17	5.6	--	--	--	40	490	176	30
04...	1220	14	5.2	--	--	--	33	502	184	24
04...	2120	11	3.9	--	--	--	20	484	148	15
06...	0920	5.4	2.6	--	--	--	12	498	146	9
09...	0340	9.5	3.0	--	--	--	18	522	142	13
09...	1230	19	3.3	--	--	--	21	472	142	18
09...	2130	23	23	--	--	--	56	528	172	33
10...	0630	21	11	--	--	--	38	474	154	26
11...	0030	14	3.3	--	--	--	19	454	150	15
12...	0330	7.7	2.2	--	--	--	13	470	152	10
12...	1230	10	1.8	--	--	--	10	470	144	7
12...	1505	20	2.1	--	--	--	15	468	142	11
12...	1740	30	--	--	58	33	29	470	150	24
12...	2025	43	--	--	53	30	43	458	150	37
13...	0525	43	--	--	--	--	69	480	162	56
13...	1425	27	--	--	--	--	37	442	152	29
14...	1725	8.5	3.3	--	--	--	15	452	152	11
15...	1150	4.6	2.2	3800	--	--	13	494	156	9
20...	0250	4.5	--	--	--	--	7	524	146	5
20...	0750	23	--	--	--	--	36	558	156	29
20...	0930	49	--	--	--	--	51	472	138	41
20...	1340	149	--	--	--	--	204	566	146	176
20...	1855	241	--	--	--	--	284	626	146	244
21...	0055	265	--	--	--	--	164	534	128	140
21...	0205	302	--	--	--	--	220	568	134	188
21...	0340	337	--	--	--	--	252	602	136	220
21...	0500	380	--	--	32	20	256	646	130	220
21...	0610	439	--	--	32	20	340	674	130	296
21...	1210	396	--	--	30	19	272	638	126	236
21...	1350	335	--	--	--	--	180	566	130	148
21...	1650	229	--	--	--	--	162	526	128	138
21...	2355	101	--	--	--	--	88	460	130	72
23...	1415	30	--	--	--	--	29	428	144	24
26...	2255	11	--	--	--	--	10	422	134	7
29...	1350	3.6	--	--	--	--	8	474	144	6

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)	COPPER, TOTAL RECOVER -ABLE (UG/L) (01119)	ZINC, TOTAL RECOVER -ABLE (UG/L) (01094)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1992									
04...	23	0.017	0.893	1.2	1.28	--	--	--	--
18...	2	0.051	0.031	0.04	0.280	--	--	--	--
NOV									
01...	2	0.033	0.038	0.05	0.170	--	--	--	--
02...	8	0.138	0.011	0.01	0.280	--	--	--	--
02...	16	0.582	0.044	0.06	0.580	--	--	--	--
02...	26	2.96	<0.005	--	0.890	10	30	228	100
02...	44	3.12	0.008	0.01	0.970	--	--	--	--
02...	38	3.83	0.044	0.06	0.940	13	30	247	98
02...	42	3.48	0.015	0.02	0.950	12	130	261	100
02...	40	3.67	0.184	0.24	1.21	21	40	226	97
02...	32	5.26	0.338	0.44	1.54	--	--	--	--
02...	40	3.91	0.272	0.35	1.33	20	40	225	99
03...	16	4.43	0.164	0.21	0.920	--	--	--	--
04...	10	4.76	0.129	0.17	0.720	--	--	--	--
04...	9	4.83	0.111	0.14	0.640	--	--	--	--
04...	5	4.87	0.160	0.21	0.590	--	--	--	--
06...	3	4.35	0.091	0.12	0.410	--	--	--	--
09...	5	3.18	0.120	0.15	0.420	--	--	--	--
09...	3	2.70	0.013	0.02	0.340	6	30	36	100
09...	23	2.94	2.56	3.3	0.750	13	30	50	100
10...	12	3.34	1.70	2.2	0.640	8	20	45	100
11...	4	3.14	0.334	0.43	0.440	--	--	--	--
12...	3	3.23	0.139	0.18	0.350	--	--	--	--
12...	3	3.12	0.069	0.09	0.340	--	--	--	--
12...	4	2.98	0.043	0.05	0.340	--	--	--	--
12...	5	2.51	0.054	0.07	0.390	4	20	45	95
12...	6	2.67	0.041	0.05	0.400	4	10	60	100
13...	13	3.52	0.751	0.97	0.750	--	--	--	--
13...	8	3.19	0.344	0.44	0.620	--	--	--	--
14...	4	4.00	0.114	0.15	0.480	--	--	--	--
15...	4	4.08	0.126	0.16	0.420	--	--	--	--
20...	2	2.13	0.057	0.07	0.240	--	--	--	--
20...	7	1.85	0.229	0.29	0.620	--	--	--	--
20...	10	1.69	0.086	0.11	0.530	--	--	--	--
20...	28	2.85	0.199	0.26	0.970	--	--	--	--
20...	40	3.88	0.214	0.28	1.09	--	--	--	--
21...	24	4.36	0.236	0.30	1.01	--	--	--	--
21...	32	4.43	0.204	0.26	1.02	--	--	--	--
21...	32	4.46	0.134	0.17	1.06	--	--	--	--
21...	36	4.38	0.124	0.16	1.16	18	50	392	97
21...	44	4.36	0.141	0.18	1.14	16	50	403	97
21...	36	4.64	0.196	0.25	1.39	17	50	376	97
21...	32	4.89	0.198	0.25	1.05	--	--	--	--
21...	24	5.12	0.179	0.23	0.980	--	--	--	--
21...	16	5.82	0.125	0.16	0.790	--	--	--	--
23...	5	5.78	0.159	0.20	0.530	--	--	--	--
26...	3	3.22	0.102	0.13	0.320	--	--	--	--
29...	2	3.01	0.094	0.12	0.260	--	--	--	--



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)
DEC 1992								
15...	0605	--	5.4	<1.0	--	6	554	140
15...	0955	--	14	1.7	--	9	534	136
15...	1120	--	23	1.6	--	18	478	140
15...	1310	--	49	2.4	--	35	414	124
15...	1420	--	92	5.2	--	89	418	116
15...	1635	--	179	6.5	--	169	426	110
15...	1915	--	288	6.2	--	220	444	110
15...	2105	--	370	6.4	--	272	458	94
15...	2155	--	421	6.3	--	191	388	88
15...	2250	--	487	6.4	--	195	384	86
15...	2345	--	551	6.9	--	182	382	92
16...	0545	--	564	6.3	--	118	310	82
16...	0805	--	467	6.1	--	100	296	82
16...	1155	--	329	5.4	--	94	296	84
16...	2010	--	177	4.0	--	63	284	88
17...	0705	--	63	2.9	--	31	288	96
17...	1305	--	50	3.3	--	29	296	104
18...	0310	--	17	2.8	--	15	306	110
18...	1040	--	21	2.7	--	14	320	114
29...	1700	1.5	--	--	--	8	538	130
30...	0345	9.0	--	--	--	10	460	136
30...	1545	9.0	--	--	--	17	434	134
31...	0200	9.6	--	--	--	16	400	138
JAN 1993								
14...	1700	0.37	--	<1.0	20	6	--	--
FEB								
14...	1415	--	0.32	1.2	<10	6	410	120

DATE	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4 (71846)	PHOS- PHORUS TOTAL (MG/L) AS P (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC 1992								
15...	4	2	1.09	0.104	0.13	0.160	--	--
15...	--	<2	0.987	0.357	0.46	0.250	--	--
15...	13	5	0.958	0.360	0.46	0.290	--	--
15...	30	5	0.928	0.238	0.31	0.340	--	--
15...	76	13	1.30	0.212	0.27	0.510	--	--
15...	149	20	1.47	0.207	0.27	0.630	--	--
15...	195	25	1.71	0.301	0.39	0.720	--	--
15...	245	27	1.86	0.268	0.35	0.730	--	--
15...	168	23	1.90	0.236	0.30	0.640	--	--
15...	172	23	1.95	0.249	0.32	0.670	20	94
15...	162	20	1.94	0.333	0.43	0.760	203	96
16...	98	20	2.21	0.389	0.50	0.670	137	94
16...	82	18	2.48	0.433	0.56	0.650	--	--
16...	72	22	2.85	0.468	0.60	0.640	--	--
16...	49	14	3.55	0.451	0.58	0.600	--	--
17...	22	9	3.93	0.372	0.48	0.520	--	--
17...	23	6	4.01	0.333	0.43	0.500	--	--
18...	12	3	4.13	0.253	0.33	0.450	--	--
18...	12	2	4.13	0.249	0.32	0.450	--	--
29...	--	<2	1.51	0.089	0.11	0.170	--	--
30...	4	6	1.49	0.520	0.67	0.340	--	--
30...	9	8	1.83	0.840	1.1	0.610	--	--
31...	8	8	1.25	1.11	1.4	0.650	--	--
JAN 1993								
14...	4	2	0.773	0.335	0.43	0.200	--	--
FEB								
14...	4	2	0.547	1.08	1.4	0.340	--	--

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, IN FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)
MAR 1993								
*04...	1330	37	--	53	--	54	226	102
07...	1550	37	--	31	--	38	188	64
07...	2120	37	--	20	--	56	240	92
08...	0900	28	--	13	--	34	200	74
08...	1820	28	--	26	--	62	314	126
09...	0255	13	--	14	--	50	272	102
09...	1455	13	--	11	--	34	244	96
10...	0255	7.4	--	13	--	30	256	104
10...	1201	7.4	--	12	--	26	250	96
*10...	1207	7.4	--	12	--	23	260	102
10...	1455	7.4	--	--	--	9	244	90
11...	0255	5.8	--	--	--	4	266	100
11...	1455	5.8	--	--	--	5	232	82
12...	0255	5.1	--	--	--	27	236	84
*12...	0925	5.1	--	6.1	--	5	276	86
12...	0930	5.1	--	6.3	--	5	274	84
16...	1155	27	--	6.4	--	22	358	110
16...	1235	27	--	5.1	--	14	314	102
16...	1315	27	--	8.5	--	24	258	88
16...	1420	27	--	13	--	44	244	86
16...	1600	27	--	16	--	42	226	82
16...	1725	27	--	14	--	47	206	70
16...	2305	27	--	11	--	38	162	52
17...	0220	24	--	9.6	--	12	142	58
17...	1120	24	--	10	--	12	150	66
*17...	1225	24	--	10	--	20	158	64
17...	1230	24	--	9.3	--	10	136	58
24...	1455	19	--	9.9	--	41	272	104
24...	1625	19	--	6.7	--	33	274	108
24...	1740	19	--	23	--	50	356	148
24...	2035	19	--	23	--	56	316	132
24...	2205	19	--	18	--	74	302	114
25...	1005	45	--	16	--	36	244	104
25...	1540	45	--	37	--	62	320	140
25...	1900	45	--	34	--	93	354	138
26...	0635	43	--	39	--	32	--	--
*26...	0935	43	--	43	--	26	268	110
26...	0937	43	--	46	--	38	278	114
26...	1835	43	--	20	--	30	292	128
27...	0635	32	--	15	--	22	262	112
27...	1835	32	--	13	--	28	268	118
28...	0505	36	--	10	--	18	252	100
*28...	1043	36	--	9.8	30	18	250	82
28...	1045	36	--	10	30	19	252	84
28...	1500	36	--	--	--	31	262	100
28...	1725	36	--	--	--	48	270	100
28...	2120	36	--	--	--	80	300	94
29...	0245	38	--	9.8	--	56	272	94
29...	0550	38	--	8.6	--	33	254	88
29...	1440	38	--	7.5	--	36	256	90
29...	1835	38	--	8.5	80	60	278	92
30...	0350	29	--	7.6	40	41	268	96
30...	1550	29	--	--	--	18	250	78
31...	0350	--	33	--	--	37	296	96
31...	1550	--	19	--	--	10	284	94

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAR 1993								
04...	36	18	1.08	3.33	4.3	1.19	--	--
07...	26	12	0.329	2.65	3.4	0.980	--	--
07...	32	24	0.023	3.56	4.6	1.00	--	--
08...	22	12	0.135	2.29	2.9	0.780	--	--
08...	32	30	0.050	5.16	6.6	1.14	--	--
09...	32	18	0.685	2.56	3.3	0.880	--	--
09...	22	12	0.597	1.90	2.4	0.790	--	--
10...	16	14	0.446	2.48	3.2	0.750	--	--
10...	16	10	0.384	1.73	2.2	0.670	--	--
10...	14	9	0.361	1.91	2.5	0.700	--	--
10...	5	4	0.180	1.32	1.7	0.580	--	--
11...	0	4	0.159	1.34	1.7	0.540	--	--
11...	2	3	0.263	1.52	2.0	0.570	--	--
12...	17	10	0.340	1.51	1.9	0.660	--	--
12...	0	5	0.136	1.35	1.7	0.560	--	--
12...	2	3	0.139	1.39	1.8	0.550	--	--
16...	18	4	0.492	2.16	2.8	0.620	--	--
16...	10	4	0.358	1.58	2.0	0.510	--	--
16...	19	5	0.492	2.03	2.6	0.600	--	--
16...	34	10	0.650	2.18	2.8	0.860	--	--
16...	26	16	0.690	2.56	3.3	1.09	--	--
16...	36	11	0.688	2.22	2.9	0.840	--	--
16...	29	9	0.829	1.96	2.5	0.690	--	--
17...	--	<2	0.799	1.93	2.5	--	--	--
17...	8	4	0.837	2.22	2.9	0.670	--	--
17...	16	4	0.796	2.20	2.8	0.680	--	--
17...	7	3	0.812	2.18	2.8	0.650	--	--
24...	32	9	0.739	2.90	3.7	0.800	--	--
24...	28	5	0.545	2.37	3.1	0.610	--	--
24...	36	14	0.473	5.04	6.5	1.39	--	--
24...	44	12	0.522	3.51	4.5	1.39	--	--
24...	60	14	0.505	3.02	3.9	1.11	--	--
25...	26	10	0.712	3.02	3.9	0.930	--	--
25...	46	16	0.216	5.84	7.5	1.46	83	93
25...	73	20	0.719	5.52	7.1	1.52	124	95
26...	24	8	0.779	4.51	5.8	1.13	83	85
26...	18	8	0.754	5.43	7.0	1.27	--	--
26...	26	12	0.759	5.44	7.0	1.28	--	--
26...	22	8	0.598	4.48	5.8	1.06	--	--
27...	16	6	0.547	3.47	4.5	0.820	--	--
27...	22	6	0.494	2.77	3.6	0.790	--	--
28...	14	4	0.421	1.94	2.5	0.590	--	--
28...	13	5	0.316	2.16	2.8	0.610	--	--
28...	13	6	0.349	2.10	2.7	0.610	--	--
28...	20	11	0.371	1.73	2.2	0.620	--	--
28...	34	14	0.330	1.77	2.3	0.710	53	99
28...	65	15	0.329	1.28	1.6	0.680	73	99
29...	42	14	0.291	1.40	1.8	0.660	58	100
29...	22	11	0.330	1.52	2.0	0.590	--	--
29...	26	10	0.342	1.12	1.4	0.540	--	--
29...	48	12	0.258	1.12	1.4	0.620	--	--
30...	31	10	0.209	0.887	1.1	0.510	--	--
30...	11	7	0.192	0.826	1.1	0.450	--	--
31...	28	9	0.206	0.597	0.77	0.490	--	--
31...	5	5	0.188	0.533	0.69	0.450	--	--

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)
APR 1993								
04...	0235	15	--	--	11	338	108	7
04...	1325	17	--	--	43	366	130	35
04...	1525	27	--	--	28	334	122	22
04...	1635	39	--	--	25	336	128	19
04...	1735	56	--	40	58	358	134	49
04...	1840	76	--	120	98	386	132	82
04...	1945	100	--	70	185	476	122	168
05...	0340	66	--	80	112	376	112	110
05...	0540	39	--	--	80	346	110	--
05...	0725	22	7.1	--	70	332	110	--
*05...	0928	24	6.3	80	53	312	102	--
05...	0932	24	6.5	100	55	322	98	52
05...	1750	33	--	--	29	394	84	23
06...	0550	30	--	--	22	312	106	17
07...	1750	27	5.0	--	12	332	120	8
07...	2340	39	4.4	--	23	358	126	18
08...	0205	56	4.5	--	33	374	128	27
08...	0340	101	5.2	100	85	430	146	73
08...	0450	160	7.6	210	239	566	164	210
08...	0635	221	9.8	300	470	784	180	418
08...	0935	329	10	1900	656	992	202	580
08...	1045	370	10	1800	608	916	178	536
08...	1220	413	9.2	830	520	850	170	456
*08...	1636	369	7.8	1700	352	720	164	300
08...	1637	368	8.7	2500	400	734	162	344
08...	1710	344	7.4	2700	428	716	160	378
08...	1820	290	--	--	304	650	148	272
08...	1940	240	--	--	266	592	146	242
08...	2110	190	--	--	194	548	132	178
09...	0135	105	--	--	120	452	128	110
10...	0235	25	--	--	19	362	116	17
11...	0235	13	--	--	10	366	112	--
11...	2340	21	--	--	6	376	114	--
12...	1140	23	2.0	20	10	394	130	8
*12...	1146	23	1.9	10	12	400	144	--
12...	1147	23	2.0	30	10	398	144	--
12...	1355	34	2.2	--	13	396	142	11
12...	1455	48	3.1	--	20	396	152	17
12...	1555	67	3.5	--	39	416	160	33
12...	1720	89	4.4	--	77	430	152	68
13...	0135	58	4.0	--	45	374	144	38
13...	0550	34	3.3	--	28	352	140	23
13...	1600	18	3.4	--	14	350	140	8
14...	0400	13	2.8	--	11	370	136	5
14...	1600	11	--	--	8	384	116	4
15...	0955	14	--	--	11	408	142	7
15...	1340	54	--	--	40	408	134	33
15...	1535	164	--	--	138	468	140	124
15...	1740	295	--	--	336	618	142	306
15...	1920	421	--	--	442	714	152	402
15...	2035	545	--	--	524	762	146	460
15...	2125	636	--	--	548	820	152	500
16...	0240	523	--	--	472	752	140	428
16...	0440	368	--	--	336	634	126	296
16...	0640	257	--	--	224	560	124	196
17...	0120	74	--	--	59	368	120	51
17...	0815	26	--	--	42	352	128	37
17...	1445	38	--	--	35	340	118	30
17...	1720	74	--	--	42	356	130	35
17...	1915	131	--	--	102	404	136	91
17...	2020	156	--	--	116	418	132	103
18...	0300	117	--	--	88	336	112	76
18...	0845	49	2.9	--	37	304	114	32
19...	0630	23	2.1	--	13	328	128	10
*19...	1355	48	2.1	100	17	352	112	14
19...	1356	48	2.2	60	18	356	116	15
19...	1655	67	2.2	180	34	384	140	29
19...	1850	118	3.2	--	98	432	132	86
19...	2145	209	4.2	--	212	544	128	188
19...	2330	243	5.2	800	400	706	154	356

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993							
04...	4	0.438	0.610	0.79	0.440	--	--
04...	8	0.641	0.662	0.85	0.500	--	--
04...	6	0.637	0.729	0.94	0.450	--	--
04...	6	0.620	0.737	0.95	0.440	--	--
04...	9	0.692	0.762	0.98	0.500	--	--
04...	16	0.773	0.805	1.0	0.620	--	--
04...	17	0.841	0.844	1.1	0.800	--	--
05...	2	0.846	0.731	0.94	0.660	--	--
05...	<2	0.913	0.818	1.1	0.620	--	--
05...	<2	0.964	0.876	1.1	0.570	--	--
05...	<2	0.960	0.918	1.2	0.530	--	--
05...	3	0.951	0.980	1.3	0.570	--	--
05...	6	0.981	1.04	1.3	0.470	--	--
06...	5	0.845	0.796	1.0	0.480	--	--
07...	4	0.646	0.780	1.0	0.470	--	--
07...	5	0.694	0.783	1.0	0.500	--	--
08...	6	0.690	0.811	1.0	0.530	--	--
08...	12	0.785	0.800	1.0	0.660	--	--
08...	29	0.899	0.935	1.2	0.920	--	--
08...	52	1.06	0.906	1.2	1.18	--	--
08...	76	1.21	0.894	1.2	1.40	--	--
08...	72	1.31	0.877	1.1	1.34	645	97
08...	64	1.50	0.825	1.1	1.26	574	97
08...	52	1.89	0.782	1.0	1.07	439	99
08...	56	1.88	0.790	1.0	1.07	470	98
08...	50	2.00	0.791	1.0	1.09	444	98
08...	32	2.31	0.893	1.2	0.970	--	--
08...	24	2.32	0.848	1.1	0.860	--	--
08...	16	2.41	0.840	1.1	0.820	--	--
09...	10	2.43	0.891	1.1	0.730	--	--
10...	2	1.68	0.742	0.96	0.490	--	--
11...	<2	1.13	0.655	0.84	0.440	--	--
11...	<2	0.837	0.659	0.85	0.400	--	--
12...	2	0.755	0.643	0.83	0.410	--	--
12...	<2	0.768	0.624	0.80	0.400	--	--
12...	<2	0.730	0.640	0.82	0.390	--	--
12...	2	0.761	0.636	0.82	0.420	--	--
12...	3	0.700	0.652	0.84	0.450	--	--
12...	6	0.746	0.666	0.86	0.540	--	--
12...	9	0.812	0.675	0.87	0.610	84	99
13...	7	0.863	0.588	0.76	0.540	66	99
13...	5	0.921	0.599	0.77	0.500	41	94
13...	6	0.905	0.500	0.64	0.440	--	--
14...	6	0.917	0.442	0.57	0.420	--	--
14...	4	0.900	0.419	0.54	0.390	--	--
15...	4	0.831	0.459	0.59	0.420	--	--
15...	7	0.746	0.553	0.71	0.450	--	--
15...	14	0.797	0.519	0.67	0.660	--	--
15...	30	0.917	0.436	0.56	0.820	--	--
15...	40	1.03	0.485	0.62	0.990	--	--
15...	64	1.10	0.478	0.62	1.07	522	95
15...	48	1.16	0.452	0.58	1.11	578	95
16...	44	1.41	0.425	0.55	1.09	2190	99
16...	40	1.58	0.420	0.54	0.930	--	--
16...	28	1.72	0.411	0.53	0.830	--	--
17...	8	1.79	0.471	0.61	0.530	--	--
17...	5	1.73	0.418	0.54	0.910	--	--
17...	5	1.58	0.408	0.53	0.430	--	--
17...	7	1.51	0.363	0.47	0.420	--	--
17...	11	1.45	0.306	0.39	0.490	--	--
17...	13	1.40	0.338	0.44	0.520	--	--
18...	12	1.11	0.422	0.54	0.490	--	--
18...	5	1.19	0.697	0.90	0.440	--	--
19...	3	1.19	0.365	0.47	0.360	--	--
19...	3	0.976	0.279	0.36	0.390	--	--
19...	3	0.986	0.249	0.32	0.380	--	--
19...	5	0.898	0.301	0.39	0.430	--	--
19...	12	0.738	0.427	0.55	0.540	--	--
19...	24	0.643	0.349	0.45	0.750	254	99
19...	44	0.701	0.342	0.44	0.950	418	99

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)
APR 1993								
20...	0400	193	4.2	1900	216	604	140	192
20...	0825	110	3.4	--	142	494	128	126
20...	1410	45	2.7	3200	60	418	124	54
*20...	1411	45	2.7	1700	84	418	122	74
20...	1635	64	--	--	90	420	124	78
20...	1815	144	--	--	70	440	116	64
20...	1950	241	4.0	--	233	486	114	207
20...	2045	275	3.9	--	240	498	118	214
21...	0145	223	3.4	--	120	380	100	104
21...	0425	136	--	--	90	320	92	74
21...	0815	62	2.8	--	48	288	90	38
21...	1835	140	3.2	--	82	346	102	70
22...	0630	39	2.8	--	22	290	92	17
23...	0600	17	2.1	80	12	312	94	10
*25...	0910	7.0	1.8	20	7	368	100	3
27...	2400	15	2.2	<10	14	420	126	11
28...	0140	36	3.2	--	19	426	122	15
28...	0255	72	5.1	--	95	482	156	80
28...	0425	124	5.9	--	139	538	168	120
28...	0515	149	7.0	190	126	568	168	108
28...	1230	108	5.4	800	138	506	160	116
28...	2325	25	3.9	--	36	394	140	29
*29...	1040	14	3.2	190	22	396	144	18
MAY								
11...	1541	1.2	2.6	10	6	426	132	3
30...	1915	3.9	--	--	6	488	134	3
30...	2235	11	--	--	8	486	132	4
31...	0500	21	--	--	12	540	174	8
31...	1700	25	--	--	50	514	162	38
JUN								
01...	1700	13	3.2	--	8	544	218	6
02...	1410	5.1	2.9	390	5	498	160	2
08...	2045	9.9	2.0	5100	13	450	124	3
08...	2110	21	6.1	34000	75	502	148	58
08...	2220	115	18	>300000	1630	1970	324	1370
08...	2315	257	12	>100000	970	1310	248	810
08...	2345	346	9.1	41000	1260	1630	242	1070
09...	0050	499	6.5	39000	1300	1590	--	1120
09...	0155	820	6.7	40000	1310	1610	--	1120
09...	0220	1000	7.7	>140000	1680	1960	--	1500
09...	0545	854	7.1	>83000	1020	1510	--	880
09...	0835	517	5.1	>90000	620	1130	--	510
09...	1025	356	5.3	>90000	440	938	--	330
09...	1147	281	4.3	57000	368	820	--	304
*09...	1155	273	4.4	>48000	332	788	--	272
09...	1355	199	4.2	37000	268	712	174	220
09...	2020	76	3.9	30000	140	550	164	100
10...	0555	28	3.4	15000	140	474	162	100
14...	0440	9.9	8.5	--	228	652	204	188
14...	0550	20	--	--	175	574	180	150
14...	0640	46	6.2	--	196	662	180	164
14...	0725	88	--	--	330	1040	234	288
14...	0845	117	7.1	--	1120	1440	244	1010
14...	1650	77	--	--	600	1010	224	516
14...	2135	49	6.2	--	102	692	188	82
15...	1145	13	4.4	--	88	530	190	66
30...	1505	0.65	<3.0	180	20	496	188	16
JUL								
14...	1500	2.1	2.0	880	34	422	--	27
26...	1332	6.4	2.8	9200	70	464	142	56
AUG								
06...	0755	10	--	--	62	460	--	43
06...	1130	20	--	--	86	468	--	64
06...	2330	11	--	--	186	534	--	156
07...	1130	7.0	--	--	78	398	--	58
13...	0652	0.09	10	600	10	424	--	1
24...	1751	0.0	5.3	110	10	408	--	3
SEP								
21...	1745	8.1	3.8	--	17	502	--	8

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993							
20...	24	0.802	0.376	0.48	0.870	344	99
20...	16	0.944	0.351	0.45	0.730	--	--
20...	6	1.04	0.348	0.45	0.630	--	--
20...	10	1.05	0.353	0.45	0.620	--	--
20...	12	1.02	0.371	0.48	0.710	--	--
20...	6	0.970	0.338	0.44	0.680	--	--
20...	26	0.807	0.283	0.36	0.740	--	--
20...	26	0.760	0.303	0.39	0.790	--	--
21...	16	0.742	0.232	0.30	0.580	--	--
21...	16	0.793	0.229	0.29	0.490	--	--
21...	10	0.851	0.243	0.31	0.470	--	--
21...	12	0.979	0.228	0.29	0.520	--	--
22...	5	0.842	0.194	0.25	0.440	--	--
23...	2	0.844	0.139	0.18	0.350	--	--
25...	4	0.492	0.092	0.12	0.300	--	--
27...	3	0.372	0.099	0.13	0.400	--	--
28...	4	0.348	0.310	0.40	0.400	--	--
28...	15	0.493	0.294	0.38	0.550	--	--
28...	19	0.696	0.212	0.27	0.600	315	100
28...	18	0.767	0.330	0.42	0.690	171	95
28...	22	1.18	0.259	0.33	0.720	189	100
28...	7	1.20	0.218	0.28	0.530	--	--
29...	4	1.07	0.145	0.19	0.450	--	--
MAY							
11...	3	0.043	0.034	0.04	0.340	--	--
30...	3	0.210	0.040	0.05	0.230	--	--
30...	4	0.209	0.106	0.14	0.280	--	--
31...	4	4.92	0.115	0.15	0.310	--	--
31...	12	5.10	0.321	0.41	0.560	--	--
JUN							
01...	2	6.84	0.338	0.44	0.430	--	--
02...	3	5.25	0.166	0.21	0.360	--	--
08...	10	0.755	0.086	0.11	0.260	--	--
08...	17	0.824	0.345	0.44	0.390	--	--
08...	260	5.02	2.59	3.3	3.19	--	--
08...	160	2.59	0.338	0.44	1.68	--	--
08...	190	2.90	0.181	0.23	1.83	--	--
09...	180	6.34	0.162	0.21	1.65	--	--
09...	190	5.32	0.153	0.20	1.71	--	--
09...	184	5.30	0.221	0.28	2.00	--	--
09...	140	6.00	0.378	0.49	1.79	--	--
09...	110	5.47	0.253	0.33	1.43	--	--
09...	110	5.04	0.211	0.27	1.24	--	--
09...	64	4.90	0.191	0.25	1.13	--	--
09...	60	5.07	0.202	0.26	1.10	--	--
09...	48	5.07	0.215	0.28	1.01	--	--
09...	40	4.64	0.200	0.26	0.720	--	--
10...	40	4.26	0.220	0.28	0.620	--	--
14...	40	1.66	0.605	0.78	0.970	--	--
14...	25	1.54	0.362	0.47	0.760	--	--
14...	32	1.53	0.161	0.21	0.760	162	100
14...	42	2.81	0.113	0.15	1.12	--	--
14...	112	3.26	0.082	0.11	1.46	--	--
14...	84	4.58	0.165	0.21	1.17	--	--
14...	20	3.29	0.163	0.21	0.930	--	--
15...	22	2.37	0.160	0.21	0.700	--	--
30...	4	0.863	0.097	0.12	0.440	--	--
JUL							
14...	7	--	0.102	0.13	0.490	--	--
26...	14	1.95	0.285	0.37	0.490	--	--
AUG							
06...	19	--	0.688	0.89	--	--	--
06...	22	--	0.155	0.20	--	--	--
06...	30	--	0.085	0.11	--	--	--
07...	20	--	0.711	0.92	--	--	--
13...	9	--	0.055	0.07	0.560	--	--
24...	7	--	0.205	0.26	0.450	--	--
SEP							
21...	9	--	0.035	0.05	0.310	--	--

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CARBO- FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)	CIS- PERME- THRIN WATER WHOLE REC (UG/L) (82418)	CYAN- AZINE TOTAL (UG/L) (81757)	DI- AZINON, TOTAL (UG/L) (39570)	
JUN 1993										
08...	2150	60	<0.10	2.1	<1.0	<1.0	--	4.4	<0.50	
14...	0655	63	<0.10	3.8	<0.3	<1.0	<1.0	2.1	--	
18...	1235	360	0.16	2.2	<0.3	<1.0	<1.0	1.5	--	
JUL										
05...	1945	183	3.7	13	<0.3	<1.0	<1.0	1.0	--	
DATE		DICAMBA (MED- IBEN) (BAN- VEL D) TOTAL (UG/L) (82052)	DIMETH- OATE WATER WHOLE TOTAL (UG/L) (39009)	EPTC WATER WHOLE REC (UG/L) (81894)	FONOFOS (DY- FONATE) WATER WHOLE TOT.REC (UG/L) (82614)	MALA- THION, TOTAL (UG/L) (39530)	METOLA- CHLOR WATER WHOLE TOT.REC (UG/L) (82612)	METHO- MYL TOTAL (UG/L) (39051)	METOLA- CHLOR IN WATER TOTAL (UG/L) (39356)	PARA- THION, TOTAL (UG/L) (39540)
JUN 1993										
08...	<0.20	<1.0	--	--	<1.0	<0.20	--	--	--	--
14...	0.24	<1.2	<1.0	<0.20	--	--	<1.0	<0.20	<1.0	<1.0
18...	<0.20	<1.0	<1.0	0.23	--	--	<1.0	0.73	<1.0	<1.0
JUL										
05...	17	<1.0	<1.0	<0.20	--	--	<1.0	<0.20	<1.0	<1.0
DATE		PENDI- METH- ALIN TOTAL (UG/L) (79190)	PHORATE TOTAL (UG/L) (39023)	SEVIN, TOTAL (UG/L) (39750)	SIMA- ZINE TOTAL (UG/L) (39055)	TERBU- FOS WAT, WH REC (UG/L) (82088)	TRANS PERME THRIN WATER WHOLE REC (UG/L) (82420)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	2,4-D, TOTAL (UG/L) (39730)	
JUN 1993										
08...	--	--	<1.00	<0.20	--	--	--	--	<0.50	<0.50
14...	<1.00	<0.20	--	1.9	<0.20	<1.0	<1.0	<1.0	0.71	<0.50
18...	<1.00	<0.20	--	1.3	<0.20	<1.0	<1.0	<1.0	<0.50	<0.50
JUL										
05...		<1.00	<0.20	--	0.22	<0.20	<1.0	<1.0	<0.50	<0.50

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	14.5	11.0	12.0	5.0	4.0	4.5	1.0	.5	.5	.0	.0	.0
2	15.5	13.0	14.0	5.5	4.0	5.0	1.5	.5	1.0	.0	.0	.0
3	16.0	14.0	15.0	5.5	4.0	5.0	2.5	1.5	2.0	.0	.0	.0
4	15.0	12.5	13.5	4.0	3.0	4.0	2.5	2.0	2.5	.0	.0	.0
5	13.0	12.0	12.5	3.0	2.0	2.5	2.5	2.0	2.0	.0	.0	.0
6	13.5	11.0	12.5	2.5	1.5	2.0	2.5	2.0	2.0	.0	.0	.0
7	14.5	12.0	13.5	2.5	1.5	2.0	2.5	2.0	2.0	.0	.0	.0
8	14.0	13.0	13.5	3.5	1.5	2.5	2.5	2.5	2.5	.5	.0	.5
9	13.5	11.5	12.5	5.0	2.5	4.0	2.5	2.5	2.5	1.0	.5	.5
10	11.5	11.0	11.0	6.5	5.0	5.5	2.5	2.0	2.5	1.5	1.0	1.0
11	12.0	10.5	11.0	5.5	4.0	5.0	2.0	2.0	2.0	1.5	1.5	1.5
12	11.5	10.0	11.0	4.5	2.0	4.0	2.0	.5	1.5	2.0	1.5	1.5
13	10.0	8.0	9.0	2.0	.5	1.0	1.5	.5	.5	2.0	2.0	2.0
14	9.5	9.0	9.0	1.5	.0	.5	.5	.0	.5	2.0	2.0	2.0
15	9.5	8.5	9.0	1.0	.0	.5	.0	.0	.0	2.0	2.0	2.0
16	8.5	6.5	8.0	1.0	.5	.5	.0	.0	.0	2.0	2.0	2.0
17	6.5	5.0	6.0	1.5	1.0	1.0	.0	.0	.0	2.0	2.0	2.0
18	6.0	4.5	5.5	2.0	1.0	1.5	.0	.0	.0	2.0	2.0	2.0
19	5.5	3.5	4.5	2.5	1.0	1.5	.0	.0	.0	2.5	2.0	2.0
20	5.0	3.5	4.0	4.5	1.0	2.5	.0	.0	.0	2.5	2.0	2.5
21	6.5	4.0	5.0	6.5	4.5	6.0	.5	.0	.0	2.5	.0	1.0
22	9.5	5.5	7.5	5.5	2.5	4.0	1.0	.0	.5	.0	.0	.0
23	13.0	9.5	11.0	2.5	2.0	2.5	1.5	1.0	1.5	.0	.0	.0
24	13.0	11.5	12.0	2.5	2.0	2.5	2.0	1.5	2.0	.0	.0	.0
25	12.0	10.0	11.0	2.5	1.5	2.5	2.5	2.0	2.5	.0	.0	.0
26	11.0	9.0	10.0	1.5	.0	1.0	2.5	2.5	2.5	.0	.0	.0
27	9.0	7.5	8.5	.5	.0	.0	3.0	2.5	3.0	.0	.0	.0
28	8.5	7.0	8.0	1.0	.0	.5	3.0	3.0	3.0	.0	.0	.0
29	8.0	6.0	7.0	1.0	.0	.5	3.5	.0	2.5	.0	.0	.0
30	6.5	4.5	5.5	.5	.5	.5	.0	.0	.0	.0	.0	.0
31	5.5	4.5	5.0	---	---	---	.0	.0	.0	.5	.0	.0
MONTH	16.0	3.5	9.6	6.5	.0	2.5	3.5	.0	1.3	2.5	.0	.7



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	1.0	.5	1.0	.5	.0	.0	14.5	10.5	12.5
2	.0	.0	.0	.5	.0	.5	1.5	.0	.5	14.0	11.0	12.5
3	.0	.0	.0	.0	.0	.0	4.0	.0	1.5	14.5	12.5	13.5
4	.0	.0	.0	.0	.0	.0	4.5	.0	2.0	14.5	13.0	13.5
5	.0	.0	.0	.0	.0	.0	4.5	.0	2.0	18.0	13.5	15.5
6	.0	.0	.0	.0	.0	.0	5.5	2.0	3.5	20.0	15.0	17.5
7	.0	.0	.0	.0	.0	.0	5.0	3.5	4.0	18.5	15.5	16.5
8	.0	.0	.0	.0	.0	.0	6.0	3.5	4.5	19.0	13.5	15.5
9	.0	.0	.0	.0	.0	.0	7.5	5.5	6.5	20.0	14.0	17.0
10	.0	.0	.0	.0	.0	.0	10.0	4.0	7.0	21.0	16.0	18.0
11	.5	.0	.0	.0	.0	.0	7.5	2.0	4.0	21.0	18.0	19.5
12	.5	.0	.0	.0	.0	.0	9.0	1.5	5.0	19.5	16.0	18.0
13	.5	.0	.5	.0	.0	.0	9.0	5.0	7.0	18.0	13.0	15.5
14	.5	.0	.5	.0	.0	.0	7.0	4.0	5.0	18.0	15.0	16.5
15	1.0	.5	.5	.0	.0	.0	4.0	.0	1.5	17.5	15.0	16.0
16	1.0	.5	.5	.0	.0	.0	1.5	.0	.5	16.0	13.0	14.5
17	1.0	.5	.5	.0	.0	.0	8.0	.0	3.5	14.5	12.5	13.5
18	1.0	1.0	1.0	.0	.0	.0	10.5	4.5	7.5	14.0	11.5	13.0
19	1.0	.5	1.0	.0	.0	.0	9.0	3.0	6.5	14.0	11.5	13.0
20	1.0	.5	1.0	.0	.0	.0	4.0	.0	2.0	14.5	12.0	13.5
21	1.0	.5	1.0	.0	.0	.0	9.5	.0	4.5	16.0	12.5	14.0
22	1.0	.5	1.0	.0	.0	.0	10.0	6.0	8.0	17.5	12.5	15.0
23	1.0	1.0	1.0	.0	.0	.0	12.0	5.5	9.0	17.0	15.0	16.0
24	1.0	1.0	1.0	.0	.0	.0	14.5	8.5	11.0	15.5	13.0	14.5
25	1.0	1.0	1.0	.0	.0	.0	12.0	9.5	10.5	14.5	11.5	13.0
26	1.0	1.0	1.0	.0	.0	.0	12.0	6.0	9.0	16.5	13.0	14.5
27	1.0	1.0	1.0	.0	.0	.0	9.5	6.5	7.0	15.0	13.0	13.5
28	1.0	1.0	1.0	.0	.0	.0	14.5	7.0	10.5	15.5	13.0	14.5
29	---	---	---	1.0	.0	.5	13.0	10.5	11.5	16.5	12.5	14.5
30	---	---	---	4.0	.0	1.5	15.5	9.0	12.0	15.5	11.0	13.5
31	---	---	---	2.0	.0	1.5	---	---	---	12.5	9.5	11.0
MONTH	1.0	.0	.5	4.0	.0	.2	15.5	.0	5.6	21.0	9.5	14.8
	JUNE			JULY			AUGUST			SEPTEMBER		
1	14.5	9.0	11.5	19.0	17.5	18.5	24.5	21.5	22.5	21.0	18.5	19.5
2	16.0	11.0	13.5	19.0	18.5	18.5	23.0	20.5	22.0	21.0	18.5	19.5
3	17.0	13.0	15.0	21.0	18.5	19.5	22.0	19.5	21.0	20.5	19.0	19.5
4	16.5	14.0	15.5	23.5	20.5	22.0	21.0	18.5	20.0	20.5	17.5	19.0
5	17.0	13.5	15.0	22.5	20.5	21.5	21.5	18.0	19.5	19.0	18.0	18.5
6	17.0	15.5	16.5	23.0	19.5	21.0	19.5	16.5	17.5	18.0	16.5	17.5
7	16.5	15.0	15.5	22.0	19.0	21.0	19.0	16.0	17.5	18.0	16.0	17.0
8	18.0	14.0	15.5	22.0	20.0	21.0	19.5	17.0	18.0	18.5	16.0	17.0
9	18.0	16.0	17.0	22.5	20.0	21.0	20.5	18.5	19.0	18.0	16.0	17.0
10	20.0	16.5	18.0	24.5	20.5	22.5	21.0	19.5	20.0	16.5	14.5	15.5
11	20.0	17.5	18.0	23.0	20.5	21.5	22.0	20.5	21.0	16.0	13.5	14.5
12	20.0	18.0	18.5	21.5	19.0	20.0	22.0	21.0	21.5	19.0	14.5	16.5
13	19.5	17.5	18.5	21.0	18.5	19.5	22.5	21.5	22.0	19.5	18.0	19.0
14	21.5	18.0	19.5	19.5	18.0	18.5	22.5	22.0	22.0	19.5	16.5	18.5
15	20.0	17.0	18.0	20.0	18.5	19.5	22.0	21.5	21.5	16.5	13.0	14.5
16	17.0	15.0	15.5	20.5	19.0	20.0	22.5	21.0	21.5	13.5	12.5	13.0
17	17.0	14.5	15.5	20.5	19.5	20.0	23.5	21.5	22.5	15.5	12.5	14.0
18	17.0	15.0	15.5	20.5	19.5	20.0	23.5	22.5	23.0	16.0	14.0	15.0
19	15.5	14.5	15.0	21.0	19.0	20.0	23.0	22.0	22.5	15.5	13.5	14.5
20	18.0	15.5	16.5	20.5	19.5	20.0	23.0	21.0	22.0	14.0	13.0	13.5
21	21.0	16.0	18.0	21.5	19.5	20.5	21.0	19.0	20.0	13.5	13.0	13.0
22	22.5	18.5	20.0	21.5	20.0	21.0	22.0	19.5	21.0	14.5	12.5	13.5
23	21.5	17.5	19.5	22.0	20.0	21.0	24.5	20.5	22.5	14.5	12.5	13.5
24	22.0	18.5	20.0	23.0	20.0	21.5	23.5	22.0	22.5	14.5	12.0	13.0
25	23.0	19.5	21.0	22.5	19.5	21.0	23.5	22.0	23.0	13.0	11.5	12.5
26	22.0	18.0	20.0	23.0	20.0	21.5	24.0	23.0	23.5	14.0	12.5	13.0
27	21.0	18.5	19.5	22.5	21.0	21.5	25.5	23.5	24.5	13.5	11.5	12.5
28	20.5	18.0	19.0	24.5	21.5	23.0	24.0	22.0	23.0	11.5	10.5	11.0
29	19.0	17.0	18.0	22.0	20.5	21.0	22.5	21.5	22.0	11.0	10.0	10.5
30	19.5	17.5	18.5	22.5	19.5	21.0	22.5	21.0	21.5	10.5	9.0	10.0
31	---	---	---	23.0	20.5	22.0	22.0	20.0	21.0	---	---	---
MONTH	23.0	9.0	17.2	24.5	17.5	20.7	25.5	16.0	21.3	21.0	9.0	15.2

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED(TONS PER DAY), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	.24	.63	.03	.02	.01
2	---	---	---	---	---	---	---	.18	.09	.05	.01	.00
3	---	---	---	---	---	---	---	.18	.04	.09	.01	.00
4	---	---	---	---	---	---	---	.36	.02	.15	.01	.00
5	---	---	---	---	---	---	---	.24	.02	e290	.00	.00
6	---	---	---	---	---	---	---	.12	.01	e2500	2.8	.00
7	---	---	---	---	---	---	---	.07	.01	e110	1.7	.00
8	---	---	---	---	---	---	---	.14	60	e82	.04	.00
9	---	---	---	---	---	---	---	.12	998	e10	.01	.00
10	---	---	---	---	---	---	---	.04	6.1	e2.6	.01	.00
11	---	---	---	---	---	---	---	.02	.19	e.17	.00	.00
12	---	---	---	---	---	---	---	.02	.05	.30	.00	.00
13	---	---	---	---	---	---	---	.01	.03	.18	.00	.00
14	---	---	---	---	---	---	---	.01	107	.17	.00	.00
15	---	---	---	---	---	---	---	.01	4.0	.14	.00	.10
16	---	---	---	---	---	---	---	.01	1.1	.10	.00	.09
17	---	---	---	---	---	---	---	.00	e2300	.07	.00	.07
18	---	---	---	---	---	---	---	.00	e3000	.10	.00	.03
19	---	---	---	---	---	---	---	.00	e100	.14	.00	.02
20	---	---	---	---	---	---	---	.01	e44	.13	.00	.02
21	---	---	---	---	---	---	---	.00	e7.8	.17	.00	.16
22	---	---	---	---	---	---	---	.00	e1.4	.16	.00	.28
23	---	---	---	---	---	---	---	.01	.58	.15	.00	.10
24	---	---	---	---	---	---	---	.03	e.19	.13	.00	.03
25	---	---	---	---	---	---	---	.04	e.48	1.5	.00	.02
26	---	---	---	---	---	---	---	.02	e.12	1.1	.00	.01
27	---	---	---	---	---	---	---	.01	.13	.26	.00	.00
28	---	---	---	---	---	---	---	.01	.06	.10	.00	.00
29	---	---	---	---	---	---	---	.01	.04	.05	.00	.00
30	---	---	---	---	---	---	---	.04	.03	.03	.00	.00
31	---	---	---	---	---	---	---	1.7	---	.03	.02	---
TOTAL	---	---	---	---	---	---	---	3.65	6632.12	3000.10	4.63	0.94

PHOSPHORUS TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	12	38	1.3	.94	.91
2	---	---	---	---	---	---	---	9.3	12	2.1	.56	.31
3	---	---	---	---	---	---	---	11	5.0	3.7	.47	.19
4	---	---	---	---	---	---	---	23	2.9	6.0	.42	.05
5	---	---	---	---	---	---	---	16	2.3	e1400	.04	.00
6	---	---	---	---	---	---	---	8.5	1.5	e5600	29	.00
7	---	---	---	---	---	---	---	5.3	1.2	e710	18	.00
8	---	---	---	---	---	---	---	12	210	e590	2.5	.00
9	---	---	---	---	---	---	---	11	3330	e150	.81	.00
10	---	---	---	---	---	---	---	3.9	74	e61	.73	.00
11	---	---	---	---	---	---	---	2.4	17	e14	.52	.00
12	---	---	---	---	---	---	---	1.8	7.8	9.2	.43	.00
13	---	---	---	---	---	---	---	1.3	4.6	5.5	.46	.00
14	---	---	---	---	---	---	---	.80	412	5.0	.36	.19
15	---	---	---	---	---	---	---	.65	68	3.8	.33	4.3
16	---	---	---	---	---	---	---	.55	18	2.5	.12	4.1
17	---	---	---	---	---	---	---	.45	e5400	1.8	.01	2.9
18	---	---	---	---	---	---	---	.41	e6400	2.4	.00	1.3
19	---	---	---	---	---	---	---	.47	e680	2.9	.00	.71
20	---	---	---	---	---	---	---	.50	e390	2.6	.00	.71
21	---	---	---	---	---	---	---	.38	e130	3.3	.00	5.9
22	---	---	---	---	---	---	---	.27	e41	2.9	.00	10
23	---	---	---	---	---	---	---	.92	16	2.5	.00	3.6
24	---	---	---	---	---	---	---	2.5	e15	2.1	.00	1.0
25	---	---	---	---	---	---	---	3.3	e30	22	.00	.57
26	---	---	---	---	---	---	---	1.6	e11	16	.00	.32
27	---	---	---	---	---	---	---	1.2	4.7	4.3	.00	.14
28	---	---	---	---	---	---	---	.99	2.3	2.0	.00	.12
29	---	---	---	---	---	---	---	.66	1.5	1.2	.00	.07
30	---	---	---	---	---	---	---	3.1	1.3	1.1	.22	.05
31	---	---	---	---	---	---	---	54	---	1.0	1.2	---
TOTAL	---	---	---	---	---	---	---	190.25	17327.1	8632.2	57.12	37.44

e ESTIMATED

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085119 BOWER CREEK, AT HIGHWAY MM, NEAR DE PERE, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--October 1990 to current year (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger.

REMARKS.--Gage established on Oct. 1, 1990. Rainfall estimated to be 0.00 for Dec. 2-4, 9, 10, 19, 20, Jan. 2, 4, 13, 28, and Mar. 10, 19, 31 because recorded precipitation interpreted as collector snowmelt. Rainfall data missing for the period Apr. 11 to May 5.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.97 in., June 17, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 2.97 in., June 17.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.57	.00	.00	.00	.00	.00	---	.00	.00	.00	.00
2	.00	.67	.00	.00	.00	.00	.00	---	.00	.20	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	---	.00	.37	.20	.00
4	.00	.04	.00	.00	.00	.00	.00	---	.00	.02	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	---	.00	2.63	.74	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.39	.33	.00
7	.00	.00	.00	.00	.00	.00	.09	.00	.19	.49	.00	.00
8	.06	.30	.00	.00	.00	.00	.39	.06	2.06	.01	.00	.01
9	.18	.05	.00	.00	.00	.00	.12	.01	.01	.19	.15	.03
10	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.01	.00	.00	.00	.00	.00	---	.00	.00	.08	.00	.15
12	.00	.30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	---	.00	.00	.21	.04	.33
14	.00	.00	.04	.00	.00	.00	---	.02	.74	.00	.00	.65
15	.23	.00	.80	.00	.00	.00	---	.00	.00	.00	.06	.00
16	.18	.11	.01	.00	.00	.00	---	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	---	.00	2.97	.06	.00	.03
18	.00	.00	.00	.00	.00	.00	---	.03	.37	.24	.00	.01
19	.00	.13	.00	.00	.00	.00	---	.02	.26	.08	.00	.02
20	.28	.91	.00	.00	.00	.00	---	.00	.10	.00	.00	.60
21	.00	.39	.00	.44	.00	.00	---	.00	.01	.00	.00	.01
22	.00	.05	.00	.00	.00	.00	---	.02	.00	.00	.00	.01
23	.00	.00	.00	.00	.00	.00	---	.70	.00	.00	.30	.00
24	.00	.00	.00	.00	.00	.00	---	.00	.59	.00	.01	.00
25	.00	.00	.00	.00	.00	.00	---	.00	.04	1.03	.00	.00
26	.00	.00	.00	.00	.00	.00	---	.00	.04	.00	.03	.00
27	.00	.00	.00	.00	.00	.00	---	.05	.03	.00	.26	.10
28	.00	.00	.00	.00	.00	.00	---	.00	.00	.01	.00	.00
29	.02	.00	.22	.00	---	.00	---	.00	.00	.00	.00	.01
30	.00	.00	.07	.00	---	.00	---	.81	.02	.00	.71	.00
31	.00	---	.00	.00	---	.00	---	.20	---	.02	.07	---
TOTAL	0.97	3.53	1.14	0.44	0.00	0.00	---	---	7.43	6.03	2.90	1.96

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040851385 FOX RIVER, AT OIL TANK DEPOT, AT GREEN BAY, WI

LOCATION.--Lat 44°31'43", long 88°01'12" in section 25, T.24 N., R.20 E., Brown County, Hydrologic Unit 04030204, about 0.5 mi upstream of Interstate Highway 43 bridge in Green Bay, and 0.8 mi upstream from mouth.

DRAINAGE AREA.--6,330 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Acoustical Velocity Meter (AVM) system. Two-path transducer installation.

## REMARKS FOR CURRENT PERIOD.--

WATER YEAR 1989: Estimated daily discharges: Nov. 9, 10, 28, 29, Apr. 4, 5, 27, 28, May 24, 25, and July 19.  
 WATER YEAR 1990: Estimated daily discharges: May 12, 13.  
 WATER YEAR 1991: Estimated daily discharges: Dec. 3, Feb. 28 to Mar. 4, June 13 to July 3, July 12, 15-20, and Aug. 5, 6, 9.  
 WATER YEAR 1992: Estimated daily discharges: Jan. 15-17, 22-24, July 20, 21, Aug. 13, 14, and Sept. 30.  
 WATER YEAR 1993: Estimated daily discharges: Oct. 1, 2, Nov. 18-20, Jan. 16, 23, Feb. 19, 21, 28, Mar. 31, Apr. 16 to July 10, July 15, and Sept. 4, 21, 22.

Records good, except for estimated daily discharges and negative discharges, which are fair. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2730	1030	6090	3870	4760	3030	9420	1930	16300	2910	2780	2250
2	1860	3180	5980	3680	4160	1910	9640	1520	15600	3040	2000	1270
3	2580	1840	5570	3090	4670	1910	9870	2420	15600	1710	2120	2260
4	3480	2000	6070	3330	4300	2980	10700	1970	15300	2370	2530	1500
5	3170	2770	5700	3550	4020	2510	10300	2640	15000	3080	2060	2210
6	3670	1930	4670	3540	4170	2370	10200	2240	15200	2730	1960	1460
7	3920	3610	4970	3560	3820	4340	8960	2300	13400	2680	1870	2120
8	3910	4120	4040	3870	4820	4900	7890	1950	12500	2490	2610	1490
9	3850	4060	3630	2750	3580	4520	8930	1500	10600	3570	2420	1330
10	3430	4630	2180	3500	3930	4340	8200	953	8950	1880	3040	1700
11	2600	3320	2600	2900	4480	4830	7860	2030	8770	1540	2610	1480
12	3090	4070	3800	4100	3480	4230	4380	2390	7630	2140	2690	865
13	3750	5500	3230	3270	3880	4890	4040	1970	8240	338	3410	1730
14	3260	2710	3690	3660	3970	5210	2920	2220	8210	1820	2310	1900
15	3530	1130	3070	3350	4950	6480	2490	2320	7440	2160	2230	1600
16	2680	913	3370	3170	3630	5610	2870	2880	5900	1990	2080	1710
17	1420	4910	3870	3390	3200	5470	3150	2960	5310	2260	1970	1990
18	2510	4790	3450	3330	3090	3780	2640	3910	4350	2580	1770	2150
19	2410	7120	2440	2800	3430	5040	2060	3550	5560	2120	2080	2160
20	2690	6710	3660	3670	3010	4640	672	3550	5110	1660	2800	1740
21	2590	7130	3420	3410	3180	4250	575	2340	6280	1310	1850	1870
22	2710	5830	2610	3350	2880	4350	558	2970	6250	2450	1310	2300
23	2100	4560	3910	3090	2950	4570	929	3580	6550	1700	2280	1250
24	3070	4680	4070	2660	2960	4480	1130	2640	6790	3090	848	1960
25	2510	3990	4190	3170	2980	8100	782	4920	6290	2380	1400	1200
26	3070	4810	2490	4230	3120	11500	722	7400	6730	2220	2000	1470
27	4460	4980	3600	2470	2890	10700	1590	6180	5220	72	1730	1600
28	3010	5210	4130	3390	3450	9850	1600	5800	3300	2550	1830	1480
29	1450	5280	3070	3550	---	9230	1820	6030	3640	2020	1870	847
30	2370	4810	3610	3010	---	8870	1810	7810	4110	2390	2070	1310
31	2960	---	3390	3160	---	9290	---	16800	---	2610	1620	---
TOTAL	90840	121623	120570	103870	103760	168180	138708	113673	260130	67860	66148	50202
MEAN	2930	4054	3889	3351	3706	5425	4624	3667	8671	2189	2134	1673
MAX	4460	7130	6090	4230	4950	11500	10700	16800	16300	3570	3410	2300
MIN	1420	913	2180	2470	2880	1910	558	953	3300	72	848	847
CFSM	.46	.64	.61	.53	.59	.86	.73	.58	1.37	.35	.34	.26
IN.	.53	.71	.71	.61	.61	.99	.82	.67	1.53	.40	.39	.30

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1989, BY WATER YEAR (WY)

	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989
MEAN	2930	4054	3889	3351	3706	5425	4624	3667	8671	2189	2134	1673
MAX	2930	4054	3889	3351	3706	5425	4624	3667	8671	2189	2134	1673
(WY)	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989
MIN	2930	4054	3889	3351	3706	5425	4624	3667	8671	2189	2134	1673
(WY)	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989

## SUMMARY STATISTICS

## FOR 1989 WATER YEAR

ANNUAL TOTAL	1405564
ANNUAL MEAN	3851
HIGHEST DAILY MEAN	16800
LOWEST DAILY MEAN	72
ANNUAL SEVEN-DAY MINIMUM	767
ANNUAL RUNOFF (CFSM)	.61
ANNUAL RUNOFF (INCHES)	8.26
10 PERCENT EXCEEDS	7240
50 PERCENT EXCEEDS	3120
90 PERCENT EXCEEDS	1600



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040851385 FOX RIVER, AT OIL TANK DEPOT, AT GREEN BAY, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1380	4270	2840	2720	1950	2730	4080	3030	5940	9630	1290	6220
2	1500	5670	1920	2440	2130	1580	4670	3370	7060	8580	3550	6480
3	1470	5870	3460	2790	3000	1980	3890	2140	6780	7250	778	6590
4	1520	6010	2530	2890	2130	1710	5070	1740	1970	5230	4310	4900
5	1570	5760	1860	2770	2320	1490	4870	923	5900	3640	2760	4480
6	688	3440	2960	2670	2140	2150	3940	2170	9930	2620	1500	4310
7	831	4090	2330	2870	1990	1850	4980	2360	7630	4830	3010	3800
8	987	3970	3290	2220	2300	2320	4510	1130	4480	5750	3340	4220
9	915	4310	3480	3360	3750	3020	2550	1040	4760	4500	2800	3660
10	955	4280	3760	2220	2990	4810	3370	4590	3820	4100	2360	-359
11	1270	3640	3100	3130	2690	5910	4410	3900	3900	3300	2180	4010
12	401	2720	3460	3020	2080	8060	2040	2860	4590	3160	2190	3530
13	1350	2490	3030	2790	1240	3390	2140	2780	7910	2970	2420	3780
14	481	3350	3180	2650	2470	14700	3650	3050	8290	1460	2670	7660
15	367	1730	3980	2560	3070	12000	3240	2780	7270	2580	2150	3720
16	1290	3160	3090	2560	3720	9530	2630	8380	6860	2880	2720	4640
17	-830	948	3770	3130	3200	10600	3540	7670	8580	1530	2500	6510
18	1130	3070	3060	3500	3500	9930	1450	6780	8940	2320	2640	3110
19	1750	1520	3230	2060	3750	9630	1320	10900	4810	631	3510	-321
20	2420	913	3320	2930	2880	10200	-835	13400	9910	1280	6700	5090
21	3430	2140	2880	3310	3440	10100	369	13000	9380	2260	6270	7320
22	2530	1140	2220	2550	2580	10000	2100	8810	14000	2230	8310	7110
23	-200	2620	2890	1060	2530	9150	1410	12300	33800	3070	9110	7010
24	2470	2060	3300	3500	3350	9570	1650	11700	21900	3420	9900	6350
25	3420	1590	3380	2110	1110	9420	2730	10800	16900	3120	9700	5560
26	3620	2010	2360	2120	1950	8790	3770	9910	15500	3310	10200	6750
27	3290	1270	2700	4030	2690	6260	3410	9470	14400	3020	7860	5060
28	3800	2880	2040	2710	2450	5900	3380	9290	13600	3220	8130	5500
29	3650	2300	2840	2900	---	5510	3220	7960	13700	2660	7720	5620
30	1970	2860	2870	3590	---	3260	2750	9480	11600	1990	7310	6010
31	3230	---	3170	2650	---	4670	---	7420	---	670	6590	---
TOTAL	52655	92081	92300	85810	73400	200220	90304	195133	294110	107211	146478	148320
MEAN	1699	3069	2977	2768	2621	6459	3010	6295	9804	3458	4725	4944
MAX	3800	6010	3980	4030	3750	14700	5070	13400	33800	9630	10200	7660
MIN	-830	913	1860	1060	1110	1490	-835	923	1970	631	778	-359
CFSM	.27	.48	.47	.44	.41	1.02	.48	.99	1.55	.55	.75	.78
IN.	.31	.54	.54	.50	.43	1.18	.53	1.15	1.73	.63	.86	.87

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1990, BY WATER YEAR (WY)

	1989	1990	1989	1990	1989	1990	1989	1990	1989	1990	1989	1990
MEAN	2314	3562	3433	3059	3164	5942	3817	4981	9237	2824	3429	3309
MAX	2930	4054	3889	3351	3706	6459	4624	6295	9804	3458	4725	4944
(WY)	1989	1989	1989	1989	1989	1990	1989	1990	1990	1990	1990	1990
MIN	1699	3069	2977	2768	2621	5425	3010	3667	8671	2189	2134	1673
(WY)	1990	1990	1990	1990	1990	1989	1990	1989	1989	1989	1989	1989

## SUMMARY STATISTICS

## FOR 1989 CALENDAR YEAR

## FOR 1990 WATER YEAR

## WATER YEARS 1989 - 1990

ANNUAL TOTAL	1309567	1578022	
ANNUAL MEAN	3588	4323	
HIGHEST ANNUAL MEAN			4087
LOWEST ANNUAL MEAN			4323
HIGHEST DAILY MEAN	16800	May 31	33800
LOWEST DAILY MEAN	-830	Oct 17	-835
ANNUAL SEVEN-DAY MINIMUM	598	Oct 12	598
ANNUAL RUNOFF (CFSM)	.57	.68	.65
ANNUAL RUNOFF (INCHES)	7.70	9.27	8.77
10 PERCENT EXCEEDS	7030	9330	8280
50 PERCENT EXCEEDS	2910	3230	3170
90 PERCENT EXCEEDS	1320	1430	1500

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040851385 FOX RIVER, AT OIL TANK DEPOT, AT GREEN BAY, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4310	3700	5230	4360	3380	2760	9580	7200	4960	2430	3440	3020
2	4990	3910	3780	4080	4080	3110	8650	7560	5600	2430	2950	3570
3	4850	3710	4010	4530	3980	3100	7200	4540	3930	2540	2850	2780
4	3760	-3260	5260	4280	3870	3020	7450	6030	4630	3090	3760	2170
5	4120	1070	4010	3770	4050	3590	7820	6710	4860	2900	3470	3030
6	3790	3770	4120	4050	4090	6280	7040	8010	4780	2990	2550	2360
7	4540	3250	4250	3700	3110	5990	8010	4940	4610	3390	2140	2230
8	4430	3780	3700	4200	4100	5790	7580	3800	5100	2000	2770	2760
9	2940	3930	3760	4330	4360	6610	7490	3150	5320	2100	2720	2720
10	4930	4010	2680	4130	4490	7050	9170	3990	5040	2080	2170	970
11	4870	4420	2910	3800	3730	7290	8720	4630	4940	2470	2550	781
12	4370	1450	4230	4740	3600	7080	8780	4950	3900	2470	2590	2370
13	4270	3850	3180	4160	3080	6730	10000	5200	4040	2340	3060	1450
14	4110	4800	3270	3800	3960	6460	12800	5620	4180	2700	3980	2610
15	3710	5150	3630	4210	3260	5640	13700	8210	4600	2550	4990	2620
16	3150	4300	3870	4140	3850	5850	9360	7460	4460	2610	5310	3440
17	2700	4770	2930	4230	3070	5850	8780	7220	5520	2660	2990	3180
18	3380	4990	3820	4160	3110	6500	11300	7510	6770	2640	2600	3530
19	2760	4360	4410	3730	4170	7420	11000	8000	6400	2650	2310	3070
20	3940	4060	4580	3910	3700	6640	9360	7850	5840	2610	2370	3350
21	3580	3900	4110	3790	3150	7700	10400	7260	4740	2860	4780	3660
22	2140	5080	4960	4220	3290	6920	9420	6810	3630	2420	3060	4100
23	3860	4560	4420	4650	1720	8150	8340	7630	3690	2500	2750	2320
24	3420	4880	4980	3430	3380	7820	6810	8030	3380	2710	3250	3030
25	3590	4060	4690	3720	2800	6290	6900	7000	2650	2290	3900	3060
26	3720	4930	3790	4220	2590	6440	6990	7220	2640	2730	3490	1290
27	3640	3980	3530	3560	2710	9940	7000	5700	2650	3030	3850	466
28	3350	6090	4760	3100	2710	10900	8080	6530	2700	3200	4040	2850
29	3780	4680	4630	4170	---	8160	7080	5230	2650	2940	4770	1190
30	3220	4290	4720	3490	---	9200	8570	6100	2460	2650	4260	2180
31	3040	---	4750	3340	---	8460	---	5070	---	2840	1700	---
TOTAL	117260	116470	126970	124000	97390	202740	263380	195160	130670	81820	101420	76157
MEAN	3783	3882	4096	4000	3478	6540	8779	6295	4356	2639	3272	2539
MAX	4990	6090	5260	4740	4490	10900	13700	8210	6770	3390	5310	4100
MIN	2140	-3260	2680	3100	1720	2760	6810	3150	2460	2000	1700	466
CFSM	.60	.61	.65	.63	.55	1.03	1.39	.99	.69	.42	.52	.40
IN.	.69	.68	.75	.73	.57	1.19	1.55	1.15	.77	.48	.60	.45

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1991, BY WATER YEAR (WY)

	MEAN	2804	3669	3654	3373	3268	6141	5471	5419	7610	2762	3377	3052
MAX	3783	4054	4096	4000	3706	6540	8779	6295	9804	3458	4725	4944	
(WY)	1991	1989	1991	1991	1989	1991	1991	1991	1990	1990	1990	1990	
MIN	1699	3069	2977	2768	2621	5425	3010	3667	4356	2189	2134	1673	
(WY)	1990	1990	1990	1990	1990	1989	1990	1989	1991	1989	1989	1989	

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1989 - 1991
ANNUAL TOTAL	1701686	1633437	
ANNUAL MEAN	4662	4475	4216
HIGHEST ANNUAL MEAN			4475
LOWEST ANNUAL MEAN			3851
HIGHEST DAILY MEAN	33800	13700	33800
LOWEST DAILY MEAN	-3260	-3260	-3260
ANNUAL SEVEN-DAY MINIMUM	1070	1900	598
ANNUAL RUNOFF (CFSM)	.74	.71	.67
ANNUAL RUNOFF (INCHES)	10.00	9.60	9.05
10 PERCENT EXCEEDS	9330	7530	7930
50 PERCENT EXCEEDS	3770	3980	3480
90 PERCENT EXCEEDS	2020	2550	1740

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040851385 FOX RIVER, AT OIL TANK DEPOT, AT GREEN BAY, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	11200	6700	6680	3610	4160	6240	11700	6080	1200	3090	1670
2	1970	14200	7240	6460	3160	4630	5980	12600	6750	193	2130	2520
3	102	10800	10300	7420	3150	4840	5440	10900	7020	3240	1950	2350
4	-794	10000	10400	7640	2850	4480	5830	11100	6440	2820	2320	1800
5	3610	9610	9650	7560	3620	4890	5760	10900	3890	1840	2020	2170
6	1990	9510	9570	7570	4070	6350	5880	10300	6400	2530	3610	1820
7	1980	7800	9690	7000	4180	7270	6310	8890	5650	3850	3320	1140
8	3230	8160	9930	7030	4660	6420	6080	4250	4510	3660	2830	1770
9	3300	7980	9890	8210	4070	7910	5510	4130	3880	2720	2320	2100
10	2740	7630	9850	7800	4540	8990	6230	5430	4390	3190	2170	2170
11	2090	8080	9570	6840	4470	8460	8090	4790	3920	1950	1450	1900
12	667	8420	11000	7780	4150	7740	7200	5510	4760	3000	2150	2830
13	2300	6750	11000	7380	4430	7760	7190	5480	3630	2680	1800	1660
14	1920	6450	10600	7660	3400	7720	6960	6040	2680	2550	1800	4340
15	1850	7340	8470	5480	3140	8130	4940	5860	2500	3660	2080	5320
16	2620	7900	9440	4810	3270	8250	10800	5640	3030	3350	2930	8470
17	1870	7820	6540	4640	3000	8010	8140	6840	3240	2130	2980	10400
18	1310	8160	4760	5130	3170	8170	6460	5500	2680	2680	1600	14300
19	1680	6260	5920	4820	4340	7630	6690	6020	2310	3500	2000	13300
20	2090	7260	7000	4040	4740	7820	8230	6380	1970	2820	3430	12100
21	1040	6080	7160	4920	2510	8290	8520	5040	3120	2810	2580	10800
22	3640	6300	6530	4460	4610	8050	11500	6290	2680	3320	2940	7550
23	3330	7090	7010	4260	4450	8350	10800	4390	2080	2220	2950	10100
24	3280	7980	6760	3920	3980	8580	11700	4600	2730	2700	2560	8650
25	5090	6610	6490	4770	4950	8570	11500	4340	2460	3580	2170	8080
26	5090	6290	6760	4510	4570	8490	11800	4560	2470	2900	2090	8640
27	6280	7940	6720	4470	4910	7600	11900	5220	2740	2760	849	9110
28	5510	5870	6900	4610	4410	7070	11900	5420	2720	3110	2430	9080
29	7020	7010	6530	4960	5420	7630	12200	6310	2390	2560	2910	7990
30	7950	8470	6790	4290	---	7740	11400	6080	1560	2320	1180	8530
31	9820	---	6490	4290	---	5650	---	5700	---	2290	2480	---
TOTAL	96075	240970	251660	181410	115830	225650	247180	206210	110680	84133	73119	182660
MEAN	3099	8032	8118	5852	3994	7279	8239	6652	3689	2714	2359	6089
MAX	9820	14200	11000	8210	5420	8990	12200	12600	7020	3850	3610	14300
MIN	-794	5870	4760	3920	2510	4160	4940	4130	1560	193	849	1140
CFSM	.49	1.27	1.28	.92	.63	1.15	1.30	1.05	.58	.43	.37	.96
IN.	.56	1.42	1.48	1.07	.68	1.33	1.45	1.21	.65	.49	.43	1.07

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1992, BY WATER YEAR (WY)

	MEAN	2878	4760	4770	3993	3455	6426	6163	5727	6630	2750	3122	3811
MAX	3783	8032	8118	5852	3994	7279	8079	8779	6652	9804	3458	4725	6089
(WY)	1991	1992	1992	1992	1992	1992	1992	1991	1992	1990	1990	1990	1992
MIN	1699	3069	2977	2768	2621	5425	3010	3667	3689	2189	2134	1673	
(WY)	1990	1990	1990	1990	1990	1989	1990	1989	1992	1989	1989	1989	

## SUMMARY STATISTICS

## FOR 1991 CALENDAR YEAR

## FOR 1992 WATER YEAR

## WATER YEARS 1989 - 1992

ANNUAL TOTAL	1861442	2015577	
ANNUAL MEAN	5100	5507	4540
HIGHEST ANNUAL MEAN			5507
LOWEST ANNUAL MEAN			3851
HIGHEST DAILY MEAN	14200	Nov 2	14300
LOWEST DAILY MEAN	-794	Oct 4	-794
ANNUAL SEVEN-DAY MINIMUM	1290	Sep 28	1480
ANNUAL RUNOFF (CFSM)	.81		.87
ANNUAL RUNOFF (INCHES)	10.94		11.85
10 PERCENT EXCEEDS	8740		8460
50 PERCENT EXCEEDS	4230		3700
90 PERCENT EXCEEDS	2350		1860

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040851385 FOX RIVER, AT OIL TANK DEPOT, AT GREEN BAY, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8320	2960	11300	7450	4200	4300	8930	17000	7860	16800	10400	4210
2	8220	6910	13100	7020	5050	2090	8550	17100	8930	16900	11100	4770
3	7660	7600	13400	6890	5190	4040	8020	17000	10800	16900	10900	3800
4	6160	6410	13700	8120	5550	4770	8490	17000	11100	17500	10700	2970
5	7520	5780	11800	7620	4320	4390	8730	16900	11000	17900	7470	2530
6	7010	6160	11400	7790	3810	4490	8970	16800	11000	20000	9480	3780
7	5210	6270	12300	6580	5760	4820	9300	16700	10400	19200	8840	2950
8	5430	5900	12200	6710	3660	5040	14700	16800	10300	19300	8630	3570
9	5410	6730	11100	6330	4270	5170	14400	16600	13300	19100	9560	3180
10	4700	7320	9820	6650	3830	4230	13200	16500	15000	18900	8260	3900
11	5650	7220	9310	7040	3970	6030	11500	16200	16200	16100	8130	3630
12	5020	8270	8970	6750	4670	6400	13500	16000	15900	15900	6860	3630
13	4200	10300	8830	7390	5820	6270	14000	14600	15700	15400	6300	3640
14	1110	10300	8380	6850	5700	7220	12600	13700	16000	17900	5830	3080
15	959	9830	8550	6060	4810	6270	11200	13200	15800	18300	5180	4290
16	3770	9100	14500	5930	2930	6400	13600	13300	15800	16600	5540	7760
17	2790	9270	9550	5480	4300	6100	14500	13200	16200	16900	5590	7680
18	2020	8900	8750	4280	2300	5900	14800	13100	17800	17400	5540	6780
19	3570	8320	9440	5490	4760	6340	15000	12700	16800	16200	5530	7780
20	2760	8360	7600	3530	3870	6090	15800	12100	17100	12300	5370	7770
21	3240	14800	8590	5560	4630	5950	16500	10800	16900	13300	4980	8160
22	2860	10100	7950	5110	3500	5750	16300	9100	16800	14800	5390	9670
23	2980	10400	8230	5800	4210	5490	16900	9380	16900	15800	6480	11000
24	2810	10300	7180	6360	4010	6510	17200	10500	17100	14600	4270	10700
25	2940	9620	7260	4330	4320	7030	17000	11300	17500	16100	4910	10300
26	2160	11100	6180	5760	4710	7120	16900	11400	17300	14700	6110	10800
27	3080	10400	7490	4180	4360	7180	17300	10400	17100	9970	6270	10700
28	3430	10600	7570	4880	4600	7210	17600	8130	17000	9880	5120	9240
29	4320	10300	2680	5190	---	6820	17200	7510	16900	10200	5300	7310
30	4400	10500	7350	5340	---	7130	17200	7630	16900	9480	5240	5590
31	3640	---	8350	6370	---	6410	---	7320	---	9850	3220	---
TOTAL	133349	260030	292830	188840	123110	178960	409890	409970	443390	484180	212500	185170
MEAN	4302	8668	9446	6092	4397	5773	13660	13220	14780	15620	6855	6172
MAX	8320	14800	14500	8120	5820	7220	17600	17100	17800	20000	11100	11000
MIN	959	2960	2680	3530	2300	2090	8020	7320	7860	9480	3220	2530
CFSM	.68	1.37	1.49	.96	.69	.91	2.16	2.09	2.33	2.47	1.08	.98
IN.	.78	1.53	1.72	1.11	.72	1.05	2.41	2.41	2.61	2.85	1.25	1.09

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1993, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993
MEAN	3162	5541	5705	4412	3642
MAX	4302	8668	9446	6092	4397
(WY)	1993	1993	1993	1993	1993
MIN	1699	3069	2977	2768	2621
(WY)	1990	1990	1990	1990	1990

## SUMMARY STATISTICS

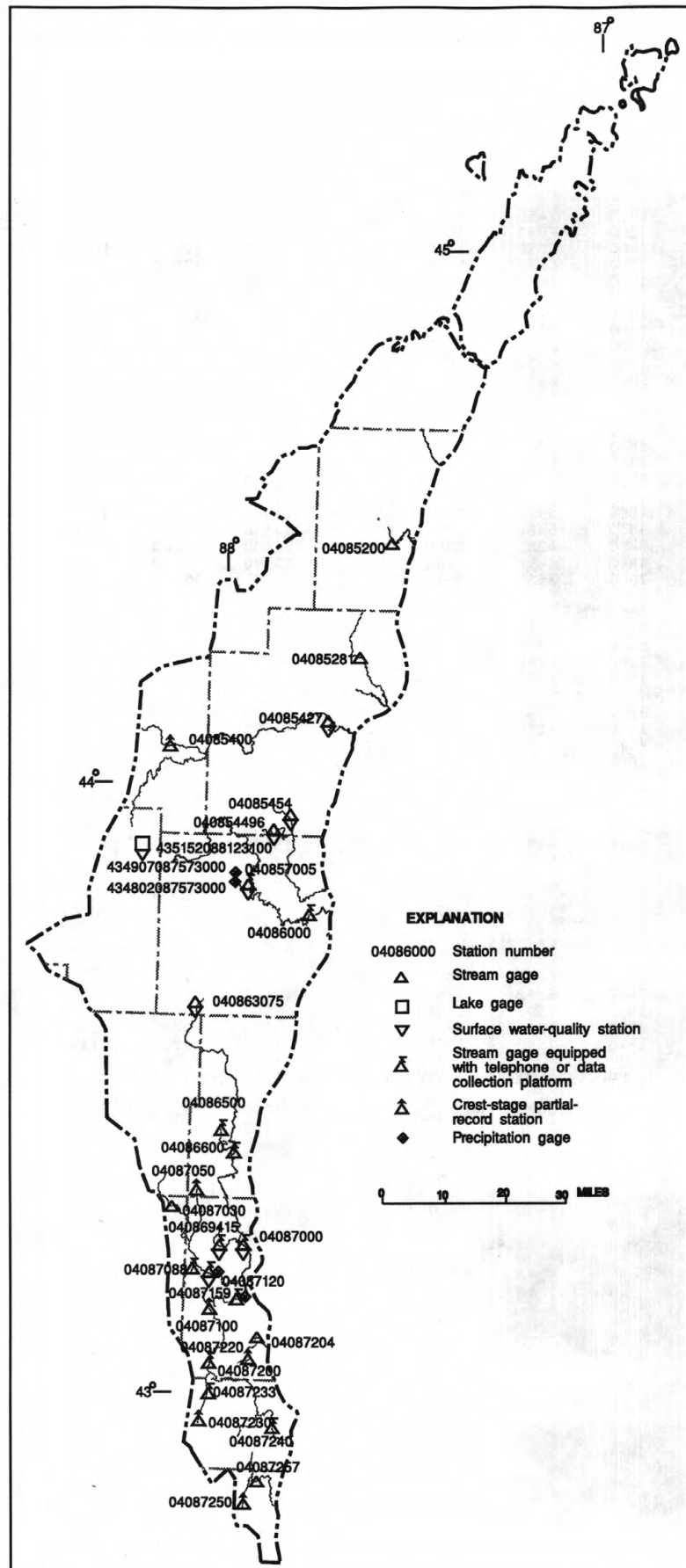
## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1989 - 1993

ANNUAL TOTAL	2113081	3322219	
ANNUAL MEAN	5773	9102	
HIGHEST ANNUAL MEAN			5452
LOWEST ANNUAL MEAN			9102
HIGHEST DAILY MEAN	14800	20000	3851
LOWEST DAILY MEAN	193	959	33800
ANNUAL SEVEN-DAY MINIMUM	1850	2430	-3260
ANNUAL RUNOFF (CFSM)	.91	1.44	598
ANNUAL RUNOFF (INCHES)	12.42	19.52	11.70
10 PERCENT EXCEEDS	10300	16900	10400
50 PERCENT EXCEEDS	5270	7790	4220
90 PERCENT EXCEEDS	2170	3810	2000





Base from U.S. Geological Survey 1:100,000 digital data;  
modified by Wisconsin Department of Natural Resources.  
Wisconsin Transverse Mercator projection.

## LAKE MICHIGAN BASIN

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085200 KEWAUNEE RIVER NEAR KEWAUNEE, WI

LOCATION.--Lat 44°27'30", long 87°33'23", in SW 1/4 sec.14, T.23 N., R.24 E., Kewaunee County, Hydrologic Unit 04030102, on left bank just downstream from bridge on County Trunk Highway F, 2.3 mi west of Kewaunee, and about 7.0 mi upstream from mouth.

DRAINAGE AREA.--127 mi<sup>2</sup>.

PERIOD OF RECORD.--Annual maximum, water years 1958-65, and occasional low-flow measurements, water years 1963-64, September 1964 to current year. No winter records for years 1965 and 1966.

REVISED RECORDS.--WDR WI-79-1: Drainage area. WDR WI-85-1: 1962(M), 1965(M), 1967-69(M), 1971(M), 1973-74(M), 1976(M), 1978(M), 1980-82(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 579.64 ft above sea level (Wisconsin State Highway Commission benchmark). Apr. 3, 1957, to Sept. 2, 1964, crest-stage gage only at same site and datum.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 4-13 and Dec. 20 to Mar. 28. Records good except those for ice-affected periods, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	27	99	110	78	45	169	181	257	71	54	48
2	35	194	93	98	72	50	110	158	204	68	51	40
3	32	385	85	90	68	70	101	157	137	67	49	38
4	29	286	80	96	78	150	175	196	95	71	51	36
5	27	182	68	82	88	290	273	207	77	119	50	34
6	26	121	68	72	80	340	238	175	66	3660	134	32
7	24	91	64	62	70	400	205	147	61	2610	125	30
8	24	76	62	56	66	360	517	129	88	807	81	29
9	25	95	58	52	62	300	1040	119	762	461	63	29
10	29	125	60	49	58	230	437	108	972	356	59	28
11	31	113	62	47	54	160	269	101	354	269	53	28
12	30	111	64	44	52	100	275	96	191	187	48	29
13	27	168	66	46	49	80	318	85	122	145	45	32
14	26	151	70	48	46	70	219	80	133	134	44	73
15	25	106	213	49	46	72	381	78	166	115	43	98
16	30	79	2020	50	45	76	2040	72	121	99	45	66
17	39	70	1670	50	43	88	1160	68	191	88	43	50
18	37	69	510	47	40	74	468	67	1430	97	40	43
19	35	66	300	50	40	64	360	67	1970	123	39	38
20	35	168	190	52	40	60	785	65	1000	102	37	42
21	37	1060	150	60	41	58	1100	62	579	84	35	93
22	38	1600	120	86	43	56	699	59	336	72	33	86
23	37	569	100	100	41	60	384	69	210	65	41	62
24	36	339	92	120	39	94	274	96	151	65	46	50
25	33	252	84	100	38	240	222	85	158	115	38	43
26	31	205	74	88	40	300	181	72	129	177	40	40
27	29	170	68	74	42	270	163	64	104	112	53	37
28	28	137	64	60	43	300	343	62	89	84	50	35
29	28	121	70	52	---	366	360	58	79	70	41	35
30	26	106	130	62	---	345	234	65	74	61	48	36
31	26	---	160	70	---	316	---	172	---	56	64	---
TOTAL	955	7242	7014	2122	1502	5484	13500	3220	10306	10610	1643	1360
MEAN	30.8	241	226	68.5	53.6	177	450	104	344	342	53.0	45.3
MAX	40	1600	2020	120	88	400	2040	207	1970	3660	134	98
MIN	24	27	58	44	38	45	101	58	61	56	33	28
CFSM	.24	1.90	1.78	.54	.42	1.39	3.54	.82	2.70	2.69	.42	.36
IN.	.28	2.12	2.05	.62	.44	1.61	3.95	.94	3.02	3.11	.48	.40

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1993, BY WATER YEAR (WY)

	MEAN	46.3	70.4	58.1	38.1	57.4	280	212	85.4	80.8	40.6	32.4	57.6
MAX	221	458	226	265	314	567	450	354	483	342	113	454	
(WY)	1985	1986	1993	1973	1984	1986	1993	1973	1990	1993	1975	1986	
MIN	10.1	10.9	9.10	9.83	11.9	77.5	56.4	21.2	12.3	8.29	7.90	8.98	
(WY)	1967	1977	1977	1977	1977	1970	1990	1977	1988	1965	1970	1966	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1964 - 1993

ANNUAL TOTAL	36795	64958	
ANNUAL MEAN	101	178	89.1
HIGHEST ANNUAL MEAN			178
LOWEST ANNUAL MEAN			35.7
HIGHEST DAILY MEAN	2020	Dec 16	3660 Jul 6
LOWEST DAILY MEAN	12	Aug 23	24 Oct 7,8
ANNUAL SEVEN-DAY MINIMUM	12	Aug 30	26 Oct 4
INSTANTANEOUS PEAK FLOW			6010 Jul 6
INSTANTANEOUS PEAK STAGE			14.42 Jul 6
INSTANTANEOUS LOW FLOW			24 Oct 7-9
ANNUAL RUNOFF (CFSM)	.79	1.40	(a)8570 Jun 23 1990
ANNUAL RUNOFF (INCHES)	10.78	19.03	(b)16.03 Mar 30 1960
10 PERCENT EXCEEDS	219	344	(c)4.0 Nov 22 1977
50 PERCENT EXCEEDS	39	74	
90 PERCENT EXCEEDS	15	35	

(a) Gage height, 16.00 ft, from crest-stage gage

(b) Backwater from ice

(c) Result of freezeup

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04085281 EAST TWIN RIVER AT MISHICOT, WI

LOCATION.--Lat 44°14'16", long 87°38'11", in NW 1/4 NW 1/4 sec.4, T.20 N., R.24 E., Manitowoc County, Hydrologic Unit 04030101, on right bank 500 ft downstream from bridge on State Highway 147, at Mishicot, 0.8 mi upstream from Johnson Creek, and 9.8 mi upstream from mouth.

DRAINAGE AREA.--110 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 584.72 ft above sea level.

REMARKS.--Estimated daily discharges: Oct. 1-15, Oct. 27 to Nov. 1, June 16 to July 7, and ice-affected periods, Dec. 5-7, 20-26, Dec. 31 to Jan. 2, Jan. 6-8, 15-20, 28-30, Feb. 15-19, and Feb. 24 to Mar. 30. Records good except those for estimated daily discharges, which are fair. Occasional regulation caused by recreation dam 0.3 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	24	100	110	69	35	242	203	256	68	40	44
2	35	167	95	94	63	37	166	168	246	66	36	36
3	31	242	88	80	57	60	144	156	182	64	35	31
4	27	199	82	99	61	110	186	177	123	74	44	29
5	24	162	76	99	64	100	251	188	94	140	43	26
6	22	118	68	82	61	120	239	175	80	250	52	24
7	21	93	64	68	55	170	244	150	75	450	80	23
8	21	82	63	54	53	200	488	133	134	483	67	22
9	22	127	61	49	48	170	923	118	1050	315	50	21
10	24	148	62	44	46	140	717	107	1090	206	46	20
11	26	125	64	44	46	86	461	99	791	162	43	20
12	25	114	64	44	44	72	392	91	395	136	37	21
13	23	150	64	45	43	66	426	82	200	114	35	27
14	22	136	69	45	40	62	361	78	185	100	33	74
15	21	113	148	45	38	58	450	75	194	93	32	100
16	26	89	742	46	34	56	1160	72	190	81	33	87
17	28	81	852	45	34	84	1060	67	400	71	34	65
18	29	81	585	44	34	66	638	66	1200	68	30	53
19	27	78	371	46	31	52	436	65	1300	69	29	45
20	26	138	180	50	29	47	703	64	800	65	27	43
21	30	413	150	64	30	45	921	60	500	59	26	89
22	33	547	120	94	35	43	682	59	330	53	24	90
23	30	515	110	98	36	50	472	65	230	48	55	77
24	26	388	94	111	34	70	342	105	180	46	48	60
25	24	253	84	104	32	150	269	104	150	74	38	50
26	23	226	76	85	35	250	221	86	130	93	31	43
27	22	182	70	76	37	230	188	75	110	81	38	38
28	22	138	62	66	37	250	253	71	90	62	48	34
29	21	124	70	62	---	320	280	66	80	53	37	34
30	21	110	109	68	---	400	262	75	72	46	39	34
31	22	---	140	63	---	410	---	177	---	42	45	---
TOTAL	795	5363	4983	2124	1226	4009	13577	3277	10857	3732	1255	1360
MEAN	25.6	179	161	68.5	43.8	129	453	106	362	120	40.5	45.3
MAX	41	547	852	111	69	410	1160	203	1300	483	80	100
MIN	21	24	61	44	29	35	144	59	72	42	24	20
CFSM	.23	1.63	1.46	.62	.40	1.18	4.11	.96	3.29	1.09	.37	.41
IN.	.27	1.81	1.69	.72	.41	1.36	4.59	1.11	3.67	1.26	.42	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1993, BY WATER YEAR (WY)

	MEAN	52.5	76.4	59.9	37.3	56.3	215	204	85.8	76.9	28.6	30.8	53.2
MAX	228	365	161	156	307	435	453	331	440	120	108	345	
(WY)	1985	1986	1993	1973	1984	1986	1993	1973	1990	1993	1980	1986	
MIN	9.80	11.9	7.72	7.70	9.39	34.5	53.3	20.2	9.19	8.42	6.75	5.63	
(WY)	1977	1977	1977	1977	1977	1980	1990	1977	1988	1988	1988	1976	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1972 - 1993

ANNUAL TOTAL	28719.1	52558	
ANNUAL MEAN	78.5	144	
HIGHEST ANNUAL MEAN			81.1
LOWEST ANNUAL MEAN			151
HIGHEST DAILY MEAN	852	1300	2930
LOWEST DAILY MEAN	9.2	20	4.5
ANNUAL SEVEN-DAY MINIMUM	9.8	22	4.8
INSTANTANEOUS PEAK FLOW		1440	(a)3380
INSTANTANEOUS PEAK STAGE		10.31	13.75
INSTANTANEOUS LOW FLOW		20	1.7
ANNUAL RUNOFF (CFSM)	.71	1.31	.74
ANNUAL RUNOFF (INCHES)	9.71	17.77	10.01
10 PERCENT EXCEEDS	173	365	190
50 PERCENT EXCEEDS	36	71	33
90 PERCENT EXCEEDS	12	28	11

(a) Gage height, 13.35 ft

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085427 MANITOWOC RIVER AT MANITOWOC, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

LOCATION.--Lat 44°06'26", long 87°42'55", in NE 1/4 NW 1/4 sec.23, T.19 N., R.23 E., Manitowoc County, Hydrologic Unit 04030101, on right bank 300 ft upstream from bridge on County Trunk Highway JJ, just west of the Manitowoc city limits and 6.6 mi upstream from mouth.

DRAINAGE AREA.--526 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 610.12 ft above sea level.

REMARKS.--Estimated daily discharges: Ice-affected period, Nov. 28 to Dec. 15 and Dec. 18 to Mar. 28. Records good except for ice-affected periods, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	74	560	480	480	240	1450	1910	559	1000	371	84
2	123	203	520	470	450	280	1330	1750	565	968	315	83
3	116	263	450	490	440	350	1600	1660	565	931	255	79
4	100	290	400	460	450	440	1610	1620	547	891	207	75
5	89	300	300	450	470	500	1570	1580	519	951	176	71
6	86	300	290	440	460	700	1520	1480	488	1660	161	67
7	82	300	340	430	440	780	1580	1350	464	1960	151	62
8	75	298	330	420	410	760	2160	1250	507	2060	144	58
9	70	305	300	430	390	740	2310	1140	2060	1780	134	55
10	72	305	340	430	390	720	2280	1060	2060	1600	132	55
11	78	305	280	420	360	680	2010	988	1860	1500	137	60
12	74	317	240	410	340	660	2080	917	1590	1430	121	57
13	74	355	230	400	320	620	2070	836	1500	1350	119	59
14	70	349	220	400	320	560	1900	807	1450	1290	106	110
15	56	322	330	410	290	540	2430	762	1460	1220	104	134
16	62	306	983	410	280	560	3280	716	1300	1150	104	143
17	88	301	910	410	260	540	2940	649	1560	1070	108	146
18	89	289	800	410	250	500	2510	597	2560	1040	115	150
19	80	273	680	410	260	520	2420	552	2980	995	103	137
20	82	333	540	420	260	500	3030	507	2480	928	95	133
21	83	648	540	460	250	490	3250	461	2130	876	90	171
22	89	669	560	500	240	490	3390	405	1910	807	82	225
23	90	771	500	540	240	500	3020	373	1710	753	85	246
24	96	847	470	540	230	600	2740	380	1560	707	84	235
25	93	809	480	520	230	820	2600	396	1460	792	88	203
26	84	803	450	520	220	1300	2350	402	1380	737	77	185
27	83	767	460	520	220	1600	2200	402	1290	673	69	174
28	80	720	480	500	230	1700	2250	372	1200	606	69	163
29	77	660	500	480	---	1590	2190	372	1120	556	68	146
30	77	620	540	460	---	1640	2090	383	1050	499	72	134
31	73	---	540	490	---	1670	---	520	---	431	79	---
TOTAL	2617	13102	14563	14130	9180	23590	68160	26597	41884	33211	4021	3700
MEAN	84.4	437	470	456	328	761	2272	858	1396	1071	130	123
MAX	126	847	983	540	480	1700	3390	1910	2980	2060	371	246
MIN	56	74	220	400	220	240	1330	372	464	431	68	55
CFSM	.16	.83	.89	.87	.62	1.45	4.32	1.63	2.65	2.04	.25	.23
IN.	.19	.93	1.03	1.00	.65	1.67	4.82	1.88	2.96	2.35	.28	.26

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1993, BY WATER YEAR (WY)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
MEAN	229	290	217	135	209	943	1073	403	278	144	76.6	168						
MAX	1465	1367	575	503	1104	1951	2672	991	1396	1071	343	1711						
(WY)	1987	1986	1983	1973	1984	1985	1979	1978	1993	1993	1986	1986						
MIN	18.8	23.1	16.3	20.4	20.7	226	222	53.8	18.1	13.6	13.7	14.9						
(WY)	1977	1977	1977	1977	1977	1980	1990	1977	1988	1988	1988	1976						

## SUMMARY STATISTICS

	FOR 1992 CALENDAR YEAR	FOR 1993 WATER YEAR	WATER YEARS 1972 - 1993
ANNUAL TOTAL	106622	254755	
ANNUAL MEAN	291	698	347
HIGHEST ANNUAL MEAN			728
LOWEST ANNUAL MEAN			82.7
HIGHEST DAILY MEAN	1390	3390	8000
LOWEST DAILY MEAN	24	55	7.0
ANNUAL SEVEN-DAY MINIMUM	30	58	8.1
INSTANTANEOUS PEAK FLOW		(a)3620	(b)8280
INSTANTANEOUS PEAK STAGE		(c)10.69	(d)13.30
INSTANTANEOUS LOW FLOW		49	6.8
ANNUAL RUNOFF (CFSM)	.55	1.33	.66
ANNUAL RUNOFF (INCHES)	7.54	18.02	8.96
10 PERCENT EXCEEDS	746	1730	940
50 PERCENT EXCEEDS	167	460	130
90 PERCENT EXCEEDS	35	83	30

(a) Gage height, 10.27 ft

(b) Gage height, 13.24 ft

(c) Ice jam

(d) From floodmarks

(e) Also occurred Oct. 3-5, 1989



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04085427 MANITOWOC RIVER AT MANITOWOC, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1979 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)
OCT 1992					MAY 1993				
15...	1030	54	680	9.5	12...	1122	927	455	19.5
22...	1015	89	810	6.5	JUN				
NOV					24...	1310	1550	430	22.5
19...	1300	272	700	3.0	AUG				
MAR 1993					18...	1030	1030	780	22.5
11...	1410	695	495	0.0	25...	1320	89	675	25.0
APR									
30...	1110	2100	440	13.5					

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD) UNITS (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TUR-BID-ITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 1992											
22...	1015	89	810	8.4	6.5	3.5	12.8	754	105	170	44
MAR 1993											
11...	1410	695	495	7.8	0.0	8.8	10.5	751	73	180	K550
MAY											
12...	1122	927	455	8.3	19.5	5.8	8.6	740	97	82	K1100
AUG											
25...	1320	89	675	8.6	25.0	3.3	8.7	748	108	440	72

DATE	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CAR-BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)
OCT 1992											
22...	390	83	44	26	4.9	356	4	298	59	56	0.20
MAR 1993											
11...	180	39	19	13	8.3	183	--	150	24	28	<0.10
MAY											
12...	270	58	30	10	6.0	210	--	172	18	26	0.20
AUG											
25...	380	80	43	16	4.1	375	12	328	30	38	0.20

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)
OCT 1992											
22...	7.8	498	0.010	1.20	0.030	1.0	0.100	0.040	0.050	<10	34
MAR 1993											
11...	5.7	264	0.030	1.00	0.860	3.0	0.380	0.200	0.150	50	19
MAY											
12...	1.6	341	0.010	0.240	0.030	1.2	0.190	0.150	0.130	<10	24
AUG											
25...	11	450	0.010	1.40	0.030	1.1	0.190	0.140	0.140	10	36

K RESULTS BASED ON COUNT OUTSIDE OF THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04085427 MANITOWOC RIVER AT MANITOWOC, WI--CONTINUED

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1992 22...	<3	28	6	9	<10	3	<1	320	<6	12	84
MAR 1993 11...	<3	200	<4	54	<10	1	<1	91	<6	32	89
MAY 12...	<3	140	<4	20	<10	2	<1	120	<6	25	94
AUG 25...	<3	12	<4	23	<10	2	<1	320	<6	61	68

## STREAMS TRIBUTARY TO LAKE MICHIGAN

435152088123100 WOLF LAKE NEAR MT. CALVARY, WI

LOCATION.--Lat 43°51'52", long 88°12'31", in SW 1/4 SE 1/4 sec.10, T.16 N., R.19 E., Fond du Lac County, Hydrologic Unit 04030101, 3.2 mi northeast of Mt. Calvary.

DRAINAGE AREA.--3.43 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--November 1983 to September 1986, November 1992 to September 1993.

GAGE.--Staff gage read at lake outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 6.81 ft, Sept. 15, 1986; minimum observed, 4.42 ft, July 24, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 6.27 ft, Apr. 17 and July 17; minimum observed, 4.85 ft, Feb. 28.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	4.89	---	5.10	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	5.93	---	---	5.64	---
3	---	---	---	---	---	---	5.64	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	5.47	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	4.95	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	5.51	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	5.10
13	---	---	---	---	---	---	---	---	5.72	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	5.35	---
16	---	---	---	---	---	---	---	5.31	---	---	---	---
17	---	---	---	---	---	---	6.27	---	---	6.27	5.31	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	5.98	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	5.87	---	---
28	---	---	---	---	4.85	---	---	---	---	---	---	---
29	---	5.27	---	---	---	---	---	---	---	---	5.14	---
30	---	---	---	4.97	---	---	---	---	5.77	---	---	---
31	---	---	---	---	---	---	---	5.56	---	---	---	---

435152088123100 WOLF LAKE NEAR MT. CALVARY, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1984 to September 1987, February to August 1993.

REMARKS.--Lake sampled near center at a depth of 47 ft. Lake ice-covered during February sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 09 TO AUGUST 17, 1993  
(Milligrams per liter unless otherwise indicated)

	Feb. 09		May 11		June 22		July 27		Aug. 17	
Depth of sample (ft)	1.5	46	1.5	44	1.5	43	1.5	45	1.5	44
Lake stage (ft)	4.95		5.51		5.98		5.87		5.31	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	574	743	564	580	553	572	554	593	550	573
pH (units)	7.8	7.2	8.3	7.7	8.2	7.5	8.1	7.4	8.4	7.4
Water temperature ( $^{\circ}\text{C}$ )	3.0	4.0	18.5	6.5	23.0	7.0	25.5	7.5	26.0	7.5
Color (Pt-Co. scale)	---	---	30	30	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.90	1.1	---	---	---	---	---	---
Secchi-depth (meters)	---	---	3.5		2.3		1.3		2.3	
Dissolved oxygen	9.1	0.0	9.8	3.1	8.5	0.0	9.6	0.0	10.2	0.0
Hardness, as $\text{CaCO}_3$	---	---	290	280	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	56	54	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	36	36	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	6.1	6.1	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	4	4	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	230	220	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	35	38	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	27	27	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	<0.1	<0.1	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	5.6	8.7	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	338	340	---	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	0.16	0.36	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	0.16	0.36	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.19	0.55	---	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	1.0	1.1	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	1.2	1.7	---	---	---	---	---	---
Nitrogen, total (as N)	---	---	1.4	2.1	---	---	---	---	---	---
Phosphorus, total (as P)	---	---	0.032	0.190	0.038	0.380	0.045	0.480	0.026	0.550
Phosphorus, ortho, dissolved (as P)	---	---	0.011	0.123	---	---	---	---	---	---
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	<40	210	---	---	---	---	---	---
Chlorophyll a, phytoplankton ( $\mu\text{g}/\text{L}$ )	---	---	0.9	---	3.3	---	11	---	12	---

2-9-93

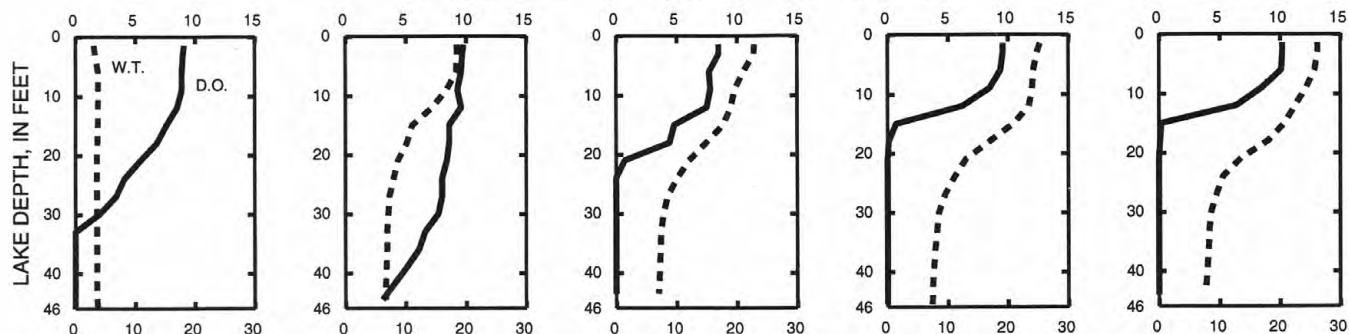
5-11-93

6-22-93

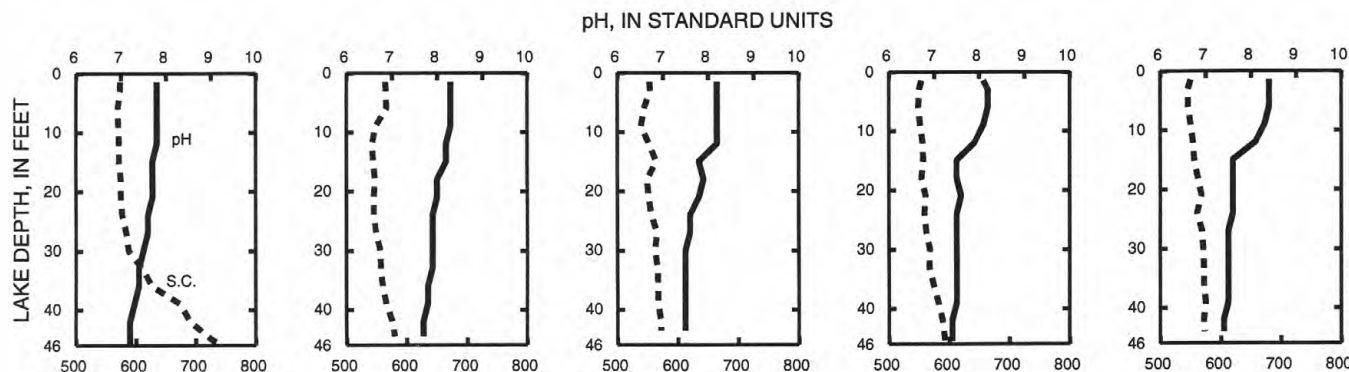
7-27-93

8-17-93

## DISSOLVED OXYGEN (D.O.), IN MILLIGRAMS PER LITER



## WATER TEMPERATURE (W.T.), IN DEGREES CELSIUS



## SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS



## STREAMS TRIBUTARY TO LAKE MICHIGAN

434907087573000 OTTER CREEK RAIN GAGE #2 NEAR PLYMOUTH, WI

LOCATION.--Lat 43°49'07", long 87°57'30", in NE 1/4 NW 1/4 sec.35, T.16 N., R.21 E., Sheboygan County, Hydrologic Unit 04030101, on Garton Road, 0.5 mi east of junction with CTH E, near Plymouth.

PERIOD OF RECORD.--January 1991 to current year (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger.

REMARKS.--Gage established on Jan. 9, 1991. Rainfall estimated to be 0.00 for Nov. 27, Dec. 11, 12, Jan. 2, 10, 14, Mar. 10, 12, 20, 21, and Apr. 2 because recorded precipitation interpreted as collector snowmelt.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.48 in., July 5, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 2.48 in., July 5.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.98	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.70	.00	.00	.00	.00	.00	.06	.00	.24	.00	.00
3	.00	.01	.00	.12	.00	.00	.00	.14	.00	.53	.09	.00
4	.00	.04	.00	.16	.00	.00	.00	.01	.15	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.48	.09	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
7	.00	.00	.00	.00	.00	.00	.29	.00	1.24	.01	.00	.00
8	.20	.24	.00	.00	.00	.03	1.08	.00	.82	.36	.00	.08
9	.01	.11	.00	.00	.00	.00	.00	.00	.00	.80	.25	.02
10	.05	.07	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.01	.00	.00	.00	.00	.00	.44	.00	.00	.07	.00	.17
12	.00	.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00	1.35
14	.02	.00	.00	.00	.00	.00	.12	.23	.48	.01	.00	.94
15	.46	.00	1.04	.00	.00	.00	1.43	.00	.00	.00	.15	.02
16	.04	.00	.04	.00	.00	.06	.04	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.01	.00	.52	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.19	.19	.21	.00	.03
19	.00	.16	.00	.00	.00	.00	.99	.06	.29	.00	.01	.00
20	.12	.72	.00	.00	.00	.00	.41	.00	.14	.00	.00	1.33
21	.00	.49	.00	.60	.00	.00	.00	.00	.00	.00	.00	.13
22	.00	.17	.00	.03	.00	.00	.00	.05	.00	.00	.00	.11
23	.00	.03	.00	.01	.00	.30	.00	.70	.00	.00	.21	.00
24	.00	.00	.00	.00	.00	.00	.02	.05	.00	.03	.00	.00
25	.00	.32	.00	.00	.00	.00	.00	.00	.01	.57	.00	.07
26	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.32	.45	.00	.04	.04	.03
28	.00	.00	.00	.00	.00	.01	.04	.00	.00	.07	.00	.05
29	.00	.00	.30	.00	---	.00	.13	.00	.00	.00	.00	.04
30	.00	.00	.34	.00	---	.00	.00	.70	.20	.00	.15	.00
31	.00	---	.00	.00	---	.09	---	.17	---	.00	.36	---
TOTAL	0.91	4.45	1.72	0.92	0.00	0.49	5.32	2.81	4.15	5.50	1.36	4.37

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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434802087573000 OTTER CREEK RAIN GAGE #1 NEAR PLYMOUTH, WI

LOCATION.--Lat 43°48'02", long 87°57'30", in SE 1/4 NW 1/4 sec.2, T.15 N., R.21 E., Sheboygan County, Hydrologic Unit 04030101, on Green Tree Road, 0.45 mi east of junction with CTH E, near Plymouth.

PERIOD OF RECORD.--January 1991 to current year (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger.

REMARKS.--Gage established on Jan. 9, 1991. Rainfall estimated to be 0.00 for Nov. 28, Dec. 10-12, Jan. 13, 14, Mar. 20, 21, and Apr. 1, 2 because recorded precipitation interpreted as collector snowmelt. Rainfall data missing for the period June 5-11.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 1.97 in., July 5, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.97 in., July 5.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.74	.00	.00	.00	.00	.00	.06	.03	.27	.00	.00
3	.00	.00	.00	.08	.00	.00	.00	.13	.00	.55	.01	.00
4	.00	.03	.00	.20	.00	.00	.00	.01	.17	.01	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	---	1.97	.05	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	---	.00	.00	.00
7	.00	.01	.00	.00	.00	.00	.31	.00	---	.00	.00	.00
8	.21	.21	.00	.00	.00	.02	1.04	.02	---	.33	.00	.08
9	.01	.09	.00	.00	.00	.00	.00	.00	---	.74	.23	.04
10	.06	.07	.00	.00	.00	.00	.00	.00	---	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.54	.00	---	.06	.00	.18
12	.00	.41	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00	1.24
14	.01	.00	.00	.00	.00	.00	.13	.55	.44	.00	.00	.97
15	.47	.00	.96	.00	.00	.00	1.50	.00	.00	.00	.16	.01
16	.05	.00	.03	.00	.00	.06	.07	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.55	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.21	.16	.22	.00	.04
19	.00	.17	.01	.00	.00	.00	1.13	.03	.27	.00	.00	.00
20	.09	.68	.00	.00	.00	.00	.54	.00	.07	.00	.00	1.40
21	.00	.44	.00	.59	.00	.00	.00	.00	.01	.00	.00	.09
22	.00	.23	.00	.02	.00	.00	.00	.05	.00	.00	.00	.08
23	.00	.05	.00	.00	.00	.29	.00	.66	.00	.00	.26	.00
24	.00	.00	.00	.00	.00	.01	.01	.04	.00	.02	.00	.00
25	.00	.41	.00	.00	.00	.00	.00	.00	.00	.67	.00	.08
26	.01	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.30	.50	.00	.05	.04	.02
28	.00	.00	.00	.00	.00	.00	.03	.00	.00	.06	.00	.06
29	.00	.00	.32	.00	---	.00	.16	.00	.00	.00	.00	.06
30	.00	.00	.32	.00	---	.00	.00	.65	.21	.00	.15	.00
31	.00	---	.00	.00	---	.13	---	.17	---	.00	.39	---
TOTAL	0.91	4.55	1.64	0.89	0.00	0.51	5.76	3.08	---	5.02	1.29	4.35

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI

LOCATION.--Lat 43°47'20", long 87°55'20", in NW 1/4 NW 1/4 sec.7, T.15 N., R.22 E., Sheboygan County, Hydrologic Unit 04030101, on left bank downstream from bridge on Willow Road, 900 ft upstream from the Sheboygan River, and 4.2 mi northeast of Plymouth.

DRAINAGE AREA.--9.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1990 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 760 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Sept. 5-9 and ice-affected periods, Dec. 4-10 and Dec. 20 to Mar. 19. Records are good except those for estimated daily discharges, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.5	3.2	6.0	4.0	6.4	7.0	24	9.2	12	3.9	3.6	2.9
2	2.4	18	5.9	3.7	5.8	15	18	8.2	9.0	4.8	3.5	2.9
3	2.4	11	5.5	3.5	5.3	34	18	8.0	7.3	5.3	3.2	2.9
4	2.3	7.6	5.2	5.4	5.2	28	24	9.0	6.1	8.1	3.0	2.9
5	2.2	5.7	4.5	5.0	5.2	25	25	9.0	6.0	25	3.0	3.4
6	2.2	4.8	5.6	4.2	5.0	18	22	8.2	5.6	92	3.0	3.3
7	2.2	4.2	5.2	3.9	4.0	17	24	7.4	7.5	28	2.9	3.1
8	2.3	4.0	5.4	3.4	3.5	23	96	6.8	125	15	2.9	3.0
9	2.6	4.8	5.2	3.1	4.0	16	55	6.4	33	70	2.9	2.9
10	2.6	4.9	5.6	2.9	3.5	10	25	6.2	16	25	3.0	2.9
11	2.5	4.6	5.1	2.8	4.3	8.0	23	5.9	11	15	3.0	3.0
12	2.4	6.5	4.8	2.7	4.0	9.0	45	5.4	8.0	10	3.0	3.2
13	2.2	6.9	5.0	2.6	3.5	9.0	28	4.9	6.6	7.6	3.0	4.9
14	2.2	5.3	5.6	2.6	3.0	9.0	18	5.5	8.5	6.8	3.0	13
15	2.3	4.6	24	2.5	3.2	8.0	109	6.7	7.0	6.2	3.0	8.6
16	3.1	4.2	50	2.4	2.9	70	91	5.5	6.0	5.6	3.0	6.1
17	2.8	4.1	25	2.4	2.7	40	34	5.2	7.0	5.1	3.0	5.1
18	2.8	4.0	16	2.4	2.5	25	20	5.7	12	5.5	3.0	4.7
19	2.7	3.9	12	2.4	3.0	14	50	5.8	15	5.4	3.0	4.3
20	2.8	11	7.0	3.0	3.5	8.2	130	5.5	13	4.8	3.0	9.8
21	2.9	26	5.2	4.0	4.0	11	63	5.2	11	4.3	2.9	19
22	2.9	17	4.1	6.0	5.0	13	28	4.9	8.2	4.0	2.9	10
23	2.9	18	3.8	9.0	6.0	35	18	6.7	6.4	3.8	3.0	8.1
24	2.8	12	3.5	9.0	5.2	44	14	9.6	5.6	3.9	3.0	6.5
25	2.6	11	3.3	7.2	4.5	46	12	7.9	5.2	7.3	2.9	5.8
26	2.6	19	3.3	6.4	4.0	43	9.8	6.4	4.7	5.5	2.9	5.6
27	2.6	12	4.0	5.8	4.0	44	9.1	6.6	4.3	4.5	3.0	5.2
28	2.5	8.4	5.0	5.4	4.0	45	13	8.6	3.9	4.7	2.9	4.9
29	2.5	7.0	6.0	5.0	---	43	12	6.9	3.8	4.3	2.9	4.8
30	2.5	6.5	7.0	4.7	---	38	11	9.2	3.9	3.9	2.9	4.8
31	2.5	---	5.0	7.0	---	33	---	15	---	3.8	2.9	---
TOTAL	78.8	260.2	258.8	134.4	117.2	788.2	1068.9	221.5	378.6	399.1	93.2	167.6
MEAN	2.54	8.67	8.35	4.34	4.19	25.4	35.6	7.15	12.6	12.9	3.01	5.59
MAX	3.1	26	50	9.0	6.4	70	130	15	125	92	3.6	19
MIN	2.2	3.2	3.3	2.4	2.5	7.0	9.1	4.9	3.8	3.8	2.9	2.9
CFSM	.27	.91	.88	.46	.44	2.68	3.75	.75	1.33	1.36	.32	.59
IN.	.31	1.02	1.01	.53	.46	3.09	4.19	.87	1.48	1.56	.36	.66

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1993, BY WATER YEAR (WY)

	MEAN	3.78	7.55	8.44	4.86	5.75	18.1	19.4	5.08	6.81	6.13	2.55	3.53
MAX	4.82	8.67	11.5	6.76	7.84	25.4	35.6	7.15	12.6	12.9	3.01	5.59	
(WY)	1992	1993	1992	1992	1991	1993	1993	1993	1993	1993	1993	1993	1993
MIN	2.54	5.48	5.45	3.49	4.19	13.4	10.4	3.60	2.45	2.65	2.16	2.15	
(WY)	1993	1991	1991	1991	1993	1991	1992	1992	1992	1992	1992	1991	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1991 - 1993

ANNUAL TOTAL	2171.6	3966.5	
ANNUAL MEAN	5.93	10.9	7.66
HIGHEST ANNUAL MEAN			10.9
LOWEST ANNUAL MEAN			5.73
HIGHEST DAILY MEAN	50	130	130
LOWEST DAILY MEAN	1.6	2.2	1.6
ANNUAL SEVEN-DAY MINIMUM	1.7	2.3	1.7
INSTANTANEOUS PEAK FLOW		(b)223	(b)223
INSTANTANEOUS PEAK STAGE		(c)8.26	(c)8.26
INSTANTANEOUS LOW FLOW		1.9	1.6
ANNUAL RUNOFF (CFSM)	.62	1.14	.81
ANNUAL RUNOFF (INCHES)	8.50	15.53	10.95
10 PERCENT EXCEEDS	13	25	15
50 PERCENT EXCEEDS	3.9	5.4	4.5
90 PERCENT EXCEEDS	2.1	2.8	2.2

(a) Also occurred Oct. 13, 14

(b) Gage height, 7.53 ft

(c) Backwater from ice

(d) Also occurred Aug. 31, Sept. 1-3, 12, 30, 1991, Aug. 30 and Sept. 1, 1992

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1990 to current year.

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1990 to current year.

DISSOLVED OXYGEN: October 1990 to current year, open-water periods.

SUSPENDED-SOLIDS DISCHARGE: October 1990 to current year.

TOTAL-PHOSPHORUS DISCHARGE: October 1990 to current year.

INSTRUMENTATION.--Stage-activated water-quality sampler since October 1990. Continuous water-temperature recorder since October 1990. Dissolved-oxygen recorder during open-water periods since October 1990.

REMARKS.--Chemical analyses by the Wisconsin State Laboratory of Hygiene. Samples are point samples unless otherwise indicated. Dissolved-oxygen concentrations greater than 20.0 mg/L are out of calibration range of meter. Records represent water temperature at sensor within 0.5°C.

## EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 29.5°C, June 27, 29, 1991; minimum observed, 0.0°C, many days during winter period.

DISSOLVED OXYGEN: Maximum observed, 19.1 mg/L, Nov. 2, 1990; minimum observed, 0.2 mg/L, Sept. 18, 1992.

SUSPENDED-SOLIDS DISCHARGE: Maximum daily, 132 tons, June 8, 1993; minimum daily, 0.01 ton, many days during 1992 and 1993 water years.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 455 lb, June 8, 1993; minimum daily, 0.27 lb, Oct. 30, 31, 1993.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 26.5°C, July 3, and Aug. 11, 24, 25; minimum observed, 0.0°C, many days during winter period.

DISSOLVED OXYGEN: Maximum observed, 16.5 mg/L, Oct 19; minimum observed, 3.6 mg/L, June 18.

SUSPENDED-SOLIDS DISCHARGE: Maximum daily, 132 tons, June 8; minimum daily, 0.01 ton, Oct. 13-15.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 455 lb, June 8; minimum daily, 0.27 lb, Oct. 30 and 31.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	MAGNE- SIUM, TOTAL RECOVER -ABLE (MG/L) (00921)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)
OCT 1992										
04...	1120	2.4	2.1	--	--	--	4	402	112	2
18...	1300	2.8	2.6	210	--	--	2	408	120	--
31...	0945	2.5	1.0	--	--	--	4	404	126	2
NOV										
01...	2125	5.4	8.4	--	--	--	85	492	158	58
02...	0105	11	6.9	--	--	--	133	514	164	98
02...	0640	20	9.9	--	--	--	180	614	186	128
02...	1115	23	6.3	--	--	--	150	540	154	110
02...	1116	23	6.8	--	--	--	164	564	162	112
02...	1240	22	5.6	--	--	--	132	538	152	98
02...	1840	17	3.4	--	--	--	60	480	142	44
03...	0040	14	2.4	--	--	--	35	458	134	25
03...	1240	11	1.6	--	--	--	17	452	136	10
04...	0640	8.3	1.5	--	--	--	17	448	124	10
05...	1840	5.4	1.8	--	--	--	11	438	116	6
07...	0825	4.3	1.8	--	--	--	6	434	114	3
08...	1430	4.0	2.1	--	--	--	6	436	124	3
09...	0230	4.4	2.1	--	--	--	11	440	122	7
09...	1430	5.0	2.4	--	--	--	12	460	130	7
12...	0335	4.4	2.1	--	--	--	16	446	118	11
12...	0935	5.2	3.4	--	--	--	25	456	128	16
12...	1535	7.2	4.2	--	72	43	36	470	130	20
12...	2135	9.5	--	--	73	42	30	484	140	23
13...	0335	8.0	--	--	75	42	15	484	140	10
13...	1535	6.4	--	--	--	--	11	456	136	7
14...	1535	5.0	2.7	--	--	--	18	454	118	14
15...	1500	4.4	2.4	660	--	--	9	446	122	6
19...	0330	4.0	--	--	--	--	8	432	122	5
20...	0650	6.0	5.4	--	--	--	27	452	120	18
20...	1250	11	--	--	--	--	72	508	150	49
20...	1850	17	--	--	--	--	81	500	152	62
21...	0050	18	--	--	--	--	118	548	170	80
21...	0250	25	--	--	71	38	210	612	168	160
21...	0430	33	--	--	74	37	364	752	198	276
21...	1030	32	--	--	60	32	174	524	130	138
21...	1630	22	--	--	--	--	98	482	128	72
22...	0430	18	--	--	--	--	61	466	124	45
22...	1630	15	--	--	--	--	23	440	120	16
22...	2230	19	--	--	--	--	51	458	132	34
23...	0430	21	--	--	--	--	39	444	130	28
23...	1030	19	--	--	--	--	25	444	132	18
24...	1030	12	--	--	--	--	16	444	122	10
25...	1030	9.2	--	--	--	--	15	456	122	10
25...	2115	16	--	--	--	--	74	490	140	49
25...	2345	23	--	--	--	--	84	464	132	63
26...	0545	22	--	--	--	--	18	424	118	13
26...	1145	18	--	--	--	--	42	454	142	26
28...	0545	8.6	--	--	--	--	14	450	124	8
29...	1235	6.7	--	--	--	--	9	444	118	6



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) (71846)	PHOS- PHORUS TOTAL (MG/L) (00665)	COPPER, TOTAL RECOVER -ABLE (UG/L) (01119)	ZINC, TOTAL RECOVER -ABLE (UG/L) (01094)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1992									
04...	2	0.418	0.020	0.03	0.040	--	--	--	--
18...	<2	0.549	0.006	0.01	0.030	--	--	--	--
31...	2	0.717	0.018	0.02	0.020	--	--	--	--
NOV									
01...	27	0.884	0.231	0.30	0.560	--	--	--	--
02...	35	0.869	0.153	0.20	0.510	--	--	--	--
02...	52	1.93	0.141	0.18	0.740	10	30	--	--
02...	40	3.17	0.091	0.12	0.560	9	20	137	97
02...	52	3.13	0.077	0.10	0.560	10	20	150	100
02...	34	3.33	0.089	0.11	0.530	10	20	121	94
02...	16	3.77	0.082	0.11	0.300	23	20	50	96
03...	10	3.44	0.116	0.15	0.200	--	--	--	--
03...	7	2.50	0.103	0.13	0.130	--	--	--	--
04...	7	1.97	0.203	0.26	0.100	--	--	--	--
05...	5	1.70	0.084	0.11	0.060	--	--	--	--
07...	3	1.58	0.101	0.13	0.050	--	--	--	--
08...	3	1.36	0.050	0.06	0.050	--	--	--	--
09...	4	1.38	0.083	0.11	0.070	--	--	--	--
09...	5	1.41	0.048	0.06	0.080	--	--	--	--
12...	5	1.45	0.066	0.08	0.070	--	--	--	--
12...	9	1.40	0.221	0.28	0.190	--	--	--	--
12...	16	1.52	0.152	0.20	0.200	<3	<10	28	100
12...	7	2.44	0.081	0.10	0.200	<3	<10	57	64
13...	5	2.78	0.086	0.11	0.160	<3	<10	61	70
13...	4	2.34	0.047	0.06	0.100	--	--	--	--
14...	4	1.76	0.057	0.07	0.080	--	--	--	--
15...	3	1.55	0.058	0.08	0.080	--	--	--	--
19...	3	1.61	0.058	0.08	0.060	--	--	--	--
20...	9	1.70	0.207	0.27	0.160	--	--	--	--
20...	23	2.57	0.381	0.49	0.520	--	--	--	--
20...	19	3.80	0.120	0.15	0.380	--	--	--	--
21...	38	4.75	0.512	0.66	0.760	--	--	--	--
21...	50	4.58	0.266	0.34	0.720	12	30	195	95
21...	88	4.73	0.221	0.28	1.04	17	40	332	99
21...	36	4.90	0.088	0.11	0.570	10	20	169	94
21...	26	4.70	0.086	0.11	0.370	--	--	--	--
22...	16	3.94	0.093	0.12	0.200	--	--	--	--
22...	7	3.75	0.075	0.10	0.170	--	--	--	--
22...	17	3.96	0.378	0.49	0.350	--	--	--	--
23...	11	4.45	0.147	0.19	0.260	--	--	--	--
23...	7	4.22	0.354	0.46	0.280	--	--	--	--
24...	6	3.54	0.061	0.08	0.140	--	--	--	--
25...	5	3.02	0.078	0.10	0.110	--	--	--	--
25...	25	3.35	0.633	0.82	0.520	--	--	71	95
25...	21	3.42	0.211	0.27	0.400	--	--	85	94
26...	5	3.88	0.091	0.12	0.260	--	--	47	89
26...	16	3.99	0.409	0.53	0.320	--	--	--	--
28...	6	2.76	0.079	0.10	0.160	--	--	--	--
29...	3	2.52	0.071	0.09	0.090	--	--	--	--

## STREAMS TRIBUTARY TO LAKE MICHIGAN

185

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)
DEC 1992								
15...	1100	--	13	12	--	90	524	170
15...	1305	--	20	7.4	--	132	516	142
15...	1815	--	35	8.7	--	204	530	152
15...	2045	--	52	11	--	358	624	150
15...	2145	--	59	8.7	--	424	676	154
15...	2310	--	67	7.9	--	442	664	152
16...	0510	--	61	3.1	--	110	390	110
16...	1010	--	50	2.4	--	58	354	106
16...	2210	--	37	1.6	--	39	372	120
17...	1010	--	26	1.9	--	27	382	118
17...	2210	--	21	2.7	--	22	376	110
18...	1010	--	16	1.9	--	14	396	116
29...	0745	6.0	--	--	--	17	396	108
29...	1345	6.0	--	--	--	33	404	108
29...	1945	6.0	--	--	--	32	394	124
30...	0145	7.0	--	--	--	22	398	120
30...	0745	7.0	--	--	--	20	410	124
30...	1345	7.0	--	--	--	51	414	120
30...	1805	7.0	--	--	--	76	384	122
31...	0005	5.0	--	--	--	56	354	112
31...	0605	5.0	--	--	--	41	370	118
JAN 1993								
14...	1410	2.6	--	<1.0	20	18	414	106
31...	1600	7.0	--	--	--	9	394	106
31...	2115	7.0	--	--	--	30	324	88
FEB								
01...	0915	6.4	--	--	--	11	320	88
01...	2115	6.4	--	--	--	11	354	94
02...	0200	5.8	--	--	--	13	390	108
14...	1115	3.0	--	<1.0	10	10	424	114
MAR								
01...	1355	7.0	--	--	--	12	406	108
01...	1600	7.0	--	--	--	14	386	92
01...	1735	7.0	--	--	--	12	376	98
01...	1950	7.0	--	--	--	18	368	90
02...	0355	15	--	--	--	13	386	98
02...	0650	15	--	--	--	14	400	102
02...	1230	15	--	--	--	16	384	104
02...	1320	15	--	--	--	19	380	108
02...	1415	15	--	--	--	27	368	98
02...	1430	15	--	--	--	112	448	126
02...	1435	15	--	--	--	370	620	140
02...	1915	15	--	--	--	88	318	96
03...	0115	34	--	--	--	46	284	82
03...	0600	34	--	--	--	31	304	86
03...	1130	34	--	8.2	--	34	324	96
03...	1210	34	--	23	--	106	362	96
03...	1325	34	--	31	--	226	464	120
03...	1410	34	--	<30	--	298	522	120
03...	1640	34	--	24	--	290	470	114
03...	2045	34	--	21	--	96	278	86
04...	0135	28	--	22	--	54	246	82
*04...	1205	28	--	20	--	66	322	112
04...	1210	28	--	20	--	66	332	120
04...	1335	28	--	--	--	82	334	96
04...	1935	28	--	--	--	68	304	94
05...	0130	25	--	--	--	50	322	108
05...	1330	25	--	--	--	116	416	112
05...	1745	25	--	--	--	308	558	132
05...	1920	25	--	--	--	280	516	140
06...	1455	18	--	--	--	352	634	142
06...	1540	18	--	--	--	528	690	144
06...	1630	18	--	--	--	564	748	160
06...	2130	18	--	--	--	126	304	78
*07...	1050	17	--	>20	--	32	322	94
07...	1053	17	--	14	--	29	322	104
07...	1540	17	--	9.6	--	96	372	108
07...	1720	17	--	11	--	188	412	114
08...	0520	23	--	9.6	--	48	294	92
08...	1355	23	--	10	--	90	332	94
08...	1535	23	--	12	--	148	368	100
09...	0015	16	--	9.6	--	46	282	84
*10...	1020	10	--	6.5	--	23	314	112
*12...	1150	9.0	--	4.7	--	90	434	108
*17...	1100	40	--	6.6	--	15	282	86

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLE

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 SOLVED (MG/L) AS N (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4 (71846)	PHOS- PHORUS TOTAL (MG/L) AS P (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
DEC 1992								
15...	60	30	1.50	0.460	0.59	0.710	--	--
15...	94	38	1.82	0.311	0.40	0.550	--	--
15...	152	52	2.57	0.223	0.29	0.750	--	--
15...	278	80	3.02	0.208	0.27	0.930	--	--
15...	340	84	2.93	0.219	0.28	1.05	385	94
15...	360	82	2.86	0.189	0.24	0.870	402	93
16...	90	20	3.40	0.118	0.15	0.490	130	94
16...	43	15	3.28	0.100	0.13	0.340	--	--
16...	29	10	3.00	0.065	0.08	0.220	--	--
17...	20	7	3.06	0.051	0.07	0.160	--	--
17...	16	6	2.98	0.055	0.07	0.170	--	--
18...	10	4	2.88	0.046	0.06	0.120	--	--
29...	9	8	1.41	0.140	0.18	0.140	--	--
29...	21	12	1.42	0.190	0.24	0.270	56	96
29...	17	15	1.57	0.342	0.44	0.320	--	--
30...	11	11	1.41	0.225	0.29	0.200	--	--
30...	13	7	1.40	0.132	0.17	0.140	--	--
30...	35	16	1.43	0.345	0.44	0.420	--	--
30...	54	22	1.30	0.403	0.52	0.550	82	96
31...	39	17	1.38	0.328	0.42	0.480	48	97
31...	28	13	1.43	0.199	0.26	0.340	--	--
JAN 1993								
14...	14	4	1.07	0.092	0.12	0.080	--	--
31...	5	4	1.53	0.336	0.43	0.180	--	--
31...	19	11	1.41	0.827	1.1	0.310	--	--
FEB								
01...	6	5	1.54	0.552	0.71	0.180	--	--
01...	5	6	1.78	0.465	0.60	0.180	--	--
02...	7	6	1.84	0.338	0.44	0.170	--	--
14...	7	3	1.32	0.078	0.10	0.050	--	--
MAR								
01...	8	4	1.34	0.124	0.16	0.080	--	--
01...	10	4	1.28	0.144	0.19	0.110	--	--
01...	8	4	1.28	0.220	0.28	0.160	--	--
01...	12	6	1.33	0.229	0.29	0.160	--	--
02...	8	5	1.37	0.245	0.32	0.160	--	--
02...	10	4	1.34	0.178	0.23	0.090	--	--
02...	12	4	1.37	0.227	0.29	0.150	--	--
02...	13	6	1.34	0.268	0.35	0.140	--	--
02...	20	7	1.31	0.319	0.41	0.210	--	--
02...	84	28	1.33	1.87	2.4	0.670	--	--
02...	312	58	1.47	1.88	2.4	1.20	--	--
02...	66	22	1.38	1.16	1.5	0.430	--	--
03...	33	13	1.52	0.808	1.0	0.300	--	--
03...	20	11	1.59	0.795	1.0	0.290	--	--
03...	23	11	1.50	0.744	0.96	0.290	--	--
03...	82	24	1.54	1.92	2.5	0.800	--	--
03...	178	48	1.49	2.43	3.1	1.16	--	--
03...	244	54	1.40	1.95	2.5	1.18	--	--
03...	232	58	1.25	1.61	2.1	0.990	--	--
03...	68	28	1.32	1.38	1.8	0.670	--	--
04...	35	19	1.34	1.37	1.8	0.560	--	--
04...	48	18	1.32	1.38	1.8	0.560	--	--
04...	46	20	1.35	1.37	1.8	0.560	--	--
04...	60	22	1.24	1.15	1.5	0.600	--	--
04...	50	18	1.31	1.14	1.5	0.590	--	--
05...	34	16	1.28	1.05	1.4	0.540	--	--
05...	84	32	1.22	0.936	1.2	0.540	--	--
05...	244	64	1.08	0.882	1.1	0.850	--	--
05...	196	84	0.990	0.864	1.1	0.790	--	--
06...	276	76	0.946	1.11	1.4	1.00	--	--
06...	412	116	0.873	1.09	1.4	1.09	--	--
06...	452	112	0.754	1.12	1.4	1.14	--	--
06...	92	34	0.719	1.17	1.5	0.660	--	--
07...	20	12	1.11	0.986	1.3	0.430	--	--
07...	18	11	1.04	0.996	1.3	0.430	--	--
07...	74	22	1.11	0.775	1.0	0.520	--	--
07...	150	38	1.01	0.681	0.88	0.610	--	--
08...	24	24	0.962	0.583	0.75	0.420	--	--
08...	64	26	1.05	0.680	0.88	0.490	--	--
08...	114	34	0.963	0.694	0.89	0.550	--	--
09...	30	16	0.877	0.719	0.93	0.410	--	--
10...	15	8	0.998	0.438	0.56	0.280	--	--
12...	68	22	1.09	0.268	0.35	0.260	--	--
17...	11	4	1.31	0.948	1.2	0.290	--	--

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)
MAR 1993							
*24...	1030	30	5.2	--	28	284	112
24...	1114	28	5.6	--	29	302	90
*24...	1118	28	5.3	--	30	302	88
24...	1320	39	8.3	--	90	346	100
24...	1425	51	7.8	--	147	372	98
24...	1525	62	8.9	--	236	422	102
25...	0125	44	7.0	--	66	296	88
25...	1325	43	6.1	--	52	298	98
25...	1535	55	8.2	--	73	280	86
26...	0335	43	5.4	--	32	268	92
26...	1055	34	4.8	--	15	266	102
*26...	1100	34	4.4	--	16	264	108
26...	1535	46	19	--	50	258	100
27...	0335	40	3.9	--	34	256	106
27...	1535	44	4.4	--	45	256	102
27...	1805	55	5.2	--	50	248	98
28...	0605	41	3.4	--	24	252	86
*28...	1355	43	3.8	150	32	260	76
28...	1358	43	4.6	170	37	262	82
28...	1715	53	--	--	53	256	90
29...	0515	43	2.9	--	23	252	84
29...	1715	45	3.8	80	40	264	86
30...	0515	40	3.2	60	20	252	84
30...	1715	35	--	--	20	266	72
31...	0515	35	--	--	16	260	74
31...	1715	29	--	--	7	282	82
APR							
01...	0515	26	--	--	14	274	84
01...	1715	21	--	--	16	302	94
02...	0515	19	--	--	14	308	92
03...	1715	21	--	--	33	346	110
04...	0620	18	--	--	19	340	106
04...	1555	26	--	--	37	358	110
04...	1820	37	--	50	62	356	98
05...	0620	24	--	--	23	328	94
*05...	1045	22	2.2	170	11	324	84
05...	1046	22	2.6	130	11	320	84
05...	1820	26	--	--	22	340	126
07...	0620	21	2.6	--	14	336	132
07...	1820	27	3.2	--	15	344	136
08...	0240	38	4.8	--	69	400	128
08...	0445	61	5.3	--	196	502	132
08...	0910	88	4.8	2200	178	454	124
08...	1120	119	8.2	20000	380	648	164
08...	1250	158	5.9	56000	362	596	148
*08...	1355	162	4.5	1700	218	510	125
08...	1356	162	5.0	1900	250	506	124
08...	1750	127	--	--	77	348	86
08...	2020	100	--	--	62	330	84
09...	0325	78	--	--	41	340	90
09...	1735	40	--	--	30	316	86
11...	0535	18	--	--	13	320	90
11...	1735	25	--	--	18	338	100
11...	1950	35	--	--	31	342	98
12...	0750	36	1.8	600	14	332	106
12...	1205	48	2.8	4700	35	346	112
*12...	1300	54	1.8	1100	51	346	88
12...	1301	54	2.2	1300	52	350	86
12...	1440	60	2.4	--	51	350	100
12...	2135	42	2.1	--	29	320	92
13...	0935	28	2.0	--	12	314	94
14...	0935	18	1.5	--	8	328	114
14...	2135	18	--	--	12	338	90
15...	0525	27	--	--	47	380	98
15...	0745	63	--	--	194	488	120
15...	0935	110	--	--	390	658	138
15...	1115	151	--	--	328	584	126
15...	2010	172	--	--	160	414	114
16...	0135	142	--	--	82	346	106
16...	1120	89	--	--	38	316	112
17...	0145	48	--	--	18	320	120
18...	0105	24	--	--	16	334	134
19...	0105	17	--	--	17	342	134
19...	1305	22	2.1	2000	10	348	132
*19...	1540	33	3.7	6800	84	418	114
19...	1541	33	4.0	12000	89	436	118

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLES



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAR 1993								
24...	20	8	1.68	0.792	1.0	0.350	--	--
24...	24	5	1.72	0.893	1.2	0.360	--	--
24...	26	4	1.70	0.787	1.0	0.370	--	--
24...	72	18	1.56	0.869	1.1	0.510	--	--
24...	120	27	1.68	0.792	1.0	0.570	--	--
24...	198	38	1.43	0.785	1.0	0.670	--	--
25...	54	12	1.25	0.701	0.90	0.380	--	--
25...	43	9	1.18	0.576	0.74	0.330	62	85
25...	60	13	1.08	0.597	0.77	0.410	83	87
26...	26	6	1.07	0.504	0.65	0.260	47	74
26...	11	4	1.11	0.444	0.57	0.210	--	--
26...	13	3	1.08	0.456	0.59	0.220	--	--
26...	42	8	0.987	0.465	0.60	0.270	--	--
27...	28	6	1.01	0.412	0.53	0.220	--	--
27...	36	9	0.961	0.354	0.46	0.260	--	--
27...	41	9	0.823	0.340	0.44	0.260	--	--
28...	18	6	0.915	0.299	0.39	0.160	--	--
28...	25	7	0.911	0.299	0.39	0.220	--	--
28...	29	8	0.939	0.303	0.39	0.230	--	--
28...	42	11	0.812	0.283	0.36	0.260	--	--
29...	19	4	0.939	0.222	0.29	0.160	--	--
29...	28	12	0.845	0.166	0.21	0.220	--	--
30...	13	7	0.863	0.154	0.20	0.160	--	--
30...	14	6	0.940	0.165	0.21	0.160	--	--
31...	10	6	0.917	0.142	0.18	0.140	--	--
31...	5	2	1.04	0.156	0.20	0.150	--	--
APR								
01...	10	4	1.23	0.155	0.20	0.120	--	--
01...	12	4	1.23	0.114	0.15	0.140	--	--
02...	10	4	1.30	0.104	0.13	0.120	--	--
03...	24	9	1.24	0.109	0.14	0.180	--	--
04...	13	6	1.42	0.119	0.15	0.140	--	--
04...	28	9	1.57	0.136	0.18	0.220	--	--
04...	48	14	1.65	0.216	0.28	0.260	--	--
05...	--	<2	1.58	0.073	0.09	0.140	--	--
05...	--	<2	1.53	0.055	0.07	0.120	--	--
05...	--	<2	1.58	0.063	0.08	0.130	--	--
05...	16	6	1.64	0.094	0.12	0.140	--	--
07...	10	4	1.41	0.065	0.08	0.110	--	--
07...	11	4	1.56	0.073	0.09	0.130	--	--
08...	52	17	1.75	0.217	0.28	0.300	--	--
08...	160	36	1.85	0.261	0.34	0.490	--	--
08...	149	29	2.11	0.293	0.38	0.480	--	--
08...	320	60	2.20	0.446	0.57	0.880	--	--
08...	308	54	2.07	0.325	0.42	0.710	--	--
08...	188	30	1.97	0.300	0.39	0.570	--	--
08...	212	38	1.98	0.294	0.38	0.600	--	--
08...	64	13	2.02	0.250	0.32	0.340	--	--
08...	52	10	1.91	0.231	0.30	0.260	--	--
09...	33	8	1.89	0.218	0.28	0.190	--	--
09...	24	6	1.61	0.094	0.12	0.150	--	--
11...	--	<2	1.42	0.069	0.09	0.100	--	--
11...	14	4	1.59	0.143	0.18	0.170	--	--
11...	25	6	1.62	0.141	0.18	0.190	--	--
12...	--	<2	1.77	0.115	0.15	0.150	--	--
12...	29	6	1.95	0.147	0.19	0.240	--	--
12...	42	9	1.88	0.123	0.16	0.230	--	--
12...	44	8	1.89	0.108	0.14	0.230	--	--
12...	39	12	1.68	0.120	0.15	0.230	--	--
12...	22	7	1.70	0.057	0.07	0.180	--	--
13...	8	4	1.48	0.050	0.06	0.100	--	--
14...	6	2	1.41	0.042	0.05	0.090	--	--
14...	9	3	1.43	0.073	0.09	0.090	--	--
15...	35	12	1.59	0.170	0.22	0.280	--	--
15...	158	36	1.56	0.173	0.22	0.540	--	--
15...	336	54	1.34	0.200	0.26	0.390	--	--
15...	280	48	1.32	0.163	0.21	0.700	--	--
15...	132	28	1.51	0.124	0.16	0.470	--	--
16...	66	16	1.36	0.116	0.15	0.310	--	--
16...	27	11	1.38	0.215	0.28	0.220	--	--
17...	13	5	1.38	0.096	0.12	0.120	--	--
18...	12	4	1.43	0.069	0.09	0.110	--	--
19...	13	4	1.35	0.058	0.08	0.100	--	--
19...	6	4	1.39	0.059	0.08	0.110	--	--
19...	66	18	1.46	0.180	0.23	0.410	--	--
19...	70	19	1.42	0.177	0.23	0.440	--	--

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)
APR 1993								
19...	1600	--	42	--	--	204	528	152
19...	1705	--	68	5.0	2600	470	760	162
19...	1855	--	100	--	--	288	580	120
19...	2020	--	117	3.3	--	256	544	110
19...	2200	--	135	3.1	2300	248	520	114
20...	1000	--	114	2.0	1000	53	328	88
20...	1555	--	135	2.6	--	140	392	106
*20...	1610	--	142	2.4	2100	138	400	108
20...	1611	--	143	2.5	1500	160	410	106
20...	1640	--	155	3.2	--	164	402	96
20...	2300	--	126	2.7	--	50	290	72
21...	1245	--	57	2.8	--	23	308	80
22...	2245	--	22	2.2	230	22	332	92
*25...	1111	--	12	1.8	110	11	352	98
MAY								
11...	1356	--	5.9	2.5	1400	10	372	114
26...	1130	--	6.5	2.2	4900	7	380	104
30...	1740	--	11	--	--	109	494	140
31...	0540	--	15	--	--	45	448	126
31...	1740	--	13	--	--	75	454	126
JUN								
01...	0540	--	13	2.0	--	28	424	--
02...	1627	--	8.5	1.2	2800	10	394	--
07...	2120	--	11	3.4	40000	72	470	--
07...	2345	--	22	7.0	47000	590	838	--
07...	2400	--	56	19	>100000	5040	5290	--
08...	0040	--	114	6.4	>90000	2900	3190	--
08...	0230	--	183	5.0	>140000	1820	2010	--
08...	0300	--	210	2.9	51000	236	480	--
08...	0850	--	174	2.2	26000	124	368	--
08...	1225	--	116	1.6	7700	42	386	--
08...	1815	--	68	2.6	23000	66	372	--
09...	0925	--	35	1.9	7000	44	382	--
*09...	0930	--	35	1.7	>8300	43	388	--
09...	0935	--	34	2.4	>33000	85	364	--
10...	0650	--	18	1.9	1800	32	392	--
*16...	1605	--	6.1	1.1	1500	14	--	--
30...	0825	--	4.0	<3.0	5200	6	450	--
JUL								
05...	2035	--	20	8.8	54000	426	768	--
05...	2105	--	52	--	--	1020	1300	--
05...	2125	--	113	20	400000	2960	3080	--
05...	2135	--	133	--	--	3020	3220	--
05...	2150	--	150	16	400000	2700	2870	--
05...	2305	--	172	7.3	98000	1790	1930	--
06...	0355	--	141	5.4	65000	162	402	--
06...	0810	--	90	--	--	74	348	--
06...	1410	--	77	3.0	24000	58	352	--
06...	1935	--	56	--	--	48	374	--
06...	2150	--	50	--	>400000	--	--	--
08...	2030	--	15	--	--	61	422	--
09...	0335	--	30	--	--	430	704	--
09...	0345	--	71	--	--	2420	2570	--
09...	0400	--	100	--	--	1520	1720	--
09...	0530	--	137	--	--	2290	2640	--
09...	0555	--	158	--	--	1640	1900	--
09...	0910	--	128	--	--	276	494	--
09...	1030	--	102	--	--	118	380	--
09...	1410	--	57	--	--	88	366	--
*09...	1720	--	47	--	--	93	388	--
09...	1730	--	46	--	--	88	386	--
09...	2225	--	39	2.2	--	76	382	--
11...	1025	--	15	2.1	--	40	402	--
14...	0830	--	6.8	1.5	710	15	414	--
27...	1205	--	4.6	1.6	2400	9	404	--
AUG								
24...	1134	--	3.0	1.5	2600	9	384	--
SEP								
08...	1110	3.0	--	<1.0	--	38	452	--
14...	0700	--	11	--	--	91	490	--
14...	1900	--	13	--	--	89	496	--
15...	0700	--	9.2	--	--	33	436	--
20...	1700	--	12	--	--	144	512	--
20...	1835	--	18	--	--	206	552	--
20...	2150	--	26	--	--	228	558	--
21...	0950	--	18	--	--	80	482	--
21...	1135	--	17	6.3	--	450	834	--

\* EQUAL-WIDTH INCREMENT (EWI) SAMPLES

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE FIXED NON FILTER- ABLE (MG/L) (00540)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS NH4) (71846)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)
APR 1993							
19...	--	163	41	1.45	0.496	0.64	0.900
19...	--	402	68	1.26	0.107	0.14	0.820
19...	--	246	42	1.18	0.147	0.19	0.650
19...	--	216	40	1.15	0.130	0.17	0.620
19...	--	210	38	1.21	0.126	0.16	0.660
20...	--	43	10	1.19	0.091	0.12	0.260
20...	--	118	22	1.22	0.109	0.14	0.410
20...	--	116	22	1.20	0.101	0.13	0.420
20...	--	138	22	1.20	0.114	0.15	0.420
20...	--	134	30	1.15	0.104	0.13	0.470
20...	--	39	11	1.04	0.079	0.10	0.230
21...	--	16	7	1.17	0.082	0.11	0.140
22...	--	14	8	1.17	0.046	0.06	0.110
25...	--	6	5	1.07	0.044	0.06	0.140
MAY							
11...	--	5	5	0.421	<0.005	--	0.070
26...	--	5	2	0.651	0.028	0.04	0.070
30...	--	75	34	1.11	0.196	0.25	0.510
31...	--	32	13	1.36	0.093	0.12	0.200
31...	--	48	27	1.07	0.062	0.08	0.280
JUN							
01...	114	19	9	1.07	0.037	0.05	0.120
02...	114	6	4	0.854	0.039	0.05	0.070
07...	--	52	20	0.895	0.101	0.13	0.210
07...	--	460	130	0.681	0.141	0.18	1.25
07...	--	4400	640	2.45	0.403	0.52	6.50
08...	416	2500	400	2.49	0.214	0.28	3.43
08...	280	1570	250	2.94	0.184	0.24	2.10
08...	120	192	44	2.58	0.125	0.16	0.610
08...	120	92	32	2.58	0.100	0.13	0.400
08...	--	29	13	1.54	0.085	0.11	0.180
08...	--	47	19	2.34	0.095	0.12	0.280
09...	124	30	14	1.65	0.078	0.10	0.190
09...	--	29	14	1.53	0.071	0.09	0.190
09...	--	66	19	2.62	0.108	0.14	0.360
10...	128	21	11	1.22	0.080	0.10	0.150
16...	--	--	--	0.889	0.042	0.05	0.090
30...	168	4	2	0.913	0.030	0.04	0.040
JUL							
05...	198	362	64	1.40	0.226	0.29	0.900
05...	334	804	216	1.25	0.492	0.63	2.75
05...	426	2620	344	2.09	0.475	0.61	4.08
05...	438	2680	344	2.49	0.390	0.50	4.19
05...	406	2380	320	2.22	0.402	0.52	3.87
05...	260	1590	200	3.07	0.506	0.65	2.13
06...	112	138	24	1.26	0.095	0.12	0.590
06...	90	60	14	1.33	0.084	0.11	0.350
06...	98	47	11	0.965	0.049	0.06	0.240
06...	--	37	11	--	0.050	0.06	0.220
06...	--	--	--	--	--	--	--
08...	--	46	15	--	0.060	0.08	0.250
09...	--	358	72	--	0.091	0.12	1.00
09...	--	2150	272	--	0.064	0.08	3.07
09...	--	1300	220	--	0.485	0.62	2.98
09...	--	2030	260	--	0.159	0.20	2.80
09...	--	1440	200	--	0.118	0.15	2.02
09...	--	238	38	--	0.088	0.11	0.620
09...	--	100	18	--	0.085	0.11	0.490
09...	--	72	16	--	0.087	0.11	0.360
09...	--	74	19	--	0.058	0.08	0.300
09...	--	72	16	--	0.061	0.08	0.290
09...	--	56	20	--	0.056	0.07	0.290
11...	--	27	13	--	0.034	0.04	0.210
14...	--	11	4	--	0.027	0.03	0.120
27...	--	5	4	--	0.007	0.01	0.060
AUG							
24...	--	5	4	--	0.016	0.02	0.060
SEP							
08...	--	30	8	--	0.010	0.01	0.070
14...	--	69	22	--	0.189	0.24	0.460
14...	--	65	24	--	0.239	0.31	0.460
15...	--	25	8	--	0.082	0.11	0.160
20...	--	98	46	--	0.485	0.62	1.06
20...	--	150	56	--	0.476	0.61	1.17
20...	--	174	54	--	0.154	0.20	0.750
21...	--	56	24	--	0.059	0.08	0.410
21...	--	366	84	--	0.053	0.07	0.430

STREAMS TRIBUTARY TO LAKE MICHIGAN

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040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CARBO- FURAN WATER WHOLE TOT. REC (UG/L) (82615)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)	CIS- PERME- THRIN WATER WHOLE REC (UG/L) (82418)	CYAN- AZINE TOTAL (UG/L) (81757)	DICAMBA (MED- IBEN) (BAN- VEL D) TOTAL (UG/L) (82052)	DIMETH- OATE WATER WHOLE TOTAL (UG/L) (39009)	EPTC WATER WHOLE REC (UG/L) (81894)
JUN 1993											
07...	2355	44	<0.10	<0.1	<1.9	<1.0	<1.0	<0.30	<0.20	<1.0	<1.0
JUL											
05...	2115	80	<0.19	0.1	<0.3	<1.0	<1.0	0.72	1.7	<1.0	<1.0
09...	0345	71	0.10	0.1	<0.3	<1.0	<1.0	<0.30	1.2	<1.0	<1.0

DATE	FONOFOS (DY- FONATE) WATER WHOLE TOT. REC (UG/L) (82614)	METHO- MYL TOTAL (UG/L) (39051)	METOLA- CHLOR IN WATER WHOLE (UG/L) (39356)	PARA- THION, TOTAL (UG/L) (39540)	PENDI- METH- ALIN TOTAL (UG/L) (79190)	PHORATE TOTAL (UG/L) (39023)	TERBU- FOS WAT, WH REC (UG/L) (82088)	TRANS PERME THRIN WATER WHOLE REC (UG/L) (82420)	TRI- FLURA- LIN TOTAL RECOVER (UG/L) (39030)	2,4-D, TOTAL (UG/L) (39730)
JUN 1993										
07...	3.2	<1.0	<0.20	<1.0	<1.00	<0.20	<0.20	<1.0	<1.0	<0.50
JUL										
05...	<0.20	<1.0	<0.20	<1.0	<1.00	<0.20	<0.20	<1.0	<1.0	<0.50
09...	<0.20	<1.0	<0.20	<1.0	<1.00	<0.20	<0.20	<1.0	<1.0	<0.50

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	17.5	9.0	13.0	5.5	4.5	5.0	2.5	.0	1.5	.0	.0	.0
2	---	---	---	8.0	4.5	6.5	2.5	1.0	1.5	.0	.0	.0
3	18.5	13.5	15.5	7.0	5.5	6.0	2.0	.0	1.0	.0	.0	.0
4	17.0	11.5	14.0	5.5	4.5	5.0	2.0	.0	1.0	.0	.0	.0
5	16.0	9.0	12.0	5.5	3.0	4.5	.0	.0	.0	.0	.0	.0
6	14.5	8.5	11.5	4.5	2.0	3.0	.0	.0	.0	.0	.0	.0
7	15.5	8.5	12.0	5.0	2.0	3.5	.0	.0	.0	.0	.0	.0
8	14.0	11.0	12.5	6.0	3.0	4.5	.0	.0	.0	.0	.0	.0
9	12.0	10.5	11.0	7.5	5.0	6.5	.0	.0	.0	.0	.0	.0
10	11.0	9.5	10.5	8.5	6.0	7.5	.5	.0	.0	.0	.0	.0
11	14.0	8.5	11.0	6.5	4.0	5.5	2.5	.5	1.5	.0	.0	.0
12	12.5	7.5	10.0	5.5	2.5	5.0	3.0	1.5	2.0	.0	.0	.0
13	11.5	5.5	8.5	3.5	1.0	2.0	3.0	2.5	2.5	.0	.0	.0
14	10.5	8.5	9.5	4.0	1.0	2.0	3.5	2.0	3.0	.0	.0	.0
15	10.0	8.5	9.0	4.0	1.0	2.0	2.5	1.5	2.5	.0	.0	.0
16	9.0	5.0	7.0	4.0	1.0	2.5	2.0	1.5	1.5	.0	.0	.0
17	8.0	3.5	5.5	4.5	3.0	3.5	2.0	1.0	1.5	.0	.0	.0
18	7.5	4.0	6.0	4.5	2.5	3.5	1.0	.0	.5	.0	.0	.0
19	7.5	2.0	5.0	5.0	2.0	3.5	2.5	.0	1.5	.0	.0	.0
20	5.5	3.5	4.5	6.0	4.0	5.0	.0	.0	.0	.0	.0	.0
21	10.5	5.0	7.0	6.5	5.0	6.0	.0	.0	.0	.0	.0	.0
22	13.5	5.5	9.0	5.0	3.5	4.5	.0	.0	.0	.0	.0	.0
23	16.5	10.0	13.0	4.5	3.5	4.0	.0	.0	.0	.0	.0	.0
24	13.5	9.0	11.5	5.0	4.0	4.5	.0	.0	.0	.0	.0	.0
25	12.0	7.5	9.5	4.5	3.0	4.0	.0	.0	.0	.0	.0	.0
26	13.0	7.5	10.0	3.0	1.0	2.5	.0	.0	.0	.0	.0	.0
27	11.0	5.0	7.5	3.0	.5	1.5	.0	.0	.0	.0	.0	.0
28	10.5	4.5	7.5	3.5	.0	1.5	.0	.0	.0	.0	.0	.0
29	8.0	5.0	6.5	3.5	.5	2.0	.0	.0	.0	.0	.0	.0
30	8.0	4.5	5.5	2.5	1.5	2.0	.0	.0	.0	.0	.0	.0
31	6.5	4.5	5.5	---	---	---	.0	.0	.0	.0	.0	.0
MONTH	---	---	---	8.5	.0	4.0	3.5	.0	.7	.0	.0	.0



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	.0	.0	.0	2.0	.0	.5	16.5	9.0	12.5
2	.0	.0	.0	.0	.0	.0	5.0	.0	2.0	15.5	10.0	12.5
3	.0	.0	.0	.0	.0	.0	7.5	.0	3.0	14.5	11.5	13.0
4	---	---	---	.0	.0	.0	7.0	.0	3.0	15.5	11.5	13.0
5	.0	.0	.0	1.0	.0	.0	5.5	1.0	3.0	17.5	12.0	14.5
6	.0	.0	.0	4.0	.0	1.0	8.0	2.0	4.5	---	---	---
7	.5	.0	.0	3.0	.0	1.0	6.0	3.0	4.0	15.5	12.5	14.0
8	.5	.0	.0	1.5	.5	1.0	5.0	3.5	4.0	19.5	11.5	15.5
9	1.0	.0	.5	2.5	.0	1.0	9.5	4.0	6.0	22.0	12.5	17.0
10	2.0	.0	1.0	3.0	.0	1.0	9.5	3.0	6.0	24.0	14.0	19.0
11	.0	.0	.0	4.0	.0	1.0	5.5	1.0	3.0	22.0	14.5	18.0
12	.0	.0	.0	1.5	.0	.0	10.0	1.5	5.0	20.0	11.5	16.0
13	.0	.0	.0	.0	.0	.0	10.0	3.0	6.0	20.0	9.0	14.0
14	2.5	.0	.5	.0	.0	.0	5.5	3.5	4.5	18.5	12.5	14.5
15	.0	.0	.0	.0	.0	.0	3.5	2.0	2.5	19.0	11.0	14.5
16	.0	.0	.0	.0	.0	.0	3.0	2.0	2.5	18.5	9.5	13.5
17	.0	.0	.0	.0	.0	.0	6.5	1.0	3.5	15.5	9.5	12.5
18	.0	.0	.0	.0	.0	.0	11.0	2.5	6.5	14.0	10.5	12.0
19	.0	.0	.0	1.0	.0	.5	7.5	3.0	5.5	15.5	8.5	12.0
20	.0	.0	.0	3.5	.5	2.0	6.0	.0	3.0	16.5	10.0	13.0
21	.0	.0	.0	5.0	1.0	2.5	10.5	1.5	5.5	18.0	10.0	14.0
22	.0	.0	.0	4.5	.5	1.5	11.5	4.0	7.5	20.0	10.5	15.0
23	.0	.0	.0	1.0	.5	.5	13.0	5.0	8.5	15.5	13.5	14.5
24	.0	.0	.0	2.0	.5	1.0	15.5	7.5	11.0	14.5	12.0	13.5
25	.0	.0	.0	2.0	.5	1.0	15.0	8.0	11.0	17.5	11.0	14.0
26	.0	.0	.0	2.5	.5	1.5	13.5	5.0	9.0	19.5	11.5	15.0
27	.0	.0	.0	4.0	1.0	2.0	8.0	5.5	7.0	15.5	11.5	13.5
28	.0	.0	.0	5.5	.5	2.5	16.5	7.5	11.5	16.5	12.5	14.5
29	---	---	---	7.5	1.0	3.5	13.0	9.5	11.0	19.5	10.0	14.5
30	---	---	---	8.5	1.0	4.0	17.0	8.0	12.0	14.5	10.5	12.0
31	---	---	---	3.5	.0	2.5	---	---	---	16.5	10.0	12.5
MONTH	---	---	---	8.5	.0	1.0	17.0	.0	5.7	---	---	---
	JUNE			JULY			AUGUST			SEPTEMBER		
1	17.5	9.5	13.5	20.5	15.5	17.5	25.5	19.0	21.5	22.0	14.0	18.0
2	14.0	11.0	13.0	23.0	16.5	19.5	22.5	17.5	20.0	22.0	15.5	18.5
3	20.0	11.5	15.0	26.5	18.0	21.5	22.5	16.5	19.0	21.0	17.0	18.5
4	17.0	11.5	14.0	22.0	18.0	20.5	21.0	15.0	18.0	21.5	14.0	17.5
5	21.0	11.0	16.0	24.0	19.0	21.0	20.5	15.0	17.5	19.5	15.0	17.0
6	19.0	13.0	16.5	24.0	19.0	21.5	20.0	16.0	17.5	20.0	13.5	16.5
7	16.5	13.0	15.0	23.5	20.5	22.0	22.0	15.0	18.0	19.0	12.5	15.5
8	19.0	13.0	16.0	23.0	20.0	21.0	22.5	15.0	18.5	19.5	13.0	16.0
9	19.5	16.0	18.0	23.5	19.5	21.0	20.0	16.0	18.0	19.5	14.0	16.5
10	22.0	16.0	19.0	25.0	20.0	22.5	25.5	17.5	21.0	16.0	12.0	14.0
11	23.0	16.0	19.0	22.5	20.0	21.0	26.5	18.0	22.0	17.0	9.5	13.0
12	23.5	16.0	19.0	24.0	18.0	20.5	25.5	19.5	22.0	21.0	13.5	17.0
13	21.0	15.5	18.5	20.0	17.0	18.5	25.5	18.5	21.5	19.0	18.0	18.5
14	23.5	17.5	20.0	23.0	17.0	20.0	24.0	19.0	21.5	18.5	14.5	17.0
15	18.5	15.0	16.5	24.0	16.5	20.0	21.5	19.0	20.0	14.5	13.0	14.0
16	17.0	13.0	15.5	24.5	16.0	20.0	24.5	19.0	21.5	15.5	12.5	14.0
17	19.0	14.5	16.5	22.0	19.0	20.5	23.5	18.5	20.5	18.0	12.0	14.5
18	16.5	15.0	15.5	22.5	18.5	20.5	23.0	18.5	21.0	18.0	13.5	15.0
19	19.5	14.5	16.5	25.0	18.5	21.5	25.0	19.0	21.5	16.0	11.0	13.5
20	19.0	16.0	17.0	24.5	18.0	21.0	22.0	18.5	20.0	13.5	12.5	13.0
21	23.5	15.5	19.0	24.0	17.0	20.0	23.5	15.5	19.0	14.5	13.5	13.5
22	23.5	17.0	20.0	23.0	16.0	19.5	22.5	17.0	19.5	16.5	13.0	14.5
23	23.5	15.5	19.5	20.0	16.5	18.5	26.0	19.0	21.5	17.0	12.0	14.0
24	24.5	17.0	20.5	23.5	17.5	20.0	26.5	19.5	22.5	16.5	10.5	13.0
25	24.5	18.5	21.0	23.5	19.0	21.0	26.5	19.5	22.5	14.0	10.5	12.0
26	24.5	16.5	20.0	25.5	19.0	22.0	26.0	20.0	22.5	15.5	12.0	13.5
27	23.5	17.0	20.0	25.0	19.0	22.0	26.0	21.5	23.0	13.0	10.5	12.0
28	23.5	16.0	19.0	24.5	20.0	22.0	23.0	19.0	21.0	12.0	9.5	11.0
29	22.5	14.5	18.0	22.0	18.0	20.0	19.5	18.0	19.0	12.5	9.0	10.5
30	20.5	15.5	17.5	24.5	16.5	20.0	23.0	18.0	20.5	12.5	7.0	9.5
31	---	---	---	23.5	17.0	20.5	23.0	17.5	20.0	---	---	---
MONTH	24.5	9.5	17.5	26.5	15.5	20.5	26.5	15.0	20.4	22.0	7.0	14.7

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OXYGEN DISSOLVED (MG/L). WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.1	6.1	8.3	---	---	---	---	---	---	---	---	---
2	9.1	5.3	7.0	---	---	---	---	---	---	---	---	---
3	9.4	5.9	7.5	---	---	---	---	---	---	---	---	---
4	13.1	6.9	9.2	---	---	---	---	---	---	---	---	---
5	12.9	7.9	9.9	---	---	---	---	---	---	---	---	---
6	12.9	7.9	10.0	---	---	---	---	---	---	---	---	---
7	12.8	6.7	9.4	---	---	---	---	---	---	---	---	---
8	10.1	6.0	7.6	15.0	12.2	13.4	---	---	---	---	---	---
9	10.3	5.7	7.7	13.7	11.4	12.3	---	---	---	---	---	---
10	10.5	6.6	8.0	12.6	11.1	11.7	---	---	---	---	---	---
11	16.1	6.9	10.5	14.5	11.7	12.8	---	---	---	---	---	---
12	15.1	9.3	11.4	12.7	11.5	11.9	---	---	---	---	---	---
13	15.5	9.2	11.8	15.3	12.5	13.9	---	---	---	---	---	---
14	14.1	9.0	10.6	---	---	---	---	---	---	---	---	---
15	14.3	8.3	10.6	---	---	---	---	---	---	---	---	---
16	13.3	8.2	10.9	---	---	---	---	---	---	---	---	---
17	14.7	10.0	12.3	---	---	---	---	---	---	---	---	---
18	16.1	10.0	12.6	---	---	---	---	---	---	---	---	---
19	16.5	11.8	13.8	---	---	---	---	---	---	---	---	---
20	14.5	11.6	12.6	---	---	---	---	---	---	---	---	---
21	16.0	10.7	12.7	---	---	---	---	---	---	---	---	---
22	15.6	9.0	12.0	---	---	---	---	---	---	---	---	---
23	14.4	7.3	10.2	---	---	---	---	---	---	---	---	---
24	14.4	7.4	10.2	---	---	---	---	---	---	---	---	---
25	16.3	9.0	11.5	---	---	---	---	---	---	---	---	---
26	15.2	9.1	11.1	---	---	---	---	---	---	---	---	---
27	15.5	9.8	11.8	---	---	---	---	---	---	---	---	---
28	15.6	9.4	11.9	---	---	---	---	---	---	---	---	---
29	15.4	9.6	11.8	---	---	---	---	---	---	---	---	---
30	15.7	10.2	12.3	---	---	---	---	---	---	---	---	---
31	15.3	11.7	13.0	---	---	---	---	---	---	---	---	---
MONTH	16.5	5.3	10.7	---	---	---	---	---	---	---	---	---
	FEBRUARY			MARCH			APRIL			MAY		
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	---	---	---	---	---	---	---	---	---	13.1	7.2	9.5
28	---	---	---	---	---	---	---	---	---	12.5	7.3	9.4
29	---	---	---	---	---	---	---	---	---	13.1	6.9	9.8
30	---	---	---	---	---	---	---	---	---	10.2	6.9	8.2
31	---	---	---	---	---	---	---	---	---	10.9	7.6	8.8
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.1	7.2	9.1	12.9	7.0	9.5	9.2	5.2	7.0	8.0	4.6	6.0
2	10.8	7.3	8.8	11.4	6.4	8.7	7.4	4.9	6.0	7.1	3.7	5.4
3	11.6	6.9	9.0	---	---	---	9.5	4.9	6.7	7.6	4.5	5.9
4	14.2	7.0	10.0	---	---	---	10.9	7.8	9.2	10.2	4.9	6.7
5	14.3	7.9	11.0	---	---	---	11.2	7.7	9.1	11.3	6.7	8.5
6	13.1	6.8	9.8	---	---	---	10.9	7.8	9.2	11.2	6.9	8.5
7	10.3	6.8	7.9	---	---	---	10.2	7.5	8.8	12.7	7.6	9.7
8	9.0	6.2	7.6	---	---	---	9.7	7.2	8.4	11.6	5.5	8.2
9	7.5	5.8	6.7	---	---	---	9.5	7.2	8.0	9.4	5.6	6.9
10	10.0	5.9	8.1	8.6	6.1	7.2	11.0	6.9	8.6	9.4	5.4	7.2
11	9.6	6.4	8.0	8.7	6.2	7.2	12.7	7.3	9.5	9.6	5.4	7.0
12	8.9	6.3	7.6	9.3	6.7	7.9	---	---	---	9.0	4.4	6.4
13	8.9	5.3	7.1	9.3	6.9	7.9	---	---	---	5.9	3.7	4.9
14	6.6	3.9	5.3	10.8	7.1	8.8	---	---	---	5.6	3.7	4.9
15	6.1	3.9	4.9	10.8	7.3	9.0	---	---	---	8.8	5.5	6.9
16	10.5	4.2	7.1	11.0	7.1	8.9	---	---	---	8.6	6.5	7.3
17	10.0	5.9	8.1	10.5	7.1	8.4	---	---	---	8.8	6.1	7.2
18	7.0	3.6	5.8	10.4	6.9	8.2	---	---	---	8.5	5.9	6.8
19	10.7	4.9	7.6	10.4	6.5	8.3	---	---	---	9.0	5.9	7.1
20	10.4	8.1	9.0	10.8	6.6	8.4	---	---	---	8.7	6.1	7.7
21	11.2	7.4	9.2	10.5	6.5	8.3	---	---	---	9.2	7.9	8.6
22	11.3	7.5	9.1	10.8	6.5	8.3	---	---	---	10.4	7.7	8.8
23	11.6	7.5	9.4	11.4	6.6	8.8	---	---	---	11.0	8.1	9.3
24	11.9	7.0	9.2	11.9	7.1	9.0	---	---	---	11.1	8.3	9.5
25	12.0	7.0	9.0	10.9	6.8	8.3	---	---	---	11.6	8.3	9.4
26	12.0	6.7	9.2	11.0	6.2	8.4	---	---	---	11.5	8.0	9.2
27	12.1	6.7	9.1	9.8	5.9	7.6	6.6	3.7	4.9	11.5	8.1	9.4
28	12.5	6.9	9.4	9.9	5.9	7.6	7.0	4.0	5.7	11.7	8.4	9.7
29	12.7	7.0	9.6	8.6	6.0	7.2	8.2	5.9	7.0	12.5	8.6	9.9
30	12.8	7.0	9.5	10.5	5.9	7.7	7.4	4.3	5.9	12.5	8.2	10.0
31	---	---	---	10.0	5.8	7.4	6.7	4.3	5.3	---	---	---
MONTH	14.3	3.6	8.4	---	---	---	---	---	---	12.7	3.7	7.8

SOLIDS, RESIDUE AT 105 DEG. C, SUSPENDED (TONS PER DAY), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.30	.14	.41	.23	.25	.90	.26	.85	.06	.09	.15
2	.03	5.6	.14	.36	.20	2.8	.67	.23	.30	.08	.08	.17
3	.03	.68	.13	.32	.18	10	.96	.23	.27	.09	.08	.18
4	.02	.33	.12	.47	.17	4.9	2.3	.25	.35	.13	.07	.20
5	.02	.19	.10	.41	.17	9.5	1.4	.25	.52	101	.07	.26
6	.02	.11	.13	.32	.16	9.4	.88	.23	.72	52	.07	.28
7	.02	.07	.12	.28	.13	4.1	.96	.21	4.4	3.2	.07	.29
8	.02	.07	.12	.23	.11	e7.2	40	.19	132	2.1	.07	.29
9	.02	.15	.12	.20	.12	e3.2	5.5	.18	5.8	112	.07	.22
10	.02	.18	.13	.18	.10	e1.1	1.4	.17	1.6	3.8	.07	.17
11	.02	.19	.11	.16	.12	e.68	1.2	.16	.79	1.5	.07	.13
12	.02	.47	.11	.15	.11	e.88	3.8	.14	.52	.80	.07	.10
13	.01	.25	.11	.13	.10	e.88	1.0	.13	.37	.42	.07	.26
14	.01	.22	.12	.13	.08	e.88	.47	.14	.42	.28	.07	2.7
15	.01	.13	16	.12	.09	e.68	62	.17	.31	.24	.07	.70
16	.02	.10	14	.11	.08	e14	12	.13	.23	.21	.07	.16
17	.02	.09	1.9	.10	.08	e3.6	1.6	.12	.25	.18	.07	.12
18	.02	.09	.68	.10	.07	e1.1	.91	.13	.41	.19	.07	.11
19	.02	.08	.47	.10	.09	e.27	27	.13	.46	.18	.07	.11
20	.02	2.0	.27	.11	.10	e.07	35	.12	.39	.15	.07	3.9
21	.02	13	.21	.15	.12	e.15	5.2	.11	.30	.13	.07	8.1
22	.02	2.0	.17	.21	.15	e.23	1.7	.10	.22	.12	.07	.41
23	.02	1.4	.16	.30	.18	e2.6	.95	.14	.16	.11	.07	.20
24	.02	.55	.15	.29	.16	e4.5	.56	.19	.13	.11	.07	.16
25	.02	.91	.14	.22	.14	7.3	.36	.15	.11	.19	.08	.14
26	.02	1.8	.14	.19	.12	4.0	.29	.13	.10	.14	.09	.14
27	.02	.71	.18	.17	.13	4.8	.27	.29	.08	.11	.10	.13
28	.02	.29	.23	.15	.13	4.3	.37	.79	.07	.11	.10	.12
29	.02	.18	.40	.13	---	3.6	.35	1.4	.07	.10	.11	.12
30	.03	.16	.82	.12	---	2.1	.32	1.8	.06	.10	.13	.12
31	.03	---	.57	.25	---	1.0	---	2.2	---	.09	.14	---
TOTAL	0.64	32.30	38.19	6.57	3.62	110.07	210.32	10.87	152.26	279.92	2.47	20.14
CAL YR 1992	TOTAL 246.37											
WTR YR 1993	TOTAL 867.37											

e ESTIMATED

STREAMS TRIBUTARY TO LAKE MICHIGAN

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040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

PHOSPHORUS TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	3.3	2.8	6.5	6.8	4.0	16	5.4	7.7	.83	1.2	1.0
2	.52	47	2.7	5.4	5.1	26	11	4.6	3.8	1.0	1.1	1.0
3	.51	9.1	2.4	4.6	4.2	107	13	4.3	3.3	1.1	1.0	1.0
4	.49	3.9	2.2	6.5	3.8	87	25	4.6	3.5	1.7	.97	1.1
5	.48	2.1	1.9	5.4	3.4	84	19	4.4	4.3	278	.97	1.2
6	.47	1.4	2.3	4.1	3.0	68	13	3.8	5.0	269	.97	1.2
7	.45	1.1	2.1	3.5	2.2	48	16	3.3	18	32	.96	1.2
8	.46	1.1	2.1	2.7	1.7	e70	228	3.0	455	19	.95	1.1
9	.50	2.0	2.0	2.2	1.8	e33	52	2.7	50	383	.94	1.1
10	.49	2.0	2.0	1.9	1.4	e12	17	2.5	15	34	.97	1.0
11	.47	1.8	1.8	1.7	1.6	e7.6	18	2.2	7.8	16	.97	1.0
12	.44	5.8	1.7	1.4	1.3	e9.7	46	2.0	5.4	9.7	.97	1.1
13	.39	4.7	1.7	1.3	1.0	e9.7	17	1.9	4.1	5.8	.97	3.1
14	.38	2.4	1.9	1.1	.82	e9.7	9.0	2.1	4.9	4.4	.96	28
15	.39	2.0	92	1.1	.89	e7.6	295	2.5	3.8	3.8	.96	7.1
16	.52	1.7	111	1.1	.83	e120	116	2.1	3.0	3.2	.97	2.1
17	.46	1.5	24	1.2	.80	e42	22	2.0	3.2	2.8	.96	1.7
18	.45	1.4	11	1.2	.77	e17	12	2.1	5.3	2.9	.97	1.5
19	.42	1.3	8.0	1.3	.95	e5.5	138	2.2	6.0	2.7	.98	1.4
20	.43	23	4.7	1.7	1.1	e2.0	253	2.1	5.1	2.3	.97	33
21	.43	84	3.5	2.4	1.3	e3.5	57	2.0	3.9	1.9	.95	44
22	.41	20	2.8	3.8	1.7	e4.8	19	1.9	2.8	1.7	.95	4.2
23	.40	25	2.6	5.9	2.1	e33	11	2.5	2.1	1.5	.97	2.6
24	.37	9.7	2.5	6.2	1.9	e51	9.9	3.6	1.7	1.5	.98	2.1
25	.34	12	2.4	5.2	1.7	89	8.8	3.0	1.5	2.6	.96	1.9
26	.33	31	2.4	4.9	1.6	58	7.1	2.6	1.3	1.9	.97	1.8
27	.32	17	2.9	4.6	1.6	56	6.3	4.6	1.1	1.5	.99	1.7
28	.30	6.7	3.7	4.5	1.7	50	8.4	10	.94	1.5	.98	1.6
29	.28	3.7	7.1	4.4	---	44	7.7	14	.87	1.4	.99	1.6
30	.27	3.1	13	4.3	---	33	6.8	16	.85	1.3	1.0	1.5
31	.27	---	9.4	7.8	---	25	---	18	---	1.2	1.0	---
TOTAL	12.98	330.8	332.6	109.9	57.06	1217.1	1478.0	138.0	631.26	1091.23	30.45	153.9
CAL YR 1992	TOTAL 1899.67	MEAN 5.2	MAX 111	MIN .27								
WTR YR 1993	TOTAL 5583.28	MEAN 15	MAX 455	MIN .27								

e ESTIMATED



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040857005 OTTER CREEK, AT WILLOW ROAD, NEAR PLYMOUTH, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--October 1990 to current year (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger.

REMARKS.--Gage established on Oct. 1, 1990. Rainfall estimated to be 0.00 for Nov. 26, Dec. 1, 2, 9, 10, Jan. 2, 12-14, 27, 28, Feb. 22, and Mar. 10, 19 because recorded precipitation interpreted as collector snowmelt.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.39 in., June 14, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.85 in., June 7.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.67	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.56	.00	.00	.00	.00	.00	.02	.00	.50	.00	.00
3	.00	.05	.00	.04	.00	.00	.00	.09	.00	.55	.01	.00
4	.00	.00	.00	.13	.00	.00	.00	.00	.18	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.69	.04	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01	.00
7	.00	.00	.00	.00	.00	.00	.17	.00	1.85	.00	.00	.00
8	.27	.18	.00	.00	.00	.01	.94	.00	.99	.32	.00	.04
9	.01	.06	.00	.00	.00	.00	.00	.00	.00	.94	.23	.05
10	.04	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.01	.00	.00	.00	.00	.00	.37	.01	.00	.06	.00	.19
12	.00	.36	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00	1.38
14	.02	.00	.00	.00	.00	.00	.09	.52	.54	.00	.00	1.11
15	.45	.00	.83	.00	.00	.00	1.20	.00	.00	.00	.18	.02
16	.04	.00	.00	.00	.00	.02	.04	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.52	.01	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.23	.12	.16	.00	.04
19	.00	.18	.00	.00	.00	.00	.96	.02	.22	.00	.00	.02
20	.17	.56	.00	.00	.00	.00	.44	.00	.04	.00	.00	1.60
21	.00	.30	.00	.52	.00	.00	.00	.00	.00	.00	.00	.07
22	.00	.26	.00	.03	.00	.02	.00	.06	.00	.00	.00	.17
23	.00	.02	.00	.00	.00	.25	.00	.62	.00	.00	.30	.00
24	.00	.00	.00	.00	.00	.00	.00	.04	.00	.04	.00	.00
25	.00	.30	.00	.00	.00	.00	.00	.00	.04	1.05	.00	.10
26	.00	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.01
27	.00	.00	.00	.00	.00	.00	.28	.45	.00	.07	.15	.03
28	.00	.00	.00	.00	.00	.00	.01	.00	.00	.06	.00	.05
29	.00	.00	.27	.00	---	.00	.16	.00	.00	.00	.00	.05
30	.00	.00	.26	.00	---	.00	.00	.67	.20	.00	.18	.00
31	.00	---	.00	.00	---	.18	---	.21	---	.02	.50	---
TOTAL	1.01	3.51	1.36	0.72	0.00	0.48	4.66	2.94	4.86	5.55	1.60	4.93

## 197

LOCATION.--Lat 43°44'25", long 87°45'35", in SE 1/4 NE 1/4 sec.29, T.15 N., R.23 E., Sheboygan County, Hydrologic Unit 04030101, on left bank 400 ft upstream from bridge on State Highway 141, near west city limits of Sheboygan, and 4.2 mi upstream from mouth.

PERIOD OF RECORD.--June 1916 to September 1924 (published as "near Sheboygan"), October 1950 to current year.  
Monthly discharge for some periods published in WSP 1307, 1727.

GAGE.--Water-stage recorder. Datum of gage is 584.00 ft above sea level. June 1916 to June 1924, nonrecording gage at site 0.7 mi downstream at different datum. November 1950 to June 1951, nonrecording gage at site 0.3 mi downstream at datum 3.15 ft lower.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 5-14 and Dec. 20 to Mar. 27. Records good except those for ice-affected periods, which are poor. Diurnal fluctuation caused by numerous powerplants above station. Gage-height telemeter at station.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	92	310	150	150	110	1470	1000	485	301	238	153
2	87	313	291	150	170	120	1140	851	410	237	238	116
3	82	427	290	140	150	150	1220	795	361	269	225	100
4	76	340	282	200	140	220	1320	766	328	324	230	79
5	70	268	140	250	160	260	1470	715	313	340	214	92
6	73	224	170	230	150	300	1420	636	291	1170	179	90
7	77	208	140	200	140	380	1360	506	298	1000	142	88
8	74	197	120	180	130	450	2300	386	2610	875	122	87
9	69	204	110	170	120	500	2550	398	1880	1360	119	85
10	62	222	110	150	110	450	1950	392	1520	1350	122	81
11	62	220	120	140	110	400	1680	319	1140	1100	122	83
12	63	222	120	130	100	360	2090	347	771	1010	113	84
13	62	270	130	130	94	340	1870	317	622	916	124	108
14	62	254	150	120	90	350	1560	305	608	873	116	219
15	62	225	271	120	84	320	2640	322	630	838	114	325
16	84	207	1240	110	80	300	3990	284	567	788	122	269
17	91	198	1080	100	74	280	3020	259	533	727	125	219
18	92	191	807	100	72	420	2210	252	634	685	122	192
19	83	183	596	100	70	320	2120	253	798	650	115	181
20	85	229	300	120	72	280	3930	245	785	594	113	197
21	86	612	250	170	74	260	3910	235	716	522	108	447
22	91	675	200	210	76	240	2890	222	641	321	103	409
23	101	685	180	230	78	300	2150	246	567	243	103	322
24	106	593	160	220	84	500	1720	349	513	244	110	256
25	92	490	150	200	88	700	1520	372	489	369	108	223
26	86	622	140	190	90	1000	1370	313	459	437	104	226
27	84	556	180	170	90	1300	1270	293	436	328	97	231
28	82	439	230	160	100	1430	1260	320	403	235	88	227
29	80	375	200	150	---	1530	1220	301	372	247	79	226
30	81	340	180	140	---	1570	1190	303	357	237	94	205
31	79	---	160	140	---	1560	---	474	---	224	173	---
TOTAL	2474	10081	8807	4970	2946	16700	59810	12776	20537	18814	4182	5620
MEAN	79.8	336	284	160	105	539	1994	412	685	607	135	187
MAX	106	685	1240	250	170	1570	3990	1000	2610	1360	238	447
MIN	62	92	110	100	70	110	1140	222	291	224	79	79
CFSM	.19	.80	.68	.38	.25	1.29	4.77	.99	1.64	1.45	.32	.45
IN.	.22	.90	.78	.44	.26	1.49	5.32	1.14	1.83	1.67	.37	.55

MEAN	162	213	171	114	166	699	749	305	201	110	109	145
MAX	741	1372	505	370	887	2052	1994	1027	789	607	1433	1143
(WY)	1987	1986	1983	1960	1984	1918	1993	1960	1984	1993	1924	1986
MIN	29.6	31.7	19.7	17.1	20.9	110	141	41.5	25.2	19.8	11.1	20.4
(WY)	1958	1951	1959	1959	1958	1968	1970	1958	1958	1958	1958	1958

ANNUAL TOTAL	93725		167717				
ANNUAL MEAN	256		459			262	
HIGHEST ANNUAL MEAN						526	1986
LOWEST ANNUAL MEAN						47.1	1958
HIGHEST DAILY MEAN	1510	Apr 11	3990	Apr 16	7000		Aug 6 1924
LOWEST DAILY MEAN	34	Sep 1	62	Oct 10, 11, 13-15	1.0		Aug 27 1922
ANNUAL SEVEN-DAY MINIMUM	36	Aug 30	63	Oct 9	8.9		Aug 14 1958
INSTANTANEOUS PEAK FLOW			4480	Apr 16	7680		Mar 22 1975
INSTANTANEOUS PEAK STAGE			9.20	Apr 16	11.64		Mar 22 1975
INSTANTANEOUS LOW FLOW			57	Oct 15	1.0		Aug 27 1922
ANNUAL RUNOFF (CFSM)	.61		1.10		.63		
ANNUAL RUNOFF (INCHES)	8.34		14.93		8.53		
10 PERCENT EXCEEDS	687		1250		616		
50 PERCENT EXCEEDS	131		235		114		
90 PERCENT EXCEEDS	48		85		37		

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040863075 NORTH BRANCH MILWAUKEE RIVER NEAR RANDOM LAKE, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 43°33'25", long 88°03'10", in SE 1/4 SW 1/4 sec.25, T.13 N., R.20 E., Sheboygan County, Hydrologic Unit 04040003, on left bank downstream from bridge on State Highway 144, 1.1 mi east of intersection of State Highways 144 and 28, 4.1 mi west of the village limits of Random Lake.

DRAINAGE AREA.--52 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 800 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: June 17-22, July 1-26, 28-31, Aug. 1, 15-30, and Sept. 1-7, 9-13, 15, 17-26, 28-30. Records good except those for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	164	107	93	33	31	60
2	---	---	---	---	---	---	163	103	86	32	30	50
3	---	---	---	---	---	---	140	99	69	31	27	45
4	---	---	---	---	---	---	120	92	60	31	26	35
5	---	---	---	---	---	---	120	89	55	35	25	30
6	---	---	---	---	---	---	120	80	62	50	25	27
7	---	---	---	---	---	---	121	77	87	100	25	24
8	---	---	---	---	---	---	199	72	189	80	24	21
9	---	---	---	---	---	---	265	66	277	50	23	20
10	---	---	---	---	---	---	251	59	221	190	24	19
11	---	---	---	---	---	---	218	52	164	150	23	19
12	---	---	---	---	---	---	222	50	116	110	25	21
13	---	---	---	---	---	---	219	48	84	80	25	35
14	---	---	---	---	---	---	199	44	72	70	24	87
15	---	---	---	---	---	---	251	42	66	55	26	90
16	---	---	---	---	---	---	327	42	60	47	31	81
17	---	---	---	---	---	---	327	40	64	44	30	76
18	---	---	---	---	---	---	272	43	70	40	28	70
19	---	---	---	---	---	---	231	39	82	38	27	62
20	---	---	---	---	---	---	384	39	80	36	26	56
21	---	---	---	---	---	---	442	37	72	34	25	54
22	---	---	---	---	---	---	309	35	66	33	24	74
23	---	---	---	---	---	---	306	61	62	31	25	60
24	---	---	---	---	---	---	222	106	57	30	25	52
25	---	---	---	---	---	---	171	110	52	28	24	58
26	---	---	---	---	---	---	140	82	42	70	23	47
27	---	---	---	---	---	---	126	75	38	67	23	43
28	---	---	---	---	---	---	115	66	35	50	22	41
29	---	---	---	---	---	---	115	62	32	40	23	42
30	---	---	---	---	---	---	111	74	33	36	24	43
31	---	---	---	---	---	---	---	91	---	33	77	---
TOTAL	---	---	---	---	---	---	6370	2082	2546	1754	840	1442
MEAN	---	---	---	---	---	---	212	67.2	84.9	56.6	27.1	48.1
MAX	---	---	---	---	---	---	442	110	277	190	77	90
MIN	---	---	---	---	---	---	111	35	32	28	22	19
CFSM	---	---	---	---	---	---	4.08	1.29	1.63	1.09	.52	.92
IN.	---	---	---	---	---	---	4.56	1.49	1.82	1.25	.60	1.03

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

	1993	1993	1993	1993	1993	1993	1993
MEAN	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	---
(WY)	---	---	---	---	---	---	---
MIN	---	---	---	---	---	---	---
(WY)	---	---	---	---	---	---	---

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

HIGHEST DAILY MEAN	442	Apr 21
LOWEST DAILY MEAN	19	Sep 10,11
ANNUAL SEVEN-DAY MINIMUM	22	Sep 6
INSTANTANEOUS PEAK FLOW	485	Apr 21
INSTANTANEOUS PEAK STAGE	15.79	Apr 21
INSTANTANEOUS LOW FLOW	21	Aug 11
10 PERCENT EXCEEDS	199	
50 PERCENT EXCEEDS	57	
90 PERCENT EXCEEDS	24	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040863075 NORTH BRANCH MILWAUKEE RIVER NEAR RANDOM LAKE, WI--CONTINUED  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM SATION)

199

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--March to September 1993.

REMARKS.--Concentration data for organic compounds are not rounded.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
MAR 1993												
11...	1420	50	510	7.7	0.0	3.7	--	--	--	--	--	--
APR												
07...	1530	142	532	8.3	5.5	10.8	761	280	60	31	11	3.0
08...	1420	185	493	8.3	5.5	10.6	761	250	55	28	9.9	3.3
15...	1145	207	473	8.3	3.5	12.1	742	260	56	28	10	2.9
21...	0730	484	391	7.9	3.5	13.9	765	200	45	22	7.7	3.4
MAY												
05...	0745	84	651	8.1	14.0	8.3	764	330	71	36	13	3.0
18...	1540	43	676	8.2	14.5	10.3	753	350	74	39	14	2.0
23...	0530	61	656	8.1	15.0	6.5	754	330	70	38	14	1.9
23...	1000	--	--	--	--	--	--	--	--	--	--	--
23...	1638	--	--	--	--	--	--	--	--	--	--	--
24...	1340	117	604	8.0	14.0	7.7	754	320	70	35	11	2.3
JUN												
03...	1515	65	636	8.3	18.0	10.1	754	350	78	38	14	1.5
16...	1530	59	651	8.1	17.5	8.9	758	340	75	37	14	2.0
30...	0800	33	677	8.3	18.0	7.1	757	360	75	41	15	1.9
JUL												
13...	1415	65	664	8.2	19.5	7.8	756	340	75	37	13	2.5
26...	1630	85	602	8.1	25.0	5.8	757	310	67	34	13	4.5
27...	1530	67	630	8.1	24.5	5.4	757	320	71	35	15	3.4
AUG												
04...	1600	26	706	8.3	20.0	5.4	766	360	76	41	19	2.4
11...	0845	25	--	8.3	22.5	--	--	370	80	42	18	2.8
26...	0930	21	734	8.1	23.5	5.9	--	360	76	42	19	2.7
31...	0905	42	689	8.2	20.5	6.7	760	350	74	39	14	3.9
SEP												
08...	0810	21	719	8.3	15.0	8.5	761	370	77	42	18	2.5
14...	1340	87	638	8.1	17.5	6.8	756	310	65	35	12	6.3
16...	0805	81	653	7.7	13.0	8.1	767	320	69	36	14	5.5
21...	1520	119	608	8.1	13.0	8.0	764	150	34	17	5.5	2.6

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LITY WAT DIS FIX END FIELD CACO3 (MG/L) (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
MAR 1993												
11...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
07...	298	0	244	240	22	22	0.10	8.0	326	1.10	0.020	0.080
08...	273	0	224	99	21	19	0.10	7.8	306	1.40	0.020	0.120
15...	254	12	<228	230	18	22	0.10	6.2	281	1.00	0.010	0.060
21...	215	0	176	180	14	15	0.10	5.9	223	1.10	0.020	0.040
MAY												
05...	366	0	300	300	21	27	0.20	6.3	387	1.30	0.030	0.130
18...	386	0	316	310	23	30	0.10	7.1	399	2.10	0.020	0.080
23...	356	12	312	310	29	28	0.10	5.9	398	1.90	0.030	0.090
23...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	99	--	--	--	--	--	--	--	--	--	--
24...	334	0	274	270	18	22	<0.10	10	370	--	--	--
JUN												
03...	388	0	318	320	18	25	<0.10	8.3	389	1.40	0.010	0.070
16...	415	0	340	300	16	25	0.10	12	400	1.30	0.020	0.070
30...	288	48	316	310	22	28	0.10	11	411	1.30	0.080	0.140
JUL												
13...	422	0	346	340	14	22	0.20	17	388	1.00	0.030	0.070
26...	359	0	294	--	20	22	0.10	14	378	0.940	0.030	0.070
27...	359	0	294	--	18	23	0.10	16	396	0.820	0.020	0.070
AUG												
04...	378	5	316	300	26	31	0.10	12	424	2.60	0.030	0.060
11...	386	0	316	310	28	32	0.10	12	417	2.30	0.040	0.090
26...	334	0	274	--	28	34	<0.10	13	352	<0.050	0.040	0.100
31...	366	0	300	--	28	28	<0.10	14	407	1.90	0.040	0.140
SEP												
08...	366	10	316	--	28	31	<0.10	13	419	2.80	0.030	0.090
14...	327	0	268	--	34	27	<0.10	13	382	1.60	0.030	0.150
16...	332	0	272	--	36	31	0.10	15	411	0.920	0.010	0.060
21...	354	0	290	--	14	13	<0.10	8.0	207	0.510	0.010	0.060



## STREAMS TRIBUTARY TO LAKE MICHIGAN

040863075 NORTH BRANCH MILWAUKEE RIVER NEAR RANDOM LAKE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
MAR 1993											
11...	--	--	--	--	--	--	--	--	--	--	--
APR											
07...	1.1	0.70	0.130	0.070	0.050	49	19	--	--	480	9
08...	1.2	0.90	0.140	0.090	0.060	51	18	--	--	16	95
15...	0.70	0.70	0.070	0.060	0.030	48	13	--	--	20	92
21...	0.70	0.70	0.080	0.070	0.040	54	7	--	--	6	91
MAY											
05...	0.80	0.70	0.080	0.070	0.060	70	47	11	3.4	96	99
18...	0.60	0.50	0.100	0.060	0.060	24	55	9.0	2.0	50	88
23...	1.0	0.60	0.150	0.060	0.050	28	42	7.4	1.7	--	--
23...	--	--	--	--	--	--	--	--	--	98	85
23...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	85	43	20	3.9	88	84
JUN											
03...	0.70	0.60	0.100	0.090	0.090	60	45	12	1.4	111	72
16...	0.90	0.70	0.210	0.120	0.110	97	65	15	2.0	103	79
30...	1.1	0.90	0.420	0.290	0.270	32	70	8.2	3.0	107	91
JUL											
13...	1.8	1.0	0.410	0.170	<0.010	150	74	15	4.1	113	85
26...	1.0	1.1	0.150	0.190	0.150	77	56	14	3.1	59	96
27...	1.3	1.0	0.250	0.170	0.140	85	70	14	0.3	70	89
AUG											
04...	0.70	0.40	0.120	0.080	0.090	13	48	6.3	1.3	48	99
11...	0.70	0.50	0.130	0.080	0.090	11	54	5.7	1.4	111	81
26...	0.50	<0.20	0.130	0.120	0.100	13	54	5.2	1.6	132	81
31...	1.4	0.80	0.270	0.110	0.100	49	49	9.1	--	114	93
SEP											
08...	0.50	0.40	0.120	0.100	0.090	10	35	4.9	1.9	68	92
14...	1.5	0.90	0.360	0.140	0.140	66	31	12	4.1	117	98
16...	1.3	1.0	0.240	0.180	0.150	110	30	15	2.4	37	97
21...	--	0.40	--	0.060	0.060	50	19	13	3.4	55	98

DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER, DISS, REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)
MAR 1993											
11...	<0.00200	<0.00200	--	0.02000	<0.01000	0.02100	0.05100	<0.00500	<0.01000	<0.02000	<0.00400
APR											
07...	<0.01500	<0.00800	--	<0.01000	<0.00800	0.02300	<0.01300	<0.00800	<0.00700	<0.02000	<0.00500
08...	<0.01500	<0.00800	<0.05000	<0.01000	<0.00800	0.08400	0.06500	<0.00800	<0.00700	<0.02000	<0.00500
15...	--	--	--	--	--	--	--	--	--	--	--
21...	<0.00200	<0.00200	<0.05000	0.01100	0.003000	0.12000	0.04000	<0.00500	<0.01000	<0.00200	<0.00400
MAY											
05...	<0.00200	<0.00200	<0.05000	<0.01000	0.004000	0.06300	0.01200	<0.00500	<0.01000	<0.00200	<0.00400
18...	<0.00200	<0.00200	<0.05000	<0.01000	<0.01000	0.05900	0.01700	<0.00500	<0.01000	<0.00200	<0.00500
23...	0.002000	0.004000	<0.05000	<0.01000	<0.01000	0.05600	0.02800	<0.00500	<0.01000	<0.00200	<0.00400
23...	--	--	--	--	--	--	--	--	--	--	--
23...	<0.00200	0.004000	<0.05000	<0.01000	<0.01000	0.08000	0.05100	<0.00500	<0.01000	<0.00200	<0.00400
24...	0.002000	0.002000	<0.05000	0.03100	<0.01000	0.07000	0.27000	<0.00500	<0.01000	<0.00200	<0.00400
JUN											
03...	<0.00200	<0.00200	<0.05000	0.01700	0.004000	0.04000	0.17000	<0.00500	<0.01000	<0.00200	<0.00400
16...	<0.01500	0.003000	<0.05000	0.36000	0.004000	0.02900	0.09000	<0.00800	<0.00700	<0.01000	<0.00500
30...	<0.01500	<0.00800	<0.05000	0.01000	<0.00800	<0.02000	0.01300	<0.00800	<0.00700	0.003000	<0.00500
JUL											
13...	<0.01500	<0.00800	<0.05000	0.51000	<0.00800	0.02200	0.38000	<0.00800	<0.00700	<0.02000	<0.00500
26...	<0.01500	<0.00800	--	0.22000	<0.00800	<0.02000	0.09500	<0.00800	<0.00700	<0.02000	<0.00500
27...	<0.01500	<0.00800	--	0.18000	<0.00800	<0.02000	0.17000	<0.00800	<0.00700	<0.02000	<0.00500
AUG											
04...	<0.01500	<0.00800	--	0.02600	<0.00800	<0.02000	0.01600	<0.00800	<0.00700	<0.02000	<0.00500
11...	<0.01500	<0.00800	--	0.17000	<0.00800	<0.02000	0.01100	<0.00800	<0.00700	<0.02000	<0.00500
26...	<0.01500	<0.00800	--	0.01300	<0.00800	0.02100	<0.01300	<0.00800	<0.00700	<0.02000	<0.00500
31...	<0.01500	<0.00800	--	0.05800	<0.00800	0.02500	<0.01300	<0.00800	<0.00700	<0.02000	<0.00500
SEP											
08...	<0.01500	0.003000	--	0.01000	<0.00800	0.03200	<0.01300	<0.00800	<0.00700	<0.01000	<0.00500
14...	--	--	--	--	--	--	--	--	--	--	--
16...	<0.01500	<0.00800	--	0.02300	0.004000	0.02400	0.01000	<0.00800	<0.00700	<0.01000	<0.00500
21...	<0.01500	<0.00800	--	0.06600	<0.00800	0.02200	<0.01300	<0.00800	<0.00700	<0.01000	<0.00500

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040863075 NORTH BRANCH MILWAUKEE RIVER NEAR RANDOM LAKE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANALINE WAT FLT 0.7 U GF, REC (UG/L) (82660)
MAR 1993										
11...	<0.00800	<0.02000	0.14000	<0.01000	<0.00800	<0.00500	0.20000	0.02500	<0.00500	<0.00200
APR										
07...	<0.01100	<0.02000	0.008000	<0.01400	<0.02200	<0.00800	0.07200	<0.00900	<0.01200	<0.00600
08...	<0.01100	<0.02000	0.01200	<0.01400	<0.02200	<0.00800	0.10000	0.009000	<0.01200	<0.00600
15...	--	--	--	--	--	--	--	--	--	--
21...	<0.00800	<0.02000	0.007000	<0.01000	<0.00800	<0.00500	0.13000	0.004000	<0.00500	<0.00200
MAY										
05...	<0.00800	<0.02000	0.004000	<0.01000	<0.00800	<0.00500	0.04200	<0.00500	<0.00500	<0.00200
18...	<0.00800	<0.02000	0.007000	<0.01000	<0.00800	<0.00500	0.03200	0.009000	<0.00500	<0.00200
23...	<0.00800	<0.02000	0.01900	<0.01000	<0.00800	<0.00500	0.03600	0.04200	<0.00500	<0.00200
23...	--	--	--	--	--	--	--	--	--	--
23...	<0.00800	<0.02000	0.02300	<0.01000	<0.00800	0.003000	0.03300	0.04400	<0.00500	<0.00200
24...	<0.00800	<0.02000	0.03100	<0.01000	<0.00800	<0.00500	0.06500	0.15000	<0.00500	<0.00200
JUN										
03...	<0.00800	<0.02000	0.006000	<0.01000	<0.00800	<0.00500	0.04600	0.02600	<0.00500	<0.00200
16...	<0.01100	<0.02000	0.01300	<0.01000	<0.02200	<0.00800	0.05000	0.01500	<0.01200	<0.00600
30...	<0.01100	<0.02000	0.004000	0.01100	<0.02200	<0.00800	0.03800	0.007000	<0.01200	<0.00600
JUL										
13...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.14000	0.07700	<0.01200	<0.00600
26...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.23000	0.03000	<0.01200	<0.00600
27...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.53000	0.02200	<0.01200	<0.00600
AUG										
04...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.04000	<0.00900	<0.01200	<0.00600
11...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.03200	<0.00900	<0.01200	<0.00600
26...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.02500	<0.00900	<0.01200	<0.00600
31...	<0.01100	<0.02000	<0.00900	<0.01400	<0.02200	<0.00800	0.03100	<0.00900	<0.01200	<0.00600
SEP										
08...	<0.01100	<0.02000	0.002000	<0.01000	<0.02200	<0.00800	0.02100	0.006000	<0.01200	<0.00600
14...	--	--	--	--	--	--	--	--	--	--
16...	<0.01100	<0.02000	0.003000	<0.01000	<0.02200	<0.00800	0.03300	<0.00900	<0.01200	<0.00600
21...	<0.01100	<0.02000	0.003000	<0.01000	<0.02200	<0.00800	0.04000	<0.00900	<0.01200	<0.00600
DATE	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	DIMETH- OATE WATER FLTRD 0.7 U GG, REC (UG/L) (82662)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
MAR 1993										
11...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	<0.00200	<0.01000	<0.01000
APR										
07...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
08...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
15...	--	--	--	--	--	--	--	--	--	--
21...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	<0.00200	<0.01000	<0.01000
MAY										
05...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	<0.00200	<0.01000	<0.01000
18...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.05600	<0.01000	<0.01000
23...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.03400	<0.01000	<0.01000
23...	--	--	--	--	--	--	--	--	--	--
23...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.07000	<0.01000	<0.01000
24...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.33000	<0.01000	<0.01000
JUN										
03...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.02600	<0.01000	<0.01000
16...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	0.01600	<0.00900	<0.01500
30...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	0.005000	<0.00900	<0.01500
JUL										
13...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
26...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
27...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
AUG										
04...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
11...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
26...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
31...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
SEP										
08...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500
14...	--	--	--	--	--	--	--	--	--	--
16...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500
21...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040863075 NORTH BRANCH MILWAUKEE RIVER NEAR RANDOM LAKE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	FRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)
MAR 1993										
11...	<0.00500	<0.00500	<0.00900	<0.00500	<0.01000	<0.01000	<0.02000	<0.00400	<0.00500	<0.00800
APR										
07...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
08...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
15...	--	--	--	--	--	--	--	--	--	--
21...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
MAY										
05...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
18...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
23...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
23...	--	--	--	--	--	--	--	--	--	--
23...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	0.04500
24...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
JUN										
03...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
16...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
30...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
JUL										
13...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
26...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
27...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
AUG										
04...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
11...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
26...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
31...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
SEP										
08...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
14...	--	--	--	--	--	--	--	--	--	--
16...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
21...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
DATE	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4,5-T DIS- SOLVED (UG/L) (39742)	SILVEX, DIS- SOLVED (UG/L) (39762)
MAR 1993										
11...	<0.00800	<0.00500	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	--	--	--
APR										
07...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
08...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
15...	--	--	--	--	--	--	--	--	--	--
21...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
MAY										
05...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
18...	<0.00800	<0.00200	0.006000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
23...	<0.00800	<0.00200	0.007000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
23...	--	--	--	--	--	--	--	--	--	--
23...	<0.00800	0.003000	0.008000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
24...	<0.00800	<0.00200	0.009000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
JUN										
03...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
16...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
30...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
JUL										
13...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
26...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
27...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
AUG										
04...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
11...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
26...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
31...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
SEP										
08...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
16...	<0.00800	<0.00200	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
21...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--



## STREAMS TRIBUTARY TO LAKE MICHIGAN

203

04086500 CEDAR CREEK NEAR CEDARBURG, WI

LOCATION.--Lat 43°19'23", long 87°58'43", in SE 1/4 SW 1/4 sec.14, T.10 N., R.21 E., Ozaukee County, Hydrologic Unit 04040003, on left bank 40 ft upstream from bridge on State Highway 60, 1.9 mi north of Cedarburg, and 6.6 mi upstream from mouth.

DRAINAGE AREA.--120 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1930 to September 1970, July 1973 to September 1981, August 1983 to September 1987, October 1990 to current year.

REVISED RECORDS.--WSP 1307: 1932-34(M), 1937(M), 1939(M), 1945(M), 1948-49(M). WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 795.33 ft above sea level (levels by Corps of Engineers). Nonrecording gage and crest-stage gage August 1930 to September 1970 at same site and datum.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 6-12, 21-29, and Jan. 2 to Mar. 25. Records good except those for ice-affected periods, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	34	107	126	80	35	519	332	185	59	40	93
2	30	191	99	110	72	45	472	287	141	56	38	68
3	27	275	90	100	66	52	417	250	122	52	35	58
4	26	269	82	200	60	60	384	248	112	53	32	54
5	25	234	81	240	64	80	379	239	108	55	31	50
6	25	186	74	220	64	100	394	209	99	72	32	45
7	26	141	74	150	50	150	398	176	117	84	35	40
8	25	115	72	94	44	250	530	151	393	69	32	34
9	25	108	70	68	42	370	692	148	542	147	32	31
10	26	106	70	56	40	260	661	130	543	197	40	29
11	25	100	70	50	39	190	575	112	442	201	42	28
12	25	109	70	50	39	130	585	102	341	172	38	27
13	25	149	70	50	38	100	540	95	250	141	36	33
14	24	135	72	52	34	84	448	91	203	123	35	149
15	24	110	104	50	31	76	519	92	183	109	35	202
16	37	94	323	49	29	120	788	86	150	97	51	166
17	45	86	361	49	28	200	932	79	125	85	43	119
18	37	80	355	48	27	250	715	83	139	77	37	95
19	33	73	279	46	27	220	624	91	156	70	38	83
20	33	99	190	45	27	210	1110	87	178	63	40	76
21	41	249	160	88	27	200	1530	85	175	53	37	91
22	46	288	140	180	27	250	1180	78	148	47	35	90
23	42	306	120	180	27	350	732	92	117	44	33	77
24	39	280	100	190	26	500	515	138	100	42	31	67
25	36	243	92	170	25	680	410	138	99	51	30	63
26	35	227	86	150	25	625	338	116	89	80	30	120
27	33	207	86	130	25	493	286	107	75	66	31	149
28	32	159	86	120	25	470	260	123	64	56	32	112
29	32	127	100	100	---	487	290	108	57	51	31	89
30	32	111	140	80	---	504	342	106	55	46	49	75
31	32	---	172	74	---	531	---	187	---	43	103	---
TOTAL	975	4891	3995	3315	1108	8072	17565	4366	5508	2561	1184	2413
MEAN	31.5	163	129	107	39.6	260	585	141	184	82.6	38.2	80.4
MAX	46	306	361	240	80	680	1530	332	543	201	103	202
MIN	24	34	70	45	25	35	260	78	55	42	30	27
CFSM	.26	1.36	1.07	.89	.33	2.17	4.88	1.17	1.53	.69	.32	.67
IN.	.30	1.52	1.24	1.03	.34	2.50	5.45	1.35	1.71	.79	.37	.75

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1993, BY WATER YEAR (WY)

	MEAN	45.2	59.2	51.0	50.5	60.5	197	165	80.0	67.0	41.3	24.0	47.7
MAX	306	376	268	273	253	575	585	291	364	298	106	485	
(WY)	1955	1986	1992	1975	1984	1976	1993	1933	1940	1952	1960	1986	
MIN	5.65	6.66	4.92	3.74	5.32	19.9	38.9	14.0	3.34	1.40	1.45	2.48	
(WY)	1935	1938	1964	1940	1959	1940	1958	1958	1934	1936	1934	1932	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1930 - 1993

ANNUAL TOTAL	32572	55953	74.0
ANNUAL MEAN	89.0	153	168
HIGHEST ANNUAL MEAN			13.5
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	469	1530	3320
LOWEST DAILY MEAN	11	24	.20
ANNUAL SEVEN-DAY MINIMUM	13	25	.24
INSTANTANEOUS PEAK FLOW		1620	3600
INSTANTANEOUS PEAK STAGE		10.29	(a)12.25
INSTANTANEOUS LOW FLOW		24	.20
ANNUAL RUNOFF (CFSM)	.74	1.28	.62
ANNUAL RUNOFF (INCHES)	10.10	17.35	8.38
10 PERCENT EXCEEDS	217	381	164
50 PERCENT EXCEEDS	56	90	30
90 PERCENT EXCEEDS	17	31	6.8

(a) From graph based on gage readings, backwater from ice



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04086600 MILWAUKEE RIVER NEAR CEDARBURG, WI

LOCATION.--Lat 43°16'49", long 87°56'30", in NW 1/4 NW 1/4 sec.6, T.9 N., R.22 E., Ozaukee County, Hydrologic Unit 04040003, on right bank 60 ft downstream from Pioneer Road bridge, 2.6 mi southeast of Cedarburg, 1.0 mi west of I-43, and 26.25 mi upstream from mouth.

DRAINAGE AREA.--607 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 653.558 ft above sea level (Southeastern Wisconsin Regional Planning Commission bench mark).

REMARKS.--Estimated daily discharges: Sept. 14, 15, and ice-affected periods, Dec. 4-13, and Dec. 20 to Mar. 19. Records good except those for estimated daily discharges, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199	162	465	310	290	220	2370	1420	848	286	354	511
2	179	566	432	300	290	230	2040	1250	756	313	327	393
3	157	772	390	380	280	250	1870	1150	651	263	301	343
4	145	726	330	480	260	280	1700	1120	561	323	277	313
5	135	633	280	540	250	320	1640	1090	524	398	259	285
6	127	539	260	470	240	360	1610	1030	381	514	259	263
7	106	454	240	430	230	540	1550	947	422	733	258	246
8	83	390	250	380	220	740	2130	845	1840	953	239	235
9	97	362	250	330	210	880	2590	786	2360	1430	241	218
10	110	349	260	300	200	900	2480	716	2330	1700	261	204
11	119	338	260	290	190	840	2390	624	2090	1840	272	198
12	110	359	260	280	180	700	2660	558	1790	1820	256	198
13	111	404	270	260	170	500	2400	498	1520	1610	245	269
14	115	403	296	250	160	450	2090	454	1380	1400	236	580
15	118	369	405	230	150	400	2550	432	1070	1160	244	910
16	151	341	930	220	150	470	3530	375	818	989	284	850
17	203	318	1100	210	140	620	3500	335	663	821	302	705
18	172	298	981	210	140	740	3130	337	759	702	280	634
19	155	282	898	210	140	800	2990	365	801	636	264	580
20	155	337	560	250	160	612	4380	362	836	575	267	549
21	155	673	480	340	180	486	4630	347	810	502	256	611
22	175	861	400	440	210	458	4110	315	745	435	244	687
23	180	933	350	420	230	714	3400	373	658	379	238	653
24	182	876	320	390	220	1240	2820	558	598	353	247	618
25	172	823	320	360	220	1590	2340	644	561	405	250	605
26	159	809	390	340	210	1910	1940	628	506	666	230	675
27	152	766	410	320	210	2010	1640	612	422	681	218	711
28	144	653	380	300	210	2130	1460	630	352	583	206	619
29	137	566	360	290	---	2230	1500	551	306	487	203	544
30	134	507	340	280	---	2300	1600	525	285	430	319	495
31	131	---	320	280	---	2380	---	703	---	388	606	---
TOTAL	4468	15869	13187	10090	5740	28300	75040	20580	27643	23775	8443	14702
MEAN	144	529	425	325	205	913	2501	664	921	767	272	490
MAX	203	933	1100	540	290	2380	4630	1420	2360	1840	606	910
MIN	83	162	240	210	140	220	1460	315	285	263	203	198
CFSM	.24	.87	.70	.54	.34	1.50	4.12	1.09	1.52	1.26	.45	.81
IN.	.27	.97	.81	.62	.35	1.73	4.60	1.26	1.69	1.46	.52	.90

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1993, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	373	583	466	281	418	1035	1070	472	432	250	203	362
MAX	1157	1565	757	406	997	1793	2501	757	1232	767	349	1593
(WY)	1987	1986	1983	1985	1984	1986	1993	1984	1984	1993	1987	1986
MIN	144	177	120	190	167	494	487	219	89.5	69.7	69.5	135
(WY)	1993	1990	1990	1991	1989	1984	1990	1988	1988	1988	1988	1982

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1982 - 1993

ANNUAL TOTAL	141422	247837	
ANNUAL MEAN	386	679	495
HIGHEST ANNUAL MEAN			720
LOWEST ANNUAL MEAN			356
HIGHEST DAILY MEAN	1720	Mar 10	4630
LOWEST DAILY MEAN	83	Oct 8	83
ANNUAL SEVEN-DAY MINIMUM	92	Aug 18	105
INSTANTANEOUS PEAK FLOW			4700
INSTANTANEOUS PEAK STAGE			12.04
INSTANTANEOUS LOW FLOW			78
ANNUAL RUNOFF (CFSM)	.64		1.12
ANNUAL RUNOFF (INCHES)	8.67		15.19
10 PERCENT EXCEEDS	963		1700
50 PERCENT EXCEEDS	250		393
90 PERCENT EXCEEDS	106		180
			127

(a) Gage height, 12.21 ft

(b) Ice affected

## STREAMS TRIBUTARY TO LAKE MICHIGAN

205

040869415 LINCOLN CREEK, AT 47TH STREET, AT MILWAUKEE, WI  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 43°05'49", long 87°58'20", in NW 1/4 SE 1/4 sec.2, T.7 N., R.21 E., Milwaukee County, Hydrologic Unit 04040003, on right bank upstream from concrete drop structure at 47th Street, 100 ft west from intersection of 47th and Congress Streets.

DRAINAGE AREA.--9.56 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Mar. 1-3, June 24, 25, and Aug. 20-23. Records good except those for estimated daily discharges, which are fair.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	11	42	7.0	4.7	4.3	3.1	5.9
2	---	---	---	---	---	12	32	13	9.0	3.5	3.6	4.3
3	---	---	---	---	---	37	25	14	8.3	47	3.8	3.9
4	---	---	---	---	---	12	21	11	14	8.7	4.1	3.2
5	---	---	---	---	---	13	18	7.7	11	33	7.3	2.4
6	---	---	---	---	---	24	17	6.6	3.5	19	5.8	2.1
7	---	---	---	---	---	18	22	5.9	217	4.2	2.6	2.6
8	---	---	---	---	---	19	138	5.1	94	49	2.4	4.7
9	---	---	---	---	---	9.4	34	4.5	24	52	16	10
10	---	---	---	---	---	9.8	16	5.2	9.6	7.2	4.8	3.7
11	---	---	---	---	---	8.1	53	5.0	7.3	5.6	3.4	7.1
12	---	---	---	---	---	6.6	25	4.9	5.5	4.0	3.7	3.4
13	---	---	---	---	---	4.9	17	4.4	4.5	31	3.6	90
14	---	---	---	---	---	3.5	25	4.4	63	16	2.9	57
15	---	---	---	---	---	3.6	245	4.0	7.0	4.9	40	9.4
16	---	---	---	---	---	43	58	2.9	5.8	4.1	4.8	5.5
17	---	---	---	---	---	9.8	21	3.8	50	3.8	3.3	4.5
18	---	---	---	---	---	5.8	14	10	33	17	3.8	3.7
19	---	---	---	---	---	6.1	241	6.5	82	4.0	7.0	2.9
20	---	---	---	---	---	10	183	5.8	31	4.0	4.2	62
21	---	---	---	---	---	8.6	30	3.4	9.9	4.2	4.0	8.7
22	---	---	---	---	---	12	18	7.6	7.6	4.1	3.8	6.2
23	---	---	---	---	---	152	14	29	6.3	4.3	3.9	4.9
24	---	---	---	---	---	31	12	7.2	5.6	3.6	3.6	4.3
25	---	---	---	---	---	22	8.4	3.7	5.0	35	3.5	91
26	---	---	---	---	---	18	7.9	3.7	4.7	4.1	4.1	41
27	---	---	---	---	---	16	7.6	12	3.5	4.9	4.7	8.4
28	---	---	---	---	---	17	8.6	4.1	4.6	4.2	2.7	6.5
29	---	---	---	---	---	16	49	2.9	3.8	3.9	5.8	5.4
30	---	---	---	---	---	13	11	35	26	4.2	218	4.9
31	---	---	---	---	---	133	---	10	---	3.8	53	---
TOTAL	---	---	---	---	---	705.2	1413.5	250.3	761.2	398.6	437.3	469.6
MEAN	---	---	---	---	---	22.7	47.1	8.07	25.4	12.9	14.1	15.7
MAX	---	---	---	---	---	152	245	35	217	52	218	91
MIN	---	---	---	---	---	3.5	7.6	2.9	3.5	3.5	2.4	2.1
CFSM	---	---	---	---	---	2.38	4.93	.84	2.65	1.34	1.48	1.64
IN.	---	---	---	---	---	2.74	5.50	.97	2.96	1.55	1.70	1.83

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1993, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1993	22.7	22.7	1993	22.7	1993
1993	47.1	47.1	1993	47.1	1993
1993	8.07	8.07	1993	8.07	1993
1993	25.4	25.4	1993	25.4	1993
1993	12.9	12.9	1993	12.9	1993
1993	14.1	14.1	1993	14.1	1993
1993	15.7	15.7	1993	15.7	1993

## SUMMARY STATISTICS

## FOR 1993 WATER YEAR

HIGHEST DAILY MEAN	245	Apr 15
LOWEST DAILY MEAN	2.1	Sep 6
ANNUAL SEVEN-DAY MINIMUM	3.3	Sep 2
INSTANTANEOUS PEAK FLOW	2700	Jun 7
INSTANTANEOUS PEAK STAGE	13.16	Jun 7
INSTANTANEOUS LOW FLOW	2.0	Sep 6,7
10 PERCENT EXCEEDS	49	
50 PERCENT EXCEEDS	7.2	
90 PERCENT EXCEEDS	3.5	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

040869415 LINCOLN CREEK, AT 47TH STREET, AT MILWAUKEE, WI--CONTINUED  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--March to September 1993. National Water-Quality Assessment Program sampling begin April in 1993.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993												
16...	1115	54	848	7.9	5.5	12.6	--	290	71	27	72	2.9
MAY												
06...	0715	6.8	1170	8.0	11.5	10	764	360	85	36	97	3.5
JUN												
08...	0920	59	432	7.9	15.0	9.2	750	140	35	12	23	2.3
17...	1120	5.2	1010	8.0	19.0	10.1	764	340	81	33	82	3.2
JUL												
20...	1030	3.8	783	8.0	22.5	9.8	760	260	62	25	61	3.0
AUG												
15...	1240	150	272	8.7	22.0	7.9	756	34	10	2.1	4.8	1.2
15...	1550	27	280	7.8	22.5	--	756	81	21	7.0	17	2.0
SEP												
09...	1415	3.4	704	8.2	19.5	11.6	748	220	53	21	52	2.0

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L) (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
APR 1993												
16...	286	0	234	230	46	120	0.20	7.5	484	2.00	0.020	0.080
MAY												
06...	325	0	266	270	76	160	0.60	4.7	658	0.930	0.030	0.080
JUN												
08...	146	0	120	120	20	37	0.20	4.7	223	0.760	0.020	0.080
17...	303	0	248	250	65	150	0.40	5.9	590	0.880	0.020	0.070
JUL												
20...	244	0	200	--	52	110	0.50	3.6	478	0.470	0.030	0.050
AUG												
15...	56	0	46	--	7.3	6.3	0.10	1.2	52	0.810	0.040	0.100
15...	75	0	62	--	19	32	0.10	2.6	141	0.640	0.020	0.160
SEP												
09...	198	0	162	--	49	89	0.70	2.7	380	0.230	0.010	0.030

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR 1993											
16...	0.50	0.50	0.060	0.040	0.020	10	20	--	--	1050	99
MAY											
06...	0.40	0.30	0.010	0.020	0.010	9	34	8.7	0.5	46	43
JUN											
08...	0.40	0.30	0.060	0.030	0.040	43	12	--	--	49	100
17...	0.30	0.30	0.030	0.020	<0.010	6	21	4.7	0.4	40	50
JUL											
20...	0.70	0.40	0.030	<0.010	0.010	8	16	3.4	0.4	42	96
AUG											
15...	0.50	0.40	0.070	0.030	0.030	22	10	4.1	1.9	134	93
15...	0.30	0.30	0.070	0.040	0.040	34	12	7.0	<0.1	25	99
SEP											
09...	0.40	0.30	0.030	0.050	<0.010	7	7	4.2	0.4	9	92

STREAMS TRIBUTARY TO LAKE MICHIGAN

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040869415 LINCOLN CREEK, AT 47TH STREET, AT MILWAUKEE, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

FIXED INTERVAL SAMPLES

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L) (00310)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	CALCIUM TOTAL RECOVERABLE (MG/L AS CA) (00916)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNESIUM, TOTAL RECOVERABLE (MG/L AS MG) (00921)	MAGNESIUM, DIS-SOLVED (MG/L AS MG) (00925)	ALKALINITY WAT WH TOT FET LAB MG/L AS CACO3 (00417)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)
MAR 1993											
11...	0830	6.6	21	2.3	--	74	73	25	24	171	880
30...	0800	12	13	1.2	160	79	74	32	30	239	200
APR 12...	1413	24	10	<1.0	190	74	78	30	31	243	5.0
MAY 11...	1115	5.1	<5	2.4	3000	88	86	39	38	261	170
24...	1430	8.4	17	--	1100	60	58	26	26	177	150
JUN 07...	1120	5.3	50	8.3	20000	39	37	15	14	109	99
21...	1030	10	11	1.6	720	87	81	35	34	288	120
JUL 06...	1700	6.3	14	2.5	300	46	46	22	23	152	98
19...	1130	3.7	12	1.6	3500	60	55	24	23	188	110
AUG 02...	1530	4.0	10	2.7	640	63	62	30	30	188	130
16...	1130	4.0	11	1.5	4200	56	52	24	25	153	72
30...	1145	12	14	2.8	--	25	22	8.0	7.0	65	26
SEP 13...	1840	52	15	3.4	--	26	21	8.0	6.0	68	19
27...	1600	7.6	7	1.1	--	70	74	29	30	239	93

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CADMIUM TOTAL RECOVERABLE (UG/L) (01113)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	COPPER, TOTAL RECOVERABLE (UG/L) (01119)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	LEAD, TOTAL RECOVERABLE (UG/L) (01114)
MAR 1993											
11...	13	1820	1.05	0.131	0.070	0.015	0.3	0.2	10	5	7
30...	2	660	1.38	0.061	0.040	0.014	<0.2	0.2	6	3	<3
APR 12...	53	692	1.42	0.083	0.080	0.012	<0.2	0.8	6	3	5
MAY 11...	6	718	0.774	0.025	0.030	0.004	<0.2	--	7	5	<3
24...	7	576	0.762	0.146	0.040	0.002	<0.2	--	5	4	<3
JUN 07...	21	394	0.914	0.200	0.160	0.048	0.3	0.1	14	9	8
21...	4	678	1.34	0.052	0.030	0.008	0.2	0.2	4	5	<3
JUL 06...	6	430	0.522	0.017	0.050	0.010	0.2	0.2	7	5	<3
19...	5	486	0.619	0.031	0.030	0.008	<0.2	0.2	5	13	3
AUG 02...	8	544	0.222	0.028	0.040	0.003	<0.2	0.1	4	3	<3
16...	8	446	0.313	0.044	0.040	0.009	<0.2	0.1	5	3	<3
30...	16	160	0.683	0.018	0.060	0.028	<0.2	0.1	10	15	4
SEP 13...	46	178	0.356	0.031	0.130	0.030	<0.2	0.1	8	7	11
27...	7	494	1.24	0.019	0.030	0.014	<0.2	0.1	6	7	<3



DICAMBA  
(MED-  
IBEN)  
(BAN-  
VEL D)  
TOTAL  
(UG/L)  
(82052)

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## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040869415 LINCOLN CREEK, AT 47TH STREET, AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## STORM EVENT SAMPLES

	BEGIN- NING DATE	BEGIN- NING TIME	ENDING DATE	ENDING TIME	RUNOFF VOLUME, MILLIONS OF CUBIC FEET (99905)	OXYGEN DEMAND, CHEM- ICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, TOTAL RECOVER- ABLE (MG/L) (00921)		
	03-22-93	2148	03-24-93	0707	164	47	6.4	--	48	23	19		
	03-24-93	1222	03-26-93	1545	52.1	23	5.1	--	53	51	20		
	03-31-93	0947	04-02-93	0247	178	35	5.2	--	50	40	20		
	04-02-93	0844	04-05-93	0701	75.1	18	2.8	340	76	74	29		
	04-19-93	2255	04-21-93	0627	417	38	3.9	--	62	34	27		
	04-29-93	0616	04-29-93	1205	43.1	46	8.0	6200	35	24	14		
	05-22-93	2227	05-24-93	1312	36.4	53	--	11000	53	33	22		
	05-30-93	1112	05-31-93	0633	38.8	39	7.0	5500	33	--	13		
	06-04-93	2040	06-05-93	1232	18.6	28	4.9	--	36	33	14		
	06-07-93	1303	06-07-93	2204	216	73	14	2000	68	13	30		
	06-08-93	0250	06-08-93	0732	36.6	26	3.8	6400	30	20	12		
	06-14-93	0250	06-14-93	1040	60.7	41	7.6	20000	28	17	11		
	06-17-93	2024	06-18-93	0614	64.6	47	8.6	35000	36	17	14		
	06-19-93	1854	06-21-93	0231	91.7	31	5.3	7700	46	29	18		
	06-30-93	0400	06-30-93	1410	23.1	34	10	25000	33	23	11		
	07-03-93	2101	07-04-93	0352	47.3	59	10	--	56	14	22		
	07-05-93	2227	07-06-93	1038	45.1	29	5.6	27000	28	16	11		
	07-08-93	1512	07-09-93	0918	98.9	32	6.5	25000	21	15	8.0		
	07-13-93	2112	07-14-93	0906	40.1	30	6.8	13000	24	18	8.0		
	07-25-93	0154	07-25-93	1501	30.9	62	14	52000	38	19	14		
	08-09-93	1251	08-10-93	0224	13.1	43	9.8	16000	33	26	12		
	08-15-93	0934	08-15-93	2151	39.9	71	12	40000	45	19	14		
	08-30-93	1358	08-30-93	1951	197	61	7.1	--	74	13	31		
	09-13-93	1033	09-13-93	1803	45.4	38	7.4	--	34	15	12		
	09-13-93	1857	09-14-93	0726	69.4	27	3.0	--	34	15	13		
	09-14-93	0920	09-15-93	0513	35.0	15	2.2	--	28	26	9.0		
	09-20-93	0949	09-21-93	1639	65.2	30	--	--	36	23	14		
	BEGIN- NING DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	ALKA- LINITY WAT WH TOT FET LAB MG/L AS CACO3 (00417)	ALKA- LINITY WAT DIS FET LAB CACO3 (MG/L) (29801)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CADMIUM TOTAL RECOVER- ABLE (UG/L) (01113)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)
	03-22-93	7.0	71	--	180	276	718	1.30	0.502	0.390	0.035	0.7	0.1
	03-24-93	19	150	--	180	12	580	1.29	0.213	0.090	0.041	<0.2	0.1
	03-31-93	14	122	--	210	148	658	1.29	0.265	0.210	0.027	0.6	0.2
	04-02-93	27	206	--	620	18	1400	1.53	0.142	0.050	0.014	0.3	0.4
	04-19-93	12	119	--	38	356	698	0.877	0.088	0.390	0.025	0.8	<0.1
	04-29-93	8.0	77	--	41	107	346	0.770	0.302	0.240	0.038	0.5	<0.2
	05-22-93	14	112	--	73	212	470	0.666	0.190	0.290	0.011	0.4	--
	05-30-93	--	88	--	66	110	362	0.733	0.207	0.210	0.033	<0.2	--
	06-04-93	13	103	--	77	34	330	0.551	0.089	0.120	0.030	0.4	0.1
	06-07-93	3.0	80	59	25	620	758	0.270	0.166	1.10	0.026	1.2	0.0
	06-08-93	7.0	72	--	25	114	288	0.749	0.196	0.180	0.022	0.3	0.1
	06-14-93	6.0	60	--	27	144	244	0.547	0.210	0.220	0.056	0.4	0.1
	06-17-93	5.0	63	--	20	220	368	0.438	0.269	0.300	0.056	0.6	0.1
	06-19-93	11	108	--	37	160	412	0.608	0.101	0.270	0.023	0.3	0.1
	06-30-93	8.0	85	--	48	70	314	0.729	0.094	0.180	0.046	0.2	2.6
	07-03-93	4.0	62	50	16	424	482	0.609	0.196	0.450	0.042	0.8	0.1
	07-05-93	6.0	57	--	26	150	280	0.374	0.089	0.210	0.031	0.5	0.1
	07-08-93	5.0	51	--	22	92	210	0.526	0.149	0.180	0.039	0.3	0.1
	07-13-93	6.0	55	--	25	83	222	0.964	0.148	0.190	0.043	--	--
	07-25-93	6.0	64	--	27	243	398	0.855	0.306	0.340	0.036	0.7	0.0
	08-09-93	10	82	--	42	72	290	0.791	0.114	0.230	0.047	0.3	<0.1
	08-15-93	6.0	66	68	32	206	384	0.704	0.114	0.400	0.037	0.6	0.1
	08-30-93	2.0	63	--	9.0	720	876	0.426	0.339	0.570	0.042	0.9	0.0
	09-13-93	4.0	53	--	18	191	300	0.364	0.062	0.280	0.036	0.4	<0.1
	09-13-93	4.0	53	--	15	173	326	0.302	0.071	0.250	0.029	0.4	0.1
	09-14-93	8.0	86	--	32	20	196	0.461	0.019	0.100	0.036	<0.2	0.1
	09-20-93	7.0	72	--	26	158	332	0.633	0.218	0.230	0.029	0.4	0.0

040869415 LINCOLN CREEK, AT 47TH STREET, AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

BEGIN- NING DATE	COPPER, TOTAL RECOVER- -ABLE (UG/L) (01119)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	LEAD, TOTAL RECOVER- -ABLE (UG/L) (01114)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	ZINC, TOTAL RECOVER- -ABLE (UG/L) (01094)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ATRA- ZINE WATER UNFLTRD REC (UG/L) (39630)	CAPTAN WATER WHOLE REC (UG/L) (39640)	CHLOR- DANE, TOTAL (UG/L) (39350)	CHLOR- DRIKOS TOTAL RECOVER (UG/L) (38932)	CYAN- AZINE TOTAL (UG/L) (81757)	DCPA WATER UNFLTRD REC (UG/L) (39770)
03-22-93	25	6	47	2	160	--	--	--	--	--	--	--
03-24-93	8	7	4	<1	50	--	--	--	--	--	--	--
03-31-93	21	6	30	<1	120	--	--	--	--	--	--	--
04-02-93	8	5	7	<1	40	--	--	--	--	--	--	--
04-19-93	21	2	78	<1	160	--	--	--	--	--	--	--
04-29-93	17	5	26	<1	100	--	--	--	--	--	--	--
05-22-93	19	5	24	<1	90	0.54	0.3	<1.0	<0.05	<1.0	<0.30	<0.12
05-30-93	16	--	20	--	80	<0.14	0.2	<1.0	<0.05	<1.0	<0.30	<0.12
06-04-93	9	4	9	<1	40	--	--	--	--	--	--	--
06-07-93	49	2	88	<1	230	<0.10	<0.1	<1.0	<0.05	<1.0	<0.30	<0.09
06-08-93	13	3	19	<1	70	--	--	--	--	--	--	--
06-14-93	14	5	18	<1	90	--	--	--	--	--	--	--
06-17-93	21	4	42	1	130	--	--	--	--	--	--	--
06-19-93	14	7	29	1	90	<0.30	0.1	<1.0	<0.05	<1.0	<0.30	--
06-30-93	10	10	12	2	60	--	--	--	--	--	--	--
07-03-93	31	4	71	<1	240	<0.10	<0.1	<1.0	<0.05	<1.0	<0.30	<0.10
07-05-93	15	4	28	<1	90	--	--	--	--	--	--	--
07-08-93	11	8	17	<1	80	<0.10	<0.1	<1.0	<0.05	<1.0	<0.30	<0.10
07-13-93	13	6	17	<1	90	--	--	--	--	--	--	--
07-25-93	27	4	43	<1	150	--	--	--	--	--	--	--
08-09-93	15	4	18	1	80	--	--	--	--	--	--	--
08-15-93	26	6	39	<1	150	--	--	--	--	--	--	--
08-30-93	39	3	77	1	220	<0.10	<0.1	<1.0	<0.05	<1.0	<0.30	<0.10
09-13-93	21	7	34	<1	120	--	--	--	--	--	--	--
09-13-93	15	7	29	<1	120	--	--	--	--	--	--	--
09-14-93	7	11	6	<1	50	--	--	--	--	--	--	--
09-20-93	16	3	25	<1	100	--	--	--	--	--	--	--

[illegible]

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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040869415 LINCOLN CREEK, AT 47TH STREET, AT MILWAUKEE, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--February to September 1993 (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger.

REMARKS.--Gage established Feb. 13, 1993. Rainfall estimated to be 0.00 for Feb. 21, 22, Mar. 9-11, 19, and Apr. 1, 2 because recorded precipitation interpreted as collector snowmelt. Rainfall data missing for the period June 24-25.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.73 in., Apr. 19.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
2	---	---	---	---	---	.00	.00	.13	.15	.00	.00	.00
3	---	---	---	---	---	.00	.00	.09	.04	.79	.00	.00
4	---	---	---	---	---	.00	.00	.02	.23	.01	.00	.00
5	---	---	---	---	---	.00	.00	.00	.01	.44	.04	.00
6	---	---	---	---	---	.00	.00	.00	.00	.00	.03	.00
7	---	---	---	---	---	.00	.19	.00	1.44	.00	.00	.00
8	---	---	---	---	---	.00	.81	.00	.57	.78	.00	.02
9	---	---	---	---	---	.00	.00	.00	.00	.14	.24	.10
10	---	---	---	---	---	.00	.00	.00	.00	.02	.00	.00
11	---	---	---	---	---	.00	.32	.00	.00	.00	.00	.12
12	---	---	---	---	---	.00	.00	.00	.00	.00	.00	.00
13	---	---	---	---	.00	.00	.00	.00	.00	.69	.00	1.54
14	---	---	---	---	.00	.00	.11	.00	.55	.00	.00	.39
15	---	---	---	---	.00	.00	1.23	.00	.00	.00	.49	.00
16	---	---	---	---	.00	.00	.03	.00	.00	.00	.00	.00
17	---	---	---	---	.00	.00	.00	.05	.53	.00	.00	.00
18	---	---	---	---	.00	.00	.01	.14	.36	.10	.00	.00
19	---	---	---	---	.00	.00	1.73	.09	.79	.00	.08	.02
20	---	---	---	---	.00	.00	.28	.00	.00	.00	.00	.51
21	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
22	---	---	---	---	.00	.26	.00	.18	.00	.00	.00	.00
23	---	---	---	---	.00	.43	.00	.28	.00	.00	.00	.00
24	---	---	---	---	.00	.00	.00	.03	---	.00	.00	.00
25	---	---	---	---	.00	.00	.00	.00	---	.32	.00	1.26
26	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.02
27	---	---	---	---	.00	.00	.02	.17	.00	.08	.00	.01
28	---	---	---	---	.00	.00	.01	.00	.05	.00	.00	.00
29	---	---	---	---	---	.00	.62	.00	.00	.00	.12	.00
30	---	---	---	---	---	.00	.00	.41	.37	.00	.80	.00
31	---	---	---	---	---	.98	---	.05	---	.00	.31	---
TOTAL	---	---	---	---	---	1.67	5.36	1.64	---	3.37	2.11	3.99



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

LOCATION.--Lat 43°06'00", long 87°54'32", in NE 1/4 sec.5, T.7 N., R.22 E., Milwaukee County, Hydrologic Unit 04040003, on left bank near northeast limits of Milwaukee in Estabrook Park, 2,000 ft downstream from Port Washington Road bridge and 6.6 mi upstream from mouth.

DRAINAGE AREA.--696 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1914 to current year. Published as "near Milwaukee" prior to 1936.

REVISED RECORDS.--WSP 564: 1918(M). WSP 924: 1940. WSP 1207: 1936(M). WSP 1337: 1915-17(M), 1918, 1919-21(M), 1922, 1923(M), 1924, 1925-33(M). WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 607.23 ft above sea level (levels by U. S. Army Corps of Engineers). Prior to Apr. 6, 1929, nonrecording gage near present site at different datum. Apr. 6, 1929, to Jan. 8, 1934, nonrecording gage at bridge 0.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Mar. 7-9, 17-20, 23-25, and ice-affected periods, Dec. 5-9, 21-27, Dec. 30 to Jan. 2, Jan. 5-11, 14-27, Jan. 29 to Feb. 9, Feb. 12-20, and Feb. 23 to Mar. 1. Records good except those for estimated daily discharges, which are poor. Occasional regulation caused by recreation dam approximately 1,200 ft upstream. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	207	434	506	380	350	250	3060	1550	870	369	381	621
2	191	1330	478	360	340	249	2450	1350	814	364	351	503
3	173	941	425	434	340	273	2170	1250	749	463	320	337
4	156	870	402	837	340	287	1980	1170	699	383	300	350
5	145	724	300	800	330	352	1920	1130	673	477	292	332
6	137	623	290	720	300	470	1880	1080	586	704	287	300
7	131	535	280	620	270	700	1840	987	1270	635	282	280
8	109	464	290	520	250	920	2760	896	2100	1040	268	271
9	99	453	310	450	250	1100	3220	829	2720	1570	299	268
10	115	427	319	350	240	1180	2870	776	2510	1710	277	245
11	129	403	316	340	226	1030	2760	705	2260	1780	287	238
12	130	545	308	311	220	841	2980	647	1910	1800	280	230
13	124	479	311	294	200	680	2760	591	1620	1730	260	390
14	131	480	315	300	190	529	2400	546	1740	1510	246	582
15	279	438	580	280	180	456	3560	544	1300	1220	346	829
16	231	405	1130	270	170	539	4470	529	1060	1010	277	899
17	188	375	1320	260	160	700	4130	489	973	865	307	761
18	207	349	1150	250	160	880	3710	501	1080	776	296	657
19	185	341	995	250	150	1000	4130	503	1390	672	285	601
20	223	474	715	290	160	660	6270	532	1270	573	268	734
21	186	792	480	450	160	536	5540	305	979	542	263	618
22	192	985	460	520	160	512	5000	420	860	482	250	678
23	199	1220	420	580	200	920	4070	580	767	439	245	674
24	206	1060	400	560	230	1300	3250	616	654	414	244	633
25	200	977	420	500	250	1700	2670	741	668	502	249	874
26	192	934	400	450	250	2090	2170	725	597	696	241	968
27	184	855	600	410	250	2250	1810	714	523	772	228	787
28	178	734	484	374	250	2330	1570	696	422	633	221	702
29	172	619	434	350	---	2480	1640	658	400	536	227	611
30	166	556	420	330	---	2480	1680	694	442	464	673	547
31	161	---	400	340	---	3000	---	771	---	415	912	---
TOTAL	5326	19822	15658	13180	6576	32694	90720	23525	33906	25546	9662	16520
MEAN	172	661	505	425	235	1055	3024	759	1130	824	312	551
MAX	279	1330	1320	837	350	3000	6270	1550	2720	1800	912	968
MIN	99	341	280	250	150	249	1570	305	400	364	221	230
CFSM	.25	.95	.73	.61	.34	1.52	4.34	1.09	1.62	1.18	.45	.79
IN.	.28	1.06	.84	.70	.35	1.75	4.85	1.26	1.81	1.37	.52	.88

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1993, BY WATER YEAR (WY)

	MEAN	283	356	306	254	381	1068	978	498	377	217	203	272
MAX	1316	1956	981	864	2200	3545	3024	1720	1249	1200	2936	2304	
(WY)	1987	1986	1929	1916	1938	1929	1993	1973	1984	1952	1924	1938	
MIN	52.8	62.4	40.7	45.8	47.4	181	237	86.4	56.3	25.0	19.4	27.4	
(WY)	1947	1950	1964	1959	1959	1940	1958	1958	1934	1936	1934	1932	

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED

SUMMARY STATISTICS	FOR 1992 CALENDAR YEAR		FOR 1993 WATER YEAR		WATER YEARS 1914 - 1993	
ANNUAL TOTAL	158188		293135		432	
ANNUAL MEAN	432		803		874	1986
HIGHEST ANNUAL MEAN					112	1958
LOWEST ANNUAL MEAN					14800	Mar 20 1918
HIGHEST DAILY MEAN	1950	Mar 10	6270	Apr 20	(a).00	Sep 8 1943
LOWEST DAILY MEAN	70	May 31	99	Oct 9	8.3	Aug 3 1936
ANNUAL SEVEN-DAY MINIMUM	94	Aug 18	120	Oct 7	15100	(b)Mar 20 1918
INSTANTANEOUS PEAK FLOW			7080	Apr 19	(c)9.00	Aug 6 1924
INSTANTANEOUS PEAK STAGE			6.87	Apr 19	(a).00	Sep 8 1943
INSTANTANEOUS LOW FLOW			3.2	Sep 3	.62	
ANNUAL RUNOFF (CFSM)	.62		1.15		8.44	
ANNUAL RUNOFF (INCHES)	8.45		15.67		985	
10 PERCENT EXCEEDS	1000		1860		224	
50 PERCENT EXCEEDS	284		502		70	
90 PERCENT EXCEEDS	120		204			

(a) Result of regulation

(b) Also occurred Aug. 6, 1924

(c) Datum then in use, from floodmark for 1918, from graph based on gage reading for 1924

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)  
(NATIONAL WATER-QUALITY ASSESSMENT PROGRAM STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1967-69, 1971, 1973 to current year. National Stream-Quality Accounting Network data collection began in January 1973. National Water-Quality Assessment Program sampling began in April 1993.

REMARKS.--Concentration data for organic compounds are not rounded.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
OCT 1992					JUN 1993				
14...	0925	127	600	11.5	15...	1005	1320	553	21.0
27...	1000	191	762	10.5	17...	0815	894	607	18.5
NOV					29...	1300	394	642	23.5
17...	0920	397	650	2.5	JUL				
JAN 1993					13...	0930	1650	508	23.0
12...	0825	304	750	0.0	28...	0915	647	556	25.5
APR					AUG				
06...	1030	1890	530	5.5	05...	0850	274	704	21.0
08...	0830	2480	581	6.0	05...	0910	289	705	21.0
23...	0945	4190	386	9.0	30...	1550	233	582	23.5
MAY					31...	1015	772	494	23.0
05...	1445	1120	636	16.5	SEP				
19...	0840	473	697	13.5	09...	0930	214	730	19.5
27...	0925	756	600	16.0	15...	0925	829	600	17.5
JUN					15...	1255	806	655	18.0
04...	0940	683	640	14.0	22...	0845	612	675	14.5
08...	1230	1970	547	16.5	28...	0900	715	653	13.0

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 1992											
27...	1000	191	762	8.4	10.5	2.7	9.6	753	87	73	46
APR 1993											
06...	1030	1890	530	8.3	5.5	5.1	12.4	750	100	130	100
JUN											
15...	1005	1320	553	7.9	21.0	5.3	7.4	757	84	230	280
AUG											
31...	1015	772	494	8.1	23.0	32	6.2	753	73	K500	K5500

DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)
OCT 1992											
27...	320	64	39	34	3.5	340	2	281	42	67	0.20
APR 1993											
06...	240	53	25	21	3.3	253	1	209	24	45	0.10
JUN											
15...	260	61	27	15	2.5	272	--	223	17	28	0.10
AUG											
31...	190	41	21	23	2.7	163	--	134	19	40	0.20

K RESULTS BASED ON COUNT OUTSIDE OF THE ACCEPTABLE RANGE (NON-IDEAL COLONY COUNT)

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)
OCT 1992 27...	0.74	424	0.010	0.500	0.020	0.60	0.080	0.030	0.040	<10	34
APR 1993 06...	7.1	330	0.020	1.00	0.070	0.90	0.110	0.080	0.040	30	27
JUN 15...	11	348	0.010	0.490	0.040	0.60	0.100	0.020	0.030	<10	32
AUG 31...	7.0	265	0.020	0.680	0.100	1.0	0.200	0.090	0.090	20	27

DATE	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1992 27...	<3	21	8	5	<10	1	<1	330	<6	--	--
APR 1993 06...	<3	44	<4	10	<10	<1	<1	140	<6	20	88
JUN 15...	<3	70	<4	11	<10	<1	<1	170	<6	27	94
AUG 31...	<3	15	<4	4	<10	<1	<1	180	<6	79	97

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)
APR 1993 08...	0830	2480	581	8.4	6.0	11.6	761	240	53	26	29	3.1
23...	0945	4190	386	8.2	9.0	11.7	751	210	47	22	13	3.0
MAY 05...	1445	1120	636	8.2	16.5	10.4	754	300	67	33	19	3.0
19...	0840	473	697	8.4	13.5	11.0	--	330	71	36	25	2.6
JUN 04...	0940	683	640	8.5	14.0	9.7	764	330	73	37	21	2.0
08...	1230	1970	547	8.3	16.5	8.8	750	220	50	22	21	2.0
17...	0815	894	607	8.2	18.5	8.1	764	300	69	32	18	2.5
29...	1300	394	642	8.6	23.5	9.5	757	330	73	36	23	2.3
JUL 13...	0930	1650	508	8.3	23.0	8.3	756	250	56	26	11	3.4
28...	0915	647	556	8.3	25.5	6.1	755	--	--	--	--	--
AUG 05...	0850	274	704	8.4	21.0	5.5	762	330	73	37	27	2.8
10...	1101	268	692	8.5	--	--	762	310	67	35	28	2.4
30...	1550	233	582	8.5	23.5	7.1	754	270	58	31	28	2.6
SEP 09...	0930	214	730	8.2	19.5	10.4	747	340	73	38	29	3.8
15...	1255	806	655	8.1	18.0	8.1	--	270	55	31	29	2.9
22...	0845	612	675	8.3	14.5	9.3	759	310	69	34	20	3.8
28...	0900	715	653	8.3	13.0	9.6	756	320	72	34	20	3.5



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LINITY WAT DIS FIX END FIELD CACO3 (MG/L) (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
APR 1993												
08...	239	0	196	--	24	50	0.10	6.7	340	1.10	0.020	0.060
23...	222	0	182	180	18	25	0.10	5.6	247	0.930	0.010	0.050
MAY												
05...	339	0	278	280	24	36	0.20	4.4	375	0.860	0.010	0.040
19...	354	7	302	300	26	51	0.20	0.35	418	0.530	0.010	0.030
JUN												
04...	246	7	302	300	21	36	<0.10	6.4	399	0.990	0.010	0.030
08...	234	0	192	190	18	35	0.10	4.2	299	1.20	0.020	0.100
17...	261	0	214	210	18	32	<0.10	12	376	0.850	0.020	0.080
29...	359	10	310	300	20	43	0.20	12	419	0.740	0.060	0.050
JUL												
13...	164	0	238	230	10	20	0.30	16	319	0.540	0.010	0.050
28...	266	10	234	--	--	--	--	--	--	0.920	0.010	0.050
AUG												
05...	371	2	308	310	22	45	0.20	14	432	0.920	<0.010	0.030
10...	344	0	282	290	24	51	0.20	9.9	396	0.980	0.010	0.020
30...	283	0	232	--	25	48	0.20	8.2	361	0.600	0.020	0.030
SEP												
09...	361	0	296	--	33	49	0.10	13	426	0.770	0.010	0.020
15...	305	2	254	--	25	47	0.20	7.3	352	0.960	0.010	0.060
22...	332	0	276	--	30	40	0.10	13	396	0.960	0.010	0.070
28...	361	2	300	--	25	40	0.10	13	401	0.980	<0.010	0.040
DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	
APR 1993												
08...	1.4	0.70	0.140	0.060	0.040	45	13	--	--	--	--	
23...	0.70	0.60	0.070	0.040	0.030	35	7	--	--	33	99	
MAY												
05...	0.80	0.70	0.080	0.050	0.040	47	12	11	1.8	29	97	
19...	0.80	0.60	0.040	0.020	0.010	18	6	13	1.2	20	75	
JUN												
04...	0.80	0.60	0.090	0.050	0.040	29	11	12	0.8	46	80	
08...	0.70	0.50	0.090	0.070	0.060	19	5	8.4	2.5	62	98	
17...	0.90	0.90	0.160	0.110	0.090	100	20	14	1.0	21	97	
29...	1.1	0.90	0.300	0.240	0.210	15	7	12	2.1	42	83	
JUL												
13...	1.3	0.80	0.270	0.150	0.140	100	10	15	1.7	52	99	
28...	0.70	0.80	0.160	0.130	0.100	--	--	10	1.0	23	100	
AUG												
05...	0.90	0.60	0.140	0.110	0.100	14	10	--	--	60	74	
10...	0.90	0.50	0.140	0.070	0.080	9	2	9.2	0.8	53	81	
30...	0.90	0.50	0.180	0.070	0.060	10	2	7.8	1.7	20	100	
SEP												
09...	0.70	0.60	0.110	0.090	0.070	10	6	9.4	0.8	42	91	
15...	0.70	0.60	0.130	0.080	0.090	12	8	7.0	0.9	28	99	
22...	--	0.80	--	0.100	0.080	42	11	12	0.8	39	96	
28...	0.80	0.60	0.100	0.080	0.080	38	9	11	0.7	24	93	

## STREAMS TRIBUTARY TO LAKE MICHIGAN

217

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	BRO- MACIL, WATER, DISS, REC (UG/L) (04029)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER, DISS, REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)
APR 1993											
08...	<0.01500	<0.00800	<0.05000	0.01000	0.01700	0.06800	0.05100	<0.00800	<0.00700	<0.02000	<0.00500
23...	--	--	--	--	--	--	--	--	--	--	--
MAY											
05...	<0.00200	<0.00200	<0.05000	0.02800	0.005000	0.14000	<0.01000	<0.00500	<0.01000	<0.00200	<0.00400
19...	<0.00200	<0.00200	<0.05000	0.05100	0.01700	0.07800	0.05000	<0.00500	<0.01000	0.002000	<0.00500
JUN											
04...	<0.00200	<0.00200	<0.05000	0.14000	0.01800	0.05100	0.09900	<0.00500	<0.01000	<0.00200	<0.00400
08...	0.007000	<0.00200	--	0.07900	0.03500	0.05200	0.75000	0.004000	<0.01000	<0.00200	<0.00400
17...	<0.01500	<0.00800	<0.05000	0.14000	0.02400	0.05400	0.56000	0.007000	<0.00700	<0.01000	<0.00500
29...	<0.01500	<0.00800	<0.05000	0.09600	0.01300	<0.02000	0.21000	<0.00800	<0.00700	<0.01000	<0.00500
JUL											
13...	<0.01500	<0.00800	<0.05000	0.12000	0.01800	0.05600	0.51000	<0.00800	<0.00700	<0.02000	<0.00500
28...	<0.01500	<0.00800	--	0.04600	0.03600	<0.02000	0.34000	<0.00800	<0.00700	<0.02000	<0.00500
AUG											
05...	<0.01500	<0.00800	--	0.04300	0.01100	<0.02000	0.12000	<0.00800	<0.00700	<0.02000	<0.00500
10...	<0.01500	<0.00800	--	0.02100	0.01900	<0.02000	0.04300	<0.00800	<0.00700	<0.02000	<0.00500
30...	<0.01500	<0.00800	--	0.07900	0.04700	<0.02000	<0.01300	<0.00800	<0.00700	<0.02000	<0.00500
SEP											
09...	<0.01500	<0.00800	--	0.01800	0.02900	0.03100	0.01700	<0.00800	<0.00700	<0.01000	<0.00500
15...	<0.01500	<0.00800	--	0.01700	0.04300	0.02200	<0.01000	<0.00800	<0.00700	<0.01000	<0.00500
22...	<0.01500	<0.00800	--	0.01000	0.01600	<0.02000	0.01000	<0.00800	<0.00700	<0.01000	<0.00500
28...	<0.01500	<0.00800	--	0.01700	0.02500	0.02600	0.02100	<0.00800	<0.00700	<0.01000	<0.00500

DATE	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANALINE WAT FLT 0.7 U GF, REC (UG/L) (82660)
APR 1993										
08...	<0.01100	<0.02000	0.01200	<0.01400	<0.02200	<0.00800	0.06300	0.01000	<0.01200	<0.00600
23...	--	--	--	--	--	--	--	--	--	--
MAY										
05...	<0.00800	<0.02000	0.03000	<0.01000	<0.00800	<0.00500	0.11000	0.02500	<0.00500	<0.00200
19...	<0.00800	<0.02000	0.02100	<0.01000	<0.00800	0.006000	0.08000	0.01700	<0.00500	<0.00200
JUN										
04...	<0.00800	<0.02000	0.01800	<0.01000	<0.00800	<0.00500	0.08400	0.03200	<0.00500	<0.00200
08...	0.006000	<0.02000	0.11000	<0.01000	<0.00800	0.02100	0.22000	1.0000	0.06300	<0.00200
17...	<0.01100	<0.02000	0.11000	<0.01000	<0.02200	<0.00800	0.37000	0.05400	0.007000	<0.00600
29...	<0.01100	<0.02000	0.02700	0.01100	<0.02200	0.009000	0.19000	0.009000	0.01400	<0.00600
JUL										
13...	<0.01100	<0.02000	0.16000	<0.01400	<0.02200	<0.00800	0.67000	0.11000	<0.01200	<0.00600
28...	<0.01100	<0.02000	0.01700	<0.01400	<0.02200	0.01300	0.23000	0.05100	<0.01200	<0.00600
AUG										
05...	<0.01100	<0.02000	0.01000	<0.01400	<0.02200	<0.00800	0.14000	<0.00900	<0.01200	<0.00600
10...	<0.01100	<0.02000	0.009000	<0.01400	<0.02200	<0.00800	0.08000	<0.00900	<0.01200	<0.00600
30...	<0.01100	<0.02000	<0.00900	0.01500	<0.02200	<0.00800	0.03200	<0.00900	<0.01200	<0.00600
SEP										
09...	<0.01100	<0.02000	0.005000	<0.01000	<0.02200	0.003000	0.05000	<0.00900	<0.01200	<0.00600
15...	<0.01100	<0.02000	0.005000	<0.01000	<0.02200	<0.00800	0.03400	<0.00900	<0.01200	<0.00600
22...	<0.01100	<0.02000	0.005000	<0.01000	<0.02200	0.003000	0.03600	<0.00900	<0.01200	<0.00600
28...	<0.01100	<0.02000	0.006000	<0.01000	<0.02200	<0.00800	0.04100	<0.00900	<0.01200	<0.00600

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	DIMETH- OATE WATER FLTRD 0.7 U GG, REC (UG/L) (82662)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
APR 1993										
08...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
23...	--	--	--	--	--	--	--	--	--	--
MAY										
05...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	<0.00200	<0.01000	<0.01000
19...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.01100	<0.01000	0.007000
JUN										
04...	<0.00600	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.009000	<0.01000	<0.01000
08...	0.008000	<0.02000	<0.00500	<0.02000	<0.01000	<0.01000	<0.01000	0.006000	<0.01000	0.007000
17...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	0.01300	<0.00900	<0.01500
29...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	0.003000	<0.00900	<0.01500
JUL										
13...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
28...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
AUG										
05...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
10...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
30...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.01000	<0.00900	<0.01500
SEP										
09...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.00500
15...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	0.006000
22...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.01500
28...	<0.01200	<0.02400	<0.01300	<0.02000	<0.03000	<0.03900	<0.03500	<0.00500	<0.00900	<0.00500
DATE	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)
APR 1993										
08...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
23...	--	--	--	--	--	--	--	--	--	--
MAY										
05...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
19...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
JUN										
04...	<0.00500	<0.00500	<0.00700	<0.00500	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
08...	<0.00500	<0.00500	0.009000	0.01600	<0.01000	<0.01000	<0.02000	<0.00300	<0.00500	<0.00800
17...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
29...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
JUL										
13...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
28...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
AUG										
05...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
10...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
30...	<0.00700	<0.01200	<0.00900	<0.01300	<0.01200	<0.00900	<0.02000	<0.00400	<0.01600	<0.04600
SEP										
09...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
15...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
22...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600
28...	<0.00700	<0.01200	<0.01300	<0.01300	<0.01200	<0.00900	<0.02000	<0.00800	<0.01600	<0.04600

## STREAMS TRIBUTARY TO LAKE MICHIGAN

219

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	2,4-D, DIS- SOLVED (UG/L) (39732)	2,4,5-T DIS- SOLVED (UG/L) (39742)	SILVEX, DIS- SOLVED (UG/L) (39762)
APR 1993										
08...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
23...	--	--	--	--	--	--	--	--	--	--
MAY										
05...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
19...	<0.00800	<0.00200	0.008000	<0.00200	<0.01000	<0.01000	<0.01000	0.27000	<0.05000	<0.05000
JUN										
04...	<0.00800	<0.00200	<0.01000	<0.00200	<0.01000	<0.01000	<0.01000	<0.05000	<0.05000	<0.05000
08...	<0.00800	0.003000	0.01700	<0.00200	<0.01000	<0.01000	<0.01000	--	--	--
17...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
29...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
JUL										
13...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	<0.05000	<0.05000	<0.05000
28...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
AUG										
05...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
10...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
30...	<0.00800	<0.00500	<0.01800	<0.01000	<0.01000	<0.08000	<0.01600	--	--	--
SEP										
09...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
15...	<0.00800	<0.00200	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
22...	<0.00800	<0.00400	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--
28...	<0.00800	<0.00200	<0.01800	<0.01000	<0.01000	<0.03800	<0.01600	--	--	--



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087030 MEMOMONEE RIVER AT MEMOMONEE FALLS, WI

LOCATION.--Lat 43°10'22", long 88°06'14", in SE 1/4 NE 1/4 sec.10, T.8 N., R.20 E., Waukesha County, Hydrologic Unit 04040003, on right bank, 150 ft upstream from Pilgrim Road (County Trunk Highway YY) bridge in Menomonee Falls, at mile 21.1.

DRAINAGE AREA.--34.7 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1974 to September 1977, July 1979 to current year.

REVISED RECORDS.--WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 753.50 ft above sea level (University of Wisconsin bench mark).

REMARKS.--Estimated discharges: Oct. 1-14, Nov. 21 to Jan. 19, and ice-affected period, Jan. 20 to Mar. 18. Records good except those for estimated daily discharges, which are poor. Occasional regulation caused by dam in Menomonee Falls, about 1.0 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.8	23	21	15	25	18	193	57	29	11	4.8	13
2	6.6	107	20	15	23	22	160	48	23	11	4.6	8.8
3	6.4	117	18	28	22	25	128	52	23	13	6.2	6.8
4	5.8	89	17	110	21	29	114	52	21	12	4.9	5.3
5	5.2	55	14	56	18	35	109	47	23	25	5.3	4.8
6	5.2	39	16	26	16	50	101	40	17	44	4.7	4.6
7	5.0	30	13	20	13	64	101	34	94	22	4.8	4.1
8	4.8	25	12	18	12	56	199	30	263	21	4.7	3.8
9	5.0	25	12	14	12	46	258	27	258	175	5.7	4.0
10	5.4	24	14	13	12	37	217	25	175	172	5.5	3.8
11	5.0	21	15	13	12	26	190	24	91	160	5.1	3.6
12	4.8	36	13	14	13	22	181	22	41	133	4.7	3.5
13	4.6	43	14	15	13	17	149	20	27	75	4.3	25
14	6.0	30	15	14	9.0	15	107	19	55	43	4.0	68
15	7.9	24	80	12	8.4	14	215	18	39	31	15	51
16	10	22	110	12	8.4	13	328	17	28	18	9.0	25
17	8.4	21	72	11	8.4	40	318	17	31	15	6.4	17
18	6.3	20	54	10	8.0	35	215	20	45	15	6.0	14
19	5.3	20	40	10	8.0	30	224	21	51	13	5.7	12
20	7.8	49	28	9.8	7.8	23	506	23	76	9.7	4.8	34
21	9.6	92	24	76	7.8	22	584	20	56	7.5	4.5	28
22	8.8	74	20	64	7.6	27	451	19	37	6.5	4.1	21
23	8.0	78	16	52	7.2	90	233	33	27	6.0	4.0	16
24	7.3	60	12	38	7.2	146	124	36	22	6.5	3.6	14
25	6.5	56	12	26	7.2	159	74	28	20	14	3.5	29
26	6.0	52	11	22	7.2	165	54	23	16	8.6	3.2	87
27	5.6	45	14	18	7.2	164	46	23	12	6.8	3.3	55
28	5.3	32	18	16	8.0	166	49	20	9.1	5.8	3.2	32
29	5.4	26	35	11	---	168	71	17	7.8	5.0	3.4	24
30	5.1	23	47	16	---	169	78	33	12	4.8	27	20
31	5.1	---	37	21	---	188	---	46	---	4.9	25	---
TOTAL	195.0	1358	844	795.8	329.4	2081	5777	911	1628.9	1095.1	201.0	638.1
MEAN	6.29	45.3	27.2	25.7	11.8	67.1	193	29.4	54.3	35.3	6.48	21.3
MAX	10	117	110	110	25	188	584	57	263	175	27	87
MIN	4.6	20	11	9.8	7.2	13	46	17	7.8	4.8	3.2	3.5
CFSM	.18	1.30	.78	.74	.34	1.93	5.55	.85	1.56	1.02	.19	.61
IN.	.21	1.46	.90	.85	.35	2.23	6.19	.98	1.75	1.17	.22	.68

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY)

MEAN	23.4	33.2	28.5	17.6	29.3	63.7	66.4	25.2	18.5	14.4	14.5	23.2
MAX	94.3	137	70.4	72.8	87.4	124	193	71.4	54.3	48.3	34.9	151
(WY)	1982	1986	1985	1988	1984	1976	1993	1990	1993	1984	1986	1986
MIN	3.31	3.38	3.00	2.29	4.21	18.3	24.6	3.80	3.33	1.55	1.47	1.86
(WY)	1977	1977	1977	1977	1977	1980	1977	1977	1988	1988	1988	1976

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1975 - 1993

ANNUAL TOTAL	9074.0	15854.3	
ANNUAL MEAN	24.8	43.4	30.0
HIGHEST ANNUAL MEAN			53.4
LOWEST ANNUAL MEAN			10.9
HIGHEST DAILY MEAN	117	Nov 3	584
LOWEST DAILY MEAN	1.7	Aug 24	3.2
ANNUAL SEVEN-DAY MINIMUM	2.2	Aug 18	3.5
INSTANTANEOUS PEAK FLOW			846
INSTANTANEOUS PEAK STAGE			5.72
INSTANTANEOUS LOW FLOW			3.0
ANNUAL RUNOFF (CFSM)	.71		1.25
ANNUAL RUNOFF (INCHES)	9.73		17.00
10 PERCENT EXCEEDS	61		112
50 PERCENT EXCEEDS	15		20
90 PERCENT EXCEEDS	4.3		5.1

(a) Gage height, 6.49 ft

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087088 UNDERWOOD CREEK AT WAUWATOSA, WI

LOCATION.--Lat 43°03'17", long 88°02'46", in SW 1/4 NW 1/4 sec.20, T.7 N., R.21 E., Milwaukee County, Hydrologic Unit 04040003, at U.S. Highway 45, on right bank, just downstream of the Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, on Milwaukee County Park Commission property, at Wauwatosa, and 0.8 mi upstream from mouth.

DRAINAGE AREA.--18.2 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1974 to November 1979, July 1980 to current year.

REVISED RECORDS.--WDR WI-77-1: Drainage area. WRD WI-85-1: 1984.

GAGE.--Water-stage recorder, crest-stage gage, and steel plate weir. Elevation of gage is 690 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 20-27, Jan. 1, 2, 7-11, 15-21, Feb. 15 to Mar. 1, and Mar. 12-18. Records good, except those for ice-affected periods, which are fair, and discharges greater than 350 ft<sup>3</sup>/s prior to Sept. 10, 1993, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	56	10	10	9.9	9.0	99	22	14	11	6.5	20
2	4.5	99	10	9.6	8.7	9.8	54	25	16	9.1	6.0	11
3	4.4	36	9.2	23	10	22	46	34	21	45	8.1	9.0
4	4.2	23	8.4	102	12	17	43	28	20	23	5.8	7.7
5	4.0	15	7.8	28	11	16	39	22	19	26	5.6	7.1
6	3.9	11	7.4	16	8.3	26	36	19	12	31	5.9	6.3
7	3.8	9.5	7.4	12	7.1	25	38	17	90	14	5.4	5.7
8	4.2	9.0	7.1	9.0	6.5	29	153	16	136	124	5.4	8.9
9	4.4	16	7.1	7.4	6.2	20	94	14	79	82	14	6.0
10	4.1	13	8.2	7.2	7.7	17	46	13	36	49	7.7	5.6
11	3.9	10	8.4	7.6	6.5	13	60	13	23	37	6.4	9.1
12	4.0	48	7.9	8.2	5.6	10	47	11	18	24	6.4	6.2
13	4.0	20	8.0	9.4	6.1	8.0	33	10	15	43	5.9	63
14	4.9	14	8.0	8.0	5.6	7.2	31	10	68	35	5.3	78
15	46	11	63	6.6	4.9	6.6	239	10	24	21	37	26
16	18	9.6	52	6.0	4.5	31	165	9.8	17	15	11	16
17	8.9	9.1	28	5.6	4.3	15	67	9.5	29	12	7.4	13
18	6.6	8.3	19	5.2	4.1	11	47	13	37	21	6.2	9.0
19	5.5	14	15	5.0	4.1	9.6	152	15	83	12	12	8.0
20	12	41	11	4.8	4.1	12	317	13	77	11	7.3	33
21	6.7	57	10	60	4.1	12	109	10	39	9.0	6.8	14
22	5.8	34	9.2	36	4.1	17	53	9.5	25	8.3	6.2	12
23	5.4	43	7.2	29	4.1	116	40	27	18	8.2	5.9	9.1
24	5.1	25	7.0	21	4.0	65	32	16	17	7.7	5.6	7.5
25	4.8	30	6.8	13	3.9	51	25	12	16	16	5.5	74
26	4.7	26	6.6	12	3.9	46	21	9.8	12	8.2	5.6	72
27	4.6	19	11	9.7	3.9	48	18	17	10	8.3	5.5	31
28	4.5	15	13	9.0	3.9	51	19	11	13	8.6	5.0	18
29	4.4	13	27	7.5	---	51	53	8.9	8.2	6.9	12	13
30	4.2	12	43	9.5	---	43	31	25	32	6.8	79	11
31	4.2	---	20	15	---	128	---	20	---	6.4	48	---
TOTAL	210.7	746.5	463.7	512.3	169.1	942.2	2207	490.5	1024.2	739.5	360.4	610.2
MEAN	6.80	24.9	15.0	16.5	6.04	30.4	73.6	15.8	34.1	23.9	11.6	20.3
MAX	46	99	63	102	12	128	317	34	136	124	79	78
MIN	3.8	8.3	6.6	4.8	3.9	6.6	18	8.9	8.2	6.4	5.0	5.6
CFSM	.37	1.37	.82	.91	.33	1.67	4.04	.87	1.88	1.31	.64	1.12
IN.	.43	1.53	.95	1.05	.35	1.93	4.51	1.00	2.09	1.51	.74	1.25

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1993, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
MEAN	9.17	12.4	12.4	8.12	11.4	26.9	29.2	15.0	11.0	11.0	12.7	13.2							
MAX	26.9	42.1	27.2	39.1	26.3	73.4	73.6	46.9	34.1	23.9	29.1	56.0							
(WY)	1987	1986	1983	1988	1985	1979	1993	1990	1993	1993	1987	1986							
MIN	2.43	1.81	1.57	.031	1.83	6.74	6.24	2.28	4.80	3.29	3.49	3.06							
(WY)	1976	1977	1977	1977	1977	1981	1977	1977	1976	1976	1976	1982							

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1975 - 1993

ANNUAL TOTAL	4543.4	8476.3	
ANNUAL MEAN	12.4	23.2	14.4
HIGHEST ANNUAL MEAN			23.2
LOWEST ANNUAL MEAN			4.21
HIGHEST DAILY MEAN	99	317	348
LOWEST DAILY MEAN	3.7	3.8	.00
ANNUAL SEVEN-DAY MINIMUM	4.0	4.0	.00
INSTANTANEOUS PEAK FLOW		767	(b)2100
INSTANTANEOUS PEAK STAGE		6.13	(c)6.58
ANNUAL RUNOFF (CFSM)	.68	1.28	.79
ANNUAL RUNOFF (INCHES)	9.29	17.33	10.73
10 PERCENT EXCEEDS	26	51	31
50 PERCENT EXCEEDS	8.2	12	6.8
90 PERCENT EXCEEDS	4.5	5.0	2.8

(a) No flow on all or part of many days during 1977 winter period

(b) Gage height, 5.55 ft

(c) Backwater from ice

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087120 MENOMONEE RIVER AT WAUWATOSA, WI

LOCATION.--Lat 43°02'44", long 87°59'59", in NE 1/4 NW 1/4 sec.27, T.7 N., R.21 E., Milwaukee County, Hydrologic Unit 04040003, on left bank near upstream side of 70th Street bridge in Wauwatosa, 800 ft downstream from Honey Creek, and at mile 6.2.

DRAINAGE AREA.--123 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 630.86 ft above sea level. Prior to Nov. 1, 1974, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Aug. 10-16, and ice-affected periods, Dec. 6-9, Dec. 20 to Jan. 3, Jan. 6-11, 15-22, 29, 30, Feb. 15 to Mar. 3, and Mar. 12-15. Records good except those for estimated daily discharges, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	253	100	72	104	80	922	193	106	61	32	153
2	31	745	96	68	85	100	569	178	95	49	30	87
3	28	348	86	130	80	130	461	208	118	173	32	62
4	25	266	79	590	94	133	419	210	105	142	29	47
5	25	172	64	288	101	120	395	173	126	95	32	38
6	24	125	68	120	79	195	359	141	69	293	40	31
7	23	101	60	90	62	251	354	121	666	129	27	29
8	24	89	56	80	55	305	1120	106	1280	434	24	37
9	26	124	54	64	53	263	917	92	819	806	66	31
10	24	106	65	60	60	197	616	83	498	574	45	34
11	23	90	69	58	54	150	665	76	293	451	36	37
12	22	283	62	62	46	100	634	70	174	335	33	33
13	22	178	64	68	47	76	463	65	117	334	31	248
14	25	123	68	66	45	66	363	63	444	268	29	438
15	181	94	325	56	39	64	1630	57	192	139	220	199
16	123	85	543	52	38	244	1330	53	127	106	80	112
17	46	76	350	50	38	196	880	50	177	85	41	78
18	37	70	258	48	37	154	634	74	339	124	34	60
19	32	87	195	46	36	120	1340	69	489	79	53	50
20	70	259	130	45	35	112	2870	82	803	67	31	230
21	47	437	110	350	35	105	1280	60	289	58	26	205
22	39	306	90	300	35	143	906	55	185	51	23	110
23	35	413	74	259	34	836	622	162	132	47	24	79
24	33	261	56	222	33	651	375	120	123	43	24	62
25	30	259	54	127	33	543	245	83	96	154	23	302
26	28	268	52	107	33	519	185	67	75	71	23	598
27	28	190	64	87	33	494	155	98	61	59	22	238
28	27	151	80	76	45	506	155	67	64	50	21	141
29	27	125	160	49	---	509	341	55	48	38	44	100
30	25	111	220	72	---	478	250	150	161	35	451	83
31	24	---	170	93	---	905	---	157	---	33	710	---
TOTAL	1186	6195	3922	3855	1469	8745	21455	3238	8271	5383	2336	3952
MEAN	38.3	206	127	124	52.5	282	715	104	276	174	75.4	132
MAX	181	745	543	590	104	905	2870	210	1280	806	710	598
MIN	22	70	52	45	33	64	155	50	48	33	21	29
CFSM	.31	1.68	1.03	1.01	.43	2.29	5.81	.85	2.24	1.41	.61	1.07
IN.	.36	1.87	1.19	1.17	.44	2.64	6.49	.98	2.50	1.63	.71	1.20

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1993, BY WATER YEAR (WY)

	MEAN	68.2	85.3	84.8	56.0	85.4	219	211	102	82.2	70.4	67.8	89.2
MAX	232	422	222	191	239	582	715	326	276	257	264	562	
(WY)	1982	1986	1988	1974	1971	1979	1993	1990	1993	1964	1986	1986	
MIN	7.15	11.9	4.65	4.45	4.18	17.5	28.7	17.1	12.6	10.6	10.5	6.50	
(WY)	1964	1963	1964	1963	1963	1968	1963	1977	1962	1963	1962	1963	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1962 - 1993

ANNUAL TOTAL	37243	70007	
ANNUAL MEAN	102	192	
HIGHEST ANNUAL MEAN			102
LOWEST ANNUAL MEAN			195
HIGHEST DAILY MEAN	745	Nov 2	2870
LOWEST DAILY MEAN	13	Jul 5	21
ANNUAL SEVEN-DAY MINIMUM	15	Aug 18	23
INSTANTANEOUS PEAK FLOW			4220
INSTANTANEOUS PEAK STAGE			8.47
ANNUAL RUNOFF (CFSM)	.83		1.56
ANNUAL RUNOFF (INCHES)	11.26		21.17
10 PERCENT EXCEEDS	219		491
50 PERCENT EXCEEDS	64		90
90 PERCENT EXCEEDS	21		31
			13

(a) Ice affected

(b) From rating curve extended above 6,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087120 MENOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.-- January 1975 to September 1977, June 1982 to September 1984, and October 1990 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: January 1975 to September 1977 and June 1982 to September 1984.

REMARKS.--Event Samples are collected by an automatic sampler and are composite samples. Base-flow samples have no ending date or time and are collected by equal-width increment method. Chemical analyses by Wisconsin State Laboratory of Hygiene and U.S. Geological Survey National Water Quality Laboratory.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## FIXED INTERVAL SAMPLES

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	
NOV 1992					APR 1993					
05...	1220	171	842	5.5	28...	1550	155	974	15.5	
DEC					JUN					
16...	1410	559	723	4.0	07...	1157	67	807	17.0	
JAN 1993					JUL					
25...	1550	140	1290	0.5	19...	1400	78	938	24.0	
MAR					SEP					
08...	1250	274	920	2.5	07...	1137	30	1020	18.5	
DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CALCIUM TOTAL RECOV- ERABLE (MG/L) AS CA (00916)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, TOTAL RECOVER- ABLE (MG/L) (00921)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)	SULFATE DIS- SOLVED (MG/L) AS SO4 (00945)
NOV 1992										
16...	1110	--	87	1.8	--	100	--	44	--	--
DEC										
07...	1100	60	--	<1.0	--	100	110	48	50	--
JAN 1993										
04...	1130	--	568	<3.0	--	39	--	16	--	--
FEB										
03...	1900	--	65	3.2	--	68	68	29	30	--
MAR										
01...	1415	80	--	2.9	--	100	99	41	42	--
29...	1315	--	468	2.0	20	57	55	24	24	--
APR										
26...	1030	--	184	2.0	210	83	83	36	35	--
MAY										
11...	1018	--	75	2.0	60	98	99	44	44	--
24...	1230	--	111	--	590	76	73	34	34	--
JUN										
08...	1030	--	1270	2.8	2100	42	37	17	15	--
21...	1315	--	274	3.0	640	84	77	34	32	--
JUL										
06...	1745	--	210	2.9	3600	50	42	18	16	--
19...	1245	--	77	1.5	470	87	84	37	37	56
AUG										
02...	1345	--	30	4.3	440	89	88	42	42	94
16...	1345	--	59	2.5	450	46	43	19	18	43
30...	1310	--	103	2.6	--	45	39	18	17	41
SEP										
13...	2040	--	444	3.0	--	37	30	16	12	24
27...	1645	--	201	1.5	--	73	76	31	31	47



STREAMS TRIBUTARY TO LAKE MICHIGAN  
04087120 MENOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CADMIUM TOTAL RECOVER -ABLE (UG/L) (01113)
NOV 1992									
16...	100	4	654	--	1.23	0.020	0.040	0.021	--
DEC									
07...	130	4	712	--	1.38	0.032	0.020	0.012	--
JAN 1993									
04...	170	128	592	--	0.525	0.110	0.300	0.106	--
FEB									
03...	170	11	630	--	0.900	0.081	0.090	0.035	--
MAR									
01...	750	21	1670	--	1.05	0.101	0.050	0.007	--
29...	85	12	412	--	0.877	0.041	0.090	0.032	--
APR									
26...	96	11	578	--	0.981	0.016	0.060	0.017	--
MAY									
11...	120	6	660	--	0.477	0.014	0.050	0.003	--
24...	110	18	582	--	0.710	0.108	0.080	0.006	--
JUN									
08...	41	82	340	--	0.700	0.058	0.350	0.045	--
21...	77	36	610	--	0.891	0.059	0.120	0.043	--
JUL									
06...	57	82	416	--	0.383	0.040	0.230	0.053	--
19...	97	21	612	8	0.657	0.022	0.090	0.038	0.20
AUG									
02...	130	4	686	--	0.168	0.014	0.050	0.017	0.20
16...	70	18	384	--	0.524	0.044	0.090	0.032	0.20
30...	55	25	304	--	0.701	0.043	0.100	0.030	0.20
SEP									
13...	43	97	330	--	0.293	0.013	0.280	0.019	0.40
27...	64	20	484	--	0.851	0.029	0.110	0.047	0.20

DATE	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COPPER, TOTAL RECOVER -ABLE (UG/L) (01119)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	LEAD, TOTAL RECOVER -ABLE (UG/L) (01114)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	SILVER, TOTAL RECOVER -ABLE (UG/L) (01079)	ZINC, TOTAL RECOVER -ABLE (UG/L) (01094)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
NOV 1992									
16...	--	<3	--	<3	--	--	20	--	--
DEC									
07...	--	6	<3	<3	<3	--	10	46	--
JAN 1993									
04...	--	16	<3	13	<3	--	60	37	--
FEB									
03...	--	10	4	3	1	--	20	36	--
MAR									
01...	--	8	5	7	<1	--	30	16	--
29...	--	5	4	<3	<1	--	20	33	--
APR									
26...	--	3	2	<3	<1	--	10	44	--
MAY									
11...	--	4	3	<3	<1	--	<10	--	--
24...	--	11	3	3	1	--	<10	--	--
JUN									
08...	--	7	3	8	<1	--	30	--	--
21...	--	5	3	4	<1	--	20	--	--
JUL									
06...	--	10	3	12	<1	--	50	<10	--
19...	0.17	4	6	5	<1	--	10	40	--
AUG									
02...	0.05	<3	4	<3	<1	<1	<10	<10	7.7
16...	0.05	<3	5	4	<1	<1	10	<10	--
30...	0.04	3	5	4	1	1	20	<10	--
SEP									
13...	0.04	11	5	15	<1	1	70	12	--
27...	0.04	7	3	3	<1	1	30	15	--

STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087120 MENOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STORM EVENT SAMPLES

BEGIN- NING DATE	BEGIN- NING TIME	ENDING DATE	ENDING TIME	RUNOFF VOLUME, MILLIONS OF CUBIC FEET (99905)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)
11-01-92	0810	11-02-92	0825	49.4	8.8	--	--	26
11-02-92	0825	11-03-92	1320	53.9	5.0	--	44	38
11-03-92	1320	11-05-92	1140	42.8	--	--	66	67
11-19-92	0630	11-23-92	0800	107	3.0	--	61	60
11-23-92	0800	11-24-92	1510	36.5	1.5	--	70	72
12-15-92	0700	12-16-92	1155	50.0	5.7	--	53	49
03-01-93	1155	03-02-93	1820	12.5	15	--	90	86
03-02-93	1820	03-04-93	1555	22.1	13	--	69	66
03-04-93	1555	03-05-93	1115	7.60	--	--	66	64
03-05-93	1315	03-07-93	1300	33.5	11	--	56	52
03-16-93	0405	03-17-93	0635	25.4	7.5	--	61	55
03-22-93	1115	03-23-93	1440	49.5	8.3	--	59	42
03-23-93	1440	03-25-93	0905	105	6.3	--	42	35
03-25-93	0905	03-27-93	1550	101	--	--	50	47
03-27-93	1550	03-29-93	1240	82.4	4.0	--	56	53
03-29-93	1240	03-31-93	0650	73.1	4.2	--	58	58
03-31-93	0650	04-01-93	1905	103	4.6	--	56	50
04-14-93	1525	04-16-93	0915	206	3.2	--	54	48
04-16-93	0915	04-19-93	0610	203	2.8	--	62	64
04-19-93	1310	04-20-93	0935	209	4.0	1600	49	35
04-20-93	0935	04-22-93	1028	278	1.9	--	52	46
04-22-93	1028	04-23-93	2315	93.3	--	--	58	--
04-29-93	0435	05-01-93	1900	62.1	6.1	--	71	73
05-22-93	2150	05-24-93	1240	20.6	--	4900	67	62
05-30-93	1115	06-01-93	1225	29.7	5.9	1500	63	--
06-04-93	1910	06-07-93	0825	24.2	4.1	--	70	64
06-07-93	1235	06-08-93	1025	105	9.0	4700	46	26
06-08-93	1025	06-10-93	0715	144	3.4	2200	49	43
06-10-93	1340	06-13-93	2245	66.1	4.4	--	75	72
06-19-93	1805	06-21-93	1230	108	4.4	5800	57	48
06-30-93	0250	07-01-93	1400	16.7	9.2	5900	67	58
07-05-93	2130	07-06-93	1710	24.3	7.4	14000	46	35
07-08-93	1445	07-09-93	1105	58.0	7.5	50000	45	27
07-09-93	1105	07-11-93	0805	107	3.9	--	45	40
07-11-93	0805	07-13-93	1900	71.1	4.2	--	64	60
08-30-93	0300	08-30-93	1225	15.5	18	--	72	31
08-30-93	1225	08-30-93	1815	5.50	2.8	--	39	24
08-31-93	1905	09-03-93	1220	29.1	--	--	68	61
09-13-93	1025	09-14-93	1625	49.1	4.6	--	37	25

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04087120 MENOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

BEGIN- NING DATE	MAGNE- SIUM, TOTAL RECOVER- ABLE (MG/L) (00921)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG) (00925)	SULFATE DIS- SOLVED (MG/L) AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL) (00940)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L) AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L) AS N) (00608)	PHOS- PHORUS TOTAL (MG/L) AS P) (00665)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L) AS P) (00671)
11-01-92	--	10	--	37	188	396	0.422	0.086	0.390	0.109
11-02-92	18	15	--	44	69	352	0.800	0.008	0.220	0.086
11-03-92	28	29	--	76	24	468	1.46	0.013	0.140	0.061
11-19-92	26	25	--	61	44	432	1.15	0.017	0.130	0.033
11-23-92	31	30	--	64	20	472	1.18	0.025	0.080	--
12-15-92	22	20	--	130	106	548	0.648	0.088	0.230	0.034
03-01-93	33	32	--	1000	17	2100	1.32	0.293	0.070	0.007
03-02-93	24	23	--	830	38	1700	1.16	0.388	0.110	0.010
03-04-93	25	25	--	500	10	1090	1.14	0.354	0.060	0.005
03-05-93	23	21	--	250	44	678	0.895	0.311	0.150	0.024
03-16-93	24	22	--	290	56	788	0.942	0.261	0.160	0.017
03-22-93	21	15	--	370	200	952	1.24	0.424	0.300	0.020
03-23-93	17	14	--	140	100	494	1.22	0.385	0.200	0.046
03-25-93	21	19	--	97	21	440	1.12	0.167	0.140	0.055
03-27-93	23	23	--	84	20	408	0.905	0.066	0.100	0.035
03-29-93	25	24	--	82	20	410	0.784	0.031	0.090	0.028
03-31-93	23	20	--	120	124	530	1.02	0.136	0.230	0.028
04-14-93	23	19	--	59	128	450	0.685	0.057	0.180	0.022
04-16-93	27	26	--	65	24	422	1.14	0.021	0.080	0.023
04-19-93	22	14	--	37	260	500	0.483	0.066	0.300	0.029
04-20-93	22	18	--	40	76	414	0.782	0.027	0.150	0.029
04-22-93	25	--	--	--	26	396	0.923	0.021	0.080	--
04-29-93	31	31	--	90	25	540	0.772	0.057	0.080	0.008
05-22-93	29	29	--	92	54	548	0.573	0.066	0.130	0.002
05-30-93	27	--	--	93	58	496	0.650	0.090	0.140	0.012
06-04-93	31	30	--	97	34	576	0.475	0.036	0.120	0.015
06-07-93	18	10	--	34	240	436	0.396	0.092	0.650	0.032
06-08-93	20	18	--	47	61	382	1.21	0.050	0.150	0.043
06-10-93	32	31	--	67	44	548	--	--	--	0.047
06-19-93	23	19	--	45	125	472	0.543	0.054	0.220	0.041
06-30-93	29	26	--	81	69	540	0.658	0.027	0.160	0.022
07-05-93	19	15	--	48	176	444	0.423	0.030	0.280	0.034
07-08-93	19	11	--	33	276	468	0.515	0.064	0.350	0.045
07-09-93	18	16	--	34	122	402	0.496	0.017	0.290	0.067
07-11-93	25	26	--	48	59	452	0.552	0.045	0.180	0.082
08-30-93	26	13	31	44	312	592	0.489	0.076	0.470	0.022
08-30-93	14	8.0	18	26	192	402	0.561	0.090	0.310	0.056
08-31-93	27	25	53	65	21	452	0.818	0.051	0.150	0.057
09-13-93	15	9.0	20	34	164	362	0.289	0.044	0.250	0.026

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087120 MENOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

BEGIN- NING DATE	CADMIUM TOTAL RECOVER -ABLE (UG/L) (01113)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COPPER, TOTAL RECOVER -ABLE (UG/L) (01119)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	LEAD, TOTAL RECOVER -ABLE (UG/L) (01114)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	SILVER, TOTAL RECOVER -ABLE (UG/L) (01079)	ZINC, TOTAL RECOVER -ABLE (UG/L) (01094)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
11-01-92	--	--	15	<3	22	<3	--	100	--
11-02-92	--	--	8	<3	7	<3	--	40	--
11-03-92	--	--	14	<3	4	<3	--	20	--
11-19-92	--	--	7	3	8	<3	--	40	--
11-23-92	--	--	6	<3	<3	<3	--	20	--
12-15-92	--	--	16	4	20	<3	--	80	--
03-01-93	--	--	10	8	6	<1	--	40	--
03-02-93	--	--	12	8	9	<1	--	50	--
03-04-93	--	--	9	7	4	<1	--	30	--
03-05-93	--	--	8	6	6	2	--	40	--
03-16-93	--	--	14	5	12	<1	--	60	--
03-22-93	--	--	24	6	33	<1	--	130	--
03-23-93	--	--	8	5	11	1	--	50	--
03-25-93	--	--	7	4	<3	<1	--	20	--
03-27-93	--	--	4	4	3	<1	--	20	--
03-29-93	--	--	4	5	<3	2	--	20	--
03-31-93	--	--	14	3	17	<1	--	70	--
04-14-93	--	--	10	2	17	<1	--	50	--
04-16-93	--	--	<3	2	3	<1	--	10	--
04-19-93	--	--	14	2	29	<1	--	80	--
04-20-93	--	--	6	2	12	<1	--	30	--
04-22-93	--	--	5	--	5	--	--	20	--
04-29-93	--	--	6	4	6	<1	--	20	8.9
05-22-93	--	--	8	5	9	2	--	30	--
05-30-93	--	--	9	--	9	--	--	40	8.4
06-04-93	--	--	6	6	8	<1	--	30	--
06-07-93	--	--	18	4	34	<1	--	100	6.8
06-08-93	--	--	5	3	8	<1	--	30	8.3
06-10-93	--	--	<3	4	<3	<1	--	20	--
06-19-93	--	--	10	4	14	<1	--	60	7.8
06-30-93	--	--	9	5	11	<1	--	50	--
07-05-93	--	--	16	6	27	<1	--	100	--
07-08-93	--	--	20	4	38	<1	--	120	--
07-09-93	--	--	9	6	13	<1	--	50	--
07-11-93	--	--	6	4	6	<1	--	50	--
08-30-93	0.80	0.04	29	6	54	1	<1	200	--
08-30-93	0.50	0.05	13	4	22	1	1	90	--
08-31-93	0.20	0.04	5	3	5	<1	--	20	--
09-13-93	0.40	0.19	16	5	23	<1	1	330	--



STREAMS TRIBUTARY TO LAKE MICHIGAN

04087120 MEMOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04087120 MENOMONEE RIVER AT WAUWATOSA, WI--CONTINUED

PRECIPITATION QUANTITY

PERIOD OF RECORD.--April 1991 to current year (non-frozen precipitation).

GAGE.--Tipping bucket rain gage with electronic datalogger. Prior to June 13, 1991, precipitation measured with a volumetric rain gage and a potentiometer.

REMARKS.--Tipping bucket rain gage established on June 13, 1991. Rainfall estimated to be 0.00 for Dec. 2, 10, 11, 19, Jan. 5, 19, 20, 28, Feb. 9, 10, 13, 25-27, Mar. 15, 16, 20, 21, and Apr. 2 because recorded precipitation interpreted as collector snowmelt. Rainfall data missing for the period Oct. 15-16.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.47 in., Oct. 4, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 2.10 in., July 8.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.64	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
2	.00	.72	.00	.00	.00	.00	.00	.20	.24	.00	.01	.00
3	.00	.12	.00	.13	.00	.00	.00	.17	.11	.65	.01	.00
4	.00	.12	.00	.54	.00	.00	.00	.29	.36	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.12	.01	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29	.03	.00
7	.00	.00	.00	.00	.00	.00	.26	.00	1.53	.00	.00	.00
8	.10	.06	.00	.00	.00	.02	.95	.00	.59	2.10	.00	.12
9	.06	.16	.00	.00	.00	.00	.00	.00	.00	.26	.28	.04
10	.01	.07	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00
11	.00	.05	.00	.00	.00	.00	.46	.00	.00	.00	.00	.17
12	.00	.74	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.62	.00	.80
14	.04	.00	.00	.00	.00	.00	.18	.00	.77	.00	.00	.48
15	---	.00	.93	.00	.00	.00	1.63	.00	.00	.00	.63	.00
16	---	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00	.00
17	.01	.00	.00	.00	.00	.00	.01	.07	.51	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.03	.14	.14	.17	.00	.00
19	.00	.33	.00	.00	.00	.00	2.07	.12	1.70	.00	.25	.03
20	.24	.50	.00	.00	.00	.00	.37	.01	.01	.00	.00	.62
21	.00	.21	.00	1.05	.00	.00	.00	.00	.01	.00	.00	.00
22	.00	.37	.00	.01	.00	.47	.00	.21	.00	.00	.00	.00
23	.00	.04	.00	.00	.00	.47	.00	.34	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.01	.00	.07	.09	.01	.00	.00
25	.00	.29	.00	.00	.00	.00	.00	.00	.05	.22	.00	1.49
26	.00	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
27	.00	.00	.00	.00	.00	.00	.03	.29	.00	.14	.00	.07
28	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00
29	.00	.00	.39	.00	---	.00	.58	.00	.00	.00	.25	.00
30	.00	.00	.52	.00	---	.00	.00	.43	.51	.00	1.36	.00
31	.00	---	.00	.00	---	1.21	---	.08	---	.00	.24	---
TOTAL	---	5.46	1.84	1.73	0.00	2.18	6.66	2.42	6.67	4.72	3.08	3.85

## 04087159 KINNICKINNIC RIVER AT SOUTH 11TH STREET AT MILWAUKEE, WI

LOCATION.--Lat 42°59'51", long 87°55'35", in SW 1/4 NW 1/4 sec.8, T.6 N., R.22 E., Milwaukee County, Hydrologic Unit 04040003, on left bank 150 ft upstream from footbridge on South 11th Street, 3.2 mi upstream from mouth, at Milwaukee.

DRAINAGE AREA.--20.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1982 to current year. Low-flow records equivalent to records for Kinnickinnic River at Milwaukee, WI (04087160) September 1976 to January 1983 (discontinued). Discontinued gage was located 0.3 mi downstream from present gage.

GAGE.--Water-stage recorder and steel plate weir. Elevation of gage is 590 ft above sea level, from river-profile map.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 2-5, 8, Dec. 20 to Jan. 3, Jan. 7-31, Feb. 15 to Mar. 1, and Mar. 12-18. Records good except those for ice-affected periods, which are poor, and those for discharges greater than 500 ft<sup>3</sup>/s, which are fair. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.0	189	9.9	10	13	e15	83	17	8.3	10	7.1	11
2	6.1	269	9.6	9.0	8.8	21	60	18	21	10	7.2	10
3	5.3	35	8.4	50	15	63	51	31	44	119	8.3	8.5
4	4.6	32	8.2	179	17	34	46	18	80	36	6.2	6.9
5	5.0	12	7.8	24	15	28	38	16	39	48	17	6.5
6	5.2	9.5	7.1	13	8.8	42	33	11	9.3	93	16	5.9
7	5.7	8.1	7.2	10	6.7	26	33	11	291	14	5.8	10
8	6.8	9.7	7.0	9.0	6.6	25	282	15	156	272	5.3	12
9	7.6	27	7.0	7.0	7.8	12	85	15	71	63	37	6.6
10	6.1	12	12	6.8	16	20	30	13	19	33	8.8	6.3
11	6.4	9.6	13	6.6	8.9	13	103	9.5	14	26	8.0	14
12	5.8	177	9.7	6.4	7.6	8.6	55	9.1	11	14	8.5	9.3
13	6.0	23	9.7	14	8.2	6.6	26	9.0	9.7	151	8.7	84
14	7.5	13	11	9.0	6.9	5.6	21	9.2	119	68	8.7	80
15	104	10	163	8.0	6.4	5.0	601	9.9	13	15	152	17
16	23	9.2	62	7.6	6.2	60	101	11	10	12	12	8.2
17	7.1	8.6	18	7.2	6.0	11	39	17	33	9.8	9.9	7.3
18	5.9	8.2	13	6.8	5.8	8.4	27	13	51	42	9.3	6.4
19	5.5	24	11	6.4	5.6	9.5	713	9.9	143	11	27	5.8
20	27	75	8.0	6.2	5.4	20	406	11	42	9.9	9.6	82
21	7.1	89	7.6	100	5.2	20	54	12	17	9.1	8.7	14
22	6.1	53	7.4	35	5.0	32	33	19	14	8.8	8.6	8.7
23	6.3	91	7.0	28	5.0	364	25	46	12	12	8.9	7.8
24	6.0	20	6.6	15	4.8	60	21	12	42	8.9	9.4	7.5
25	4.7	50	6.4	10	4.7	36	17	7.2	14	49	9.0	265
26	4.9	37	6.0	9.4	4.7	30	18	6.5	10	9.8	8.7	106
27	5.2	16	9.0	9.2	4.7	28	15	23	9.6	9.3	10	27
28	5.5	12	25	9.0	4.7	28	17	7.0	21	9.0	7.9	17
29	5.4	11	60	8.4	---	25	71	6.3	9.2	8.1	44	12
30	5.4	10	110	7.6	---	20	21	53	81	7.5	373	9.8
31	5.0	---	20	30	---	315	---	16	---	7.1	46	---
TOTAL	318.2	1349.9	667.6	657.6	220.5	1391.7	3125	481.6	1414.1	1195.3	906.6	872.5
MEAN	10.3	45.0	21.5	21.2	7.87	44.9	104	15.5	47.1	38.6	29.2	29.1
MAX	104	269	163	179	17	364	713	53	291	272	373	265
MIN	4.6	8.1	6.0	6.2	4.7	5.0	15	6.3	8.3	7.1	5.3	5.8
CFSM	.51	2.23	1.07	1.05	.39	2.22	5.16	.77	2.33	1.91	1.45	1.44
IN.	.59	2.49	1.23	1.21	.41	2.56	5.75	.89	2.60	2.20	1.67	1.61

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1993, BY WATER YEAR (WY)

	MEAN	23.7	31.7	23.5	14.3	17.9	29.4	36.3	24.6	22.8	28.4	36.3	28.4
MAX	60.5	67.8	48.9	43.7	34.7	44.9	104	72.9	47.1	49.9	82.3	68.4	68.4
(WY)	1992	1986	1983	1988	1986	1993	1993	1990	1993	1986	1986	1986	1986
MIN	8.79	9.15	3.96	6.51	5.84	13.5	14.1	9.07	11.4	13.2	14.7	15.4	15.4
(WY)	1988	1987	1990	1987	1989	1988	1989	1992	1985	1985	1985	1990	1990

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1983 - 1993

ANNUAL TOTAL	7640.1	12600.6	26.5	
ANNUAL MEAN	20.9	34.5	39.8	1986
HIGHEST ANNUAL MEAN			21.2	1988
LOWEST ANNUAL MEAN				
HIGHEST DAILY MEAN	333	Jun 17	1630	Aug 6 1986
LOWEST DAILY MEAN	4.6	Feb 12	2.9	Dec 26-28 1989
ANNUAL SEVEN-DAY MINIMUM	5.0	Feb 8	3.0	Dec 23 1989
INSTANTANEOUS PEAK FLOW			(a)10600	Aug 6 1986
INSTANTANEOUS PEAK STAGE			(b)14.41	Aug 6 1986
ANNUAL RUNOFF (CFSM)	1.03	1.71	1.31	
ANNUAL RUNOFF (INCHES)	14.07	23.21	17.79	
10 PERCENT EXCEEDS	49	80	52	
50 PERCENT EXCEEDS	8.8	11	10	
90 PERCENT EXCEEDS	6.0	6.0	6.4	

(a) From rating curve extended above 600 ft<sup>3</sup>/s on basis of step-backwater analysis at peak gage height

(b) From inside gage, 16.01 ft, from floodmarks



## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087204 OAK CREEK AT SOUTH MILWAUKEE, WI

LOCATION.--Lat 42°55'30", Long 87°52'12", in NW 1/4 sec.2, T.5 N., R.22 E., Milwaukee County, Hydrologic Unit 04040002, on left bank 25 ft downstream from 15th Avenue bridge in South Milwaukee and 2.8 mi upstream from mouth.

DRAINAGE AREA.--25.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORDS.--WDR WI-80-1: 1979 (average discharge).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 631.40 ft above sea level.

REMARKS.--Estimated daily discharges: Ice-affected periods, Jan. 1, 7, 8, 25, 29, 30, Feb. 17 to Mar. 1, and Mar. 12-15, 18. Records good except those for ice-affected periods, which are fair. Low flows may occasionally be affected by construction and activity at gravel pit upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.5	34	20	24	31	4.5	306	26	16	18	3.8	14
2	4.3	294	19	20	17	7.8	129	21	13	12	3.5	6.6
3	3.7	100	16	37	19	36	120	22	30	11	3.3	5.4
4	3.8	74	16	198	26	73	119	28	29	16	3.1	4.2
5	3.2	41	15	69	31	59	97	21	87	19	8.6	3.4
6	3.2	28	15	33	26	83	80	19	25	87	16	3.0
7	2.9	23	14	18	16	77	69	17	91	20	6.9	3.1
8	2.9	19	13	16	14	63	270	16	253	65	3.8	3.2
9	2.9	29	12	16	13	44	234	14	266	126	11	4.1
10	2.9	23	13	16	14	33	92	13	80	33	17	3.7
11	2.9	20	14	15	16	26	104	12	41	48	6.6	4.0
12	2.8	196	15	14	12	19	113	11	27	24	3.9	4.9
13	2.6	116	15	15	12	16	64	9.6	19	17	3.3	17
14	3.0	46	16	16	11	14	48	9.1	50	35	3.0	36
15	13	30	85	15	9.4	12	367	8.6	25	18	43	24
16	32	23	219	14	8.6	58	341	7.7	17	13	29	9.8
17	9.9	20	72	14	5.4	53	125	7.3	21	11	8.2	6.0
18	5.5	18	38	13	5.0	20	77	8.1	46	11	5.1	5.1
19	4.2	18	28	12	4.7	17	236	8.3	61	12	58	4.1
20	8.3	65	21	11	4.6	17	728	8.1	100	8.3	18	14
21	9.8	136	17	118	4.4	24	357	7.8	38	6.3	7.6	25
22	5.8	75	16	124	4.1	36	118	7.7	22	5.3	5.2	11
23	4.6	216	15	76	4.0	395	70	15	17	5.3	6.0	6.9
24	3.9	87	13	78	3.9	231	50	14	16	5.4	5.5	5.4
25	3.6	64	13	32	3.9	119	39	9.4	14	20	3.6	57
26	3.4	101	11	24	3.9	93	32	7.5	12	14	3.3	185
27	3.1	51	9.5	19	3.9	76	27	10	9.6	6.0	3.7	35
28	3.1	34	9.1	18	3.9	72	27	11	11	4.7	2.9	19
29	3.1	27	50	16	---	71	53	7.5	9.3	4.0	21	16
30	3.0	23	112	13	---	56	41	24	37	3.8	49	12
31	2.9	---	110	25	---	196	---	32	---	3.8	47	---
TOTAL	164.8	2031	1051.6	1129	327.7	2101.3	4533	432.7	1482.9	682.9	409.9	547.9
MEAN	5.32	67.7	33.9	36.4	11.7	67.8	151	14.0	49.4	22.0	13.2	18.3
MAX	32	294	219	198	31	395	728	32	266	126	58	185
MIN	2.6	18	9.1	11	3.9	4.5	27	7.3	9.3	3.8	2.9	3.0
CFSM	.21	2.71	1.36	1.46	.47	2.71	6.04	.56	1.98	.88	.53	.73
IN.	.25	3.02	1.56	1.68	.49	3.13	6.75	.64	2.21	1.02	.61	.82

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1993, BY WATER YEAR (WY)

	MEAN	12.3	18.9	21.6	13.9	22.3	52.9	49.6	23.1	19.9	15.4	13.1	18.5
MAX	48.4	85.3	65.3	77.3	84.4	149	151	96.1	85.8	95.8	52.7	110	110
(WY)	1992	1986	1983	1974	1971	1979	1993	1990	1968	1969	1986	1972	1972
MIN	1.86	1.83	.79	.021	1.91	2.24	9.14	2.15	2.15	3.34	1.89	1.78	1.78
(WY)	1976	1977	1977	1977	1964	1968	1968	1977	1988	1988	1970	1982	1982

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1964 - 1993

ANNUAL TOTAL	8290.1	14894.7	23.4
ANNUAL MEAN	22.7	40.8	41.7
HIGHEST ANNUAL MEAN			6.67
LOWEST ANNUAL MEAN			855
HIGHEST DAILY MEAN	294	Nov 2	Mar 5
LOWEST DAILY MEAN	1.9	Jul 7	(a)
ANNUAL SEVEN-DAY MINIMUM	2.8	Oct 7	Jan 7
INSTANTANEOUS PEAK FLOW			Aug 6
INSTANTANEOUS PEAK STAGE			Aug 6
INSTANTANEOUS LOW FLOW			(a)
ANNUAL RUNOFF (CFSM)	.91	1.63	.94
ANNUAL RUNOFF (INCHES)	12.34	22.16	12.73
10 PERCENT EXCEEDS	50	100	50
50 PERCENT EXCEEDS	13	16	7.9
90 PERCENT EXCEEDS	3.2	3.8	1.9

(a) Several days during 1977

STREAMS TRIBUTARY TO LAKE MICHIGAN

04087220 ROOT RIVER NEAR FRANKLIN, WI

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LOCATION.--Lat 42°52'25", long 87°59'45", in SE 1/4 sec.22, T.5 N., R.21 E., Milwaukee County, Hydrologic Unit 04040002, on right bank 400 ft upstream from State Highway 100, 2.1 mi upstream from Root River Canal, 2.4 mi southeast of Franklin, 5.5 mi southeast of Hales Corners, and about 24 mi upstream from mouth.

DRAINAGE AREA.--49.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORD.--WDR WI-81-1: Drainage area. WDR WI-83-1: 1981.

GAGE.--Water-stage recorder. Datum of gage is 674.5 ft above sea level.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 5-9, 20-26, Jan. 1 to Feb. 6, Feb. 13 to Mar. 3, and Mar. 12-19. Records good except those for ice-affected periods, which are poor. Flow affected by urbanization in the drainage basin. Gage-height telemeter at station.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Flood of Mar. 30, 1960, reached a stage of 9.57 ft, discharge, 5,130 ft<sup>3</sup>/s, from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	16	30	90	50	14	507	62	36	49	8.4	51
2	8.4	358	29	40	33	20	212	52	24	24	8.3	23
3	8.4	239	26	70	27	35	146	59	62	19	8.2	14
4	8.6	99	24	250	37	115	145	86	51	47	8.6	12
5	7.9	63	23	170	49	100	135	62	112	22	8.5	8.8
6	8.3	42	20	60	41	132	119	51	54	83	17	9.0
7	7.5	33	17	45	26	149	112	44	107	30	11	8.2
8	7.3	27	16	32	21	122	319	40	397	37	8.0	7.6
9	8.2	31	15	30	19	100	541	35	321	202	11	8.8
10	9.0	34	17	28	19	66	215	32	133	87	27	8.6
11	8.2	28	18	24	25	49	146	29	78	117	11	7.0
12	9.6	158	17	21	19	35	189	28	48	72	8.1	9.7
13	7.5	175	17	25	18	31	116	28	36	39	8.0	13
14	7.6	76	20	31	14	27	88	27	119	177	7.4	83
15	16	45	81	30	13	25	385	26	103	97	38	80
16	61	34	353	28	12	54	672	24	49	45	82	25
17	25	30	147	27	11	100	336	25	37	33	22	14
18	11	26	78	26	10	60	138	26	59	37	13	11
19	8.5	25	51	24	9.8	35	227	28	98	32	21	9.1
20	11	76	45	22	9.6	28	1020	29	190	23	18	38
21	23	186	35	90	9.6	36	538	28	112	16	11	66
22	13	128	31	200	9.6	49	177	24	62	14	9.1	24
23	12	219	27	120	9.4	372	119	34	47	13	8.3	15
24	8.4	123	24	100	9.4	477	97	53	37	13	8.6	12
25	8.5	80	22	62	9.2	247	74	34	48	37	7.6	37
26	8.3	112	20	38	9.2	178	61	26	28	30	15	334
27	7.8	74	18	35	9.2	155	53	27	21	14	7.7	153
28	8.2	50	16	31	9.2	164	51	33	20	12	7.5	66
29	8.0	40	61	29	---	159	77	20	19	11	16	41
30	8.0	35	146	28	---	132	102	24	61	9.5	138	28
31	10	---	204	27	---	220	---	56	---	8.7	152	---
TOTAL	363.5	2662	1648	1833	538.2	3486	7117	1152	2569	1450.2	725.3	1216.8
MEAN	11.7	88.7	53.2	59.1	19.2	112	237	37.2	85.6	46.8	23.4	40.6
MAX	61	358	353	250	50	477	1020	86	397	202	152	334
MIN	7.3	16	15	21	9.2	14	51	20	19	8.7	7.4	7.0
CFSM	.24	1.80	1.08	1.20	.39	2.29	4.82	.76	1.74	.95	.48	.82
IN.	.27	2.01	1.25	1.39	.41	2.64	5.38	.87	1.94	1.10	.55	.92

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1993, BY WATER YEAR (WY)

	MEAN	25.4	33.8	40.7	30.5	43.9	104	93.0	42.8	38.0	27.0	23.0	33.3
MAX	95.5	151	118	190	161	315	316	138	137	142	72.3	214	
(WY)	1992	1986	1983	1974	1971	1979	1973	1990	1969	1969	1987	1972	
MIN	2.38	4.26	2.02	2.47	2.75	13.6	21.5	5.32	3.55	3.09	3.82	3.04	
(WY)	1964	1964	1964	1977	1977	1968	1977	1977	1988	1988	1971	1971	

SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

WATER YEARS 1964 - 1993

ANNUAL TOTAL	12598.5	24761.0	
ANNUAL MEAN	34.4	67.8	44.5
HIGHEST ANNUAL MEAN			84.0
LOWEST ANNUAL MEAN			12.7
HIGHEST DAILY MEAN	358	1020	2390
LOWEST DAILY MEAN	3.9	7.0	.44
ANNUAL SEVEN-DAY MINIMUM	4.4	8.0	1.1
INSTANTANEOUS PEAK FLOW		1180	3700
INSTANTANEOUS PEAK STAGE		8.90	9.31
INSTANTANEOUS LOW FLOW		6.3 (a)	.38
ANNUAL RUNOFF (CFSM)	.70	1.38	.91
ANNUAL RUNOFF (INCHES)	9.53	18.72	12.30
10 PERCENT EXCEEDS	77	158	95
50 PERCENT EXCEEDS	20	31	17
90 PERCENT EXCEEDS	6.5	8.6	4.5

(a) Also occurred Oct. 8, Aug. 28, and 29

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087233 ROOT RIVER CANAL NEAR FRANKLIN, WI

LOCATION.--Lat 42°48'55", long 87°59'40", in SE 1/4 sec.10, T.4 N., R.21 E., Racine County, Hydrologic Unit 04040002, on right bank 10 ft downstream from highway bridge 3.5 mi upstream from mouth, 5.5 mi southeast of intersection U.S. 45 and State Highway 100 in Franklin, and 8.7 mi southeast of Hales Corners.

DRAINAGE AREA.--57.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1963 to current year.

REVISED RECORD.--WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 670 ft above sea level, from topographic map.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 24, Jan. 10, 11, 15-18, 25-30, Feb. 2, 3, Feb. 15 to Mar. 1, and Mar. 13-15. Records are good except those for ice-affected periods, which are poor. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	25	64	171	55	10	593	96	37	59	4.9	10
2	13	256	58	108	38	15	392	79	29	38	5.1	7.3
3	12	279	52	72	32	26	261	74	31	30	4.4	6.1
4	13	194	47	301	64	145	267	84	29	25	4.7	5.4
5	13	149	41	256	110	181	213	78	96	21	4.8	4.4
6	12	107	38	130	124	224	169	68	68	35	4.6	4.0
7	12	81	34	85	57	259	143	60	91	31	4.3	3.5
8	14	63	32	62	37	216	298	54	386	26	4.1	3.0
9	16	63	30	49	29	154	513	46	470	51	4.8	3.1
10	16	67	31	45	29	115	279	41	303	36	6.7	3.1
11	15	62	28	40	40	76	181	38	148	74	5.7	3.5
12	13	230	27	37	28	53	166	34	101	55	5.0	3.4
13	14	328	27	39	24	39	129	33	78	33	5.2	3.9
14	15	186	32	34	21	36	108	31	121	28	5.1	6.9
15	18	114	96	30	16	32	346	28	102	23	6.4	9.7
16	25	83	440	28	14	133	679	25	67	19	9.1	7.5
17	23	68	337	27	11	246	439	23	54	16	6.5	5.9
18	19	58	174	26	10	121	226	23	56	18	5.8	5.5
19	18	51	118	25	9.6	72	234	22	155	59	6.2	5.0
20	19	90	87	24	9.6	52	1120	21	224	33	5.6	5.6
21	24	234	65	122	9.4	69	1020	20	144	22	5.1	6.5
22	22	207	53	281	9.2	94	528	18	89	18	4.6	6.3
23	22	411	44	202	9.0	461	235	20	63	14	4.4	5.5
24	26	368	40	207	8.8	695	171	29	50	13	5.1	4.8
25	25	210	36	120	8.6	427	135	22	42	13	5.4	7.4
26	26	204	29	74	8.6	260	110	19	34	12	5.1	92
27	25	159	28	52	8.6	216	93	18	30	9.1	5.0	54
28	24	112	27	43	8.6	196	84	19	26	8.2	5.8	26
29	24	88	68	34	---	185	100	16	23	7.7	8.6	15
30	22	74	197	30	---	162	123	21	45	5.8	14	11
31	22	---	330	34	---	242	---	57	---	5.0	14	---
TOTAL	576	4621	2710	2788	829.0	5212	9355	1217	3192	837.8	186.1	335.3
MEAN	18.6	154	87.4	89.9	29.6	168	312	39.3	106	27.0	6.00	11.2
MAX	26	411	440	301	124	695	1120	96	470	74	14	92
MIN	12	25	27	24	8.6	10	84	16	23	5.0	4.1	3.0
CFSM	.33	2.70	1.53	1.58	.52	2.95	5.47	.69	1.87	.47	.11	.20
IN.	.38	3.02	1.77	1.82	.54	3.40	6.11	.79	2.08	.55	.12	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1993, BY WATER YEAR (WY)

	MEAN	24.4	38.4	48.9	33.0	54.4	120	109	47.8	38.7	26.2	22.9	34.9
MAX	113	154	200	219	189	352	312	211	130	141	138	212	
(WY)	1973	1993	1983	1974	1971	1979	1993	1990	1967	1978	1978	1972	
MIN	1.05	1.27	.86	.56	.69	6.03	10.8	2.47	2.51	2.18	2.20	1.28	
(WY)	1964	1964	1964	1977	1977	1968	1977	1977	1977	1991	1985	1971	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1964 - 1993

ANNUAL TOTAL	17551.7	31859.2	
ANNUAL MEAN	48.0	87.3	49.8
HIGHEST ANNUAL MEAN			98.4
LOWEST ANNUAL MEAN			4.57
HIGHEST DAILY MEAN	440	Dec 16	1410
LOWEST DAILY MEAN	2.6	Jun 12	(a) 40
ANNUAL SEVEN-DAY MINIMUM	3.1	Jun 10	3.4
INSTANTANEOUS PEAK FLOW			1260
INSTANTANEOUS PEAK STAGE			10.36
INSTANTANEOUS LOW FLOW			2.7
ANNUAL RUNOFF (CFSM)	.84		1.53
ANNUAL RUNOFF (INCHES)	11.45		20.79
10 PERCENT EXCEEDS	126		234
50 PERCENT EXCEEDS	24		34
90 PERCENT EXCEEDS	4.7		5.7
			10.36
			15
			2.2

(a) Result of freezeup

(b) Gage height, 9.88 ft

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087240 ROOT RIVER AT RACINE, WI

LOCATION.--Lat 42°45'05", long 87°49'25", in NE 1/4 sec.6, T.3 N., R.23 E., Racine County, Hydrologic Unit 04040002, on left bank 30 ft downstream from State Highway 38 bridge in Racine, 350 ft downstream from Horlick Dam, and 5.2 mi upstream from mouth.

DRAINAGE AREA.--190 mi<sup>2</sup>, of which 1.24 mi<sup>2</sup> is probably noncontributing.

PERIOD OF RECORD.--August 1963 to current year.

REVISED RECORD.--WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 610 ft above sea level, from topographic map. Prior to Feb. 5, 1964, nonrecording gage on bridge 30 ft upstream.

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 5-8, 21-29, Jan. 11-20, 29-31, Feb. 2, 3, 13, 14, 17-19, 23-28, and Mar. 12-15. Records good except those for ice-affected periods, which are fair. Gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	30	172	542	115	34	1330	346	123	130	20	159
2	39	396	151	399	110	37	1380	244	91	125	18	72
3	34	587	133	319	94	54	1220	213	81	91	17	37
4	29	776	120	593	117	153	964	221	107	78	16	27
5	25	640	92	721	176	332	881	240	157	85	16	25
6	24	413	80	801	241	476	764	210	247	92	17	22
7	22	259	78	399	197	621	629	183	284	131	17	18
8	21	196	80	186	120	781	811	162	673	92	19	16
9	19	170	80	149	93	699	1170	144	1150	118	24	15
10	18	182	81	115	82	467	1390	129	1150	219	21	13
11	16	184	81	100	88	276	1100	115	929	166	26	13
12	17	432	79	100	89	170	754	104	500	198	29	13
13	16	684	77	90	70	130	654	94	241	136	35	12
14	16	748	80	92	68	96	503	89	226	99	36	18
15	16	586	157	84	56	92	872	87	323	181	35	81
16	21	319	709	70	53	154	1430	83	262	131	69	87
17	71	223	879	68	47	326	1740	74	167	82	98	40
18	58	185	883	62	45	450	1420	71	147	73	46	27
19	35	158	537	62	42	292	1080	68	401	79	31	23
20	29	184	268	56	39	159	2320	66	503	95	65	22
21	27	476	150	137	38	144	2860	61	535	72	47	30
22	35	631	140	398	35	214	2450	59	431	54	29	72
23	37	1050	110	564	34	1010	1480	54	217	44	26	37
24	32	918	64	724	33	1410	851	62	157	38	22	27
25	27	871	60	539	32	1550	550	76	126	37	19	40
26	25	738	56	354	32	1200	378	62	116	52	16	199
27	24	546	54	210	32	884	293	49	93	55	14	303
28	24	409	54	144	33	720	248	49	80	33	13	273
29	22	259	90	100	---	679	262	54	72	25	15	125
30	20	208	338	84	---	625	356	54	82	24	40	83
31	20	---	666	86	---	817	---	96	---	22	161	---
TOTAL	861	13458	6599	8348	2211	15052	32140	3619	9671	2857	1057	1929
MEAN	27.8	449	213	269	79.0	486	1071	117	322	92.2	34.1	64.3
MAX	71	1050	883	801	241	1550	2860	346	1150	219	161	303
MIN	16	30	54	56	32	34	248	49	72	22	13	12
CFSM	.15	2.38	1.13	1.43	.42	2.57	5.68	.62	1.71	.49	.18	.34
IN.	.17	2.65	1.30	1.65	.44	2.97	6.33	.71	1.91	.56	.21	.38

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1993, BY WATER YEAR (WY)

	MEAN	73.7	117	144	96.4	153	372	365	168	118	90.1	67.8	98.2
MAX	335	454	568	401	457	1149	1071	649	378	485	237	683	
(WY)	1987	1986	1983	1974	1971	1979	1993	1990	1967	1969	1987	1972	
MIN	2.79	8.90	3.08	2.21	3.98	30.6	61.8	8.73	7.75	5.18	6.60	2.58	
(WY)	1964	1964	1964	1977	1977	1968	1977	1977	1988	1988	1971	1963	

## SUMMARY STATISTICS

## FOR 1992 CALENDAR YEAR

## FOR 1993 WATER YEAR

## WATER YEARS 1963 - 1993

ANNUAL TOTAL	51861	97802	155	
ANNUAL MEAN	142	268	268	
HIGHEST ANNUAL MEAN			23.3	1993
LOWEST ANNUAL MEAN				1977
HIGHEST DAILY MEAN	1050	Nov 23	4010	Mar 5 1974
LOWEST DAILY MEAN	11	Jun 15	.00	Jul 9-15 1988
ANNUAL SEVEN-DAY MINIMUM	13	Jun 11	.00	Jul 9 1988
INSTANTANEOUS PEAK FLOW			4500	Mar 5 1974
INSTANTANEOUS PEAK STAGE			8.54	Mar 5 1974
ANNUAL RUNOFF (CFSM)	.75		.82	
ANNUAL RUNOFF (INCHES)	10.22		11.17	
10 PERCENT EXCEEDS	399		408	
50 PERCENT EXCEEDS	64		55	
90 PERCENT EXCEEDS	17		9.0	



04087257 PIKE RIVER NEAR RACINE. WI

LOCATION.--Lat 42°38'49", long 87°51'38", in SE 1/4 NE 1/4 sec.11, T.2 N., R.22 E., Kenosha County, Hydrologic Unit 04040002, on right bank just downstream from unnamed tributary, 1.7 mi downstream from Pike Creek, 6.8 mi southwest of Racine Post Office and 9.0 mi upstream from mouth.

DRAINAGE AREA.--38.5 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-76-1: 1975. WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 620.09 ft above sea level (Southeastern Wisconsin Regional Planning Commission).

REMARKS.--Estimated daily discharges: Ice-affected periods, Dec. 24-27, Jan. 1, 2, 8, 16-21, 25, 26, 29-31, Feb. 2, Feb. 15 to Mar. 1, and Mar. 12-15, 17, 18. Records good except those for ice-affected periods, which are fair. Low flows considerably affected by effluent discharge in upper portion of basin, and by occasional regulation of small recreation dam 1.1 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	24	40	94	44	15	523	56	16	71	7.4	14
2	12	289	36	70	29	19	236	45	15	46	7.7	11
3	9.5	147	31	54	32	76	211	41	16	34	7.7	9.3
4	8.4	141	28	320	54	177	185	43	15	26	7.5	6.9
5	7.7	97	24	140	84	126	144	35	25	21	7.3	6.0
6	7.9	67	22	81	72	156	115	31	15	38	7.6	5.9
7	7.7	50	21	55	37	130	93	30	86	22	5.6	6.2
8	7.7	40	21	41	28	105	252	27	213	22	5.0	7.5
9	8.3	48	20	37	25	72	249	25	357	22	9.7	7.0
10	8.0	44	20	33	26	58	129	24	136	16	11	6.5
11	6.8	41	19	32	30	44	104	22	78	19	8.4	4.9
12	6.6	194	19	31	23	31	90	21	52	16	7.3	6.0
13	6.2	174	19	34	20	25	70	19	41	15	4.9	11
14	15	88	24	30	19	25	59	17	77	16	4.0	19
15	12	58	102	28	17	25	379	16	50	13	13	16
16	23	47	316	25	16	124	341	16	37	12	12	9.1
17	14	40	136	24	15	110	168	16	31	11	8.7	7.2
18	9.2	33	82	24	15	56	115	17	28	48	8.4	5.7
19	8.1	30	59	23	15	40	297	15	404	42	8.4	5.2
20	11	53	44	22	15	35	779	14	229	20	7.2	7.7
21	13	128	36	110	15	43	304	13	120	16	6.1	7.5
22	11	114	32	170	14	60	153	12	76	14	5.5	6.6
23	10	302	27	130	14	701	107	16	54	12	8.5	6.2
24	10	145	25	143	14	295	82	21	41	11	9.6	5.6
25	8.4	103	24	86	13	167	60	14	34	17	7.3	33
26	8.7	174	23	52	13	138	47	13	25	13	7.1	139
27	9.1	99	22	43	13	119	40	15	23	11	7.3	39
28	9.0	68	22	37	14	107	38	14	21	10	5.9	22
29	9.3	53	80	31	---	97	86	11	19	9.2	26	14
30	8.8	46	192	29	---	82	85	25	86	8.3	32	12
31	7.7	---	215	28	---	342	---	28	---	7.3	53	---
TOTAL	307.1	2937	1781	2057	726	3600	5541	712	2420	658.8	327.1	457.0
MEAN	9.91	97.9	57.5	66.4	25.9	116	185	23.0	80.7	21.3	10.6	15.2
MAX	23	302	316	320	84	701	779	56	404	71	53	139
MIN	6.2	24	19	22	13	15	38	11	15	7.3	4.0	4.9
CFSM	.26	2.54	1.49	1.72	.67	3.02	4.80	.60	2.10	.55	.27	.40
IN.	.30	2.84	1.72	1.99	.70	3.48	5.35	.69	2.34	.64	.32	.44

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 1993, BY WATER YEAR (WY)

MEAN	19.2	33.0	38.8	24.8	32.5	80.4	75.4	39.8	30.8	22.5	21.7	28.9
MAX	61.2	126	101	97.1	69.6	258	185	146	82.4	129	92.5	131
(WY)	1987	1986	1983	1974	1981	1979	1993	1990	1972	1978	1978	1986
MIN	4.40	3.62	2.35	2.05	3.74	20.0	12.1	4.57	8.32	4.93	4.35	3.25
(WY)	1972	1972	1977	1977	1977	1977	1977	1977	1988	1976	1976	1976

## SUMMARY STATISTICS

FOR 1992 CALENDAR YEAR

FOR 1993 WATER YEAR

## WATER YEARS 1972 - 1993

ANNUAL TOTAL	12087.3		21524.0						
ANNUAL MEAN	33.0		59.0			37.3			
HIGHEST ANNUAL MEAN						59.0			1993
LOWEST ANNUAL MEAN						8.10			1977
HIGHEST DAILY MEAN	316	Dec 16	779	Apr 20		1010		Mar 3	1974
LOWEST DAILY MEAN	6.2	Oct 13	4.0	Aug 14		.35		Sep 28	1976
ANNUAL SEVEN-DAY MINIMUM	7.3	Oct 7	6.3	Sep 5		1.7		Nov 10	1971
INSTANTANEOUS PEAK FLOW			1140	Apr 20		1480		Mar 4	1976
INSTANTANEOUS PEAK STAGE			7.63	Apr 20		8.15		Mar 4	1976
ANNUAL RUNOFF (CFSM)	.86		1.53			.97			
ANNUAL RUNOFF (INCHES)	11.68		20.80			13.16			
10 PERCENT EXCEEDS	70		143			85			
50 PERCENT EXCEEDS	19		25			16			
90 PERCENT EXCEEDS	8.5		7.7			5.2			

As the number of streams on 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 at these partial-record stations are usable in low-flow and flood-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 times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at miscellaneous sites and for special studies are given in separate tables.

## CREST-STAGE PARTIAL-RECORD STATIONS

The following table contains annual maximum discharges 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 minimum has been determined.

Station number and name	Location and drainage area	Period of record	MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS			Period of record maximum		
			Water year	Gage	Dis-	Period of record	Gage	Dis-
			Date	height (ft)	charge (ft <sup>3</sup> /s)	Date	height (ft)	charge (ft <sup>3</sup> /s)
STREAMS TRIBUTARY TO LAKE SUPERIOR								
04024400 Stony Brook near Superior, WI	Lat 46°35'01", long 92°07'10", in SE 1/4 sec.4, T.47 N., R.14 W., Douglas County, Hydrologic Unit 04010301, at box culvert on State Highway 35, 12.5 mi south of toll bridge on U.S. Highways 2 and 35 at St. Louis River at Superior. Drainage area is 1.86 mi <sup>2</sup> .	1959-93	05-24-93	16.85	289	09-02-85	35.23	595
04025200 Pearson Creek near Maple, WI	Lat 46°38'51", long 91°42'55", on common boundary of secs.11 and 14, T.48 N., R.11 W., Douglas County, Hydrologic Unit 04010301, at box culvert on State Highway 13, 4.0 mi north of Maple. Drainage area is 4.07 mi <sup>2</sup> .	1957-93	05-24-93	13.84	352	09-02-85	31.83	1,440
04026200 Sand River Tributary near Red Cliff, WI	Lat 46°53'53", long 90°56'47", in NE 1/4 sec.14, T.51 N., R.5 W., Bayfield County, Hydrologic Unit 04010301, at box culvert on State Highway 13, 8.0 mi northwest of Red Cliff. Drainage area is 1.09 mi <sup>2</sup> .	1959-93	05-24-93	11.62	83	05-23-64	16.86	624
*04026300 Sioux River near Washburn, WI	Lat 46°41'20", long 90°57'02", in NE 1/4 sec.35, T.49 N., R.5 W., Bayfield County, Hydrologic Unit 04010301, on County Trunk High- way C, 2.5 mi west of Washburn. Drainage area is 33.9 mi <sup>2</sup> .	1959-65 1966# 1967-93	07-09-93	11.72	390	09-02-85	29.45	2,200
04026450 Bad River near Mellen, WI	Lat 46°16'14", long 90°42'26", in NE 1/4 NW 1/4 sec.26, T.44 N., R.3 W., Ashland County, Hydrologic Unit 04010302, on left bank 150 ft downstream from bridge on U.S. Forest Service Road, 4.4 mi south- west of Mellen. Drainage area is 82.0 mi <sup>2</sup> .	1971-75# 1976-93	06-20-93 07-02-92	4.95 8.65	845 E2,450	07-02-92	8.65	E2,450
*04027200 Pearl Creek at Grandview, WI	Lat 46°22'05", long 91°05'27", in NE 1/4 sec.22, T.45 N., R.6 W., Bayfield County, Hydrologic Unit 04010302, at box culvert on U.S. Highway 63, 0.8 mi east of Grandview. Drainage area is 16.9 mi <sup>2</sup> .	1960-93	05-24-93	11.37	133	07-02-92	28.47	1,920
STREAMS TRIBUTARY TO LAKE MICHIGAN								
*04059900 Allen Creek Tributary near Alvin, WI	Lat 45°58'05", long 88°47'24", on north boundary sec.7, T.40 N., R.14 E., Forest County, Hydrologic Unit 04030106, at culvert on State Highway 70, 2.2 mi southeast of Alvin. Drainage area is 1.22 mi <sup>2</sup> .	1960-93	05-02-93	B	<5	05-22-83	11.38	23

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Station number and name	Location and drainage area	Period of record	MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS			Period of record maximum		
			Water year 1993 maximum			Period of record maximum		
			Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED								
04063640 North Branch Pine River at Windsor Dam near Alvin, WI	Lat 45°55'43", long 88°51'38", in SE 1/4 sec.21, T.40 N., R.13 E., Forest County, Hydrologic Unit 04030108, at bridge on country road, at Windsor Dam, 3.8 mi up- stream from confluence of North and South Forks, 4.0 mi southwest of Alvin. Drainage area is 27.8 mi <sup>2</sup> .	1967-68# 1970-93	06-17-93	2.47	61	04-09-80	3.89	165
04063688 South Branch Popple River near Newald, WI	Lat 45°44'42", long 88°35'31", in NW 1/4 sec.26, T.38 N., R.15 E., Florence County, Hydrologic Unit 04030108, at corrugated twin barrel culverts on U.S. Forest Service Road 2159, 5.4 mi east of Newald. Drainage area is 9.47 mi <sup>2</sup> .	1970-93	06-17-93 09-14-93	11.71 DH12.12	44	04-15-71	12.81	71
*04063800 Woods Creek near Fence, WI	Lat 45°49'53", long 88°23'17", in SE 1/4 sec.29, T.39 N., R.17 E., Florence County, Hydrologic Unit 04030108, at box culvert on State Highway 101, 6.0 mi north of Fence. Drainage area is 41.90 mi <sup>2</sup> .	1958-93	06-17-93	11.38	208	05-07-65	15.80	853
04064800 Little Popple River near Aurora, WI	Lat 45°47'34", long 88°11'40", in SW 1/4 sec.1, T.38 N., R.18 E., Florence County, Hydrologic Unit 04030108, at 3-barrel corrugated culvert on County Trunk Highway N, 5.5 mi west of Aurora. Drainage area is 35.0 mi <sup>2</sup> .	1970-93	06-17-93	13.08	375	05-31-70	15.5	595
04067760 Peshtigo River near Cavour, WI	Lat 45°39'20", long 88°38'52", in SW 1/4 sec.29, T.37 N., R.15 E., Forest County, Hydrologic Unit 04040105, at bridge on U.S. High- way 8, 0.7 mi northwest of Cavour. Drainage area is 150 mi <sup>2</sup> .	1970-93	06-17-93 04-16-92 06-20-90 03-28-89 04-03-88 10-12-86 05-26-85 04-30-84 05-22-83 05-06-82 04-09-80 08-16-78 04-13-77 04-02-76	13.03 13.15 12.74 12.83 12.90 12.89 12.57 12.59 13.49 12.17 13.04 12.76 11.80 13.48	725 E790 E670 E690 E710 E710 E620 E630 E870 E325 E750 E650 E440 E870	06-10-79	15.06	1,440
04069700 North Branch Oconto River near Wabeno, WI	Lat 45°26'19", long 88°37'40", in SW 1/4 sec.9, T.34 N., R.15 E., Forest County, Hydrologic Unit 04030104, at pipe arch culvert on County Trunk Highway C, 0.6 mi east of intersection with State Highway 32 at Wabeno. Drainage area is 34.1 mi <sup>2</sup> .	1970-93	06-17-93	12.31	200	06-14-81	13.62	420
04071700 North Branch Little River near Coleman, WI	Lat 45°00'37", long 88°02'43", on common boundary of secs.2 and 3, T.29 N., R.20 E., Oconto County, Hydrologic Unit 04030104, at bridge on U.S. Highway 141, 3.8 mi south of Coleman. Drainage area is 21.4 mi <sup>2</sup> .	1958-93	06-17-93 03-09-92 04-14-91 03-21-90 03-28-89	13.29 12.77 12.61 13.70 13.53	300 E220 E200 E380 E345	03-30-67	14.50	640
*04071800 Pensaukee River near Pulaski, WI	Lat 44°45'48", long 88°15'07", in NE 1/4 sec.1, T.26 N., R.18 E., Shawano County, Hydrologic Unit 04030103, at bridge on State High- way 32, 6.1 mi north of Pulaski. Drainage area is 48.80 mi <sup>2</sup> .	1961-93	07-18-93 04-16-92 03-24-91 05-17-90 03-27-89 04-02-88 10-13-86 11-02-85 10-18-84 07-10-84 08-28-83 07-11-82 02-22-81 04-09-80	15.09 13.15 12.63 11.90 G16.13 11.56 11.78 15.83 15.43 12.59 13.26 14.69 14.69 16.11	1,170 E715 E610 E475 EF1,340 E420 E450 E1,400 E1,210 E600 E735 E1,060 E1,060 E1,480	05-28-73	17.10	1,700
*04073400 Bird Creek at Wautoma, WI	Lat 44°06'00", long 89°18'00", in S 1/2 sec.34, T.19 N., R.10 E., Waushara County, Hydrologic Unit 04030201, at concrete culvert on State Highway 21, 0.2 mi west of Wautoma. Drainage area is 4.14 mi <sup>2</sup> .	1959-93	06-18-93	12.78	160	03-07-73	13.07	190

Station number and name	Location and drainage area	Period of record	MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS			Period of record maximum		
			Water year 1993 Date	maximum Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED								
04074300 Mud Creek near Nashville, WI	Lat 45°34'19", long 89°02'39", in SW 1/4 sec.30, T.36 N., R.12 E., Forest County, Hydrologic Unit 04030202, at concrete circular culvert on U.S. Highway 8, 3.5 mi north of Nashville. Drainage area is 9.05 mi <sup>2</sup> .	1970-93	06-17-93	12.66	70	06-14-81	14.06	105
*04074700 Hunting River near Elcho, WI	Lat 45°25'10", long 89°11'15", in N 1/2 sec.24, T.34 N., R.10 E., Langlade County, Hydrologic Unit 04030202, at twin culverts on U.S. Highway 45 and State Highway 47, 1.5 mi south of Elcho. Drainage area is 9.00 mi <sup>2</sup> .	1958-93	09-13-93	12.64	150	09-28-59	12.98	200
*04074850 Lily River near Lily, WI	Lat 45°20'59", long 88°49'52", in SE 1/4 sec.11, T.33 N., R.13 E., Langlade County, Hydrologic Unit 04030202, at culvert on County Trunk Highway A, 3.2 mi north from junction of State Highways 55 and 52 at Lily. Drainage area is 45.6 mi <sup>2</sup> .	1970-93	06-17-93	10.19	62	10-29-74	11.00	158
*04075200 Evergreen Creek near Langlade, WI	Lat 45°10'11", long 88°48'12", in NW 1/4 sec.18, T.31 N., R.14 E., Langlade County, Hydrologic Unit 04030202, on culvert on State Highway 64, 3.5 mi southwest of Langlade. Drainage area is 8.09 mi <sup>2</sup> .	1959-65 1966-72# 1973-93	1993	C		07-11-82	11.66	80
*04079700 Spaulding Creek near Big Falls, WI	Lat 44°38'13", long 89°01'20", on common boundary of secs.14 and 15, T.25 N., R.12 E., Waupaca County, Hydrologic Unit 04030202, at culvert on County Trunk Highway E, 1.5 mi north of Big Falls. Drainage area is 5.57 mi <sup>2</sup> .	1959-65 1966# 1967-93	09-13-93	11.15	69	05-07-60	11.64	101
04081900 Sawyer Creek at Oshkosh, WI	Lat 44°02'00", long 88°35'00", in SW 1/4 sec.15, T.18 N., R.16 E., Winnebago County, Hydrologic Unit 04030201, at bridge on U.S. High- way 41, 1.0 mi southwest of bridge on Algoma Street at Fox River, at Oshkosh. Drainage area is 12.10 mi <sup>2</sup> .	1961-93	07-05-93	15.66	1,700	09-11-86	17.47	2,350
*04085030 Apple Creek near Kaukauna, WI	Lat 44°19'15", long 88°17'33", on west boundary sec.2, T.21 N., R.18 E., Outagamie County, Hydrologic Unit 04030204, at bridge on State Highway 55, 3.0 mi north of Kaukauna. Drainage area is 15.2 mi <sup>2</sup> .	1960-93	07-05-93	15.58	1,900	07-05-93	15.58	1,900
*04085400 Killsnake River near Chilton, WI	Lat 44°03'33", long 88°08'36", in E 1/2 sec.6, T.18 N., R.20 E., Calumet County, Hydrologic Unit 04030101, at bridge on country road, 2.4 mi northeast of Chilton. Drainage area is 29.4 mi <sup>2</sup> .	1961-93	06-08-93	13.66	1,470	03-30-79	14.37	1,840
*04087050 Little Menomonee River near Freistadt, WI	Lat 43°12'24", long 88°02'24", on common boundary of secs.29 32, T.9 N., R.21 E., Ozaukee County, Hydrologic Unit 04040003, at bridge on Dongs Bay Road, 2.0 mi south of Freistadt. Drainage area is 8.00 mi <sup>2</sup> .	1958-74 1975-79# 1980-93	04-20-93 11-29-91 1991 03-13-90 03-27-89 01-31-88 04-14-87 11-09-84 07-09-84 04-02-83 10-01-81 07-13-81	13.19 11.38 B 10.72 11.04 11.91 10.97 11.10 12.39 11.68 13.06 10.38	340 E110 E<94 E90 E74 E145 E87 E94 E185 E130 E305 E55	04-21-73	13.14	360
04087100 Honey Creek at Milwaukee, WI	Lat 42°58'41", long 87°59'52", in SE 1/4 sec.15, T.6 N., R.21 E., Milwaukee County, Hydrologic Unit 04040003, 400 ft upstream from bridge on S. 68TH Street, 6.0 mi southwest of mouth of Milwaukee River, at Milwaukee. Drainage area is 3.26 mi <sup>2</sup> .	1959-93	08-30-93	20.53	450	12-02-82	22.60	1,050



## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS									
Station number and name	Location and drainage area	Period of record	Water year 1993 maximum			Period of record maximum			
			Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)	Date	Gage height (ft)	Dis- charge (ft <sup>3</sup> /s)	
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED									
*04087200 Oak Creek near South Milwaukee, WI	Lat 42°52'58", long 87°53'31", on common boundary of secs.21 and 22, T.5 N., R.22 E., Milwaukee County, Hydrologic Unit 04040002, at bridge on West Nicholson Road, 3.0 mi southwest of South Milwaukee. Drainage area is 13.8 mi <sup>2</sup> .	1958-93	04-19-93 16.79 10-24-91 15.69 04-09-91 15.18	660 E370 E315	03-30-60 17.49	1,100			
04087230 West Branch Root River Canal Tributary near North Cape, WI	Lat 42°45'44", long 88°01'04", in SE 1/4 sec.33, T.4 N., R.21 E., Racine County, Hydrologic Unit 04040002, at culvert on County Trunk Highway U, 3.0 mi southeast of North Cape. Drainage area is 3.99 mi <sup>2</sup> .	1962-93	04-19-93 12.46	148	08-17-87 12.88	182			
*04087250 Pike Creek near Kenosha, WI	Lat 42°36'12", long 87°53'41", in W 1/2 sec.27, T.2 N., R.22 E., Kenosha County, Hydrologic Unit 04040002, at box culvert on State Highway 43, 3.0 mi northwest of Kenosha. Drainage area is 7.25 mi <sup>2</sup> .	1960-93	04-19-93 16.37	140	09-17-78 17.6	220			

- \* Also a low-flow partial-record station  
 # Operated as a continuous-record station  
 B Peak did not reach bottom of gage  
 C Equipment failure, no peak recorded  
 D Backwater from beaver dam  
 E Revised  
 F Estimated  
 G Backwater from ice  
 H Annual maximum stage also occurred at different date from discharge peak

Measurements of water temperature and specific conductance are made at routine visits to complete-record gaging stations. These measurements, made over a range of streamflow conditions, can be used to estimate changes in the dissolved-mineral content of the stream water with time.

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
STREAMS TRIBUTARY TO LAKE SUPERIOR									
04024430 NEMADJI RIVER NEAR SOUTH SUPERIOR, WI (LAT 46 38 00N LONG 092 05 38W)									
OCT 1992					APR 1993				
19...	1350	166	220	2.5	09...	1140	2280	142	2.0
NOV					MAY				
24...	1120	223	210	1.0	26...	1410	1840	140	13.5
JAN 1993					AUG				
11...	1440	62	310	0.0	02...	1330	110	165	14.5
MAR									
01...	1610	69	295	1.0					
04025500 BOIS BRULE RIVER AT BRULE, WI (LAT 46 32 16N LONG 091 35 43W)									
OCT 1992					APR 1993				
19...	1645	147	118	4.0	07...	1600	218	80	3.0
NOV					21...	1530	228	120	10.0
30...	1230	147	125	2.0	MAY				
JAN 1993					26...	0845	341	90	11.5
12...	1000	129	150	0.0	AUG				
MAR					03...	1045	145	120	16.0
02...	0930	139	140	2.0					
04027500 WHITE RIVER NEAR ASHLAND, WI (LAT 46 29 50N LONG 090 54 15W)									
OCT 1992					APR 1993				
21...	1445	242	175	5.0	07...	1740	464	130	5.0
NOV					MAY				
30...	1420	249	280	0.5	26...	0700	892	100	12.0
JAN 1993					AUG				
12...	1230	195	223	1.0	03...	1400	182	190	19.0
MAR									
02...	1145	189	215	1.0					
STREAMS TRIBUTARY TO LAKE MICHIGAN									
04066003 MENOMINEE RIVER BELOW PEMENE CRK NR PEMBINE, WI (LAT 45 34 46N LONG 087 47 13W)									
APR 1993					MAY 1993				
01...	1450	3960	238	1.5	06...	1600	10500	170	12.0
04069500 PESHTIGO RIVER AT PESHTIGO, WI (LAT 45 02 49N LONG 087 44 40W)									
NOV 1992					MAR 1993				
18...	1030	676	270	0.5	04...	1500	452	285	0.0
DEC					APR				
30...	1050	882	290	0.5	29...	1115	2400	252	9.5
04071000 OCONTO RIVER NEAR GILLET, WI (LAT 44 51 53N LONG 088 18 00W)									
NOV 1992					APR 1993				
17...	1615	564	245	0.5	27...	1700	1260	192	8.5
DEC					JUN				
29...	1605	623	253	0.5	21...	1930	3140	190	17.0
MAR 1993					AUG				
03...	1715	441	290	0.0	16...	1905	610	310	21.5
04071858 PENSANKEE RIVER NEAR PENSANKEE, WI (LAT 44 49 08N LONG 087 57 12W)									
NOV 1992					APR 1993				
06...	1210	106	540	1.5	29...	1340	339	488	11.0
DEC					JUN				
30...	1415	44	570	0.0	23...	1005	382	450	18.5
MAR 1993					AUG				
05...	1140	39	460	0.0	17...	1130	37	592	22.5
30...	1830	702	270	1.0					

## SPECIFIC CONDUCTANCE AND WATER TEMPERATURE AT GAGING STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED									
04073500 FOX RIVER AT BERLIN, WI (LAT 43 57 14N LONG 088 57 08W)									
NOV 1992					JUN 1993				
05...	0935 1230		358	4.0	27...	1645 3600		308	23.5
FEB 1993					AUG				
17...	1800 1010		260	0.0	18...	1510 2320		372	25.5
APR									
27...	1620 4530		267	11.5					
04079000 WOLF RIVER AT NEW LONDON, WI (LAT 44 23 32N LONG 088 44 25W)									
NOV 1992					JUN 1993				
04...	1405 1770		339	4.5	30...	1030 6730		270	20.0
FEB 1993					AUG				
18...	1340 1300		197	0.0	18...	1755 1950		374	23.0
MAY									
12...	1530 5730		290	21.5					
04085200 KEWAUNEE RIVER NEAR KEWAUNEE, WI (LAT 44 27 30N LONG 087 33 23W)									
OCT 1992					APR 1993				
15...	1635 25		730	9.5	30...	1615 230		600	14.0
NOV					JUN				
18...	1405 71		720	2.5	23...	1525 188		640	20.0
JAN 1993					JUL				
06...	1315 77		680	0.5	08...	1210 736		380	22.0
MAR					AUG				
12...	1335 93		500	0.5	19...	1335 39		718	22.5
04085281 EAST TWIN RIVER AT MISHICOT, WI (LAT 44 14 16N LONG 087 38 11W)									
OCT 1992					APR 1993				
15...	1315 21		660	9.0	30...	1330 266		520	12.0
NOV					JUN				
19...	1150 76		570	2.5	24...	1010 187		550	17.5
JAN 1993					JUL				
06...	1130 87		580	0.5	07...	1900 452		420	21.0
MAR					AUG				
12...	1030 69		470	0.0	19...	1105 29		670	21.5
04086000 SHEBOYGAN RIVER AT SHEBOYGAN, WI (LAT 43 44 25N LONG 087 45 35W)									
OCT 1992					MAY 1993				
13...	1505 62		550	11.5	26...	1455 309		580	17.0
NOV					SEP				
16...	1435 195		570	2.0	14...	1530 239		530	19.0
04086600 MILWAUKEE RIVER NEAR CEDARBURG, WI (LAT 43 16 49N LONG 087 56 34W)									
OCT 1992					MAY 1993				
14...	1215 121		650	11.5	27...	1230 613		600	15.5
NOV					AUG				
17...	1200 311		650	2.5	05...	1205 260		640	22.0
04087030 MENOMONEE RIVER AT MENOMONEE FALLS, WI (LAT 43 10 22N LONG 088 06 14W)									
OCT 1992					MAY 1993				
14...	1520 5.7		720	10.5	27...	1525 25		710	16.0
NOV					AUG				
17...	1440 23		690	4.0	05...	1515 5.4		680	20.0
MAR 1993									
24...	1430 142		450	1.0					

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED									
04087088 UNDERWOOD CREEK AT WAUWATOSA, WI (LAT 43 03 17N LONG 088 02 46W)									
DEC 1992					JUN 1993				
16...	1140	49	1160	4.5	07...	1040	12	1030	18.0
JAN 1993					JUL				
25...	1140	47	1710	0.5	19...	1143	11	1020	25.5
MAR					SEP				
08...	1008	21	1330	4.0	07...	1012	5.6	1100	18.0
APR									
28...	1030	19	1240	19.0					
04087159 KINNICKINNIC R AT S. 11TH ST AT MILWAUKEE, WI (LAT 42 59 51N LONG 087 55 35W)									
NOV 1992					APR 1993				
05...	1353	12	1060	7.5	28...	1322	16	1290	18.5
DEC					JUN				
16...	1620	30	1170	5.5	07...	1336	595	128	17.0
JAN 1993					JUL				
25...	1442	14	1760	1.5	19...	1625	11	942	28.5
MAR					SEP				
08...	1512	31	1470	5.0	07...	1451	9.1	712	22.5
04087204 OAK CREEK AT SOUTH MILWAUKEE, WI (LAT 42 55 30N LONG 087 52 12W)									
NOV 1992					APR 1993				
06...	1310	29	950	5.0	29...	1310	64	899	12.0
DEC					JUN				
17...	1325	64	907	3.5	08...	0845	270	402	14.5
JAN 1993					JUL				
26...	1242	22	1370	1.0	20...	1410	7.3	1150	24.0
MAR					SEP				
09...	1210	39	972	3.0	08...	1122	3.1	1140	18.0
23...	1245	519	642	2.0					
04087220 ROOT RIVER NEAR FRANKLIN, WI (LAT 42 52 25N LONG 087 59 45W)									
NOV 1992					APR 1993				
06...	1030	42	878	4.5	29...	1020	54	977	12.5
DEC					JUN				
17...	1110	135	835	2.5	08...	1110	421	410	16.0
JAN 1993					JUL				
26...	1022	41	1300	0.5	20...	1204	22	865	23.0
MAR					SEP				
09...	1012	106	824	2.0	08...	0918	6.7	1000	17.0
09...	1548	90	768	3.0					
04087233 ROOT RIVER CANAL NEAR FRANKLIN, WI (LAT 42 48 55N LONG 087 59 40W)									
NOV 1992					APR 1993				
06...	0835	109	803	6.0	29...	0855	76	577	12.5
DEC					JUN				
17...	0923	379	524	3.0	08...	1320	414	485	15.5
JAN 1993					JUL				
26...	0848	80	667	0.5	20...	0832	35	703	21.0
MAR					SEP				
09...	0830	167	413	2.0	08...	0750	2.9	1100	17.5
09...	1443	140	443	3.0					
04087240 ROOT RIVER AT RACINE, WI (LAT 42 45 05N LONG 087 49 25W)									
OCT 1992					APR 1993				
13...	1605	16	1080	12.0	28...	1130	246	696	10.5
NOV					MAY				
25...	0905	882	580	5.0	25...	0737	77	933	14.0
JAN 1993					JUL				
07...	0845	445	637	0.5	22...	0856	54	867	21.5
FEB					SEP				
16...	1525	55	1220	0.5	15...	1445	103	762	17.0



## SPECIFIC CONDUCTANCE AND WATER TEMPERATURE AT GAGING STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED									
		04087257	PIKE RIVER NEAR RACINE, WI (LAT 42 38 49N LONG 087 51 38W)						
OCT 1992					MAR 1993				
14...	0845	10	605	10.5	24...	1440	249	444	1.5
NOV					30...	1552	80	685	7.5
24...	1638	131	780	6.5	MAY				
JAN 1993					24...	1552	18	684	15.5
06...	1625	73	644	1.5	JUL				
FEB					22...	0726	14	645	17.5
17...	0745	7.7	481	0.0	SEP				
					15...	1115	16	481	15.0

Water-quality data in this section are for samples collected at gaging stations and other sites on streams for reconnaissance or other purposes on a non-continuous basis.

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## STREAMS TRIBUTARY TO LAKE MICHIGAN

WATER-QUALITY ANALYSES AT MISCELLANEOUS SITES  
MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

04085085 - FOX RIVER AT GREEN BAY, WI (LAT 44 31 05 LONG 088 00 58W)

DATE	TIME	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
JUL 1993 10...	1815	10	>5.0	68	96

040854496 - PIGEON RIVER NEAR HOWARDS GROVE, WI (LAT 43 53 36 LONG 087 51 25W)

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
MAY 1993 26...	1310	7.6	8.6	--	--	2.4	310
JUN 04...	1100	7.2	8.4	--	--	2.1	37000
16...	1430	8.2	8.3	16.0	9.6	2.2	6400
30...	1050	5.1	8.3	--	--	<3.0	2900
JUL 14...	0930	13	8.0	19.0	6.7	2.6	1700
26...	0845	4.9	8.3	25.0	7.6	1.7	8400
AUG 12...	1330	3.4	8.8	23.5	9.9	1.8	4200
25...	0920	2.0	8.2	21.5	7.8	2.9	--
25...	0925	2.0	--	21.5	7.8	--	5100
SEP 08...	1337	1.5	8.7	17.0	10.4	<1.0	--
21...	1359	15	7.9	13.0	7.4	4.0	--

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
MAY 1993 26...	11	388	112	5	0.494	0.019	--
JUN 04...	24	420	124	9	0.902	0.068	--
16...	18	--	--	--	1.01	0.416	0.190
30...	13	438	162	4	0.944	0.053	--
JUL 14...	22	428	--	8	--	0.089	0.300
26...	9	430	--	4	--	0.058	--
AUG 12...	8	372	--	2	--	0.018	0.130
25...	34	390	--	12	--	0.052	0.350
25...	--	--	--	--	--	--	--
SEP 08...	11	376	--	2	--	0.018	0.110
21...	40	452	--	13	--	0.184	0.320

## WATER-QUALITY ANALYSES AT MISCELLANEOUS SITES

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MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

04085454 - MEESE RIVER AT CT HIGHWAY XX NEAR CLEVELAND, WI (LAT 43 55 20 LONG 087 48 45W)

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
MAY 1993							
26...	1405	8.3	8.7	--	--	2.3	80
JUN							
04...	1310	8.4	8.6	--	--	1.6	1500
16...	1505	8.5	8.3	17.5	10.0	1.6	140
30...	1310	5.6	8.2	--	--	<3.0	250
JUL							
14...	1120	13	8.2	20.5	8.5	1.8	570
26...	1720	6.2	8.4	25.0	8.6	1.6	880
AUG							
12...	1450	4.1	8.6	22.0	9.1	1.7	120
25...	0804	3.5	8.2	20.5	7.5	1.7	500
SEP							
08...	1513	3.3	8.6	18.5	10.3	<1.0	--
21...	1535	18	8.0	13.0	10.7	8.9	--

DATE	TOTAL RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	RESIDUE SOLIDS, AT 105 DEG. C, TOTAL (MG/L) (00500)	SOLIDS, VOLA- TILE ON IGNI- TION, TOTAL (MG/L) (00505)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
MAY 1993							
26...	5	370	110	4	0.270	0.041	--
JUN							
04...	7	396	118	4	0.625	0.058	--
16...	12	--	--	--	0.841	0.095	0.200
30...	12	438	178	4	0.747	0.058	--
JUL							
14...	16	434	--	6	--	0.060	0.270
26...	9	380	--	3	--	0.023	--
AUG							
12...	6	362	--	3	--	0.024	0.200
25...	10	384	--	4	--	0.042	0.230
SEP							
08...	7	378	--	3	--	0.014	0.130
21...	21	410	--	11	--	0.552	0.520

04085685 - OTTER CREEK AT GREEN TREE ROAD NEAR PLYMOUTH, WI (LAT 43 48 00 LONG 087 57 18W)

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
JUN 1993							
16...	1005	2.4	8.4	19.5	9.2	1.4	30
JUL							
27...	1455	2.1	8.5	28.0	8.0	1.5	180
AUG							
24...	1542	1.2	8.4	26.5	6.8	2.0	10

DATE	TOTAL RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	RESIDUE SOLIDS, AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 1993						
16...	5	--	--	0.296	0.059	0.030
JUL						
27...	4	320	3	--	0.032	--
AUG						
24...	6	336	4	--	0.031	0.020



WATER-QUALITY ANALYSES AT MISCELLANEOUS SITES  
MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

04085690 - OTTER CREEK TRIBUTARY ON CTH E NEAR PLYMOUTH, WI (LAT 43 47 56 LONG 087 57 41W)

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L) (00310)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)
JUN 1993 16...	1000	1.7	8.1	13.5	9.0	1.8	140
JUL 27...	1400	1.4	8.1	20.0	8.6	1.3	240
AUG 24...	1430	2.1	8.2	22.0	7.3	1.8	670

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
JUN 1993 16...	14	--	--	0.955	0.051	0.080
JUL 27...	8	454	5	--	0.028	--
AUG 24...	8	350	6	--	0.016	0.050

040857001 - OTTER CREEK @ STATE HIGHWAY 57 NEAR PLYMOUTH, WI (LAT 43 47 17 LONG 087 56 29W)

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STANDARD UNITS) (00403)	TEMPERATURE WATER (DEG C) (00010)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L) (00310)	COLI-FORM, FECAL, UM-MF (COLS./100 ML) (31625)
JUN 1993 16...	1055	4.8	8.3	15.5	10.0	1.0	180
AUG 24...	1006	3.8	8.3	19.5	8.3	1.4	570

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA-TILE, SUS-PENDED (MG/L) (00535)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)
JUN 1993 16...	12	--	--	0.583	0.034	0.070
AUG 24...	15	370	6	--	0.016	0.050

## WATER-QUALITY ANALYSES AT MISCELLANEOUS SITES

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## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

040857002 - OTTER CREEK TRIB @ ST HIGHWAY 57 NR PLYMOUTH, WI (LAT 43 47 13 LONG 087 56 29W)

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
JUN 1993 16...	1140	0.40	8.2	14.0	11.4	<1.0	240
JUL 27...	0935	0.27	8.2	17.0	7.0	1.2	720
AUG 24...	1134	0.04	7.9	18.5	7.2	1.8	680

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 1993 16...	5	--	--	2.57	0.024	0.080
JUL 27...	13	394	6	--	0.007	--
AUG 24...	10	476	5	--	0.090	0.170

040857003 - OTTER CREEK @ COUNTY TRUNK HWY J NR PLYMOUTH, WI (LAT 43 47 21 LONG 087 56 13W)

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
JUN 1993 16...	1230	5.4	8.4	17.0	10.2	1.4	5900
JUL 27...	1139	4.6	8.5	21.5	12.8	1.3	1500
AUG 24...	0849	3.5	8.4	24.0	8.5	1.6	11000

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 1993 16...	14	--	--	0.697	0.026	0.070
JUL 27...	12	410	4	--	0.016	--
AUG 24...	14	378	6	--	0.016	0.060

## WATER-QUALITY ANALYSES AT MISCELLANEOUS SITES

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

040857004 - OTTER CREEK TRIBUTARY AT CTH J NEAR PLYMOUTH, WI (LAT 43 47 22 LONG 087 55 58W)

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
JUN 1993 16...	1315	0.19	8.1	15.5	9.6	<1.0	4100
AUG 24...	1205	0.02	7.5	11.5	4.0	7.0	130000

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUN 1993 16...	4	--	--	1.43	0.038	0.130
AUG 24...	174	612	42	--	0.748	0.510

0408570045 - OTTER CREEK #3A AT CT HGHWAY J NEAR PLYMOUTH, WI (LAT 43 47 26 LONG 087 56 00W)

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 105 DEG. C, TOTAL (MG/L) (00500)	RESIDUE VOLA- TILE, SUS- PENDE (MG/L) (00535)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)
JUL 1993 27...	1300	4.5	8.5	22.0	11.0	1.5	1400	8	406	4	0.025	--
AUG 12...	1112	3.5	8.3	18.0	8.4	1.5	2500	7	430	3	0.029	0.050

## GROUND-WATER RECORDS



**Figure 6. Location of observation wells and ground-water-quality sites in Wisconsin.**

## 253

435759089490001. Local number, AD-17/06E/08-0076.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water table well, diameter 1 1/4 in., depth 21 ft, cased to 19 ft, well point 19-21 ft.

INSTRUMENTATION.--Water level measured weekly by observer.

DATUM.--Elevation of land-surface datum is 955 ft above sea level. Measuring point: top of casing, 1.50 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.69 ft below land-surface datum. May 29, 1973;  
lowest water level measured, 18.14 ft below land-surface datum, Mar. 7, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM. WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL			
OCT	5	14.03	DEC	7	13.83	FEB	8	14.50	APR	12	13.39	JUN	7	12.17	AUG	2	11.55
	12	14.10		14	13.65		15	14.76		19	12.64		14	11.93		9	11.84
	19	14.24		21	13.41		22	14.80		26	11.90		21	10.70		16	11.90
	26	14.24		28	13.80		MAR	1		14.98	MAY		3	11.65		28	11.10
NOV	2	14.32	JAN	4	13.74	MAR	8	14.99	MAY	10	11.40	JUL	6	10.70	SEP	7	12.15
	9	14.40		11	13.90		15	14.94		17	11.80		12	10.50		13	12.23
	17	14.54		19	14.36		22	15.05		24	11.85		19	10.70		20	12.10
	24	13.95		26	14.25		29	14.65		JUN	1		11.90	26		11.25	27
DEC	1	13.70	FEB	1	14.26	APR	5	13.93									

460936090531701. Local number, AS-43/04W/32-0006.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in., depth 89 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,470 ft above sea level. Measuring point: top of hole in pump base, at land-surface datum.

PERIOD OF RECORD.--August 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 24.4 ft below land-surface datum, Mar. 24, 1985;  
lowest water level measured, 32.4 ft below land-surface datum, Apr. 1, 1964.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

## GROUND-WATER LEVELS

## BARRON COUNTY

451514091582101. Local number, BR-33/13W/21-0046.

LOCATION.--Lat 45°15'14", long 91°58'21", Hydrologic Unit 07050007. Owner: Edward Thuftin.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 4 in., depth 65 ft.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

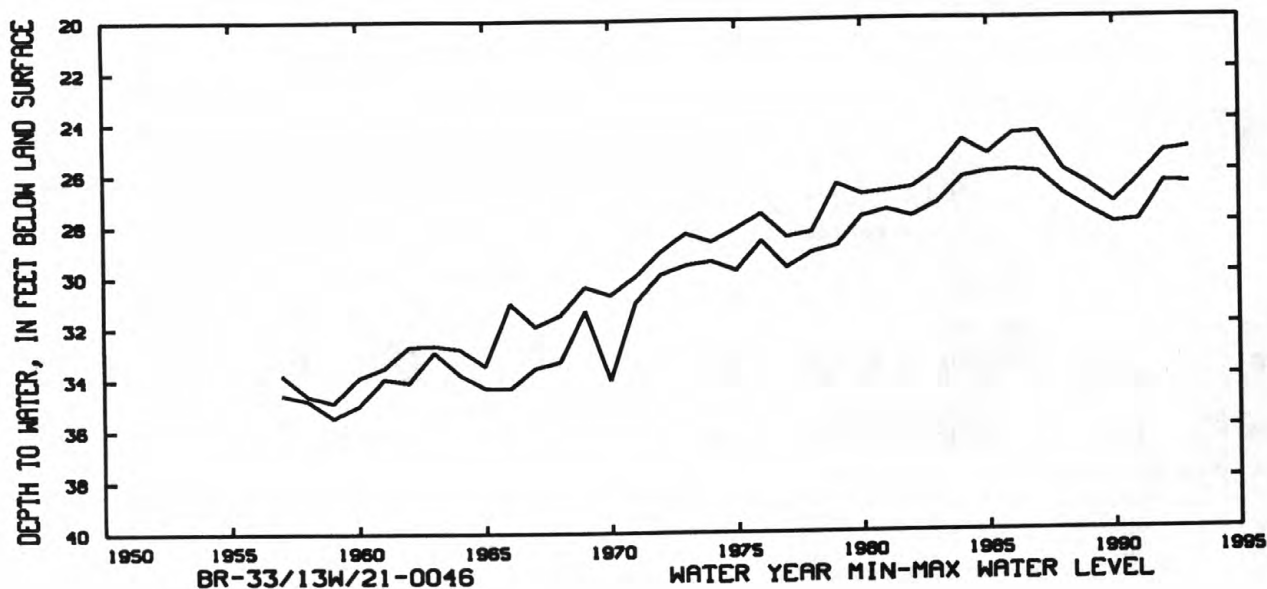
DATUM.--Elevation of land-surface datum is 1,115 ft above sea level. Measuring point: top of casing, 2.00 ft above land-surface datum.

PERIOD OF RECORD.--October 1956 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 24.47 ft below land-surface datum, Nov. 5, 1986; lowest water level measured, 35.45 ft below land-surface datum, May 13, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	26.07	DEC 28	26.29	FEB 25	26.48	APR 13	26.22	JUL 23	25.11	SEP 7	25.45
NOV 17	26.22	JAN 28	26.32	MAR 9	26.45	MAY 12	25.91	AUG 19	25.24	23	25.58
DEC 4	26.20	FEB 18	26.39	31	26.40	28	25.98				



## GROUND-WATER LEVELS

255

## BROWN COUNTY

443228088003101. Local number, BN-24/20E/24-0076.

LOCATION.--Lat 44°32'28", long 88°00'31", Hydrologic Unit 04030204. Owner: Wisconsin Public Service Corp.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 5 in., depth 500 ft, cased to 150 ft, open end.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

DATUM.--Elevation of land-surface datum is 590 ft above sea level. Measuring point: top of 3-in. pipe, 4.00 ft above land-surface datum.

PERIOD OF RECORD.--April 1950 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 41.24 ft below land-surface datum, May 3, 1961;  
lowest water level measured, 248.97 ft below land-surface datum, Aug. 30, 1955.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	110.21	FEB 4	104.83	MAR 10	103.84	MAY 14	103.80	JUL 8	106.15	AUG 13	106.80
NOV 11	109.48	12	104.10	18	103.91	21	104.15	15	106.58	26	107.26
17	108.94	19	103.83	2	103.46	4	104.65	22	106.70	SEP 8	109.50
DEC 2	107.25	25	104.06	15	102.70	9	104.60	AUG 5	106.90	16	108.67
16	106.36	MAR 2	103.85	MAY 6	104.10	24	105.35				

## BURNETT COUNTY

455224092215601. Local number, BT-39/16W/17-0002.

LOCATION.--Lat 45°52'24", long 92°21'56", Hydrologic Unit 07030001. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 8 in., depth 46 ft, cased to 46 ft,  
perforated 44 1/2-46 ft.

INSTRUMENTATION.--Water level measured weekly by observer.

DATUM.--Elevation of land-surface datum is 981 ft above sea level. Measuring point: pointer on float gage,  
4.87 ft above land-surface datum.

PERIOD OF RECORD.--May 1937 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.33 ft below land-surface datum, June 28, 1968;  
lowest water level measured, 37.90 ft below land-surface datum, Aug. 21, 1992.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 2	32.99	DEC 4	33.07	FEB 5	33.19	APR 9	33.19	JUN 11	33.16	AUG 6	32.87
9	32.92	11	33.06	12	33.17	16	33.27	18	33.13	13	32.86
16	33.07	18	33.06	19	33.15	23	33.25	25	33.03	20	32.84
23	33.02	25	33.03	26	33.23	30	33.31	JUL 2	32.98	27	32.80
30	32.84	JAN 1	33.02	MAR 5	33.24	MAY 7	33.28	9	32.97	SEP 3	32.78
NOV 6	33.10	8	33.15	12	33.29	14	33.12	16	33.98	10	32.64
13	32.99	15	33.08	19	33.25	21	33.21	23	32.92	17	32.82
20	33.00	22	33.04	26	33.29	28	33.19	30	32.87	24	32.80
27	33.04	29	33.16	APR 2	33.30	JUN 4	33.17				



445544091155701. Local number, CH-28/07W/17-0142.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 60 ft., cased to 39 ft., open end.

INSTRUMENTATION.--Water level measured weekly by observer.

DATUM.--Elevation of land-surface datum is 965 ft above sea level. Measuring point: 1/4-in. hole in pump base, 2.20 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.97 ft below land-surface datum, Oct. 28, 1986;  
lowest water level measured, 33.46 ft below land-surface datum, Jan. 10, 1978.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL			
OCT	12	29.95	DEC	15	28.95	FEB	15	28.92	APR	19	29.78	JUN	13	29.31	AUG	8	29.09
	18	29.29		21	29.17		22	29.80		26	30.24		20	29.12		16	28.82
	26	29.15		27	29.50	MAR	1	29.71	MAY	3	29.71		28	29.00		23	28.49
NOV	2	28.45	JAN	5	29.73		8	30.01		10	29.81	JUL	6	28.67	SEP	1	28.81
	9	29.16		11	29.68		14	30.00		16	29.53		12	28.88		7	28.93
	16	29.08		18	29.94		21	30.00		23	29.23		19	28.83		13	28.49
	23	29.26		25	29.87		29	29.99		31	29.55		27	28.82		20	28.64
DEC	1	28.96	FEB	1	30.00	APR	5	30.18	JUN	7	29.29	AUG	2	28.87		26	28.53
	7	29.46		7	29.62		12	30.26									

444525090443201. Local number, CK-26/03W/04-0001.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 150 ft cased to 53 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,210 ft above sea level. Measuring point: hole in pump base, at land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 50.00 ft below land-surface datum Apr. 28, 1987;  
lowest water level measured, 70.64 ft below land-surface datum, Sept. 17, 1965.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

[illegible]

## GROUND-WATER LEVELS

257

## DANE COUNTY

430429089230301. Local number, DN-07/09E/23-0005.

LOCATION.--Lat 43°04'29", long 89°23'03", Hydrologic Unit 07090001. Owner: State of Wisconsin.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in., depth 346 ft, cased to 265 ft, open end.

INSTRUMENTATION.--Water level measured weekly by observer.

DATUM.--Elevation of land-surface datum is 930 ft above sea level. Measuring point: hole in pump base, 3.50 ft below land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 83.55 ft below land-surface datum, Dec. 25, 1960  
lowest water level measured, 123.34 ft below land-surface datum, Aug. 25, 1992.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	118.05	DEC 14	108.88	FEB 15	110.72	APR 19	109.60	JUN 14	107.28	AUG 9	113.39
12	114.21	21	109.17	22	108.30	26	111.30	21	99.95	16	120.60
19	122.82	28	103.08	MAR 1	108.89	MAY 3	109.77	28	111.05	23	119.56
26	110.43	JAN 4	99.54	8	108.51	10	115.35	JUL 6	109.41	30	120.94
NOV 2	111.69	11	102.84	15	109.42	17	101.19	12	106.54	SEP 7	117.84
9	109.53	19	109.27	22	111.04	24	103.96	19	111.79	13	121.38
16	109.91	25	109.66	29	110.02	JUN 1	100.80	26	114.03	20	118.15
30	107.03	FEB 2	106.80	APR 5	112.40	7	101.90	AUG 2	113.80	27	122.08
DEC 7	107.79	8	109.05	12	109.30						

430456089190601. Local number, DN-07/10E/09-0105.

LOCATION.--Lat 43°04'56", long 89°19'06", Hydrologic Unit 07070005. Owner: City of Madison.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 380 ft, cased to 85 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 870 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.63 ft below land-surface datum, Mar. 23, 1986;  
lowest water level measured, 32.76 ft below land-surface datum, June 30, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	27.35	27.00	26.21	25.23	25.62	25.91	23.98	23.39	22.71	21.38	21.65	21.98
10	27.17	27.23	26.06	25.04	25.69	25.89	23.66	23.41	21.95	20.85	21.70	22.62
15	28.17	26.72	26.21	25.40	25.39	25.53	23.48	22.70	21.87	20.60	21.82	21.39
20	27.73	26.92	25.56	25.54	25.61	25.68	22.33	22.45	20.87	21.08	21.88	
25	26.78	26.30	25.12	25.40	26.05	25.59	21.94	23.46	21.82	21.11	21.92	21.75
EOM	26.90	25.99	25.52	25.51	25.72	24.56	22.47	22.78	22.29	20.98	21.90	21.64

WTR YEAR 1993 MAX 28.24 OCT 16 MIN 19.91 JUL 11

## GROUND-WATER LEVELS

## DODGE COUNTY

432407088552701. Local number, DG-11/13E/23-0081.

LOCATION.--Lat 43°24'15", long 88°55'26", Hydrologic Unit 07090002. Owner: Wis. Dept. of Transportation.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 125 ft, cased to 57 ft, open end.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

DATUM.--Elevation of land-surface datum is 880 ft above sea level. Measuring point: 1/4-in. hole in side of casing, 1.30 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.00 ft below land-surface datum, Dec. 4, 1991;  
lowest water level measured, 26.67 ft below land-surface datum, Feb. 3, 1965.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	20.16	NOV 15	19.28	JAN 7	18.09	APR 15	16.65	JUN 16	17.27	AUG 25	18.62
29	20.29	DEC 10	18.34	FEB 18	18.99	MAY 18	17.58	JUL 21	17.00		

## DOOR COUNTY

455757087151701. Local number, DR-29/27E/30-0007.

LOCATION.--Lat 45°57'57", long 87°15'17", Hydrologic Unit 04030102. Owner: Fred Peterson.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 4 in., depth 84 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 725 ft above sea level. Measuring point: hole in pump base, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.00 ft below land-surface datum, Mar. 22, 1979;  
lowest water level measured, 56.12 ft below land-surface datum, Feb. 21, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	33.37	JAN 6	36.43	MAR 12	35.32	MAY 13	35.12	JUL 8	22.42	AUG 19	46.30
NOV 18	36.64										

445055087213801. Local number, DR-27/26E/05-0265

LOCATION.--Lat 44°50'55", long 87°21'38", Hydrologic Unit 04030102. Owner: U.S. Geol. Survey.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled observation, diameter 6 in., depth 442 ft, cased to 170 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 616 ft above sea level. Measuring point: top of casing, 1.57 ft above land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.49 ft above land-surface datum, Apr. 20, 1972;  
lowest water level, 35.33 ft below land-surface datum, Feb. 1, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	28.92	24.97	14.64	10.77	16.82	18.90	12.79	1.03	10.22	6.14	10.66	
10	29.15	24.03	14.10	12.14	17.64	13.80	8.81	2.01	7.29	1.56	12.14	
15	28.92	22.10	15.50	12.81	18.07	16.69	8.27	3.50	6.55	3.81	13.41	
20	28.58	22.01	7.09	13.84	19.75	16.98	- 0.01	5.38	0.84	5.44		
25	29.32	13.10	9.27	14.35	20.87	15.45	- 0.16	7.25	2.56	6.18		
ECM	29.83	12.30	9.66	14.67	20.56	12.46	- 0.03	7.53	5.34	8.98		

WTR YEAR 1993 MAX 31.87 FEB 26 MIN -0.95 APR 22

## GROUND-WATER LEVELS

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## DOUGLAS COUNTY

463217091342801. Local number, DS-47/10W/23-0001.

LOCATION.--Lat 46°32'17", long 91°34'28", Hydrologic Unit 04010301. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 8 in., depth 40 ft, cased to 40 ft, perforated 37-40 ft.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

DATUM.--Elevation of land-surface datum is 980 ft above sea level. Measuring point: pointer on float gage, 4.33 ft above land-surface datum.

PERIOD OF RECORD.--June 1937 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.81 ft above land-surface datum, Apr. 28, 1978; lowest water level measured, 29.59 ft below land-surface datum, July 29, 1939.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 19	3.22	MAY 17	0.87	SEP 16	0.87

## FOND DU LAC COUNTY

434358088301001. Local number. FL-15/17E/30-0374.

LOCATION.--Lat 43°43'58", long 88°30'46", Hydrologic Unit 04030203. Owner: Wis. Dept. of Transportation.

AQUIFER.--Galena-Platteville.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 120 ft, cased to 63 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 835 ft above sea level. Measuring point: hole in pump base, 1.50 ft above land-surface datum.

PERIOD OF RECORD.--October 1967 to September 1993 (well sealed off).

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.05 ft below land-surface datum, Apr. 11, 1986; lowest water level measured, 34.99 ft below land-surface datum, Mar. 21, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	25.99	DEC 10	20.72	FEB 18	18.99	MAY 18	14.02	JUL 21	12.95	AUG 25	14.61
NOV 15	23.35	JAN 7	17.89	APR 15	14.73	JUN 16	14.24				

## FOREST COUNTY

460156088474901. Local number, FR-41/14E/18-0002.

LOCATION.--Lat 46°01'56", long 88°47'49", Hydrologic Unit 04030106. Owner: Wis. Dept. of Transportation.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water-table well, diameter 1 1/4 in., depth 18 ft, cased to 15 ft, well point 15-18 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,552 ft above sea level. Measuring point: top of casing, 1.70 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.96 ft below land-surface datum, Apr. 29, 1954; lowest water level measured, 12.50 ft below land-surface datum, Dec. 24, 1991.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	11.17	DEC 15	10.90	MAR 5	10.77	MAY 5	9.56	JUN 29	10.77	AUG 13	11.33
NOV 25	10.98	JAN 13	10.97	31	10.92						

## GROUND-WATER LEVELS

## FLORENCE COUNTY

454622088324802. Local number, FC-38/15E/18-0093.

LOCATION.--Lat 45°46'22", long 88°32'48", Hydrologic Unit 04030108. Owner: U.S. Forest Service.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Augered water-table observation well, diameter 3 in.

DATUM.--Datum of gage is approximately 1,400 ft above sea level.

PERIOD OF RECORD.--October 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed water level, 65.57 ft, June 20, 1993; minimum observed water level, 62.04 ft, Mar. 10-11, 1990.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63.97	63.83	64.12	64.02	63.93	63.83	63.99	64.36	64.89	65.35	65.25	65.03
2	63.97	63.93	64.10	64.02	63.94	63.83	63.97	64.37	64.87	65.37	65.23	65.06
3	63.94	64.00	64.08	64.04	63.93	63.82	63.95	64.44	64.86	65.35	65.22	65.08
4	63.93	63.97	64.08	64.03	63.92	63.82	63.93	64.57	64.85	65.37	65.22	65.04
5	63.92	63.95	64.07	64.02	63.93	63.83	63.93	64.64	64.84	65.38	65.25	65.02
6	63.92	63.92	64.07	64.02	63.92	63.84	63.93	64.64	64.83	65.37	65.33	65.00
7	63.92	63.91	64.06	64.02	63.94	63.84	63.95	64.62	64.85	65.34	65.27	64.98
8	63.92	63.90	64.05	64.01	63.91	63.84	64.05	64.62	64.95	65.36	65.23	64.99
9	63.94	63.90	64.05	63.99	63.92	63.83	64.13	64.60	65.01	65.37	65.24	65.02
10	63.94	63.91	64.05	63.98	63.91	63.83	64.15	64.63	65.02	65.34	65.23	64.98
11	63.94	63.91	64.04	63.98	63.90	63.83	64.16	64.79	65.25	65.35	65.19	64.96
12	63.94	63.93	64.03	63.98	63.91	63.83	64.11	64.77	65.22	65.33	65.18	64.97
13	63.93	63.91	64.02	63.99	63.91	63.82	64.10	64.74	65.19	65.33	65.17	65.19
14	63.91	63.89	64.02	63.99	63.90	63.82	64.10	64.74	65.18	65.34	65.16	65.43
15	63.90	63.88	64.06	63.98	63.89	63.81	64.10	64.72	65.15	65.32	65.16	65.30
16	63.91	63.88	64.14	63.99	63.88	63.81	64.11	64.69	65.14	65.31	65.15	65.24
17	63.90	63.87	64.12	63.98	63.88	63.79	64.10	64.69	65.39	65.31	65.14	65.21
18	63.89	63.86	64.10	63.96	63.88	63.79	64.13	64.69	65.34	65.33	65.14	65.17
19	63.89	63.86	64.11	63.96	63.87	63.79	64.19	64.69	65.43	65.33	65.13	65.13
20	63.89	63.91	64.09	63.96	63.86	63.79	64.20	64.69	65.57	65.29	65.10	65.13
21	63.87	64.20	64.09	63.98	63.86	63.78	64.20	64.69	65.50	65.28	65.08	65.13
22	63.88	64.27	64.08	63.98	63.86	63.78	64.21	64.68	65.45	65.26	65.07	65.13
23	63.89	64.24	64.06	63.98	63.85	63.78	64.23	64.71	65.42	65.26	65.09	65.10
24	63.88	64.20	64.06	63.96	63.84	63.77	64.29	64.77	65.41	65.26	65.12	65.08
25	63.89	64.18	64.07	63.95	63.84	63.79	64.32	64.74	65.41	65.33	65.06	65.07
26	63.88	64.17	64.03	63.97	63.83	63.82	64.30	64.73	65.39	65.33	65.05	65.07
27	63.87	64.15	64.04	63.95	63.83	63.86	64.29	64.75	65.36	65.30	65.08	65.05
28	63.86	64.14	64.02	63.96	63.83	63.89	64.37	64.76	65.34	65.33	65.06	65.04
29	63.85	64.13	64.02	63.94	---	63.91	64.37	64.75	65.33	65.30	65.04	65.02
30	63.84	64.12	64.03	63.96	---	63.95	64.37	64.81	65.35	65.26	65.09	65.03
31	63.84	---	64.03	63.96	---	64.01	---	64.90	---	65.25	65.07	---
MEAN	63.90	64.00	64.06	63.98	63.89	63.83	64.14	64.68	65.19	65.32	65.15	65.09
MAX	63.97	64.27	64.14	64.04	63.94	64.01	64.37	64.90	65.57	65.38	65.33	65.43
MIN	63.84	63.83	64.02	63.94	63.83	63.77	63.93	64.36	64.83	65.25	65.04	64.96



## GRANT COUNTY

425551090391301. Local number, GR-05/02W/06-0005.

LOCATION.--Lat 42°55'51", long 90°39'13", Hydrologic Unit 07060003. Owner: Homer Yelinek.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in., depth 35 ft, cased to 5 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

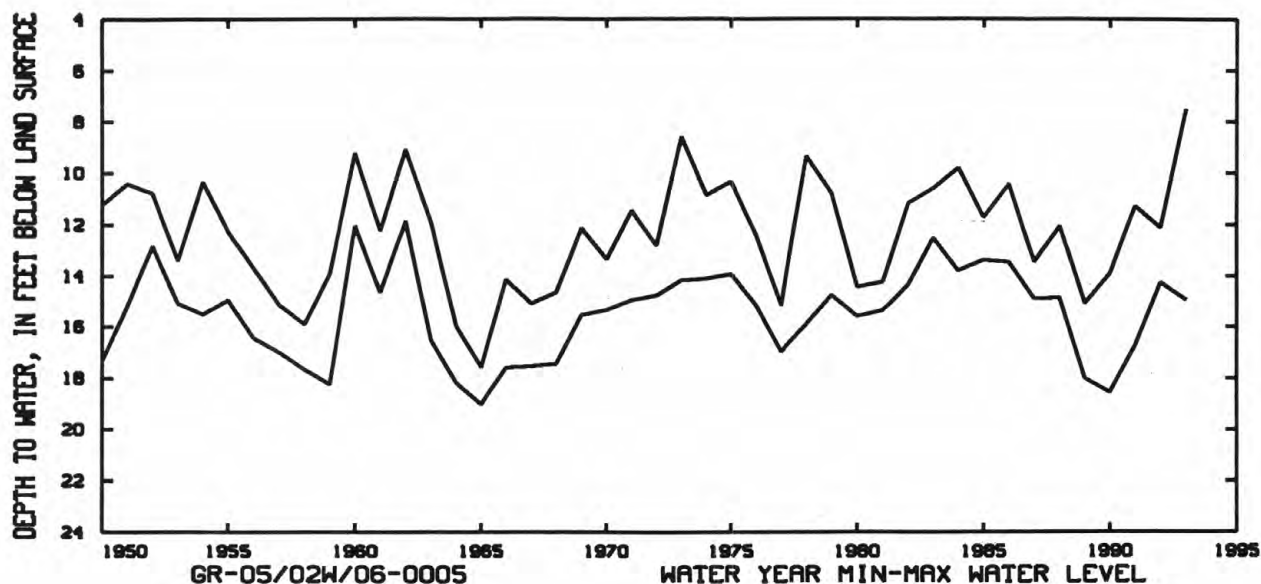
DATUM.--Elevation of land-surface datum is 980 ft above sea level. Measuring point: edge of pump base, 0.50 ft above land-surface datum.

PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.52 ft below land-surface datum, July 22, 1993; lowest water level measured, 19.03 ft below land-surface datum, Aug. 17, 1965.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	14.83	DEC 23	14.32	FEB 12	14.50	MAY 12	9.57	JUL 22	7.52	SEP 16	9.88
NOV 18	14.93	JAN 22	14.27	APR 5	11.93	JUN 14	9.58	AUG 30	9.27		



## GREEN COUNTY

423815089404201. Local number, GN-02/07E/21-0001.

LOCATION.--Lat 42°38'15", long 89°40'12", Hydrologic Unit 07090003. Owner: Eric Welty.

AQUIFER.--Galena-Platteville.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in., depth 75 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 995 ft above sea level. Measuring point: top of casing, 4.50 ft above land-surface datum.

PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 47.96 ft below land-surface datum, Apr. 13, 1966; lowest water level measured, 69.72 ft below land-surface datum, Feb. 17, 1964.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 9	60.80	DEC 15	58.45	FEB 24	55.57	JUN 3	51.37	AUG 30	49.45	SEP 24	50.68
NOV 17	61.47	JAN 19	55.42	APR 6	53.50	JUL 26	48.31				

## GROUND-WATER LEVELS

## IOWA COUNTY

425644090101901. Local number, IW-06/03E/32-0032.

LOCATION.--Lat 42°56'44", long 90°10'19", Hydrologic Unit 07090003. Owner: Archie Lee.

AQUIFER.--Galena-Platteville.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 92 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,200 ft above sea level. Measuring point: 1/4-in. hole pump base, at land-surface datum.

PERIOD OF RECORD.--August 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.02 ft below land-surface datum, July 22, 1993; lowest water level measured, 68.81 ft below land-surface datum, Aug. 18, 1965.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	57.25	DEC 15	56.40	FEB 25	56.25	JUN 2	47.79	AUG 30	50.35	SEP 21	53.79
NOV 16	58.32	JAN 4	54.48	APR 8	46.85	JUL 22	36.02				

## JACKSON COUNTY

441051090470901. Local number, JA-20/03W/30-0005.

LOCATION.--Lat 44°10'51", long 90°47'09", Hydrologic Unit 07040007. Owner: Robert Foulker.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 190 ft, cased to 54 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 845 ft above sea level. Measuring point: hole in pump base, at land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.70 ft below land-surface datum, June 30, 1993; lowest water level measured, 22.60 ft below land-surface datum, Dec. 19, 1958.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	16.74	DEC 9	17.71	MAR 11	19.35	JUN 30	13.70	AUG 4	15.19	SEP 14	16.78
NOV 6	17.34	JAN 28	18.71	APR 29	16.86						

## JUNEAU COUNTY

435515090152901. Local number, JU-17/02E/28-0098.

LOCATION.--Lat 43°55'15", long 90°15'29", Hydrologic Unit 07070003. Owner: Wis. Dept. of Transportation.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in., depth 71 ft, cased to 42 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 930 ft above sea level. Measuring point: 1/4-in. hole in pump base, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.86 ft below land-surface datum, May 24, 1973; lowest water level measured, 13.90 ft below land-surface datum, Jan. 10, 1979.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	12.11	DEC 8	11.87	MAR 11	12.15	JUN 30	10.63	AUG 4	10.62	SEP 14	10.64
NOV 6	12.03	JAN 28	12.16	APR 29	10.73						

## GROUND-WATER LEVELS

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## KENOSHA COUNTY

423907087521701. Local number, KE-02/22E/11-0006.

LOCATION.--Lat 42°39'07", long 87°52'17", Hydrologic Unit 04040002. Owner: Kenosha County.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 1,751 ft, cased to 492 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 639 ft above sea level. Measuring point: end of 3/4-in. plastic pipe, 1.35 ft above land-surface datum.

REMARKS.--Water level affected by regional pumping of wells.

PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 21.10 ft below land-surface datum, Dec. 3, 1947; lowest water level measured, 217.45 ft below land-surface datum, Oct. 14, 1992.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	217.45	MAY 24	215.08	JUL 21	215.18	SEP 15	216.86

## LAFAYETTE COUNTY

423114090161101. Local number, LF-01/02E/33-0057.

LOCATION.--Lat 42°31'13", long 90°16'11", Hydrologic Unit 07060005. Owner: Coulthard Estate.

AQUIFER.--Galena-Platteville.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 265 ft, cased to 16 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 1,000 ft above sea level. Measuring point: top of casing, 3.00 ft above land-surface datum.

PERIOD OF RECORD.--April 1952 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 18.29 ft below land-surface datum, July 18, 1993; lowest water level, 130.99 ft below land-surface datum, Nov. 6, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	36.56	36.61	31.48	28.18	29.84	31.08	30.94	24.10	23.10	20.75	20.10	23.36
10	36.07	36.56	30.91	28.27	30.01	31.00	30.74	21.51	22.87	19.37	20.80	23.98
15	36.23	36.65	30.87	28.31	30.35	31.26	30.35	20.67	22.83	18.54	21.35	24.48
20	36.36	36.16	29.63	29.02	30.34	31.60	28.21	20.97	22.24	18.48	22.05	24.42
25	36.33	33.43	29.00	29.29	31.05	31.56	25.84	21.81	21.97	18.58	22.59	
EOM	36.47	31.56	29.06	29.28	31.16	30.38	25.31	22.45	21.48	19.39	22.90	25.42
WTR YEAR 1993	MAX	36.75	NOV 6	MIN	18.29	JUL 18						

424620089590001. Local number, LF-04/04E/35-0078.

LOCATION.--Lat 42°46'20", long 89°58'57", Hydrologic Unit 07090003. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 3/4 in., depth 29 ft, cased to 16 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 850 ft above sea level. Measuring point: top of casing, 0.20 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.89 ft below land-surface datum, May 23, 1974; lowest water level measured, 19.81 ft below land-surface datum, Mar. 3, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	16.60	DEC 15	15.94	FEB 25	16.00	JUN 4	12.04	AUG 30	10.71	SEP 23	10.88
NOV 18	16.58	JAN 11	15.30	APR 8	14.74	JUL 27	9.94				

## GROUND-WATER LEVELS

## LANGLADE COUNTY

450933089084801. Local number, LA-31/11E/20-0064.

LOCATION.--Lat 45°09'33", long 89°08'48", Hydrologic Unit 07070002. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water-table well, diameter 2 in., depth 20 ft, cased to 18 ft, well point 18-20 ft.

INSTRUMENTATION.--Water level measured weekly by observer.

DATUM.--Elevation of land-surface datum is 1,508 ft above sea level. Measuring point: top of collar on casing, 0.30 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.40 ft below land-surface datum, June 21, 1993; lowest water level measured, 16.46 ft below land-surface datum, Jan. 31, 1949.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	12.83	DEC 8	12.40	FEB 8	13.15	APR 5	12.90	JUN 7	10.42	AUG 9	11.59
12	12.83	14	12.45	15	13.25	12	12.70	14	10.10	16	11.80
19	12.91	21	12.40	22	13.90	19	12.60	21	9.40	23	11.82
26	12.95	JAN 6	12.50	MAR 2	13.60	26	12.38	28	9.66	30	12.15
NOV 2	12.97	11	12.55	8	13.45	MAY 3	11.70	JUL 6	10.15	SEP 7	12.36
16	12.85	19	12.60	15	12.20	10	11.10	12	10.47	15	12.47
23	12.65	25	12.65	22	13.60	17	10.58	19	10.95	20	12.28
30	12.20	FEB 1	12.90	27	13.55	24	10.70	AUG 2	11.35	27	12.35

## LINCOLN COUNTY

452318089402501. Local number, LN-34/06E/36-0060.

LOCATION.--Lat 45°23'18", long 89°40'25", Hydrologic Unit 07070002. Owner: U.S. Geol. Survey.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water-table well, diameter 1 1/4 in., depth 22 ft, cased to 20 ft, well point 20-22 ft.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

DATUM.--Elevation of land-surface datum is 1,435 ft above sea level. Measuring point: top of pipe, 3.00 ft above land-surface datum.

PERIOD OF RECORD.--July 1955 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.03 ft below land-surface datum, May 7, 1952; lowest water level measured, 9.89 ft below land-surface datum, Aug. 3, 1988.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	8.50	JAN 10	6.30	APR 20	7.62	JUL 27	7.71	AUG 10	7.87	AUG 30	6.15
NOV 19	8.24	FEB 20	8.69	JUN 15	7.67	AUG 2	7.65	16	7.16	SEP 6	7.80
DEC 15	7.27	MAR 18	8.69	JUL 20	7.74	9	7.59	23	7.98		

## GROUND-WATER LEVELS

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## MANITOWOC COUNTY

440430087420401. Local number, MN-19/23E/35-0028.

LOCATION.--Lat 44°04'30", long 87°42'04", Hydrologic Unit 04030101. Owner: Wis. Dept. of Transportation.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 147 ft, cased to 133 ft, open end.

INSTRUMENTATION.--Water level measured weekly by observer.

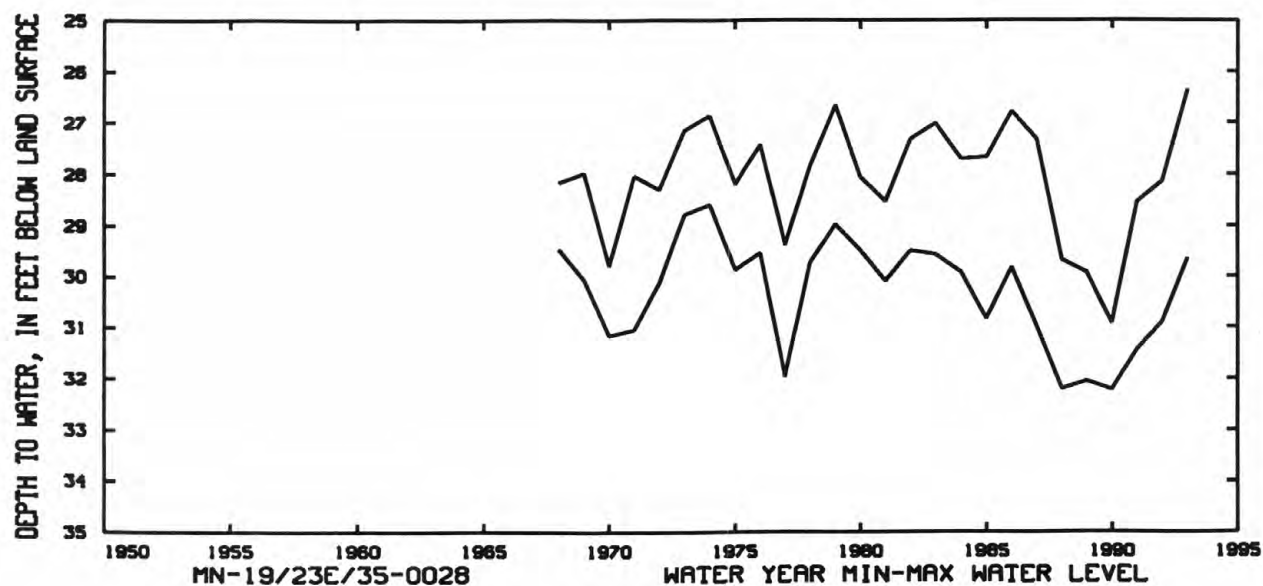
DATUM.--Elevation of land-surface datum is 670 ft above sea level. Measuring point: 1/4-in. hole in pump base, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.37 ft below land-surface datum, May 4, 1993; lowest water level measured, 32.22 ft below land-surface datum, Dec. 28, 1989.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	29.37	DEC 1	28.76	FEB 2	28.28	MAR 30	28.24	MAY 25	26.90	AUG 3	27.46
14	29.65	9	28.32	9	28.25	APR 6	28.10	JUN 1	27.08	18	28.29
15	29.64	15	28.14	16	28.35	13	27.67	8	27.02	24	28.10
21	29.37	21	28.03	23	28.54	20	26.98	22	27.30	31	28.12
28	29.33	29	27.89	MAR 2	28.72	28	26.89	24	27.35	SEP 7	28.20
NOV 3	29.62	JAN 5	27.91	9	28.63	30	26.64	29	27.68	14	28.23
11	29.07	12	28.00	11	28.61	MAY 4	26.37	JUL 13	27.12	21	28.07
17	28.99	19	28.14	16	28.41	11	26.60	20	27.21	28	28.14
19	29.01	26	28.00	23	28.46	18	26.91	28	27.30		





## GROUND-WATER LEVELS

## MARATHON COUNTY

444709089265301. Local number, MR-27/09E/31-0028.

LOCATION.--Lat 44°47'09", long 89°26'53", Hydrologic Unit 07070002. Owner: U.S. Geol. Survey.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water-table well, diameter 1 1/4 in., depth 27 ft, cased to 25 ft, well point 25-27 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 1,229 ft above sea level. Measuring point: top of pipe, 0.80 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.18 ft below land-surface datum, Aug. 1, 1993; lowest water level measured, 26.09 ft below land-surface datum, Mar. 30, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	17.54	DEC 6	17.14	FEB 7	16.65	APR 11	16.21	JUN 13	14.37	AUG 8	12.23
11	17.46	13	17.03	14	16.65	18	16.09	20	13.62	15	12.21
18	17.49	20	16.96	21	16.65	25	15.95	28	13.30	22	12.19
25	17.46	27	16.87	28	16.69	MAY 2	15.84	JUL 4	12.90	29	12.26
NOV 1	17.46	JAN 3	16.75	MAR 7	16.75	9	15.46	11	12.52	SEP 5	12.27
8	17.47	10	16.71	14	16.74	16	15.27	18	12.34	12	12.27
15	17.47	17	16.69	21	16.90	23	16.05	25	12.21	19	12.38
22	17.29	24	16.60	28	15.98	30	14.91	AUG 1	12.18	27	12.37
29	17.19	31	16.65	APR 4	16.21	JUN 5	14.81				

## MARINETTE COUNTY

453816087590101. Local number, MT-37/20E/34-0007.

LOCATION.--Lat 45°38'16", long 87°59'01", Hydrologic Unit 04030108. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 8 in., depth 33 ft, cased to 33 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 980 ft above sea level. Measuring point: pointer on float gage, 4.00 ft above land-surface datum.

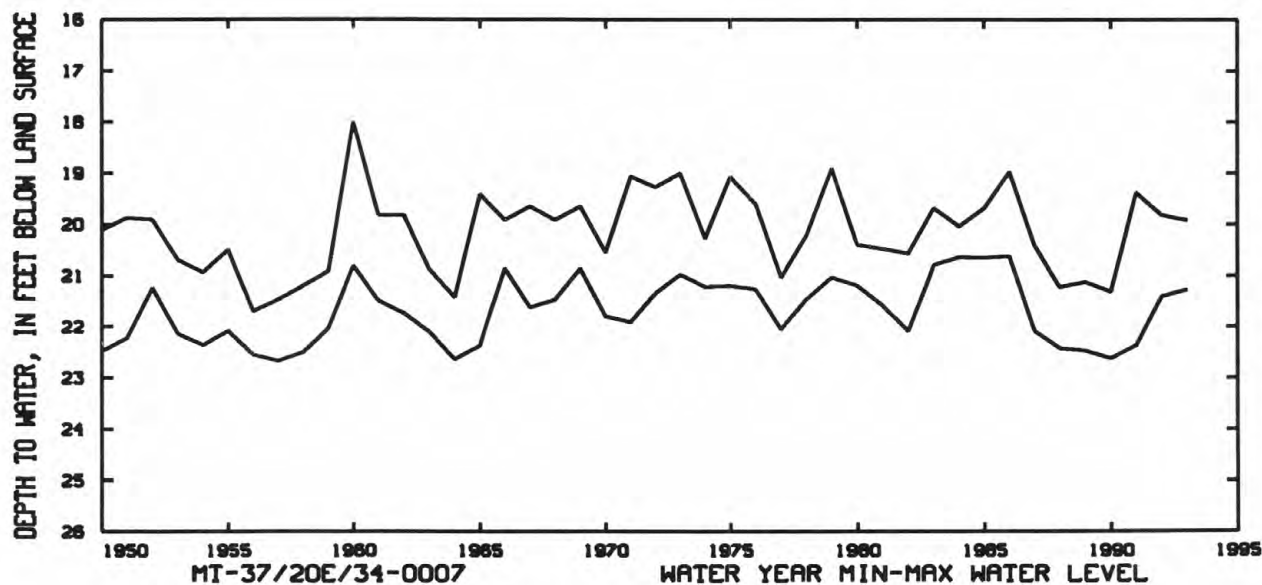
PERIOD OF RECORD.--March 1939 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.01 ft below land-surface datum, May 17, 1960; lowest water level measured, 23.26 ft below land-surface datum, Nov. 2, 1948.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	21.14	DEC 8	20.76	FEB 10	21.08	APR 14	20.88	JUN 15	20.18	AUG 10	20.38
14	21.16	15	20.82	16	21.14	20	20.86	22	20.09	17	20.26
22	21.18	22	20.75	23	21.17	27	20.73	29	19.92	24	20.53
28	21.19	29	20.83	MAR 2	21.21	MAY 4	20.58	JUL 6	19.92	31	20.60
NOV 3	21.21	JAN 5	20.88	9	21.22	11	20.37	13	20.04	SEP 7	20.64
10	21.21	12	20.96	16	21.23	18	20.24	20	20.15	14	20.72
17	21.08	19	21.00	23	21.28	25	20.23	27	20.26	21	20.56
24	20.94	26	21.03	31	21.09	JUN 1	20.20	AUG 3	20.35	28	20.64
DEC 2	20.75	FEB 2	21.05	APR 6	20.95	8	20.18				

## MARINETTE COUNTY



## MARQUETTE COUNTY

435244089293401. Local number, MQ-16/08E/12-0009.

LOCATION.--Lat 43°52'44", long 89°29'34", Hydrologic Unit 04030201. Owner: Village of Westfield.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 274 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 880 ft above sea level. Measuring point: top of casing, at land-surface datum.

PERIOD OF RECORD.--October 1949 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.15 ft below land-surface datum, July 13, 1993; lowest water level measured, 18.21 ft below land-surface datum, Feb. 18, 1965.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	14.94	DEC 14	14.77	FEB 16	14.82	MAY 21	13.48	JUL 13	12.15	AUG 27	12.16
NOV 3	14.85	JAN 6	14.67	APR 13	14.41						

433956089275601. Local number, MQ-14/09E/30-0026.

LOCATION.--Lat 43°39'56", long 89°27'56", Hydrologic Unit 04030201. Owner: Leslie Mountford.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in., depth 170 ft, cased to 145 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 800 ft above sea level. Measuring point: 1/4-in. hole in cap of casing, 0.75 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 12.80 ft below land-surface datum, Apr. 2, 1973; lowest water level measured, 19.22 ft below land-surface datum, Feb. 22, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	16.64	DEC 14	15.70	FEB 16	14.98	MAY 21	14.02	JUL 13	13.29	AUG 27	14.45
NOV 3	16.49	JAN 6	15.41	APR 13	14.78						

## GROUND-WATER LEVELS

## MILWAUKEE COUNTY

425819087551201. Local number, ML-06/22E/20-0085.

LOCATION.--Lat 42°58'19", long 87°55'12", Hydrologic Unit 04040003. Owner: City of Milwaukee.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 16 in., depth 1,834 ft, cased to 705 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 705 ft above sea level. Measuring point: hole in cover on casing, 6.00 ft below land-surface datum.

PERIOD OF RECORD.--Water years 1938, 1944, 1946, 1950, 1952, 1961, 1973 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 110.00 ft below land-surface datum, 1938; lowest water level, 342.30 ft below land-surface datum, Mar. 27, 1992.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

LOWEST VALUE												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	328.14	327.89	328.20	328.19	329.31	329.60	330.12	330.43	330.82	331.26	331.80	332.40
10	327.83	327.88	327.76	328.45	329.23	329.67	329.88	330.45	330.92	331.43	331.72	332.52
15	327.93	327.89	327.75	328.28	329.30	329.84	329.72	330.29	331.21	331.67	331.74	332.77
20	327.95	327.89	327.93	328.87	329.17	329.98	329.95	330.41	331.21	331.51	331.84	332.67
25	328.05	327.92	328.03	329.04	329.64	330.11	330.06	330.61	331.27	331.41	332.01	332.60
EOM	328.05	327.86	328.20	328.91	329.67	329.73	330.27	330.66	331.48	331.65	332.22	332.83

WTR YEAR 1993 MAX 332.83 SEP 30 MIN 327.56 NOV 2

430412087545801. Local number, ML-07/22E/17-0120.

LOCATION.--Lat 43°04'12", long 87°54'58", Hydrologic Unit 04040003. Owner: Nunn-Bush Shoe Co.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 400 ft, cased to 215 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 685 ft above sea level. Measuring point: top of concrete, 8.75 ft below land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--April 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 54.99 ft below land-surface datum, Apr. 28, 1986; lowest water level, 144.20 ft below land-surface datum, Aug. 29, 1991.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	134.23	DEC 15	131.40	FEB 24	128.02	MAY 27	124.22	AUG 5	122.25	SEP 15	121.63
NOV 17	132.89	JAN 12	129.97	MAR 31	125.85						

425613088014301. Local number, ML-06/21E/32-0148.

LOCATION.--Lat 42°56'13", long 88°01'43", Hydrologic Unit 04040002. Owner: Milwaukee County.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in., depth 180 ft, cased to 43 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 774 ft above sea level. Measuring point: top of 1/4-in. pipe, at land-surface datum.

PERIOD OF RECORD.--September 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.56 ft below land-surface datum, Mar. 4, 1951; lowest water level measured, 40.03 ft below land-surface datum, Aug. 13, 1971.

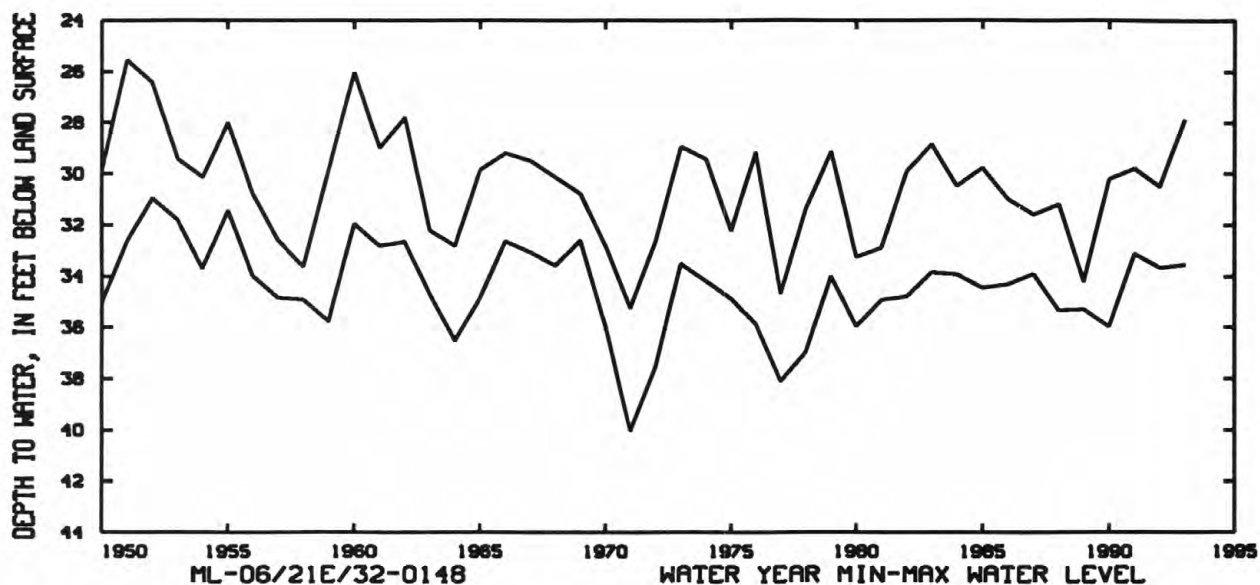
## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	33.55	DEC 17	33.40	MAR 9	32.95	JUN 8	29.45	JUL 20	30.04	SEP 8	31.62
NOV 15	33.50	JAN 26	32.23	APR 29	27.89						

## GROUND-WATER LEVELS

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## MILWAUKEE COUNTY



## MONROE COUNTY

434342090495601. Local number, MO-15/04W/34-0002.

LOCATION.--Lat 43°43'42", long 90°49'56", Hydrologic Unit 07060001. Owner: Joseph Anderson.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in., depth 44 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 1,100 ft above sea level. Measuring point: top of casing, 0.50 ft above land-surface datum.

REMARKS.--No measurements made in 1981-82 water year.

PERIOD OF RECORD.--July 1934 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.70 ft below land-surface datum, Apr. 10, 1976; lowest water level measured, 18.68 ft below land-surface datum, Feb. 23, 1935.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DAY	LOWEST VALUE											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	6.81	6.94	6.89	6.98	7.12				5.94	5.56	6.09	6.05
10	6.83	6.95	6.86	7.01					5.56	5.79	5.93	6.15
15	6.89	7.01	6.92	7.15					5.96	5.77	6.02	6.08
20	6.94	6.99	6.81	7.08					5.53	5.91	5.98	6.09
25	6.96	6.50	6.80	7.03					5.85	5.94	6.08	6.15
EOM	7.00	6.71	6.96	7.07				5.79	5.97	6.02	5.69	6.20
WTR YEAR 1993	MAX		7.15	JAN 13	MIN	5.32	JUN 9					

440026090390101. Local number. MO-18/02W/29-0017.

AQUIFER.--Sandstone.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 909 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--November 1949 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 0.48 ft below land-surface datum, Sept. 29, 1965; lowest water level, 8.62 ft below land-surface datum, Oct. 7, 1987.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	5.39	6.02	5.64	5.91	6.43	6.80	6.01	3.20	3.74	1.62	2.36	3.20
10	5.51	6.12	5.78	6.01	6.52	6.79	5.80	3.06	3.09	1.99	2.30	3.49
15	5.66	6.19	5.86	6.08	6.57	6.83	5.41	3.21	3.31	2.12	2.60	3.21
20	5.75	6.24	5.75	6.13	6.61	6.88	4.53	3.50	2.16	2.37	2.70	3.46
25	5.84	5.61	5.70	6.28	6.71	6.86	3.90	3.57	2.32	2.56	2.97	3.65
EOM	5.96	5.53	5.81	6.35	6.74	6.57	3.72	3.53	2.59	1.99	2.81	3.84
	WTR YEAR 1993	MAX	6.91	MAR 24	MIN	1.58	JUL 4					

OCONTO COUNTY

445054088025201. Local number. OC-27/20E/03-0020.

AQUIFER.--Prairie du Chien.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in., depth 100 ft, cased to 88 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 640 ft above sea level. Measuring point: 1/4-in. hole in pump base, 2.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.07 ft below land-surface datum, June 20, 1969;  
lowest water level measured, 13.52 ft below land-surface datum, Aug. 27, 1981.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	11.07	DEC 21	10.68	MAR 30	10.65	APR 29	10.47	JUN 22	10.19	AUG 17	10.48
NOV 6	9.96	MAR 4	10.73								



455213089323501. Local number, ON-39/08E/18-0022.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Jetted unused water-table well. diameter 6 in.. depth 27 ft. cased to 27 ft. open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 1,607 ft above sea level. Measuring point: top of casing, 6.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 12.31 ft below land-surface datum, May 28, 1973; lowest water level, 22.02 ft below land-surface datum, Jan. 20, 1993.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	15.55	15.72	15.78	15.92	16.11	16.35	16.67	16.29	15.28	14.55	14.69	15.19
10	15.54	15.72	15.76	15.96	16.16	16.40	16.69	16.06	15.21	14.49	14.79	15.27
15	15.60	15.74	15.80	15.96	16.19	16.45	16.68	15.83	15.10	14.54	14.83	15.33
20	15.63	15.75	15.84	22.02	16.22	16.50	16.64	15.68	15.01	14.47	14.94	15.35
25	15.67	15.75	15.85	16.06	16.28	16.56	16.56	15.55	14.80	14.53	15.04	15.40
EOM	15.70	15.74	15.88	16.06	16.30	16.62	16.44	21.37	14.68	14.61	15.13	15.46

WTR YEAR	1993	MAX	22.02	JAN 20	MIN	14.45	JUL 19
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454026089425301. Local number. ON-37/06E/27-0023.

LOCATION.--Lat 45°40'26", long 89°42'53". Hydrologic Unit 07070001. Owner: U.S. Geol. Survey.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water-table well, diameter 1 1/4 in., depth 37 ft, cased to 35 ft, well point 35-37 ft.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

DATUM.--Elevation of land-surface datum is 1,529 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.35 ft below land-surface datum, July 22, 1973;  
lowest water level measured, 34.29 ft below land-surface datum, June 6, 1990.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL			
OCT	15	30.20	DEC	15	30.05	MAR	15	30.90	MAY	5	30.74	JUN	19	29.71	JUL	12	30.67
NOV	9	30.32	FEB	18	30.67		29	30.92		29	30.70		30	29.51		31	30.65
	17	30.43		26	30.42	APR	12	30.78	JUN	5	29.86		8	30.71		4	30.08
	29	30.39		28	30.65		26	30.80									

## OUTAGAMIE COUNTY

441840088115001. Local number. OU-21/19E/04-0326.

LOCATION.--Lat 44°18'40", long 88°11'50". Hydrologic Unit 04030204. Owner: Outagamie County, Rapid Croche.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 280 ft., cased to 82 ft.

INSTRUMENTAION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 660 ft above sea level. Measuring point: 1/4-in. hole in pump base, 1.50 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.10 ft below land-surface datum, Apr. 20, 1970;  
lowest water level measured, 93.43 ft below land-surface datum, Oct. 3, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	92.99	DEC 15	90.50	MAR 12	88.89	MAY 13	88.31	JUL 7	88.60	AUG 18	90.66
NOV 19	91.41	JAN 5	89.58								

## GROUND-WATER LEVELS

## POLK COUNTY

453013092314601. Local number, PK-35/17W/08-0040.

LOCATION.--Lat 45°30'13", long 92°31'46", Hydrologic Unit 07030005. Owner: Village of Milltown.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in., depth 52 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,250 ft above sea level. Measuring point: hole in pump base, at land-surface datum.

PERIOD OF RECORD.--September 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.55 ft below land-surface datum, Jul 23, 1986; lowest water level measured, 41.38 ft below land-surface datum, July 22, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	32.59	DEC 28	32.60	FEB 18	33.25	APR 29	34.00	JUN 30	33.60	AUG 27	32.78
NOV 23	32.14	JAN 28	32.97	MAR 31	33.83	MAY 28	34.44	JUL 23	33.00	SEP 30	32.76

452352092332001. Local number, PK-34/18W/26-0093.

LOCATION.--Lat 45°23'52", long 92°33'20", Hydrologic Unit 07030005. Owner: Wis. Dept. of Transportation.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 64 ft, cased to 60 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

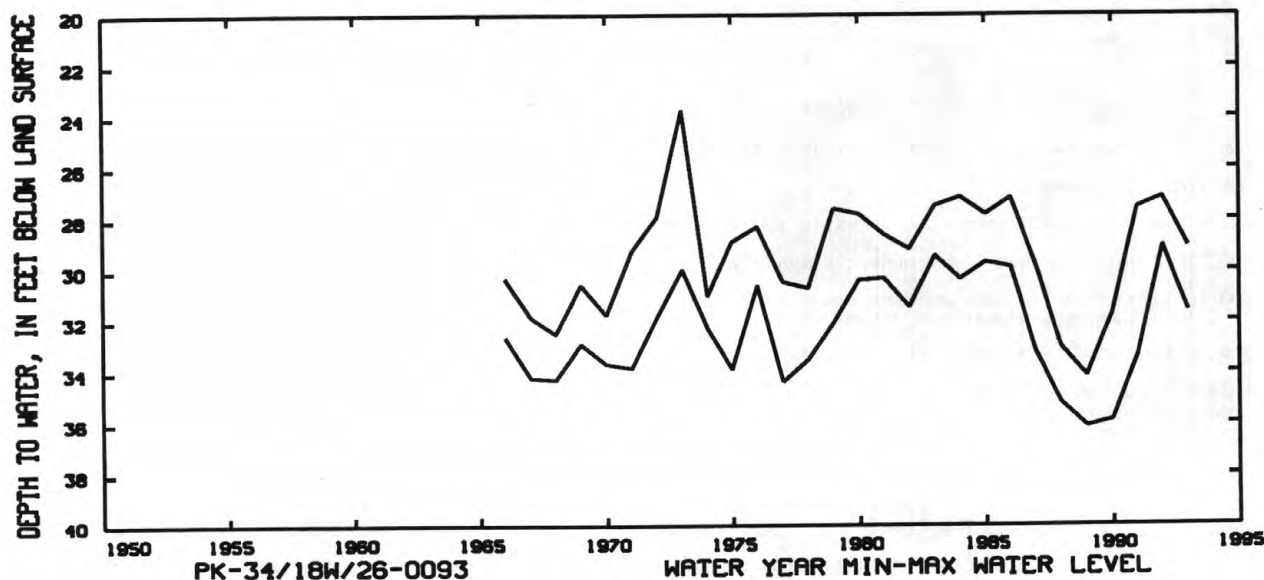
DATUM.--Elevation of land-surface datum is 1,140 ft above sea level. Measuring point: hole in pump base, 2.00 ft above land-surface datum.

PERIOD OF RECORD.--March 10, 1966 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 23.72 ft below land-surface datum, June 20, 1973; lowest water level measured, 36.13 ft below land-surface datum, Mar. 22, 1989.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	29.06	DEC 14	30.17	FEB 15	31.12	APR 19	31.26	JUN 14	31.35	AUG 9	29.90
23	29.26	22	30.28	24	31.28	26	31.33	22	30.77	16	29.86
27	29.46	30	30.40	MAR 1	31.34	MAY 3	31.29	28	30.54	23	29.87
NOV 5	29.54	JAN 5	30.52	8	31.42	10	31.32	JUL 6	30.25	30	29.90
9	29.67	11	30.58	15	31.47	17	31.34	12	30.06	7	30.02
16	29.72	18	30.72	22	31.60	24	31.35	19	29.90	13	30.04
23	29.80	25	30.80	29	31.46	JUN 1	31.37	26	30.02	20	30.11
30	29.95	FEB 2	30.90	APR 5	31.37	7	31.40	AUG 2	29.80	27	30.19
DEC 7	30.07	8	31.02	12	31.34						



## PORTAGE COUNTY

443127089174101. Local number, PT-24/10E/28-0015.

LOCATION.--Lat 44°31'27", long 89°17'41", Hydrologic Unit 04030202. Owner: Lawrence Krogwold.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven unused water-table well, diameter 2 in., depth 52 ft, cased to 50 ft, screened 50-52 ft.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

DATUM.--Elevation of land-surface datum is 1,133 ft above sea level. Measuring point: rim of casing, 1.50 ft above land-surface datum.

PERIOD OF RECORD.--August 1950 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.50 ft below land-surface datum, Aug. 4, 1973; lowest water level measured, 38.81 ft below land-surface datum, Nov. 12, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	34.08	DEC 12	34.06	FEB 20	33.86	APR 17	33.75	JUN 12	33.37	AUG 7	30.20
17	34.07	26	34.02	MAR 6	33.87	MAY 1	33.71	26	33.07	21	29.91
31	34.07	JAN 9	34.02	MAR 20	33.84	MAY 15	33.64	JUL 10	31.60	SEP 4	29.80
NOV 14	34.05	23	33.95	APR 3	33.80	29	33.51	24	30.82	18	29.77
28	34.05	FEB 6	33.95								

442623089302701. Local number, PT-23/08E/25-0376.

LOCATION.--Lat 44°26'23", long 89°30'27", Hydrologic Unit 07070003. Owner: U. S. Geol. Survey.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Driven observation water table well, diameter 1 1/4 in., depth 36 ft, cased to 34 ft, well point 34-36 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

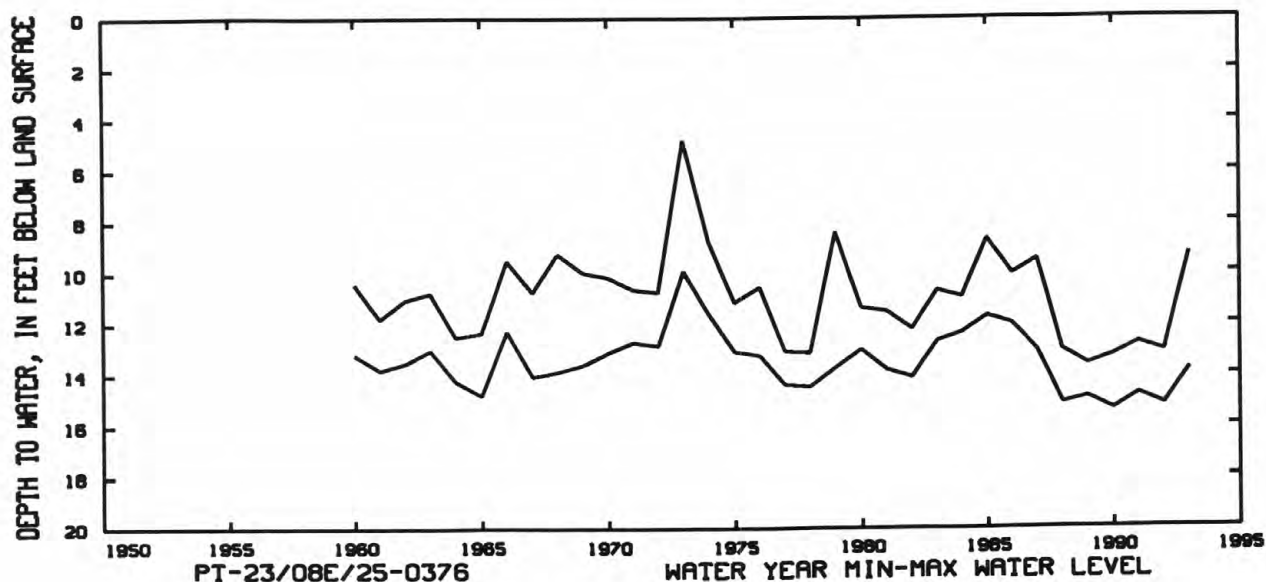
DATUM.--Elevation of land-surface datum is 1,099 ft above sea level. Measuring point: top of casing, 4.20 ft above land-surface datum.

PERIOD OF RECORD.--December 1, 1959, to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.77 ft below land-surface datum, June 5, 1973; lowest water level measured, 15.37 ft below land-surface datum, Feb. 15, 1990.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	13.60	JAN 21	13.20	MAR 22	13.70	MAY 24	11.30	JUL 19	9.30	SEP 22	10.50
NOV 17	13.80	FEB 23	13.30	APR 20	12.60	JUN 22	10.20	AUG 17	10.20	27	10.70
DEC 11	13.20										



## GROUND-WATER LEVELS

## PRICE COUNTY

455448090263401. Local number, PR-40/01W/24-0006.

LOCATION.--Lat 45°54'48", long 90°26'34", Hydrologic Unit 07050002. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Jetted unused water-table well, diameter 8 in., depth 13 ft, cased to 13 ft.

INSTRUMENTATION.--Water level measured bi-monthly by observer.

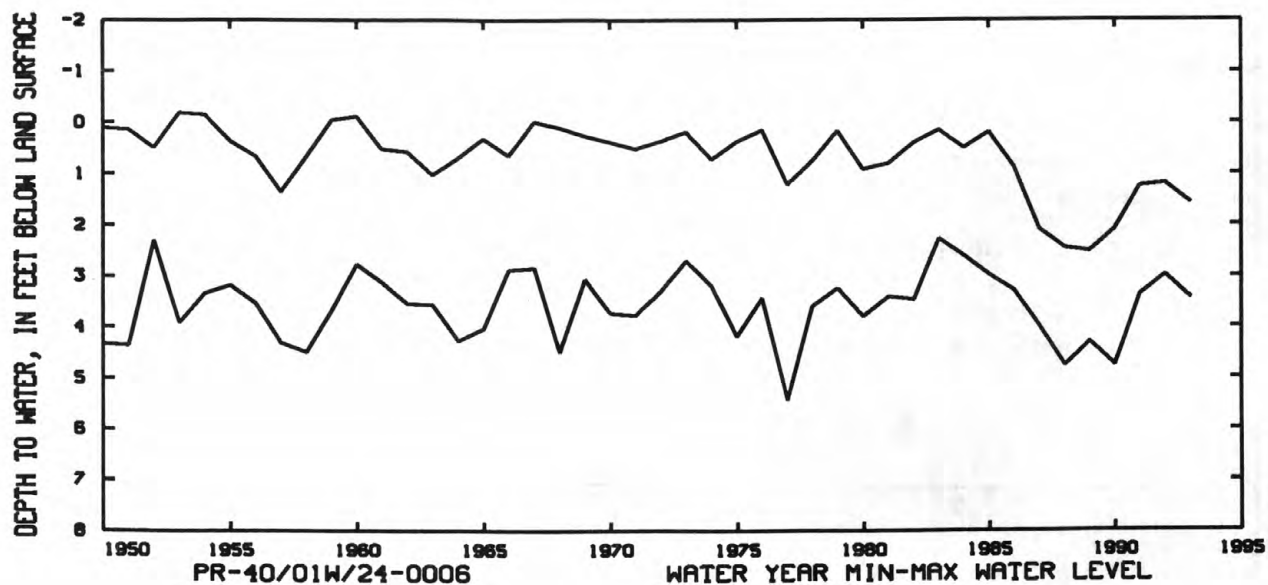
DATUM.--Elevation of land-surface datum is 1,510 ft above sea level. Measuring point: top of casing, 5.00 ft above land-surface datum.

PERIOD OF RECORD.--March 1937 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.41 ft above land-surface datum, June 29, 1946; lowest water level measured, 5.67 ft below land-surface datum, Oct. 31 and Nov. 1, 1948.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	3.13	NOV 20	2.69	JAN 18	2.40	APR 6	2.70	JUN 16	1.58	AUG 27	2.78
NOV 18	2.89	DEC 17	2.90	FEB 17	3.44	MAY 4	1.67	JUL 30	2.15	SEP 27	2.49



## GROUND-WATER LEVELS

275

## RACINE COUNTY

424202087542301. Local number, RA-03/22E/21-0005.

LOCATION.--Lat 42°42'02", long 87°54'23", Hydrologic Unit 04040002. Owner: Chicago, Milwaukee, St. Paul and Pacific Railroad Co.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in., depth 1,176 ft, cased to 586 ft, 10 in. liner 976-1,083 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 730 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

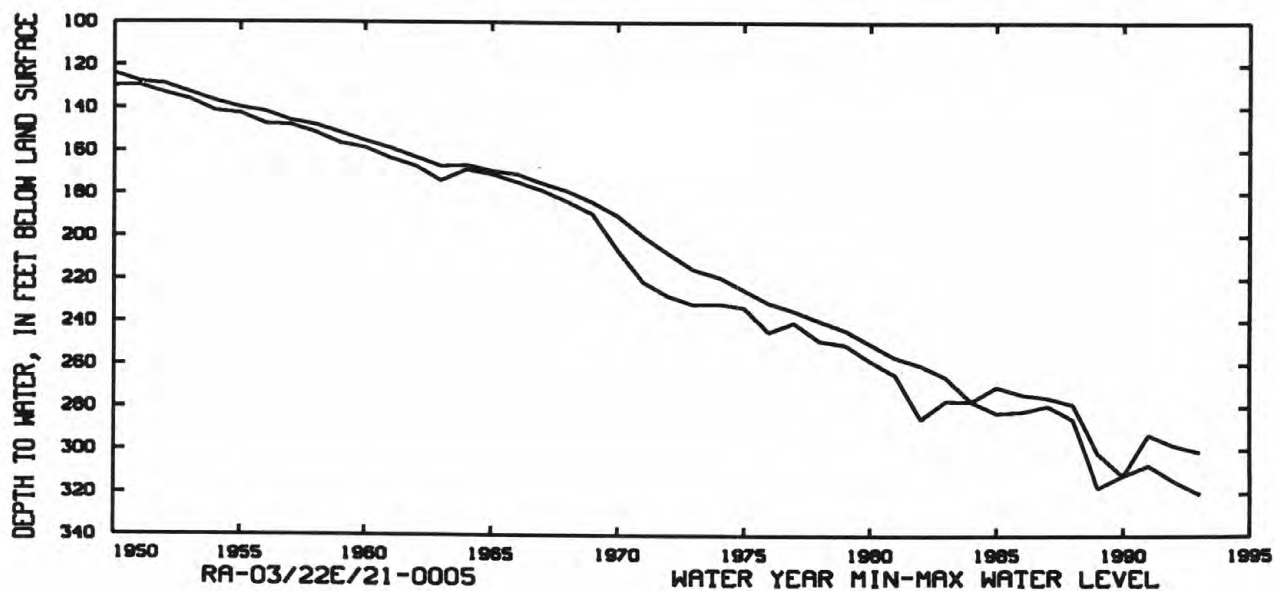
REMARKS.--Water level affected by regional pumping of wells.

PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 108.94 ft below land-surface datum, Aug. 16, 1946; lowest water level measured, 320.22 ft below land-surface datum, Aug. 17, 1993.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	301.47	DEC 15	301.00	FEB 16	301.94	APR 28	312.82	JUN 15	314.54	AUG 17	320.22
NOV 25	301.06	JAN 7	300.87	MAR 30	302.40	MAY 24	313.57	JUL 22	317.35	SEP 15	303.09





## RICHLAND COUNTY

431840090203201. Local number, RI-10/01E/26-0023.

LOCATION.--Lat 43°18'40", long 90°20'32", Hydrologic Unit 07070005. Owner: Koch Tractor, Inc.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in., depth 160 ft, cased to 135 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 725 ft above sea level. Measuring point: top of 1-in. breather pipe, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 9.11 ft below land-surface datum, May 22, 1973; lowest water level measured, 16.45 ft below land-surface datum, Mar. 14, 1991.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	13.79	DEC 9	12.79	JAN 16	12.51	MAR 23	12.82	MAY 25	15.62	JUL 21	11.46
NOV 15	13.29										

## ROCK COUNTY

423956089022301. Local number, RO-02/12E/02-0003.

LOCATION.--Lat 42°39'56", long 89°02'23", Hydrologic Unit 07090001. Owner: School for the Blind, Janesville.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 470 ft, cased to 113 ft, open end.

INSTRUMENTATION.--Water level measured weekly by observer.

DATUM.--Elevation of land-surface datum is 824 ft above sea level. Measuring point: 1/4-in. hole cap of casing, 1.50 ft above land-surface datum.

PERIOD OF RECORD.--July 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.27 ft below land-surface datum, Apr. 2 and 16, 1986; lowest water level measured, 67.22 ft below land-surface datum, Sept. 30, 1992.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	64.30	DEC 10	60.00	FEB 18	55.79	APR 22	60.54	JUN 17	59.90	AUG 19	57.21
15	61.85	17	63.26	MAR 11	55.47	29	60.92	24	59.76	SEP 2	57.49
29	60.74	31	62.20	18	59.72	MAY 6	60.09	JUL 1	56.31	9	58.66
NOV 5	60.19	JAN 7	65.15	25	60.27	13	59.79	8	56.27	16	58.35
12	60.19	21	58.02	APR 1	60.56	20	60.37	29	55.93	23	55.79
19	60.16	FEB 4	60.32	8	60.34	27	60.38	AUG 5	57.10	30	55.62
DEC 3	60.06	12	67.00	16	60.52	JUN 10	59.90	12	56.98		

## RUSK COUNTY

453107090420101. Local number, RU-35/03W/14-0089.

LOCATION.--Lat 45°31'07", long 90°42'01", Hydrologic Unit 07050004. Owner: Hawkins Cemetery.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled public-supply water-table well, diameter 6 in., depth 25 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,380 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--April 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.25 ft below land-surface datum, June 12, 1991; lowest water level measured, 23.50 ft below land-surface datum, Mar. 2, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	12.80	DEC 7	11.79	FEB 15	13.95	APR 8	13.55	MAY 5	8.85	JUN 11	9.57
NOV 19	12.52	JAN 14	13.24	MAR 2	14.28						

## ST. CROIX COUNTY

450812092223601. Local number, SC-31/16W/29-0094.

LOCATION.--Lat 45°08'12", long 92°22'36", Hydrologic Unit 07030005. Owner: Cylon Methodist Church.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 4 in., depth 73 ft, cased to 63 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,059 ft above sea level. Measuring point: top of casing, 2.90 ft above land-surface datum.

PERIOD OF RECORD.--October 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 27.80 ft below land-surface datum, May 4, 1992; lowest water level measured, 36.04 ft below land-surface datum, Sept. 13, 1961.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	29.73	DEC 1	29.90	MAR 2	30.59	APR 1	30.50	MAY 13	30.30	JUN 10	30.30
NOV 1	29.84	JAN 5	30.00								

## SAUK COUNTY

432100089440001. Local number, SK-10/06E/02-0003.

LOCATION.--Lat 43°21'00", long 89°44'00", Hydrologic Unit 07070005. Owner: Badger Army Ammunition Plant.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 12 in., depth 451 ft, cased to 160 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 884 ft above sea level. Measuring point: hole in platform, at land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--March 1989 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 67.23 ft below land-surface datum, Aug. 10, 1993; lowest water level, 83.92 ft below land-surface datum, Aug. 2, 1946.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	79.73	80.25	80.09	78.91	78.86	78.71	77.79	71.55	69.29	69.09	67.35	67.60
10	79.68	80.33	79.77	78.98	78.65	78.67	76.91	70.12	69.21	68.95	67.23	67.67
15	79.80	80.43	79.55	78.88	78.68	78.60	75.97	69.69	69.22	68.63	67.26	67.90
20	79.88	80.32	79.57	79.02	78.63	78.58	74.74	69.57	69.21	68.19	67.39	67.82
25	79.95	80.32	79.35	78.81	78.87	78.58	72.87	69.57	69.19	67.47	67.44	67.91
EOM	80.06	80.06	79.12	78.66	78.78	78.21	72.26	69.32	69.17	67.42	67.54	68.33
WTR YEAR 1993	MAX	80.49	NOV 18	MIN	67.23	AUG 10						

## SHAWANO COUNTY

444203088214601. Local number, SH-26/18E/30-0001.

LOCATION.--Lat 44°42'03", long 88°21'46", Hydrologic Unit 04030103. Owner: Wis. Dept. of Transportation.

AQUIFER.--Prairie du Chien.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 132 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 917 ft above sea level. Measuring point: top of plastic pipe, 0.43 ft below land-surface datum.

PERIOD OF RECORD.--April 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 50.77 ft below land-surface datum, July 14, 1993; lowest water level measured, 65.15 ft below land-surface datum, Feb. 22, 1990.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	54.80	DEC 10	52.34	APR 15	52.56	JUN 18	51.13	JUL 14	50.77	AUG 25	52.98
NOV 24	52.90	FEB 18	54.39	MAY 18	52.00						

## GROUND-WATER LEVELS

## TAYLOR COUNTY

450947090483901. Local number, TA-31/04W/13-0001.

LOCATION.--Lat 45°09'47", long 90°48'39", Hydrologic Unit 07050005. Owner: Village of Gilman.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in., depth 26 ft, cased to 16 ft, screened 16-26 ft.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 1,200 ft above sea level. Measuring point: top of casing, 2.00 ft above land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--April 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 3.69 ft below land-surface datum, June 21, 1993; lowest water level, 13.11 ft below land-surface datum, Oct. 15, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	9.82	9.17	9.14	9.46	9.46	9.47	7.80	6.84	8.54	8.68	9.71	10.16
10	9.55	9.23	9.36	9.44	9.51	9.27	7.03	7.91	8.22	9.05	9.43	10.27
15	9.38	9.31	9.39	9.40	9.68	9.19	7.24	7.95	8.85	9.04	9.53	9.84
20	9.51	9.39	9.27	9.57	9.44	9.31	7.46	8.61	5.70	9.42	9.30	9.49
25	9.55	8.31	9.08	9.61	9.57	9.19	8.24	8.41	6.14	9.65	9.56	9.57
EOM	9.66	8.88	9.36	9.33	9.49	7.72	8.07	8.03	8.22	9.85	9.86	9.76

WTR YEAR 1993 MAX 10.28 SEP 11 MIN 3.69 JUN 21

## TREMPEALEAU COUNTY

440422091182901. Local number, TR-19/08W/35-0001.

LOCATION.--Lat 44°04'22", long 91°18'29", Hydrologic Unit 07040007. Owner: Mrs. William Davidson.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 6 in., depth 195 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 820 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--October 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 131.38 ft below land-surface datum, Sept. 7, 1993; lowest water level measured, 146.56 ft below land-surface datum, Sept. 1, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 26	137.90	DEC 9	138.64	FEB 9	137.96	APR 6	138.66	JUN 5	135.57	AUG 19	131.82
NOV 15	138.48	JAN 9	138.10	MAR 13	137.42	MAY 1	136.17	JUL 6	133.32	SEP 7	131.38

440414091270401. Local number, TR-19/09W/33-0009.

LOCATION.--Lat 44°04'14", long 91°27'04", Hydrologic Unit 07040005. Owner: Village of Centerville.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled public-supply water-table, diameter 6 in., depth 71 ft, cased to 66 ft, screened 66-71 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 740 ft above sea level. Measuring point: top of breather pipe, at land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43.70 ft below land-surface datum, Sept. 13, 1993. lowest water level measured, 57.11 ft below land-surface datum, Mar. 16, 1965.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	47.99	DEC 9	48.89	FEB 8	48.40	APR 12	48.10	JUN 16	46.70	AUG 13	44.50
NOV 6	48.00	JAN 7	48.10	MAR 4	48.50	MAY 3	47.80	JUL 7	46.00	SEP 13	43.70

## GROUND-WATER LEVELS

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## VILAS COUNTY

455958089420501. Local number, VI-41/06E/26-0895.

LOCATION.--Lat 45°59'58", long 89°42'05", Hydrologic Unit 07070001. Owner: State of Wisconsin.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Augered water-table observation well, diameter 3 in., depth 22 ft, cased to 20 ft, screened 20-22 ft.

DATUM.--Datum of gage is 1,600 ft above sea level.

PERIOD OF RECORD.--October 1983 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed water level, 27.08 ft, Apr. 26-28, 1986; minimum observed water level, 22.64 ft, Mar. 14, 1990.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.10	25.09	25.10	25.01	24.90	24.79	24.64	25.04	25.49	25.77	25.59	25.32
2	25.10	25.10	25.10	25.01	24.90	24.78	24.64	25.07	25.49	25.78	25.59	25.32
3	25.10	25.10	25.09	25.02	24.90	24.78	24.64	25.09	25.49	25.78	25.57	25.31
4	25.09	25.10	25.09	25.02	24.89	24.77	24.64	25.11	25.50	25.79	25.56	25.30
5	25.08	25.09	25.08	25.00	24.88	24.76	24.64	25.14	25.50	25.79	25.55	25.29
6	25.07	25.08	25.08	25.00	24.87	24.76	24.63	25.17	25.50	25.80	25.55	25.28
7	25.07	25.08	25.08	24.99	24.88	24.76	24.63	25.20	25.50	25.80	25.54	25.28
8	25.07	25.08	25.08	24.98	24.88	24.75	24.63	25.23	25.52	25.79	25.53	25.27
9	25.08	25.08	25.07	24.97	24.88	24.74	24.65	25.25	25.53	25.79	25.53	25.26
10	25.08	25.08	25.07	24.97	24.86	24.74	24.65	25.28	25.52	25.78	25.53	25.26
11	25.09	25.07	25.06	24.97	24.86	24.73	24.65	25.31	25.52	25.77	25.52	25.25
12	25.11	25.07	25.06	24.97	24.86	24.73	24.66	25.33	25.52	25.75	25.52	25.25
13	25.11	25.07	25.05	24.97	24.86	24.72	24.68	25.36	25.52	25.75	25.51	25.24
14	25.11	25.07	25.05	24.97	24.85	24.72	24.71	25.40	25.51	25.75	25.50	25.23
15	25.11	25.07	25.05	24.97	24.85	24.71	24.72	25.41	25.51	25.74	25.50	25.23
16	25.12	25.07	25.06	24.97	24.84	24.71	24.74	25.41	25.51	25.74	25.49	25.23
17	25.12	25.07	25.06	24.96	24.84	24.69	24.74	25.43	25.53	25.73	25.48	25.23
18	25.12	25.06	25.05	24.95	24.84	24.69	24.76	25.44	25.52	25.72	25.47	25.23
19	25.12	25.06	25.05	24.94	24.84	24.68	24.78	25.44	25.52	25.71	25.47	25.23
20	25.12	25.06	25.05	24.94	24.84	24.68	24.79	25.44	25.54	25.69	25.45	25.23
21	25.12	25.07	25.05	24.95	24.84	24.67	24.80	25.45	25.56	25.67	25.43	25.23
22	25.12	25.07	25.05	24.95	24.84	24.65	24.82	25.45	25.58	25.65	25.43	25.23
23	25.12	25.08	25.04	24.94	24.83	24.65	24.86	25.46	25.63	25.65	25.43	25.23
24	25.11	25.08	25.03	24.94	24.82	24.65	24.90	25.47	25.66	25.63	25.41	25.23
25	25.11	25.08	25.05	24.93	24.81	24.64	24.90	25.47	25.70	25.63	25.39	25.23
26	25.11	25.08	25.03	24.94	24.81	24.64	24.91	25.48	25.71	25.63	25.38	25.23
27	25.12	25.08	25.03	24.93	24.80	24.64	24.94	25.48	25.74	25.62	25.35	25.23
28	25.12	25.08	25.02	24.93	24.80	24.64	24.97	25.48	25.75	25.62	25.35	25.22
29	25.10	25.08	25.01	24.92	---	24.64	24.99	25.48	25.76	25.60	25.35	25.21
30	25.09	25.08	25.01	24.92	---	24.64	25.02	25.48	25.76	25.60	25.35	25.20
31	25.09	---	25.01	24.92	---	24.64	---	25.49	---	25.59	25.33	---
MEAN	25.10	25.08	25.06	24.96	24.85	24.70	24.76	25.35	25.57	25.71	25.47	25.25
MAX	25.12	25.10	25.10	25.02	24.90	24.79	25.02	25.49	25.76	25.80	25.59	25.32
MIN	25.07	25.06	25.01	24.92	24.80	24.64	24.63	25.04	25.49	25.59	25.33	25.20



## GROUND-WATER LEVELS

## VILAS COUNTY

455910089403701. Local number, VI-41/07E/31-0085.

LOCATION.--Lat 45°59'10", long 89°40'37", Hydrologic Unit 07070001. Owner: State of Wisconsin.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Augered water-table observation well, diameter 3 in., depth 60 ft, cased to 57 ft, well screened 57-60 ft.

PERIOD OF RECORD.--November 1980 to current year.

DATUM.--Datum of gage is 1,600 ft above sea level.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed water level, 33.83 ft, Apr. 14, 1986; minimum observed water level, 29.27 ft, May 15-17, 1990.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32.06	31.97	31.90	31.77	31.50	31.32	31.18	31.57	31.77	32.07	32.17	32.17
2	32.07	32.04	31.90	31.78	31.50	31.32	31.18	31.61	31.77	32.08	32.18	32.17
3	32.05	32.00	31.90	31.78	31.49	31.29	31.18	31.64	31.76	32.08	32.18	32.17
4	32.03	31.97	31.91	31.77	31.48	31.28	31.17	31.66	31.76	32.10	32.18	32.17
5	32.03	31.96	31.91	31.74	31.48	31.29	31.17	31.69	31.76	32.10	32.18	32.16
6	32.03	31.94	31.92	31.74	31.48	31.29	31.17	31.73	31.76	32.10	32.18	32.16
7	32.03	31.93	31.92	31.73	31.48	31.29	31.17	31.76	31.76	32.10	32.18	32.16
8	32.05	31.92	31.92	31.70	31.47	31.28	31.17	31.79	31.77	32.10	32.18	32.15
9	32.09	31.93	31.93	31.69	31.47	31.27	31.17	31.81	31.77	32.10	32.20	32.18
10	32.08	31.94	31.93	31.68	31.45	31.27	31.18	31.81	31.77	32.10	32.21	32.16
11	32.06	31.93	31.93	31.67	31.43	31.25	31.19	31.81	31.77	32.10	32.21	32.15
12	32.07	31.97	31.93	31.66	31.43	31.25	31.19	31.82	31.77	32.10	32.21	32.16
13	32.06	31.95	31.92	31.66	31.43	31.24	31.20	31.82	31.77	32.10	32.21	32.16
14	32.03	31.91	31.92	31.65	31.43	31.25	31.22	31.82	31.77	32.10	32.21	32.16
15	32.02	31.89	31.95	31.64	31.40	31.25	31.22	31.82	31.77	32.10	32.21	32.16
16	32.03	31.89	31.93	31.64	31.39	31.24	31.22	31.84	31.78	32.10	32.21	32.15
17	32.01	31.88	31.92	31.62	31.38	31.21	31.23	31.84	31.79	32.12	32.21	32.15
18	32.01	31.86	31.92	31.61	31.38	31.21	31.25	31.84	31.79	32.13	32.21	32.15
19	32.01	31.86	31.93	31.60	31.37	31.21	31.25	31.83	31.79	32.14	32.21	32.15
20	32.04	31.89	31.91	31.60	31.37	31.21	31.25	31.83	31.81	32.14	32.18	32.15
21	32.00	31.91	31.91	31.60	31.37	31.20	31.25	31.82	31.84	32.14	32.16	32.15
22	32.00	31.91	31.89	31.60	31.36	31.18	31.29	31.82	31.90	32.14	32.16	32.15
23	32.01	31.92	31.87	31.58	31.35	31.19	31.31	31.83	31.96	32.14	32.17	32.16
24	32.00	31.90	31.87	31.56	31.34	31.19	31.34	31.82	32.01	32.14	32.17	32.15
25	32.01	31.90	31.88	31.54	31.33	31.18	31.39	31.79	32.02	32.15	32.17	32.15
26	32.01	31.91	31.85	31.57	31.32	31.17	31.42	31.79	32.04	32.17	32.17	32.15
27	32.00	31.90	31.84	31.54	31.32	31.17	31.44	31.78	32.05	32.17	32.16	32.15
28	31.99	31.88	31.80	31.54	31.32	31.17	31.47	31.78	32.06	32.17	32.16	32.14
29	31.98	31.89	31.80	31.52	---	31.17	31.50	31.78	32.07	32.17	32.16	32.12
30	31.97	31.89	31.80	31.53	---	31.17	31.52	31.78	32.07	32.17	32.17	32.13
31	31.97	---	31.78	31.52	---	31.17	---	31.77	---	32.17	32.17	---
MEAN	32.03	31.92	31.89	31.64	31.41	31.23	31.26	31.78	31.85	32.12	32.18	32.15
MAX	32.09	32.04	31.95	31.78	31.50	31.32	31.52	31.84	32.07	32.17	32.21	32.18
MIN	31.97	31.86	31.78	31.52	31.32	31.17	31.17	31.57	31.76	32.07	32.16	32.12



## VILAS COUNTY

455517089144001. Local number, VI-40/10E/28-0033.

LOCATION.--Lat 45°55'17", long 89°14'40", Hydrologic Unit 07070001. Owner: Trees for Tomorrow, Inc.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled observation water table well, diameter 6 in., depth 37 ft, cased to 37 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 1,640 ft above sea level. Measuring point: top of casing, 0.75 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.63 ft below land-surface datum, July 21, 1968; lowest water level measured, 14.92 ft below land-surface datum, Aug. 10, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	12.71	DEC 15	12.72	FEB 15	13.00	MAY 14	12.36	JUL 15	12.15	SEP 15	12.77
NOV 17	12.80	JAN 15	12.82	APR 16	13.27	JUN 15	12.12	AUG 25	12.17		

## WALWORTH COUNTY

423532088254601. Local number, WW-02/17E/36-0037.

LOCATION.--Lat 42°35'32", long 88°25'46", Hydrologic Unit 07120006. Owner: Lake Geneva Water Works.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 10 in., depth 820 ft, cased to 10 in., 0-214 ft; 8 in., 214-227 ft, open end.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 860 ft above sea level. Measuring point: top of casing, 2.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 129.48 ft below land-surface datum, Feb. 14, 1962; lowest water level measured, 222.67 ft below land-surface datum, June 19, 1992.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	217.03	DEC 30	217.24	FEB 16	218.42	APR 26	212.34	JUN 29	213.59	AUG 2	213.58
NOV 18	216.77	JAN 5	218.47	MAR 31	212.36	MAY 5	212.18	JUL 20	212.69		

## WAUKESHA COUNTY

425535088131701. Local number, WK-05/19E/02-0031.

LOCATION.--Lat 42°55'35", long 88°13'17", Hydrologic Unit 07120006. Owner: William Bahl.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in., depth 508 ft, cased to 434 ft, open end.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

DATUM.--Elevation of land-surface datum is 962 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--May 1947 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 126.06 ft below land-surface datum, May 10, 1973; lowest water level, 138.14 ft below land-surface datum, Feb. 2, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	133.97	133.82	133.70	133.47	133.37	133.52	132.83	131.36	131.53	131.49	132.43	131.93
10	133.79	133.84	133.58	133.46	133.33	133.46	132.56	131.48	131.43	131.53	132.36	131.93
15	133.86	133.85	133.62	133.32	133.42	133.46	132.26	131.55	131.54	131.38	132.27	131.97
20	133.83	133.69	133.68	133.49	133.37	133.39	132.03	131.58	131.36	131.47	131.95	131.83
25	133.88	133.63	133.68	133.47	133.59	133.33	131.67	131.68	131.39	131.54	132.23	131.74
ECM	133.90	133.61	133.60	133.29	133.55	132.88	131.39	131.61	131.48	131.96	132.12	131.70

WTR YEAR 1993 MAX 134.00 OCT 26 MIN 131.29 MAY 4

441545088522901. Local number, WP-21/13E/25-0002.

AQUIFER.--Sandstone.

INSTRUMENTATION.--Water level measured weekly by observer.

PERIOD OF RECORD.--August 1950 to current year.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL						
OCT	3	13.91	DEC	5	14.02	FEB	6	13.59	APR	10	14.21	JUN	12	12.03	AUG	1	10.98			
	10	13.89		12	13.63		13	13.73		17	13.86		19	12.19		14	11.39			
	17	13.86		19	13.48		20	13.84		24	12.09		26	11.04		21	11.97			
	24	13.93		26	13.29		27	14.11		MAY	1		11.88	JUL		3	10.09	SEP	28	12.28
	31	14.09		JAN	2		13.16	MAR			6		14.29			8	11.18		10	9.78
NOV	7	14.13	4		13.08	13	14.36		15	11.04	17	10.04	11	13.27						
	14	14.20	16		13.14	20	14.39		22	10.89	24	10.19	18	13.32						
	21	14.23	23		13.21	27	14.48		29	10.97	31	10.25	25	13.39						
	28	14.11	30		13.38	APR	3		14.50	JUN	5	11.39								

440713089320801. Local number, WS-19/08E/15-0008.

AQUIFER.--Sand and gravel.

INSTRUMENTATION.--Digital water-level recorder--60-minute punch.

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

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	10.20	10.11	10.22		9.89	9.96	10.06	9.23	8.06	7.82	6.53	6.47
10	10.12	10.14	10.18	9.95	9.89	9.98	10.05	8.95	7.99	7.82	6.53	6.47
15	10.09	10.16		9.93	9.89	10.00	10.02	8.76	7.92	6.57	6.52	6.47
20	10.09	10.20		9.91	9.91	10.04	9.99	8.51	7.83	6.56	6.51	6.47
25	10.09	10.22		9.89	9.92	10.06	9.84	8.33	7.82	6.55	6.51	6.47
EOM	10.09	10.22		9.89	9.94	10.06	9.44	8.18	7.82	6.53		6.47

WTR YEAR 1993 MAX 10.30 OCT 1 MIN 6.47 SEP 1

## GROUND-WATER LEVELS

283

## WAUSHARA COUNTY

441414089091101. Local number, WS-20/11E/02-0053.

LOCATION.--Lat 44°14'14", long 89°09'11", Hydrologic Unit 04030202. Owner: Merle Knox.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in., depth 177 ft, cased to 172 ft, screened 172-177 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 923 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--February 1956 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.37 ft below land-surface datum, Aug. 18, 1993; lowest water level measured, 40.41 ft below land-surface datum, Mar. 4, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	36.08	DEC 17	35.66	FEB 20	35.60	APR 20	35.18	JUN 23	33.38	AUG 18	32.37
NOV 18	36.20	JAN 20	35.51	MAR 16	36.88	MAY 20	35.24	JUL 15	32.90		

## WINNEBAGO COUNTY

440122088324601. Local number, WI-18/16E/23-0006.

LOCATION.--Lat 44°01'22", long 88°32'46", Hydrologic Unit 04030201. Owner: City of Oshkosh.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in., depth 200 ft.

INSTRUMENTATION.--Water level measured monthly by observer.

DATUM.--Elevation of land-surface datum is 765 ft above sea level. Measuring point: top of 1-in. pipe, at land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--August 1950 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 16.65 ft below land-surface datum, Apr. 28, 1993; lowest water level measured, 45.15 ft below land-surface datum, Jan. 1, 1966.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	19.54	JAN 4	17.95	FEB 25	19.47	APR 28	16.65	JUN 30	17.16	AUG 31	19.76
DEC 1	17.88	27	18.87	APR 2	18.53	MAY 27	17.85	JUL 29	17.90	SEP 29	19.79

QUALITY OF GROUND WATER

284

GEOLOGICAL UNIT.--110QRNR, rocks of the Quaternary System of the Cenozoic Era. 350SLRN, rocks of the Silurian System. 360ODVC, rocks of the Ordovician System of the Paleozoic Era. 365CMPL, rocks of the Champlainian Series of the Ordovician System. 365SNNP, rocks of the Sinnipee Group. 365STPR, St. Peter Sandstone. 368PRDC, Prairie du Chien Group of the Ordovician System. 372SCRX, rocks of the St. Croix Series of the Cambrian System of the Paleozoic Era. 372TMPL, rock of the Trempealeau Group of Cambrian System. 400BCPX, Precambrian crystalline rocks of the basement complex.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	LOCAL IDENT- I- FIER	GEO- LOGIC UNIT	DATE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)		
CALUMET COUNTY												
435426088092601	CA-17/20E/30-1129		110QRNR	09-05-93	1200	22.00	703	7.3	17.0	1.6		
435910088025701	CA-18/20E/36-1128		110QRNR	09-03-93	1045	43.50	244	7.8	15.0	1.5		
435923088073901	CA-18/20E/32-1127		110QRNR	09-05-93	1520	11.00	890	6.9	18.0	4.6		
FOND DU LAC COUNTY												
435000088425401	FL-16/15E/28-0692		110QRNR	09-01-93	1300	27.00	918	7.3	11.5	0.1		
MANITOWOC COUNTY												
435411087565001	MN-17/21E/35-0516		110QRNR	09-06-93	0920	28.00	583	7.4	10.0	0.1		
OZAUKEE COUNTY												
433126088002301	OZ-12/21E/08-0542		110QRNR	09-06-93	1650	42.00	616	7.5	14.0	1.6		
SHEBOYGAN COUNTY												
433336088025901	SB-13/20E/25-0439		110QRNR	09-06-93	1430	28.00	849	7.3	13.5	0.5		
434603088072401	SB-15/20E/17-0440		110QRNR	09-02-93	1130	53.00	576	7.3	13.5	0.3		
434619088005401	SB-15/21E/17-0438		110QRNR	09-02-93	1430	43.00	620	7.2	14.5	1.3		
WASHINGTON COUNTY												
431623088041001	WN-09/20E/01-0972		110QRNR	09-07-93	1220	24.00	378	7.1	18.0	1.4		
431812088094001	WN-10/20E/29-0973		110QRNR	09-07-93	1430	34.00	725	7.6	16.5	1.8		
432053088114301	WN-10/19E/12-0970		110QRNR	09-08-93	0840	43.00	318	7.8	12.0	0.2		
432242088082401	WN-11/20E/32-0971		110QRNR	09-08-93	1200	58.00	665	7.2	11.0	0.1		
STATION	NUMBER	DATE	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	ALKA- LINITY WAT DIS FIX END FIELD MG/L AS CACO3 (39036)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
CALUMET COUNTY--CONTINUED												
435426088092601		09-05-93	370	69	48	5.0	2.3	334	0	274	270	72
435910088025701		09-03-93	73	16	8.0	28	1.4	149	0	122	120	8.4
435923088073901		09-05-93	490	99	58	8.0	1.4	454	0	372	370	49
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	530	94	71	8.3	1.3	617	0	506	500	49
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	320	67	38	2.9	1.1	371	0	304	300	41
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	310	63	37	14	4.1	308	0	252	250	51
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	460	110	45	13	2.5	349	0	286	290	220
434603088072401		09-02-93	330	66	39	3.6	1.0	378	0	310	300	27
434619088005401		09-02-93	350	70	42	4.9	1.0	371	0	304	290	29
WASHINGTON COUNTY--CONTINUED												
431623088041001		09-07-93	470	89	60	6.3	2.2	525	0	430	420	64
431812088094001		09-07-93	370	39	66	16	3.2	417	0	342	340	17
432053088114301		09-08-93	180	36	22	27	1.3	217	0	178	180	5.1
432242088082401		09-08-93	380	81	44	3.9	1.2	466	0	382	380	18

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)
CALUMET COUNTY--CONTINUED												
435426088092601	09-05-93	28		0.050	0.10	19	389	<0.050	<0.010	0.060	<0.20	0.040
435910088025701	09-03-93	2.4		<0.010	0.30	13	147	<0.050	<0.010	0.130	0.20	0.120
435923088073901	09-05-93	43		0.040	<0.10	18	513	9.30	<0.010	0.040	0.20	0.040
FOND DU LAC COUNTY--CONTINUED												
435000088425401	09-01-93	15		0.090	0.10	36	519	<0.050	<0.010	0.100	<0.20	0.020
MANITOWOC COUNTY--CONTINUED												
435411087565001	09-06-93	4.1		0.020	<0.10	17	326	<0.050	<0.010	0.030	<0.20	0.010
OZAUKEE COUNTY--CONTINUED												
433126088002301	09-06-93	28		0.18	<0.10	14	358	<0.050	<0.010	0.110	0.30	0.010
SHEBOYGAN COUNTY--CONTINUED												
433336088025901	09-06-93	3.0		<0.010	0.30	20	583	<0.050	<0.010	0.530	0.60	0.020
434603088072401	09-02-93	6.3		0.020	0.10	19	333	<0.050	<0.010	0.060	<0.20	0.050
434619088005401	09-02-93	34		0.030	0.20	17	356	1.70	<0.010	0.040	<0.20	0.010
WASHINGTON COUNTY--CONTINUED												
431623088041001	09-07-93	9.1		0.070	0.20	17	474	0.430	<0.010	0.070	<0.20	0.020
431812088094001	09-07-93	35		0.25	0.30	27	398	<0.050	<0.010	0.200	0.30	0.030
432053088114301	09-08-93	1.3		<0.010	0.30	20	187	<0.050	<0.010	0.200	0.30	0.070
432242088082401	09-08-93	3.6		0.020	0.20	27	348	<0.050	<0.010	0.100	<0.20	0.020
STATION	NUMBER	DATE	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	TRITIUM TOTAL (PCI/L) (07000)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	H-2 / H-1 STABLE ISOTOPE RATIO PER MIL (82082)	O-18 / O-16 STABLE ISOTOPE RATIO PER MIL (82085)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	DI- BROMO- METHANE WATER WHOLE RECOVER (UG/L) (30217)	DI- CHLORO- BROMO- METHANE TOTAL (UG/L) (32101)
CALUMET COUNTY--CONTINUED												
435426088092601	09-05-93	0.030		16	240	120	2.1	-63.9	-9.62	1.4	<0.2	<0.2
435910088025701	09-03-93	0.120		40	67	6.5	0.80	-64.8	-9.71	1.8	<0.2	<0.2
435923088073901	09-05-93	0.040		17	7	55	0.80	-70.4	-10.53	2.6	<0.2	<0.2
FOND DU LAC COUNTY--CONTINUED												
435000088425401	09-01-93	0.010		710	34	55	<0.40	-61.6	-9.38	1.1	<0.2	<0.2
MANITOWOC COUNTY--CONTINUED												
435411087565001	09-06-93	0.010		28	45	73	<0.40	-70.6	-10.47	0.7	<0.2	<0.2
OZAUKEE COUNTY--CONTINUED												
433126088002301	09-06-93	<0.010		10	220	130	1.0	-72.0	-10.73	3.0	<0.2	<0.2
SHEBOYGAN COUNTY--CONTINUED												
433336088025901	09-06-93	0.020		230	340	0.4	0.70	-63.6	-9.90	2.0	<0.2	<0.2
434603088072401	09-02-93	0.030		42	140	0.7	0.40	-77.4	-11.41	0.7	<0.2	<0.2
434619088005401	09-02-93	0.010		13	12	57	0.70	-70.6	-10.56	0.5	<0.2	<0.2
WASHINGTON COUNTY--CONTINUED												
431623088041001	09-07-93	0.010		10	270	67	1.4	-59.8	-9.32	7.1	<0.2	<0.2
431812088094001	09-07-93	0.020		8	59	12	0.50	-63.0	-9.75	6.1	<0.2	<0.2
432053088114301	09-08-93	0.060		1300	99	1.0	<0.40	-64.3	-9.65	2.4	<0.2	<0.2
432242088082401	09-08-93	0.020		260	180	3.2	<0.40	-67.5	-10.14	1.2	<0.2	<0.2



## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L) (32102)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L) (32103)	BROMO- FORM TOTAL (UG/L) (32104)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L) (32105)	CHLORO- FORM TOTAL (UG/L) (32106)	TOLUENE TOTAL (UG/L) (34010)	BENZENE TOTAL (UG/L) (34030)	CHLORO- BENZENE TOTAL (UG/L) (34301)	CHLORO- ETHANE TOTAL (UG/L) (34311)	ETHYL- BENZENE TOTAL (UG/L) (34371)
			CALUMET COUNTY--CONTINUED									
435426088092601		09-05-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
435910088025701		09-03-93	<0.2	<0.2	<0.2	<0.2	<0.2	6.5	<0.2	<0.20	<0.2	<0.2
435923088073901		09-05-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	<0.2	<0.2	<0.2	<0.2	<0.2	3.1	<0.2	<0.20	<0.2	<0.2
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	25	0.4	<0.20	<0.2	<0.2
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	0.4	<0.2	<0.20	<0.2	<0.2
434603088072401		09-02-93	<0.2	<0.2	<0.2	<0.2	<0.2	1.2	<0.2	<0.20	<0.2	<0.2
434619088005401		09-02-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.2	<0.2
WASHINGTON COUNTY--CONTINUED												
431623088041001		09-07-93	<0.2	<0.2	<0.2	<0.2	<0.2	27	<0.2	<0.20	<0.2	<0.2
431812088094001		09-07-93	<0.2	<0.2	<0.2	<0.2	<0.2	14	0.3	<0.20	<0.2	<0.2
432053088114301		09-08-93	<0.2	<0.2	<0.2	<0.2	<0.2	4.1	<0.2	<0.20	<0.2	<0.2
432242088082401		09-08-93	<0.2	<0.2	<0.2	<0.2	<0.2	2.3	<0.2	<0.20	<0.2	<0.2
STATION	NUMBER	DATE	METHYL- BROMIDE TOTAL (UG/L) (34413)	METHYL- CHLO- RIDE TOTAL (UG/L) (34418)	METHYL- ENE CHLO- RIDE TOTAL (UG/L) (34423)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L) (34475)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L) (34488)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L) (34496)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L) (34501)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L) (34506)	1,1,2- TRI- CHLORO- ETHANE TOTAL (UG/L) (34511)	ETHANE, 1,1,2,2- TRI- CHLORO- WAT UNF REC (UG/L) (34516)
CALUMET COUNTY--CONTINUED												
435426088092601		09-05-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
435910088025701		09-03-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
435923088073901		09-05-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
434603088072401		09-02-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
434619088005401		09-02-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
WASHINGTON COUNTY--CONTINUED												
431623088041001		09-07-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
431812088094001		09-07-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
432053088114301		09-08-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
432242088082401		09-08-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

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STATION	NUMBER	DATE	BENZENE O- CHLORO- WATER UNFLTRD REC (UG/L) (34536)	1,2-DI- CHLORO- PROPANE TOTAL (UG/L) (34541)	1,2- TRANSDI CHLORO- ETHENE TOTAL (UG/L) (34546)	BENZENE 1,2,4- TRI- CHLORO- WAT UNF REC (UG/L) (34551)	BENZENE 1,3-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34566)	BENZENE 1,4-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34571)	DI- CHLORO- DI- FLUORO- METHANE TOTAL (UG/L) (34668)	NAPHTH- ALENE TOTAL (UG/L) (34696)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L) (34699)	CIS 1,3-DI- CHLORO- PROPENE TOTAL (UG/L) (34704)
			CALUMET COUNTY--CONTINUED									
435426088092601		09-05-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
435910088025701		09-03-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
435923088073901		09-05-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
434603088072401		09-02-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
434619088005401		09-02-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
WASHINGTON COUNTY--CONTINUED												
431623088041001		09-07-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
431812088094001		09-07-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
432053088114301		09-08-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
432242088082401		09-08-93	<0.20	<0.2	<0.2	<0.20	<0.20	<0.20	<0.2	<0.2	<0.2	<0.2
STATION	NUMBER	DATE	VINYL CHLO- RIDE TOTAL (UG/L) (39175)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L) (39180)	HEXA- CHLORO- BUT- ADIENE TOTAL (UG/L) (39702)	CIS-1,2 -DI- CHLORO- ETHENE WATER TOTAL (UG/L) (77093)	STYRENE  TOTAL (UG/L) (77128)	1,1-DI CHLORO- PRO- PENE, WAT, WH TOTAL (UG/L) (77168)	2,2-DI CHLORO- PRO- PANE WAT, WH TOTAL (UG/L) (77170)	1,3-DI- CHLORO- PROPANE WAT. WH TOTAL (UG/L) (77173)	PSEUDO- CUMENE WATER UNFLTRD REC (UG/L) (77222)	ISO- PROPYL- BENZENE WATER WHOLE REC (UG/L) (77223)
			CALUMET COUNTY--CONTINUED									
435426088092601		09-05-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
435910088025701		09-03-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
435923088073901		09-05-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.20	<0.20
434603088072401												

## QUALITY OF GROUND WATER

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	BENZENE N-PROPYL WATER UNFLTRD REC (UG/L) (77224)	MESIT- YLENE WATER UNFLTRD REC (UG/L) (77226)	O- CHLORO- TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	METHANE BROMO- CHLORO- WAT UNFLTRD REC (UG/L) (77297)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L) (77342)	BENZENE SEC BUTYL- WATER UNFLTRD REC (UG/L) (77350)	BENZENE TERT- BUTYL- WATER UNFLTRD REC (UG/L) (77353)	P-ISO- PROPYL- TOLUENE WATER WHOLE REC (UG/L) (77356)
			CALUMET COUNTY--CONTINUED								
435426088092601	09-05-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
435910088025701	09-03-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
435923088073901	09-05-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
FOND DU LAC COUNTY--CONTINUED											
435000088425401	09-01-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MANITOWOC COUNTY--CONTINUED											
435411087565001	09-06-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
OZAUKEE COUNTY--CONTINUED											
433126088002301	09-06-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
SHEBOYGAN COUNTY--CONTINUED											
433336088025901	09-06-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
434603088072401	09-02-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
434619088005401	09-02-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
WASHINGTON COUNTY--CONTINUED											
431623088041001	09-07-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
431812088094001	09-07-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
432053088114301	09-08-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
432242088082401	09-08-93		<0.20	<0.20	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
STATION	NUMBER	DATE	123-TRI CHLORO- PROPANE WATER WHOLE TOTAL (UG/L) (77443)	ETHANE, 1112- TETRA- CHLORO- WAT UNF REC (UG/L) (77562)	1,2,3- TRI- CHLORO BENZENE WAT, WH REC (UG/L) (77613)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	FREON- 113 WATER UNFLTRD REC (UG/L) (77652)	METHYL ETHER TERT- BUTYL WAT UNF REC (UG/L) (78032)	XYLENE WATER UNFLTRD REC (UG/L) (81551)	BROMO- BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	DIBROMO CHLORO- PROPANE WATER WHOLE TOT.REC (UG/L) (82625)
			CALUMET COUNTY--CONTINUED								
435426088092601	09-05-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
435910088025701	09-03-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
435923088073901	09-05-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
FOND DU LAC COUNTY--CONTINUED											
435000088425401	09-01-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
MANITOWOC COUNTY--CONTINUED											
435411087565001	09-06-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
OZAUKEE COUNTY--CONTINUED											
433126088002301	09-06-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	0.30	<0.2	<1.0
SHEBOYGAN COUNTY--CONTINUED											
433336088025901	09-06-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
434603088072401	09-02-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
434619088005401	09-02-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
WASHINGTON COUNTY--CONTINUED											
431623088041001	09-07-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
431812088094001	09-07-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
432053088114301	09-08-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0
432242088082401	09-08-93		<0.2	<0.2	<0.20	<0.2	<0.2	<0.2	<0.20	<0.2	<1.0

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)
			CALUMET COUNTY--CONTINUED									
435426088092601		09-05-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
435910088025701		09-03-93	<0.02	<0.008	<0.01	0.005	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
435923088073901		09-05-93	<0.02	<0.008	0.02	<0.008	0.07	<0.01	<0.008	<0.007	<0.005	<0.01
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	<0.02	<0.008	<0.01	0.11	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
434603088072401		09-02-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
434619088005401		09-02-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
WASHINGTON COUNTY--CONTINUED												
431623088041001		09-07-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
431812088094001		09-07-93	<0.02	<0.008	<0.01	0.14	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
432053088114301		09-08-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
432242088082401		09-08-93	<0.02	<0.008	<0.01	<0.008	<0.02	<0.01	<0.008	<0.007	<0.005	<0.01
STATION	NUMBER	DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANALINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	
			CALUMET COUNTY--CONTINUED									
435426088092601		09-05-93	<0.02	0.002	<0.01	<0.02	<0.008	0.004	<0.009	<0.01	<0.006	
435910088025701		09-03-93	<0.02	0.002	<0.01	<0.02	<0.008	<0.02	<0.009	<0.01	<0.006	
435923088073901		09-05-93	<0.02	<0.009	<0.01	<0.02	<0.008	0.02	<0.009	<0.01	<0.006	
FOND DU LAC COUNTY--CONTINUED												
435000088425401		09-01-93	<0.02	<0.009	<0.01	<0.02	<0.008	<0.006	<0.009	<0.01	<0.006	
MANITOWOC COUNTY--CONTINUED												
435411087565001		09-06-93	<0.02	<0.009	<0.01	<0.02	<0.008	0.001	<0.009	<0.01	<0.006	
OZAUKEE COUNTY--CONTINUED												
433126088002301		09-06-93	<0.02	0.005	<0.01	<0.02	<0.008	0.003	<0.009	<0.01	<0.006	
SHEBOYGAN COUNTY--CONTINUED												
433336088025901		09-06-93	<0.02	0.003	<0.01	<0.02	<0.008	0.004	<0.009	<0.01	<0.006	
434603088072401		09-02-93	<0.02	<0.009	<0.01	<0.02	<0.008	<0.006	<0.009	<0.01	<0.006	
434619088005401		09-02-93	<0.02	<0.009	<0.01	<0.02	<0.008	<0.006	<0.009	<0.01	<0.006	
WASHINGTON COUNTY--CONTINUED												
431623088041001		09-07-93	<0.02	0.003	<0.01	<0.02	<0.008	0.002	<0.009	<0.01	<0.006	
431812088094001		09-07-93	<0.02	0.006	<0.01	<0.02	<0.008	0.005	<0.009	<0.01	<0.006	
432053088114301		09-08-93	<0.02	<0.009	<0.01	<0.02	<0.008	0.002	<0.009	<0.01	<0.006	
432242088082401		09-08-93	<0.02	<0.009	<0.01	<0.02	<0.008	0.001	<0.009	<0.01	<0.006	



## QUALITY OF GROUND WATER

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	DIMETH- OATE WATER FLTRD 0.7 U GG, REC (UG/L) (82662)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PFB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)
			CALUMET COUNTY--CONTINUED								
435426088092601		09-05-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
435910088025701		09-03-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
435923088073901		09-05-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
FOND DU LAC COUNTY--CONTINUED											
435000088425401		09-01-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.01	<0.009
MANITOWOC COUNTY--CONTINUED											
435411087565001		09-06-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
OZAUKEE COUNTY--CONTINUED											
433126088002301		09-06-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
SHEBOYGAN COUNTY--CONTINUED											
433336088025901		09-06-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
434603088072401		09-02-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.01	<0.009
434619088005401		09-02-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.01	<0.009
WASHINGTON COUNTY--CONTINUED											
431623088041001		09-07-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
431812088094001		09-07-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
432053088114301		09-08-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
432242088082401		09-08-93	<0.01	<0.02	<0.01	<0.02	<0.03	<0.04	<0.03	<0.005	<0.009
STATION	NUMBER	DATE	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BIFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)
			CALUMET COUNTY--CONTINUED								
435426088092601		09-05-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
435910088025701		09-03-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
435923088073901		09-05-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
FOND DU LAC COUNTY--CONTINUED											
435000088425401		09-01-93	<0.02	<0.007	<0.01	<0.009	<0.01	<0.01	<0.009	<0.02	<0.004
MANITOWOC COUNTY--CONTINUED											
435411087565001		09-06-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
OZAUKEE COUNTY--CONTINUED											
433126088002301		09-06-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
SHEBOYGAN COUNTY--CONTINUED											
433336088025901		09-06-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
434603088072401		09-02-93	<0.02	<0.007	<0.01	<0.009	<0.01	<0.01	<0.009	<0.02	<0.004
434619088005401		09-02-93	<0.02	<0.007	<0.01	<0.009	<0.01	<0.01	<0.009	<0.02	<0.004
WASHINGTON COUNTY--CONTINUED											
431623088041001		09-07-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
431812088094001		09-07-93	<0.02	<0.007	<0.01	<0.01	0.004	<0.01	<0.009	<0.02	<0.008
432053088114301		09-08-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008
432242088082401		09-08-93	<0.02	<0.007	<0.01	<0.01	<0.01	<0.01	<0.009	<0.02	<0.008



QUALITY OF GROUND WATER

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993

STATION	NUMBER	DATE	PRO- PANIL WATER FLTRD 0.7 U	CAR- BARYL WATER FLTRD 0.7 U	THIO- BENCARB WATER FLTRD 0.7 U	DCPA WATER FLTRD 0.7 U	PENDI- METH- ALIN WAT FLT 0.7 U	NAPROP- AMIDE WATER FLTRD 0.7 U	PRO- PARGITE WATER FLTRD 0.7 U	METHYL AZIN- PHOS WAT FLT 0.7 U	PER- METHRIN CIS WAT FLT 0.7 U
			GF, REC (UG/L) (82679)	GF, REC (UG/L) (82680)	GF, REC (UG/L) (82681)	GF, REC (UG/L) (82682)	GF, REC (UG/L) (82683)	GF, REC (UG/L) (82684)	GF, REC (UG/L) (82685)	GF, REC (UG/L) (82686)	GF, REC (UG/L) (82687)
			CALUMET COUNTY--CONTINUED								
435426088092601		09-05-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
435910088025701		09-03-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
435923088073901		09-05-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
FOND DU LAC COUNTY--CONTINUED											
435000088425401		09-01-93	<0.02	<0.05	<0.008	<0.005	<0.02	<0.01	<0.01	<0.08	<0.02
MANITOWOC COUNTY--CONTINUED											
435411087565001		09-06-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
OZAUKEE COUNTY--CONTINUED											
433126088002301		09-06-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
SHEBOYGAN COUNTY--CONTINUED											
433336088025901		09-06-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
434603088072401		09-02-93	<0.02	<0.05	<0.008	<0.005	<0.02	<0.01	<0.01	<0.08	<0.02
434619088005401		09-02-93	<0.02	<0.05	<0.008	<0.005	<0.02	<0.01	<0.01	<0.08	<0.02
WASHINGTON COUNTY--CONTINUED											
431623088041001		09-07-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
431812088094001		09-07-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
432053088114301		09-08-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02
432242088082401		09-08-93	<0.02	<0.05	<0.008	<0.004	<0.02	<0.01	<0.01	<0.04	<0.02

The reports listed below are a partial list of reports prepared by the Wisconsin District in cooperation with other agencies since 1948. The list contains reports that are relevant and contribute significantly to understanding the hydrology of Wisconsin's water resources.

The reports published in a U.S. Geological Survey series are for sale by the U.S. Geological Survey, Box 25425, Federal Center, Denver, CO 80225. Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices can be obtained by writing to the above address or by calling (303)236-7476. Copies of reports published by the University of Wisconsin, Geological and Natural History Survey, can be obtained from their office at 3817 Mineral Point Road, Madison, WI 53705.

#### WATER-SUPPLY PAPERS

Kammerer, P.A., Jr., and Krug, W.R., 1993, Wisconsin stream water quality, in U.S. Geological Survey, National water summary 1990-91--Hydrologic events and stream water quality: U.S. Geological Survey Water-Supply Paper 2400, p. 561-568.

Melcher, N.B., and Walker, J.F., 1992, Evaluation of selected methods for determining streamflow during periods of ice effect: U.S. Geological Survey Water-Supply Paper 2378, 47 p.

U.S. Geological Survey, 1991, National water summary 1988-89--Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper 2375, 591 p.

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## CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	$2.54 \times 10^1$	millimeter
	$2.54 \times 10^{-2}$	meter
foot (ft)	$3.048 \times 10^{-1}$	meter
mile (mi)	$1.609 \times 10^0$	kilometer
<i>Area</i>		
acre	$4.047 \times 10^3$	square meter
	$4.047 \times 10^{-1}$	square hectometer
	$4.047 \times 10^{-3}$	square kilometer
square mile (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometer
<i>Volume</i>		
gallon (gal)	$3.785 \times 10^0$	liter
	$3.785 \times 10^0$	cubic decimeter
	$3.785 \times 10^{-3}$	cubic meter
million gallons (Mgal)	$3.785 \times 10^3$	cubic meter
	$3.785 \times 10^{-3}$	cubic hectometer
cubic foot (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeter
	$2.832 \times 10^{-2}$	cubic meter
cubic-foot-per-second day [(ft <sup>3</sup> /s) d]	$2.447 \times 10^3$	cubic meter
	$2.447 \times 10^{-3}$	cubic hectometer
acre-foot (acre-ft)	$1.233 \times 10^3$	cubic meter
	$1.233 \times 10^{-3}$	cubic hectometer
	$1.233 \times 10^{-6}$	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liter per second
	$2.832 \times 10^1$	cubic decimeter per second
	$2.832 \times 10^{-2}$	cubic meter per second
gallon per minute (gal/min)	$6.309 \times 10^{-2}$	liter per second
	$6.309 \times 10^{-2}$	cubic decimeter per second
	$6.309 \times 10^{-5}$	cubic meter per second
million gallons per day (Mgal/d)	$4.381 \times 10^1$	cubic decimeter per second
	$4.381 \times 10^{-2}$	cubic meter per second
<i>Mass</i>		
ton (short)	$9.072 \times 10^{-1}$	megagram or metric ton

*Sea level:* In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.



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