

# Water Resources Data Wisconsin Water Year 1989



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WI-89-1  
Prepared in cooperation with the State of Wisconsin  
and with other agencies

## CALENDAR FOR WATER YEAR 1989

1988

## OCTOBER

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1989

## JANUARY

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## SEPTEMBER

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# Water Resources Data Wisconsin

## Water Year 1989

by B.K. Holmstrom and R.M. Erickson



**U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WI-89-1**  
Prepared in cooperation with the State of Wisconsin  
and with other agencies

UNITED STATES DEPARTMENT OF THE INTERIOR  
MANUEL LUJAN, JR., SECRETARY

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City of Middleton  
City of Beaver Dam  
City of Galena, Ill.  
City of Thorp  
Madison Metropolitan Sewerage District  
Milwaukee Metropolitan Sewerage District  
City of Hillsboro  
Illinois Department of Transportation  
City of Waupun  
City of Peshtigo  
Rock County Parks Department  
Village of Oconomowoc Lake  
Menominee Indian Tribe of Wisconsin  
Lac Courte Oreilles Governing Board  
Oneida Indian Tribe of Wisconsin  
Stockbridge-Munsee Tribal Council  
Town of Delavan  
District of Powers Lake  
Green Lake Sanitary District  
Okauchee Lake Management District  
Wind Lake Management District  
Town of Norway  
Fowler Lake Management District  
City of Fond du Lac  
Little Muskego Lake District  
City of Muskego/Big Muskego Protection and Rehabilitation Lake District  
Chippewa County  
Wisconsin Department of Justice  
Balsam Lake Protection and Rehabilitation District  
Town of Delton

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Madison, Wisconsin 53719



## 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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Josef Habale, Madison, southwest

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W. G. Batten	K. K. Fitzgerald	L. B. House	R. S. Stenback

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HYDROLOGIC MEASUREMENT SITES IN DOWNSTREAM ORDER,  
FOR WHICH RECORDS ARE PUBLISHED

VII

[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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## WATER RESOURCES DATA - WISCONSIN, 1989

### INTRODUCTION

Water-resources data for Wisconsin for the 1989 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. This report contains discharge records from 118 gaging stations and peak stage and discharge from 104 crest-stage stations; stage for 38 lakes and contents for 24 reservoirs; water-quality data from 39 streams and from 37 lakes; and water-level records from 63 observation wells. Various discharge, stage, precipitation, ground-water level, and water quality data are collected at four acid-deposition sites in northern Wisconsin. 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.

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." 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.

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.

## 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, C. D. Besadny, secretary.  
Southeastern Wisconsin Regional Planning Commission, K. W. Bauer, executive director.  
U.S. Army Corps of Engineers.  
Wisconsin Department of Transportation, Lowell B. Jackson, secretary, and S. W. Woods, chief bridge engineer.  
The University of Wisconsin-Extension, Geological and Natural History Survey, M. E. Ostrom, state geologist and director.  
Dane County Department of Public Works, Kenneth J. Kosciak, director.  
Dane County Regional Planning Commission, Charles Montemayor, executive director.  
City of Madison, A. E. Milke, city engineer.  
City of Middleton, Dan Ramsey, mayor.  
City of Beaver Dam, John Omen, mayor.  
City of Galena, IL, Frank L. Einsweiler, mayor.  
City of Thorp, Dave M. Keating, mayor.  
Madison Metropolitan Sewerage District, James L. Nemke, chief engineer and director.  
Milwaukee Metropolitan Sewerage District, Harold Cahill, Jr., executive director.  
City of Hillsboro, Wayne Peterson, mayor.  
Illinois Department of Transportation.  
City of Waupun.  
City of Peshtigo.  
Rock County Parks Department.  
Village of Oconomowoc Lake.  
Menominee Indian Tribe of Wisconsin.  
Lac Courte Oreilles Governing Board.  
Oneida Indian Tribe of Wisconsin.  
Stockbridge-Munsee Tribal Council.  
Town of Delavan.  
District of Powers Lake.  
Green Lake Sanitary District.  
Okauchee Lake Management District.  
Wind Lake Management District.  
Town of Norway.  
Fowler Lake Management District.  
City of Fond du Lac.  
Little Muskego Lake District.  
City of Muskego/Big Muskego Protection and Rehabilitation Lake District.  
Chippewa County.  
Wisconsin Department of Justice.  
Balsam Lake Protection and Rehabilitation District.  
Town of Delton

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., Nekoosa Papers Inc., 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

Runoff during the 1989 water year was below normal for the entire State except for a few basins in west-central, east-central, and southeast Wisconsin where flows were just above normal. Average runoff ranged from approximately 53 percent to 111 percent of long-term averages for the stations (fig. 1). The Galena River in southwest Wisconsin had the lowest runoff (53 percent) compared to its long-term (1940-89) average. The Sheboygan River basin in east-central Wisconsin had the greatest runoff (111 percent) compared to its long-term (1917-24, 1951-89) average.

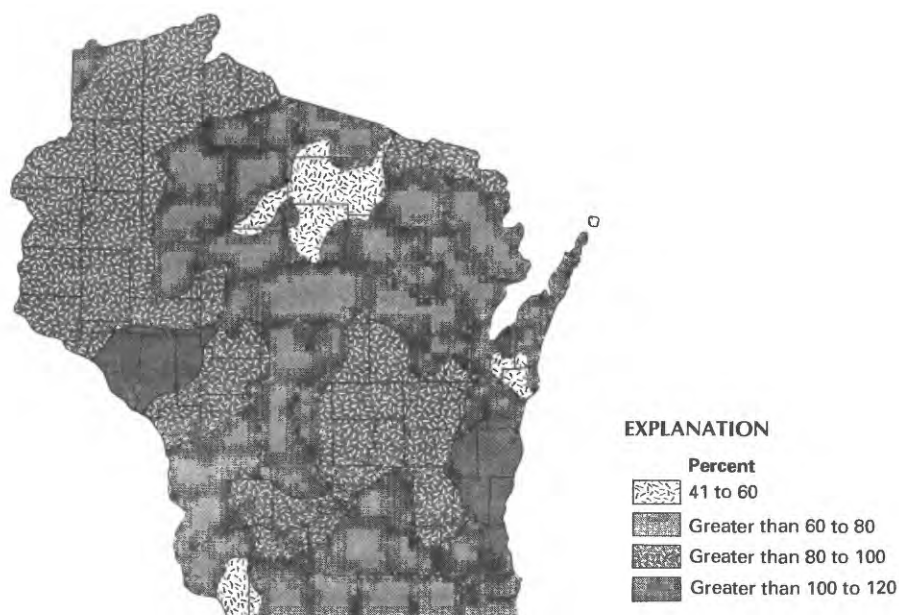


Figure 1. 1989 runoff as percent of long-term average runoff.

A comparison of annual discharge for the 1916-89 individual water years at Oconto River near Gillett, Jump River at Sheldon, and Sugar River near Brodhead gaging stations to their long-term average discharge for water years 1916-89 is shown in figure 2. Although the 1989 annual discharge was much less than the long-term average discharge for each of the three gaging stations, there were a number of previous years in which the annual discharges were less than the 1989 values. The following table shows comparisons of the long-term average discharge for the period of record, the 1989 annual discharge, ranking of 1989 annual mean discharge, the lowest annual mean discharge, and year of occurrence. Ranks of discharges are from lowest (1) to highest (74).

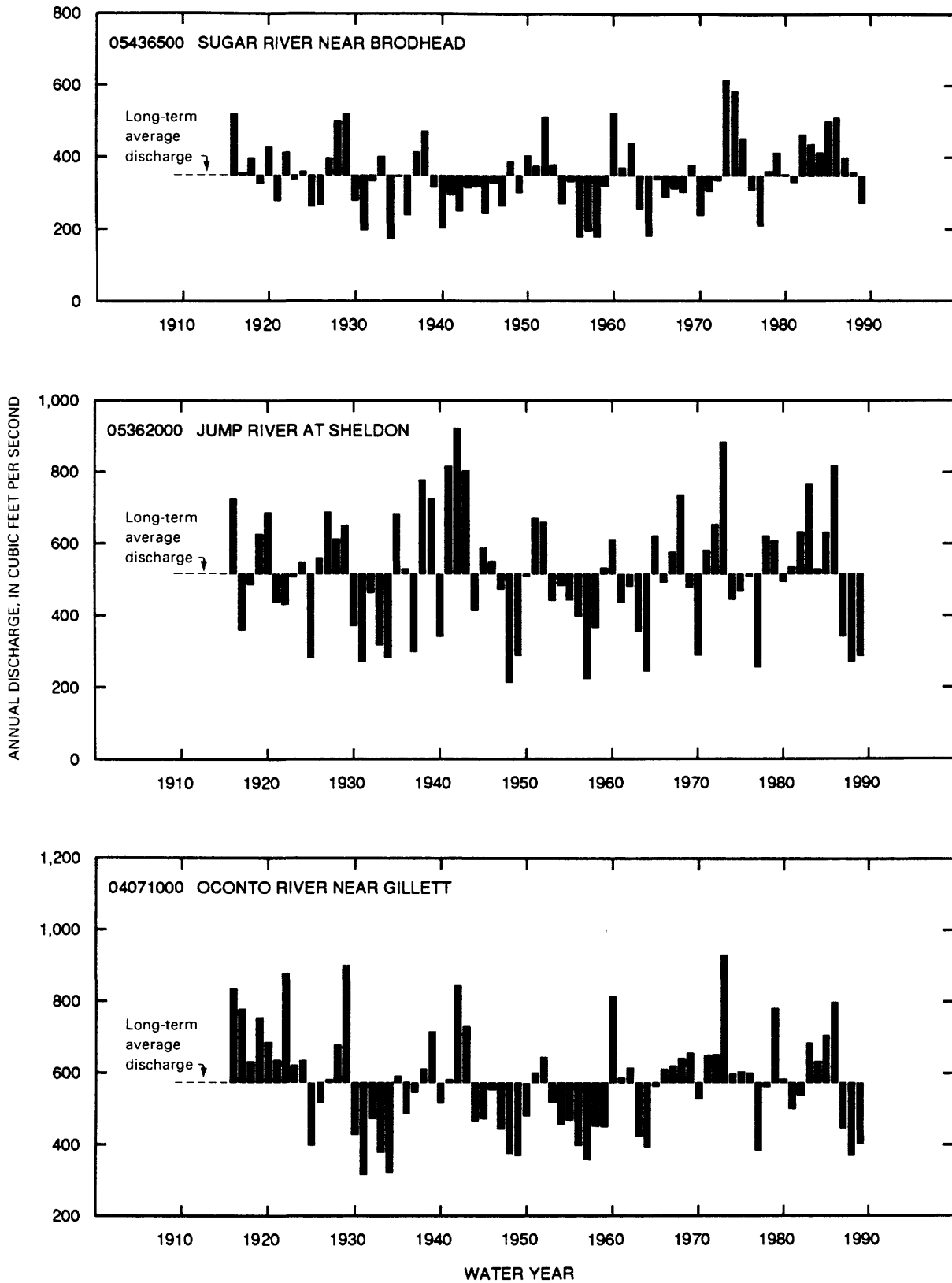
Station number	Station name	Long-term average discharge (1916-89) (ft <sup>3</sup> /s)	1989 annual discharge (ft <sup>3</sup> /s)	Ranking of 1989 annual discharge	Record low annual discharge (ft <sup>3</sup> /s) and year of occurrence
04071000	Oconto River nr Gillett	547	403	12	316 in 1931
05362000	Jump River at Sheldon	515	287	9	214 in 1948
05436500	Sugar River nr Brodhead	349	273	18	172 in 1934

The comparisons of the monthly and annual discharges for the 1989 water year to discharge for a 74-year base period at the same three gaging stations are shown in figure 3.

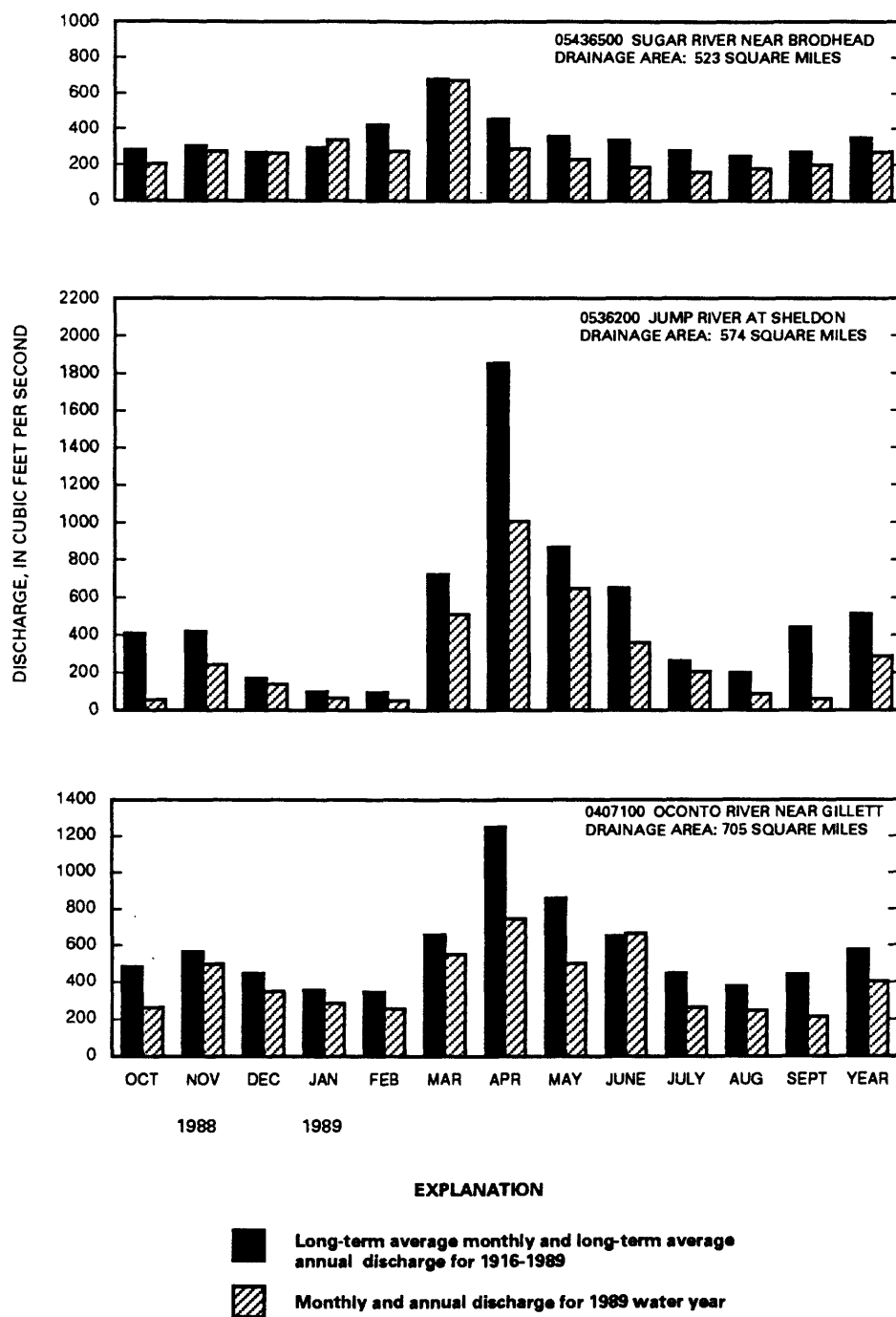
A description of the seasonal variation in streamflow follows:

#### October - December 1988

Streamflows, which were below normal in July-September of the 1988 water year, continued to be below normal during the October-December period except for southeast and east-central Wisconsin. Streamflows in the Upper Black River and Jump River basins in north-central Wisconsin, the Grant River and Pecatonica River basins in southwest Wisconsin, and Pensaukee River basin in northeast Wisconsin were between 40 and 50 percent of normal. Flows were well below normal in these basins even though statewide precipitation during the October through December period was generally above normal. Below-normal flows were caused by below-normal precipitation and hot temperatures in the preceding 3-month period (July-September 1988). Precipitation for the period ranged from 0.61 inches below normal in southwest Wisconsin to 3.16 inches above normal in northeast Wisconsin. Precipitation was 1.93 inches above normal in southeast Wisconsin (National Oceanic and Atmospheric Administration, 1989, p. 5, 7, 9), which resulted in flow about 150 percent the normal value for the Fox River basin.



**Figure 2. Comparison of annual discharge at representative gaging stations to their long-term average discharge for water years 1916-1989.**



**Figure 3. Comparison of discharge at representative gaging stations during 1989 water year with discharge for 1916-1989.**



January - March 1989

Precipitation was below normal for the entire State during January through March, ranging from 0.27 inches below normal in northwest Wisconsin to 1.46 inches below normal in southwest Wisconsin (Pamela Naber, UW-Extension, Geological and Natural History Survey, written commun., 1990). Flows generally were below normal statewide during this period except for a few basins in west-central Wisconsin. Discharges ranged from 61 percent of normal for the Bad River basin in north-central Wisconsin to 140 percent of normal for the Trempealeau River basin in west-central Wisconsin. The frost depths for mid-January to late March were 6 to 17 inches greater than the average. In late March, the average frost depth for the State was still 29.7 inches (Wisconsin Agricultural Statistics Service, 1989, p. 1). This caused most of the snowmelt and precipitation occurring in mid to late March to run off. This runoff caused a number of instantaneous flood peaks that equalled or exceeded the 2-year recurrence interval.

These peak discharges and recurrence intervals are summarized in the following table:

Station number	Station name	Date	Peak discharge (ft <sup>3</sup> /s)	Recurrence interval (years)
04071858	Pensaukee River near Pensaukee	Mar. 27	2,700	5
04085200	Kewaunee River near Kewaunee	Mar. 26	4,680	6
04085281	East Twin River at Mishicot	Mar. 27	1,400	2
04085427	Manitowoc River at Manitowoc	Mar. 27	4,640	6
04086000	Sheboygan River at Sheboygan	Mar. 27	5,610	7
04087000	Milwaukee River at Milwaukee	Mar. 28	4,980	2
05368000	Hay River at Wheeler	Mar. 28	9,590	20
05369000	Red Cedar River at Menomonie	Mar. 28	16,800	10
05379500	Trempealeau River at Dodge	Mar. 28	7,110	6
05381000	Black River at Neillsville	Mar. 27	15,300	3
05382000	Black River near Galesville	Mar. 30	23,000	2
05397500	Eau Claire River at Kelly	Mar. 28	3,500	2
05399500	Big Eau Pleine River near Stratford	Mar. 27	11,600	4
05402000	Yellow River at Babcock	Mar. 28	6,110	3
05406500	Black Earth Creek at Black Earth	Mar. 12	433	2
05427948	Pheasant Branch at Middleton	Mar. 11	501	6

April - June 1989

Statewide precipitation continued to be below normal in April-June. Departures from normal ranged from 0.53 inches below normal in northwest Wisconsin to 4.78 inches below normal in south-central Wisconsin (Pamela Naber, UW-Extension, Geological and Natural History Survey, written commun., 1990). Streamflows for the period were below normal for all of the State except for a few basins in central and east-central Wisconsin. Streamflows ranged from 32 percent of normal for the Galena River basin in southwest Wisconsin to 126 percent of normal for the Sheboygan River basin in east-central Wisconsin.

July - September 1989

Statewide precipitation patterns differed considerably during July-September. Precipitation was below normal for the entire State for the period except for south-central and southeast Wisconsin. Departures from normal precipitation ranged from 6.09 inches below normal in northeast Wisconsin to 4.04 inches above normal in southeast Wisconsin (Pamela Naber, UW-Extension, Geological and Natural History Survey, 1990). Streamflow for the period was below normal for the entire State except for southeast Wisconsin. Streamflow ranged from 7 percent of normal for the Pensaukee River near Pensaukee in northeast Wisconsin to 149 percent of normal for the Milwaukee River at Milwaukee in southeast Wisconsin. Two streams in southeast Wisconsin had flood peaks which were caused by local thunderstorms that equalled or exceeded the 2-year recurrence interval. A peak discharge of 240 cubic feet per second ( $\text{ft}^3/\text{s}$ ), a 4-year recurrence interval, was recorded at the Mukwonago River at Mukwonago gaging station on September 1, and a peak of 760  $\text{ft}^3/\text{s}$ , a 2-year recurrence interval, was recorded at the Root River Canal near Franklin station on September 2.

Precipitation in northeast Wisconsin for the 6-month period April-September was 8.93 inches below normal. This caused streamflow to decline to record low levels for the July-September period at three gaging stations in northeast Wisconsin. The three stations that recorded their lowest July through September means are listed below:

Station number	Station name	Period of record	Previous low July-Sept. mean discharge ( $\text{ft}^3/\text{s}$ )	1989 July- Sept. mean discharge ( $\text{ft}^3/\text{s}$ )
04063700	Popple River near Fence	Oct. 1964- Sept. 1989	28.3	19.3
04071858	Pensaukee River nr Pensaukee	Oct. 1972- Sept. 1989	3.42	2.68
04074950	Wolf River at Langlade	Mar. 1966- Sept. 1979, Oct. 1980- Sept. 1989	233	181

The annual minimum 7-consecutive day average flow (Q7) also reached record lows for two of these stations in late September. The Popple River near Fence reached a Q7 of 12  $\text{ft}^3/\text{s}$  which equalled the previous record low of 12  $\text{ft}^3/\text{s}$  recorded in July 1988. Streamflow in the Pensaukee River near Pensaukee River declined to a record low Q7 of 0.64  $\text{ft}^3/\text{s}$ ; the previous record low of 1.3  $\text{ft}^3/\text{s}$  occurred in August 1977. The Q7 at many gaging stations declined to values that corresponded to values with recurrence intervals of 5 or more years. These values and corresponding recurrence intervals are listed in the following table:

Station number	Station name	Date	Q7 (ft <sup>3</sup> /s)	Recurrence interval (years)
04027000	Bad River near Odanah	Sept. 24-30	63	14
04027500	White River near Ashland	July 24-30	138	5
04063700	Popple River near Fence	Sept. 20-26	12	35
04066003	Menominee River below Pemene Creek near Pembine	Aug. 24-30	1,080	5
04067500	Menominee River near McAllister	Sept. 24-30	1,170	15
04069500	Peshtigo River at Peshtigo	Sept. 24-30	233	6
04071000	Oconto River near Gillett	Sept. 23-29	199	6
04071858	Pensaukee River near Pensaukee	Sept. 19-25	0.64	21
04077400	Wolf River near Shawano	Sept. 24-30	333	5
04079000	Wolf River at New London	Sept. 24-30	449	14
04084500	Fox River at Rapide Croche dam near Wrightstown	Sept. 23-29	1,190	5
04085281	East Twin River at Mishicot	Sept. 21-27	6.5	6
04085427	Manitowoc River at Manitowoc	Sept. 24-30	10	12
04087220	Root River near Franklin	July 2-8	1.9	9
05333500	St. Croix River near Danbury	Aug. 6-12	579	6
05340500	St. Croix River at St. Croix Falls	Aug. 7-13	1,240	5
05360500	Flambeau River near Bruce	Sept. 24-30	527	5
05365500	Chippewa River at Chippewa Falls	Aug. 5-11	908	6
05369500	Chippewa River at Durand	Aug. 7-13	2,330	6
05394500	Prairie River near Merrill	Sept. 22-28	59	20
05395000	Wisconsin River at Merrill	Sept. 19-25	812	8
05397500	Eau Claire River at Kelly	Sept. 24-30	39	8
05398000	Wisconsin River at Rothschild	Sept. 23-29	863	23
05400760	Wisconsin River at Wisconsin Rapids	Sept. 24-30	1,030	20
05402000	Yellow River at Babcock	Aug. 15-21	4.5	5
05404000	Wisconsin River nr Wisconsin Dells	Sept. 24-30	1,320	42
05407000	Wisconsin River at Muscoda	Sept. 24-30	2,320	27
05414000	Platte River near Rockville	July 5-11	27	6
05415000	Galena River at Buncombe	July 5-11	13	15
05431486	Turtle Creek near Clinton	July 3-9	29	8
05432500	Pecatonica River at Darlington	July 6-12	39	8
05546500	Fox River at Wilmot	July 3-9	61	12

References cited:

National Oceanic and Atmospheric Administration, [1989], Climatological data, annual summary, Wisconsin, 1988: Vol. 93, No. 13, 36 p.

Wisconsin Agricultural Statistics Service, 1989, Summary--winter of 1988-89: Crop Weather Report, Vol. 12, No. 8, 2 p.

### Water Quality

Suspended-sediment and total-phosphorus yields were generally higher in the 1989 water year than in the 1988 water year even though runoff continued to be below normal in most of the state for the 1989 water year (fig. 1). Near- or above-normal precipitation in many areas, and greater than average frost depths, contributed to surface runoff that caused the increase in yields. Yields in the 1988 water year were unusually low because of below-normal surface runoff during the 1988 drought. The annual suspended-sediment yield at the Grant River at Burton in southwest Wisconsin was 177 tons/mi<sup>2</sup> (tons per square mile) for the 1989 water year; this is twice the yield for the 1988 water year, but only 70 percent of the average yield for the period 1978-89. At Duncan Creek Tributary near Tilden in west-central Wisconsin, 1989 suspended-sediment and total-phosphorus yields of 274 tons/mi<sup>2</sup> and 1,600 lb/mi<sup>2</sup> (pounds per square mile), respectively, were the highest measured in three years (1987-89). Suspended-sediment and total-phosphorus yields of 46.7 tons/mi<sup>2</sup> and 579 lb/mi<sup>2</sup> at Silver Creek at Ripon in east-central Wisconsin were also the highest yields measured in the three-year period 1987-89. At Delavan Lake Inlet near Lake Lawn in southeast Wisconsin, the 1989 total phosphorus yield of 144 lb/mi<sup>2</sup> was twice the 1988 yield but only half of the average annual yield for the 5-year period 1984-89.

Dissolved-solids concentration is a measure of the dissolved mineral content of water. Dissolved-solids concentrations in rivers and streams change with changes in runoff. Concentrations are generally highest during base flow, when streamflow is ground-water runoff, and decrease as base flow is diluted by runoff from snowmelt and precipitation.

Dissolved-solids concentrations measured at selected National Stream-Quality Accounting Network (NASQAN) stations and a Hydrologic Benchmark Network (HBMN) station during the 1989 water year reflect runoff conditions in the State. Dissolved-solids concentrations measured at these stations during the water year are compared to monthly median concentrations for the period of record in figure 4.

Dissolved-solids concentrations at the Wisconsin River at Muscoda were above normal in October and December and near long-term median values for the rest of the water year (fig. 4). Runoff at this station was below normal for the entire year. Lasting effects from the 1988 drought may have contributed to the higher concentrations in October and December.

At the Manitowoc River at Manitowoc, the dissolved-solids concentration was greater than the long-term median value in October, when monthly runoff was 19 percent of normal, and less than the long-term median value in March, when the sample was collected the day following the maximum discharge for the year (fig. 4). Dissolved-solids concentrations in June and August were slightly above the monthly medians; runoff at this station for the period April-September was below normal.

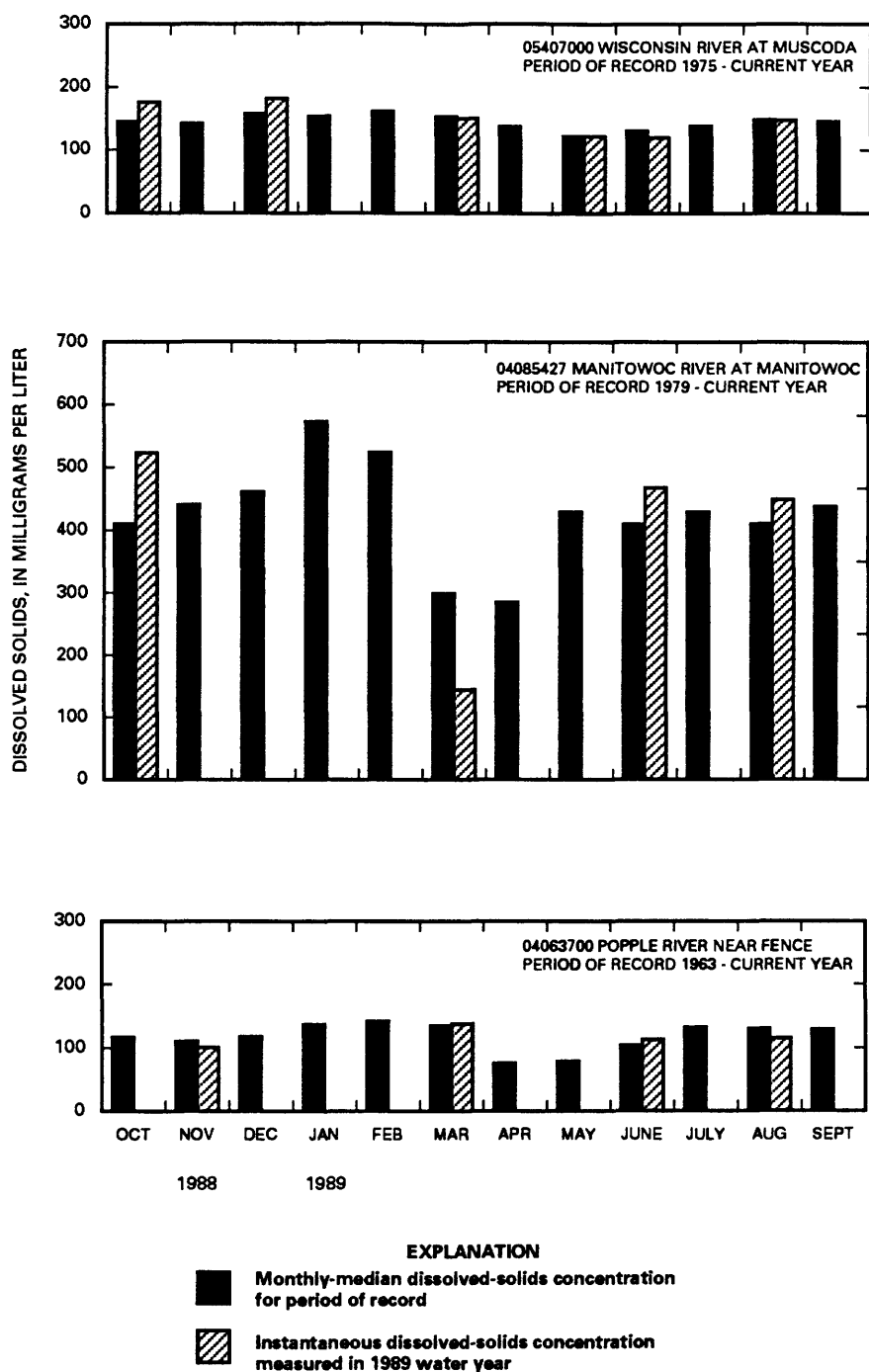


Figure 4. Comparison of dissolved-solids concentrations in streams during 1989 water year with monthly median.

Samples collected at the Popple River near Fence during the 1989 water year were all collected at low flow, and the dissolved-solids concentrations were close to monthly median values (fig. 4). Runoff at this station was near normal in the first quarter (October-December) and decreased throughout the year to 23 percent of normal in the last quarter (July-September).

### Ground-Water Levels

Maps showing the seasonal ground-water trends for the year (fig. 5) are based on water-level data from 27 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 September through November 1988; WINTER consists of measurements from December 1988 through February 1989; SPRING consists of measurements from March through May 1989; and SUMMER consists of measurements from June through August 1989. Mean seasonal water levels were compared to the long-term mean seasonal water levels. The 1989 water level was considered normal if it was within one-half of the standard deviation on the long-term mean.

Shallow ground-water levels during the 1989 water year were generally normal or below normal. Throughout the year, water levels in only 3 of the 27 shallow-aquifer wells were above normal compared to as many as 13 wells above normal during the previous year. Above normal water levels during 1989 were measured in wells located in Burnett, Clark, and northern Door counties. In the FALL water levels were below normal except in counties adjacent to the State's western and southern borders (except for a small area around Green county) and a narrow band running from Dane to eastern Marathon counties. As the year progressed into WINTER and SPRING water levels in southwestern Wisconsin also fell below normal. This area of the state was approximately 15 inches below normal precipitation for the 18 month period spanning January, 1988 to June, 1989. During the SUMMER of 1989 only a narrow band running northwest to southeast through Burnett, Trempealeau, Adams and Kenosha counties had normal water levels. Water levels in Burnett and Clark counties were above normal.

### SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Program provides data from river basins where hydrologic conditions are relatively unaffected by man's activities and are expected to remain unaffected within the foreseeable future.

National Stream-Quality Accounting Network was designed by the U.S. Geological Survey to meet information needs of agencies or groups involved in national or regional water-quality planning and management. Both accounting and broad monitoring aspects have been incorporated in the network design. The network is divided into the river-basin accounting units designated by the Office of Water Data Coordination in consultation with the Water Resources Council. Primary objectives of the network are: (1) to assess the areal variability of water-quality conditions, nationwide, on an annual basis; and (2) to assess long-term changes in stream quality.

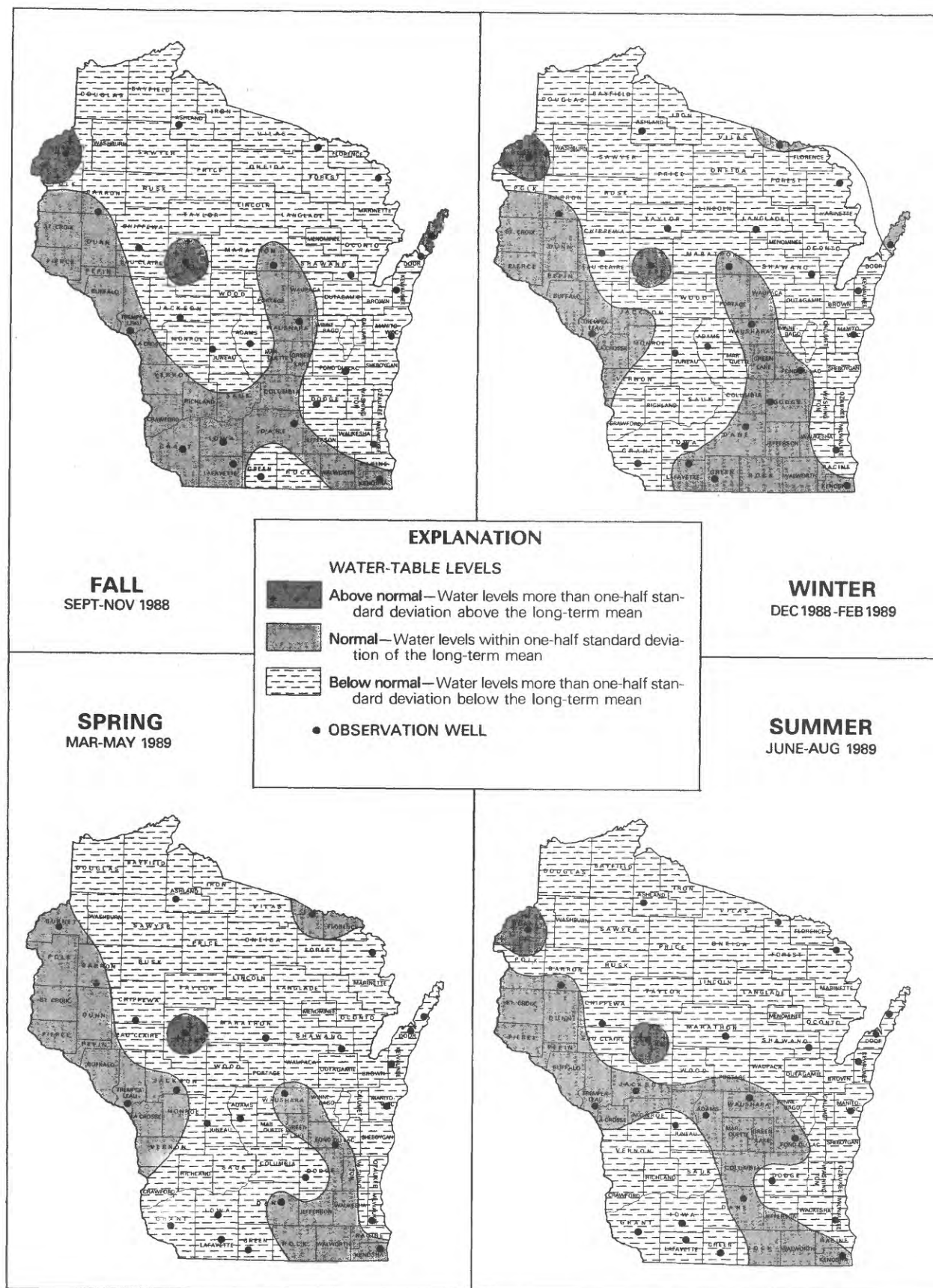


Figure 5. Relation of seasonal water-table levels to long-term means.

The U.S. Geological Survey completed a nation-wide review of the NASQAN program during 1986. This review is expected to result in a change in emphasis in the program and a net reduction, nationally, in the number of stations in the network. The original accounting objectives of the program will be retained only for a reduced number of stations that account for the quality of water leaving the continent or entering the Great Lakes. To meet the accounting objectives, preference will be given to stations where statistically significant water-quality changes have been detected or where changes in upstream land uses are anticipated.

Increased emphasis will be placed on trend detection and transport of dissolved and suspended materials at these remaining accounting stations and any other stations retained in the network. Other stations retained in the network will be selected on the basis of hypotheses concerning the causes of existing or potential trends that the station is intended to identify. This new emphasis will require more intensive sampling (event-related and fixed-frequency sampling) and more chemical analyses of suspended materials, thus increasing per station costs. These increased costs are to be met by a reduction in network size rather than by increased funding of the program. Some reduction in network size and changes in network composition began in the 1987 water year; additional changes in the size, composition, and emphasis of the network are expected to be planned and implemented through the 1990 water year.

Radiochemical Surveillance Network is a network of water-quality stations, representing major drainage basins in the conterminous United States, where samples are collected regularly for radioisotope analysis.

#### EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are from the 1989 water year that began October 1, 1988, and ended September 30, 1989. 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 and surface and ground water, and ground-water-level data. Data collection as part of cooperative studies of acid deposition in Wisconsin, which includes most of the data type just mentioned, are tabulated in a separate section of the report. The explanations of various types of data given in the remainder of this section apply to these records as well. Figure 6 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 figures 7 and 8.

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

Each data station, whether streamsite or well, in this report 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 for the station 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.

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- or nine-digit number for each station, such as 04087000 or 054310157, which appears just to the left of the station name, includes the two-digit Part number "04" or "05" plus the six- or seven-digit downstream-order number "087000" or "4310157". The Part number designates the major river basin; for example, records in this report are in Part 04 (St. Lawrence River basin) or 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 commonly are published for such stations, they are referred to as "daily stations." By contrast, partial records are obtained by 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. These types of stations are each 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, or from a tape punched at selected intervals on a water-stage recorder. 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. 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

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information such as station location, period of record, average discharge, historical extremes, 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. These headings may include all or some of the following:

**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 National Geodetic Vertical Datum of 1929 (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 estimated record, the paragraph will begin with this information presented as the first entry. 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, possibly, other pertinent items.

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

AVERAGE DISCHARGE.--The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges. Unless otherwise qualified, the maximum discharge is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

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.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence of peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030 and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

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.

RATING TABLE.--Skeleton rating tables allow an approximation of daily gage heights from daily discharges. The tables also indicate the range in stage resulting from any given range in discharge.

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

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually 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. The figures shown in the yearly summary below the monthly summary are the appropriate discharges for the calendar and water years.

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 or 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 stream-gaging 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. Water-quality partial-record stations are sites where more limited water-quality data are collected. These data include water temperature and specific conductance measurements made at gaging station visits and other reconnaissance data collected for special purposes. Water-quality data for water-quality partial-record stations appear together 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, 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 load. Water quality in lakes may differ with depth and laterally at a particular depth depending on thermal stratification and other physical and biological factors.

Chemical-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 recording monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon values recorded. More detailed records (hourly values) may be obtained from the U.S.G.S. Wisconsin District Office.

### Sediment

Suspended-sediment concentrations are determined on samples collected with depth integrating samplers from one or more verticals in the cross section, or on a single sample taken manually or with an automatic sampler at a fixed point. For fixed-point samples, a coefficient is applied to correct for differences between fixed-point and flow-integrated samples.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently than during stable periods. The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge. Suspended-sediment discharges less than 0.005 tons/day are reported as 0.

Suspended-sediment samples are collected less frequently at some stations where suspended-sediment discharges are not computed. These periodic samples represent conditions only at the time of sample collection. However, such data are useful in establishing seasonal relations between suspended-sediment concentration and streamflow and in predicting long-term sediment-discharge characteristics of the stream.



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 U.S.G.S. Sediment Laboratory in Iowa City, Iowa. Chemical analyses, other than field measurements, are performed by the USGS National Water Quality Laboratory unless specified otherwise. Methods used by USGS laboratories in analyzing water and sediment samples and computing sediment records 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 1989. Sulfate values in this report for samples collected prior to July 1989 have not been corrected for this bias.

### Collecting and Analyzing Agencies

All water-quality analyses stored in USGS computer files (WATSTORE) contain codes that identify the agency that collected the sample (collecting agency) and that analyzed it (analyzing agency). These codes are also shown 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 non USGS), cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then following in sequence.

The concentrations of some constituents are given as less than some 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.

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 parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, temperature recorder, pumping 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. Non USGS laboratories providing analytical data 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 U.S. Geological Survey 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	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 63 wells are given in this report. The location of these wells is shown on figure 7. 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 63 wells are presented in this report, water-level data are currently being collected for a total of 216 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), an alphanumeric number, derived from the county, township-range location of the well, and a sequential number for 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 the National Geodetic Vertical Datum of 1929 and the height 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.

**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) National Geodetic Vertical Datum of 1929 (NGVD of 1929); 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.

### Records of Ground-Water Quality

#### Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as part of special studies in specific areas. Consequently, a number of chemical analyses may be presented for some counties but none for others.

Most methods of collecting and analyzing water samples are described in the "U.S. Geological Survey Techniques of Water-Resources Investigations" manuals listed in "Publications on techniques of water-resources investigations." Laboratory analyses are by the USGS National Water Quality Laboratory unless specified otherwise. The values reported in this report represent water-quality conditions at the time of sampling. Care is taken to assure that the water collected represents the geologic unit supplying water to the well. This is done by pumping the well for what is believed to be a sufficient length of time to flush out water that might have been contaminated by exposure to the material that comprise the well casing or distribution system.

#### Data Presentation

The records of ground-water quality are published in a section titled QUALITY OF GROUND WATER immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by County. No descriptive statements are given for ground-water-quality records; however, station number, local identifying number, geologic unit, depth of well, date of

sampling, and other pertinent data are given in the table containing the chemical analyses of the ground water. The discussion of detection limits and the list of remarks codes for surface-water-quality records also apply to ground-water-quality records.

#### ACCESS OF WATSTORE DATA

The National WATER Data STORAGE and RETrieval System (WATSTORE) was established to process and store water data collected through the activities of the U.S. Geological Survey and to provide more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from the District Office.

General inquiries about WATSTORE may be directed to:

Chief Hydrologist  
U.S. Geological Survey  
437 National Center  
Reston, Virginia 22092

Telephone: 703/648-5686

## 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  $44.5^{\circ}\text{C} \pm 0.2^{\circ}$  on 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  $35^{\circ} \pm 1.0^{\circ}$  on M-enterococcus 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 feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Cubic foot per second (ft<sup>3</sup>/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.

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  $\mu$ 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 (CaCO<sub>3</sub>). 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.

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 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.

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.

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  $\mu\text{m}$  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  $\mu\text{m}$  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--Continued

- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 3-B2. *Introduction to ground-water hydraulics, a programmed text for self-instruction*, by G. D. Bennett: USGS--TWRI Book 3, Chapter B2. 1976. 172 pages.
- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
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- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
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- 7-C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
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## 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, Books and Open-File Reports Section, Federal Center, Box 25425, 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. Ficke, 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.
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- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 pages.
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- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. 1986. 41 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 pages.
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- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS--TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS--TWRI Book 3, Chapter A17. 1985. 38 pages.
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ST. LAWRENCE RIVER BASIN RECORDS

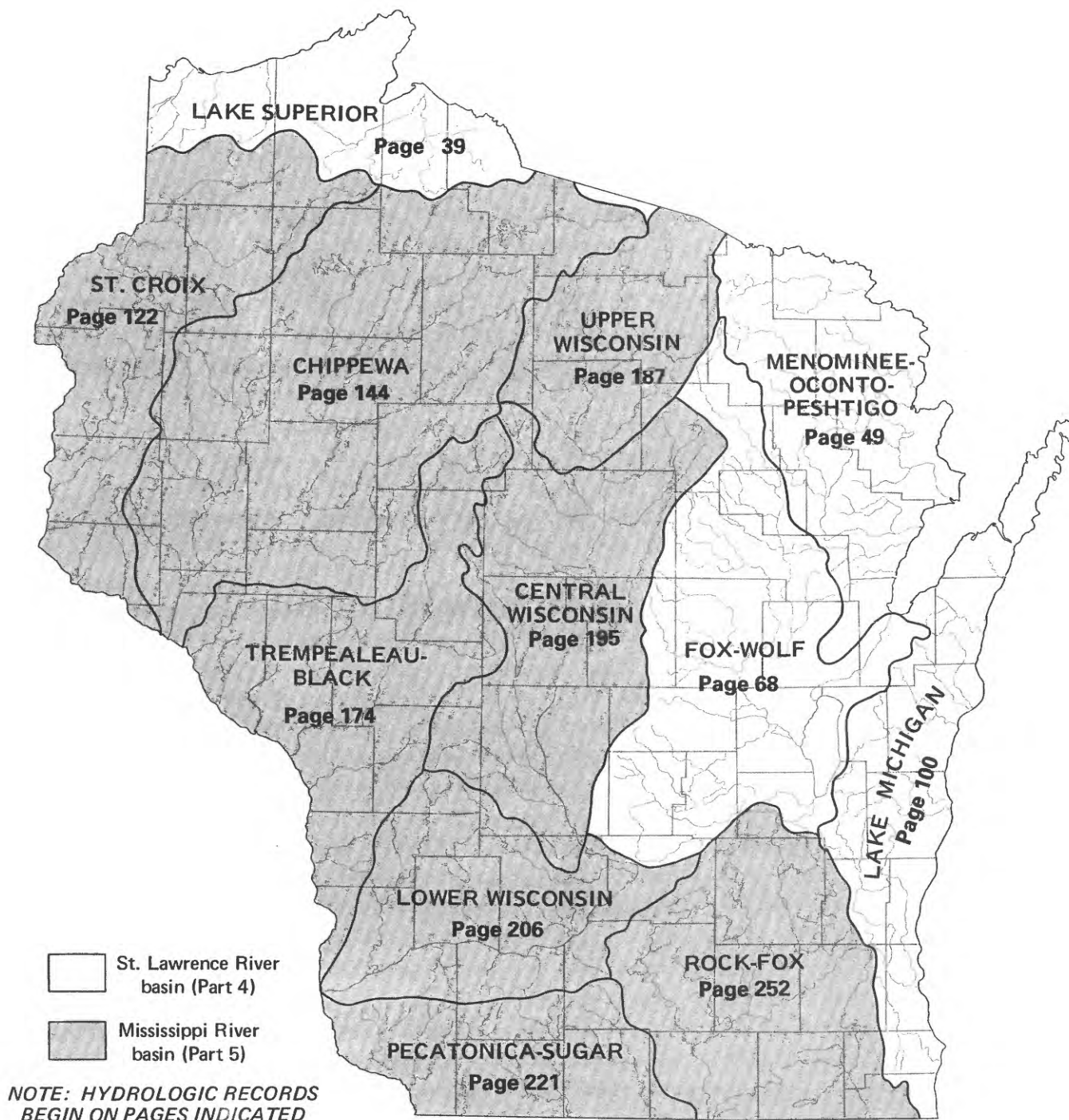
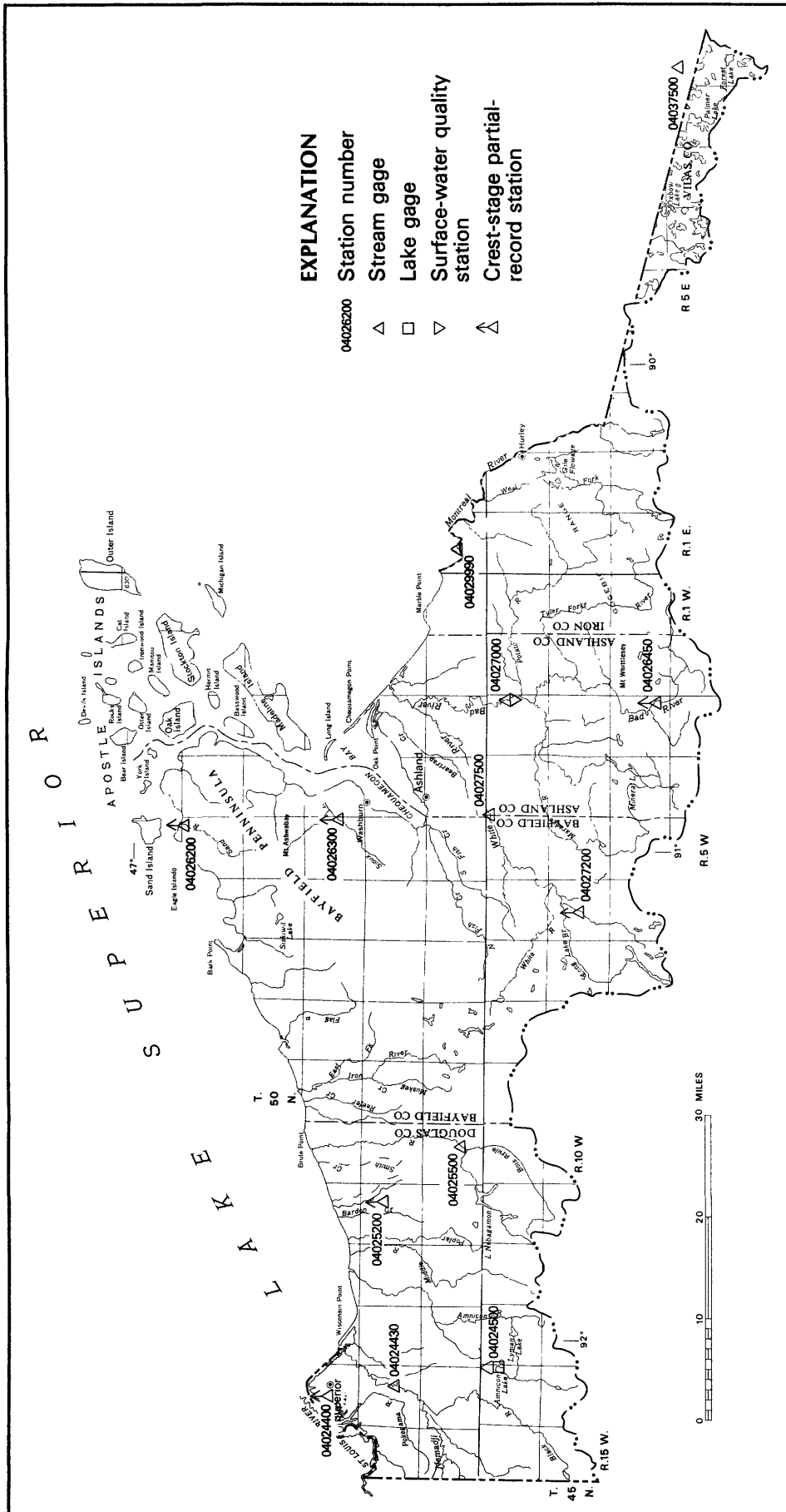


Figure 6. Major surface-water drainage basins and index of hydrologic records.





Base from U.S. Geological Survey  
State base map, 1968

## 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Apr. 26 to May 25 and ice periods listed in rating table below. Records good except for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--15 years, 401 ft<sup>3</sup>/s, 12.96 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,700 ft<sup>3</sup>/s, May 10, 1979, gage height, 22.83 ft; maximum gage height, 23.82 ft, Sept. 3, 1985; minimum daily, 16 ft<sup>3</sup>/s, Dec. 8, 1976.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Apr. 7	1200	(a)*3,480	(a)*19.07				

(a) Backwater from ice.

Minimum discharge, 34 ft<sup>3</sup>/s, July 28, gage height, 3.45 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1 to Nov. 15 and Sept. 22-30; stage-discharge relation affected by ice Oct. 29 to Nov. 4, Nov. 6, and Nov. 19 to Apr. 16.)

3.5	38	7.0	514
3.7	56	11.0	1,400
4.0	84	14.0	2,260
5.0	198	18.0	3,820

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	92	320	76	88	66	900	460	568	130	69	2120
2	131	88	300	76	84	64	920	640	471	114	59	1020
3	122	86	320	76	82	64	1200	880	395	103	54	632
4	118	84	270	76	80	64	2100	1000	330	90	52	656
5	108	93	230	78	78	64	2700	940	284	81	52	1190
6	98	94	210	78	76	64	3100	840	249	75	45	720
7	91	99	180	78	74	64	3400	760	216	73	45	485
8	89	100	160	78	72	66	3300	700	196	68	43	366
9	86	99	140	78	72	68	2300	660	194	64	44	297
10	83	114	130	78	70	70	1700	640	188	63	47	244
11	78	135	110	80	70	78	1400	620	171	64	43	208
12	77	132	100	80	70	86	1300	600	168	57	41	191
13	74	134	94	80	70	90	1400	580	343	53	46	175
14	74	142	92	80	68	100	1600	560	372	50	50	153
15	73	153	92	80	68	120	1900	560	310	50	55	135
16	72	1210	90	80	68	130	2300	540	247	46	51	120
17	74	1290	88	80	68	130	2670	520	205	53	52	109
18	81	677	86	82	68	120	2040	520	179	50	46	101
19	93	480	84	82	68	110	1610	500	161	48	45	95
20	99	380	84	84	68	110	1380	500	148	44	53	105
21	104	340	82	84	68	110	1140	490	133	48	56	144
22	109	350	82	86	68	120	989	490	126	47	57	239
23	115	360	80	86	68	120	848	490	138	43	57	188
24	111	370	80	86	68	130	728	490	178	41	54	148
25	108	370	80	86	68	140	655	1100	161	42	48	130
26	103	350	80	86	68	150	600	1240	152	40	55	117
27	102	470	78	88	68	180	540	825	149	41	84	107
28	101	490	78	88	66	580	500	615	136	40	77	99
29	98	400	78	88	---	1100	490	493	118	51	66	89
30	96	360	78	88	---	1000	470	722	119	86	81	85
31	94	---	78	88	---	930	---	741	---	83	804	---
TOTAL	3002	9542	4054	2534	2004	6288	46180	20716	6805	1938	2431	10468
MEAN	96.8	318	131	81.7	71.6	203	1539	668	227	62.5	78.4	349
MAX	140	1290	320	88	88	1100	3400	1240	568	130	804	2120
MIN	72	84	78	76	66	64	470	460	118	40	41	85
CFSM	.23	.76	.31	.19	.17	.48	3.67	1.59	.54	.15	.19	.83
IN.	.27	.85	.36	.22	.18	.56	4.09	1.83	.60	.17	.22	.93

CAL YR 1988	TOTAL 100780	MEAN 275	MAX 4000	MIN 39	CFSM .66	IN. 8.93
WTR YR 1989	TOTAL 115962	MEAN 318	MAX 3400	MIN 40	CFSM .76	IN. 10.27

## STREAMS TRIBUTARY TO LAKE SUPERIOR

41

04024500 AMNICON LAKE NEAR SOUTH RANGE, WI

LOCATION.--Lat 46°28'59", long 92°04'01", in SW 1/4 NW 1/4 sec.12, T.46 N., R.14 W., Douglas County, Hydrologic Unit 04010301, 9.5 mi southwest of South Range.

DRAINAGE AREA.--4.8 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--August 1936 to September 1964 (fragmentary), October 1984 to September 1986, May 1988 to current year.

GAGE.--Staff gage read by Dennis Corbin. Datum of gage is 1179.94 ft, National Geodetic Vertical Datum of 1929. Prior to 1964, staff gage 0.3 mi west at datum of 1188.00 ft, National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1199.32 ft, May 9, 1950; minimum observed, 1195.82 ft, Oct. 28, 1948.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 17.54 ft, Oct. 1; minimum observed, 16.89 ft, Aug. 23.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.54	---	---	---	---	---	---	---	---	17.25	17.07	17.31
2	17.52	---	---	---	---	---	---	---	---	17.25	---	17.31
3	17.50	---	---	---	---	---	---	---	---	17.23	---	17.29
4	17.50	---	---	---	---	---	---	---	---	17.23	---	17.39
5	17.48	---	---	---	---	---	---	---	---	17.21	---	17.41
6	17.46	---	---	---	---	---	---	---	---	17.21	---	17.39
7	17.44	---	---	---	---	---	---	---	---	17.17	---	17.39
8	17.42	---	---	---	---	---	---	---	---	17.17	---	17.37
9	17.40	---	---	---	---	---	---	---	17.29	17.15	16.97	17.37
10	17.38	---	---	---	---	---	---	---	17.29	17.15	---	17.35
11	17.36	---	---	---	---	---	---	---	17.27	17.13	---	17.33
12	17.34	---	---	---	---	---	---	---	17.31	17.11	---	17.31
13	17.34	---	---	---	---	---	---	---	17.31	17.09	---	17.29
14	17.32	---	---	---	---	---	---	---	17.29	17.09	---	17.29
15	17.32	---	---	---	---	---	---	---	17.29	17.07	---	17.30
16	17.32	---	---	---	---	---	---	---	17.27	17.07	16.91	17.31
17	17.32	---	---	---	---	---	---	---	17.26	17.09	---	17.29
18	17.32	---	---	---	---	---	---	---	17.25	17.09	---	17.29
19	17.33	---	---	---	---	---	---	---	17.23	17.07	---	17.27
20	17.34	---	---	---	---	---	---	---	17.21	17.07	---	17.27
21	17.32	---	---	---	---	---	---	---	17.19	17.05	---	17.25
22	17.30	---	---	---	---	---	---	---	17.17	17.05	---	17.25
23	17.28	---	---	---	---	---	---	---	17.21	17.05	16.89	17.23
24	17.26	---	---	---	---	---	---	---	17.23	17.05	---	17.23
25	17.24	---	---	---	---	---	---	---	17.23	17.03	---	17.21
26	17.22	---	---	---	---	---	---	---	17.25	16.99	---	17.19
27	17.20	---	---	---	---	---	---	---	17.27	16.97	---	17.17
28	17.18	---	---	---	---	---	---	---	17.27	16.95	---	17.15
29	17.16	---	---	---	---	---	---	---	17.25	17.01	---	17.13
30	---	---	---	---	---	---	---	---	17.25	17.07	16.93	17.11
31	---	---	---	---	---	---	---	---	---	17.07	---	---
MAX	17.54	---	---	---	---	---	---	---	17.31	17.25	17.07	17.41
MIN	17.16	---	---	---	---	---	---	---	17.17	16.95	16.89	17.11

## STREAMS TRIBUTARY TO LAKE SUPERIOR

04025500 BOIS BRULE RIVER NEAR BRULE, WI

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 Nebagamon Creek, and 1.7 mi upstream from Little Bois Brule River.

DRAINAGE AREA.--120 mi<sup>2</sup>.

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

REVISED RECORDS.--WRD WI-71-1: Drainage area. WSP 1337: 1943(M), 1944, 1945-50(M).

GAGE.--Water-stage recorder. Datum of gage is 948.49 ft above National Geodetic Vertical Datum of 1929. 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 periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

AVERAGE DISCHARGE.--44 years (water years 1943-81, 1985-89), 172 ft<sup>3</sup>/s, 19.46 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,520 ft<sup>3</sup>/s, June 5, 1944, gage height, 5.2 ft, from graph based on gage readings and from rating curve extended above 750 ft<sup>3</sup>/s; minimum observed, 67 ft<sup>3</sup>/s, Mar. 13, 1943.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Feb. 9	0700	(a)	*4.21	May 24	2300	362	2.70
Apr. 17	0500	*459	3.06				

(a) Backwater from ice.

Minimum discharge, 109 ft<sup>3</sup>/s, Aug. 11, 12.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Nov. 23-24, and Nov. 29 to Mar. 24.)

1.4	101	3.0	443
2.0	200		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	132	170	140	130	140	150	296	223	151	122	205
2	150	132	170	140	130	140	157	282	213	146	119	178
3	149	132	160	140	120	140	176	266	201	141	116	173
4	145	132	160	150	120	130	206	251	192	137	115	197
5	142	142	160	150	120	130	228	251	185	133	113	194
6	141	148	150	150	120	130	242	238	180	130	112	171
7	140	145	150	150	120	130	261	227	173	129	111	161
8	136	144	150	150	130	120	280	221	169	128	112	154
9	138	144	150	150	130	120	282	216	168	128	112	144
10	136	148	150	150	130	120	279	208	164	127	111	136
11	135	147	150	150	140	120	267	201	159	125	113	131
12	131	147	150	150	140	120	254	194	165	126	109	128
13	131	149	150	150	140	120	257	189	183	125	114	126
14	131	149	150	150	150	120	294	185	180	124	118	123
15	130	153	150	150	150	120	326	182	174	121	119	122
16	133	237	150	150	150	120	401	177	165	121	116	121
17	136	224	150	150	150	120	440	173	158	123	113	120
18	138	211	150	150	150	120	399	173	155	122	113	120
19	137	209	140	150	140	120	372	215	151	122	114	125
20	138	203	140	140	140	120	353	275	147	121	122	130
21	141	190	140	140	140	120	333	251	144	119	115	133
22	139	177	140	140	140	120	320	238	153	117	117	129
23	142	160	140	130	140	120	308	223	157	119	115	126
24	141	160	130	120	140	120	295	237	153	118	113	123
25	137	168	140	120	140	130	287	343	153	116	113	121
26	135	170	140	120	140	138	282	314	155	116	116	121
27	137	194	140	120	140	154	272	275	151	114	118	119
28	140	195	140	120	140	163	260	243	144	113	114	119
29	136	190	140	120	---	160	265	230	140	121	119	118
30	131	180	140	120	---	155	293	245	152	126	114	118
31	130	---	140	120	---	151	---	233	---	125	219	---
TOTAL	4279	5012	4580	4330	3820	4031	8539	7252	5007	3884	3667	4186
MEAN	138	167	148	140	136	130	285	234	167	125	118	140
MAX	153	237	170	150	150	163	440	343	223	151	219	205
MIN	130	132	130	120	120	120	150	173	140	113	109	118
CFSM	1.15	1.39	1.23	1.16	1.14	1.08	2.37	1.95	1.39	1.04	.99	1.16
IN.	1.33	1.55	1.42	1.34	1.18	1.25	2.65	2.25	1.55	1.20	1.14	1.30

CAL YR 1988 TOTAL 55348 MEAN 151 MAX 498 MIN 103 CFSM 1.26 IN. 17.16  
WTR YR 1989 TOTAL 58587 MEAN 161 MAX 440 MIN 109 CFSM 1.34 IN. 18.16

STREAMS TRIBUTARY TO LAKE SUPERIOR

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04027000 BAD RIVER NEAR ODANAH, WI

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.

DRAINAGE AREA.--597 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS.

PERIOD OF RECORD.--July 1914 to December 1922 (monthly discharge only for some periods published in WSP 1307), May 1948 to current year.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 668.30 ft above National Geodetic Vertical Datum of 1929. May 17, 1948, to Nov. 6, 1959, and Oct. 19, 1960, to Nov. 23, 1961, water-stage recorder. Nov. 7, 1959, to Oct. 18, 1960, and Nov. 24, 1961, to July 12, 1962, nonrecording gage. Prior to Nov. 11, 1922, water-stage recorder at site 2 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for periods of ice affect, which are poor.

AVERAGE DISCHARGE.--49 years (1915-22, 1949-89), 620 ft<sup>3</sup>/s, 14.10 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,700 ft<sup>3</sup>/s, Apr. 24, 1960, gage height, 21.7 ft from flood-marks and 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>; minimum, 34 ft<sup>3</sup>/s, Nov. 8, 1976, result of freezeup.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	----	3,100	ice jam	Apr. 17	1600	*4,060	8.25
Apr. 5	2100	3,600	*(a)11.58	May 25	1600	3,190	7.33

(a) Ice jam.

Minimum discharge, 58 ft<sup>3</sup>/s, Sept. 27, 28, 30, gage height, 2.19 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Oct. 28 to Nov. 1, Nov. 21-24, and Nov. 28 to Apr. 13.)

2.1	56	4.0	780
2.5	162	6.0	2,100
3.0	323	8.0	3,810

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	OCT	NOV	DEC	JAN	FEB	MEAN VALUES						
						MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	240	700	190	160	180	1300	2010	1040	387	80	709
2	124	233	700	190	150	170	1400	1880	867	584	78	671
3	119	233	720	190	150	160	2100	1550	753	547	75	512
4	120	230	560	190	140	160	2600	1280	650	428	75	371
5	134	300	520	190	140	150	3500	1220	548	326	71	367
6	182	744	480	190	130	150	2300	1300	469	258	73	355
7	181	600	420	180	130	150	2100	1140	410	212	70	310
8	170	448	380	180	130	160	1900	1010	391	185	68	262
9	159	436	350	170	130	170	1400	901	587	166	68	223
10	150	481	330	170	130	180	1300	795	654	154	68	187
11	139	513	310	170	140	190	1100	694	559	142	67	158
12	131	492	300	160	140	200	1000	608	458	138	65	138
13	128	482	290	160	140	210	980	539	556	143	67	121
14	129	481	280	160	140	220	1490	482	843	136	66	112
15	132	466	270	160	150	210	1940	440	803	124	85	106
16	138	1740	260	160	150	200	2530	402	648	117	89	104
17	168	2290	250	160	150	190	3800	366	511	117	84	98
18	220	1750	240	160	160	190	3690	336	409	115	77	87
19	229	1300	230	160	160	190	3100	353	356	118	72	82
20	217	993	230	160	160	200	2830	2070	310	111	76	88
21	204	700	220	160	160	210	2640	1990	265	101	76	89
22	195	580	220	160	160	220	2580	1260	241	99	81	84
23	193	600	210	170	170	230	2620	894	271	92	85	73
24	241	540	210	170	170	250	2450	707	325	87	86	67
25	339	544	200	170	170	270	2210	2570	311	86	81	64
26	327	634	200	170	170	330	2100	2540	285	81	82	66
27	293	915	200	170	170	940	1810	1730	276	78	93	62
28	270	1000	190	160	180	2900	1490	1160	256	74	93	61
29	260	900	190	160	---	2100	1290	860	223	75	82	61
30	240	780	190	160	---	1800	1570	1010	218	80	75	60
31	240	---	190	160	---	1500	---	1120	---	81	201	---
TOTAL	5902	21645	10040	5260	4230	14380	63120	35217	14493	5442	2509	5748
MEAN	190	721	324	170	151	464	2104	1136	483	176	80.9	192
MAX	339	2290	720	190	180	2900	3800	2570	1040	584	201	709
MIN	119	230	190	160	130	150	980	336	218	74	65	60
CFSM	.32	1.21	.54	.28	.25	.78	3.52	1.90	.81	.29	.14	.32
IN.	.37	1.35	.63	.33	.26	.90	3.93	2.19	.90	.34	.16	.36
CAL YR 1988	TOTAL 164077	MEAN 448	MAX 6140	MIN 66	CFSM .75	IN. 10.22						
WTR YR 1989	TOTAL 187986	MEAN 515	MAX 3800	MIN 60	CFSM .86	IN. 11.71						

## STREAMS TRIBUTARY TO LAKE SUPERIOR

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 current year. 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 1988 TO SEPTEMBER 1989

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 (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-TOCOCOCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
NOV 1988												
15...	1650	--	462	120	8.00	1.5	8.0	13.6	754	98	30	88
JAN 1989												
03...	1250	--	186	161	--	0.0	2.6	13.0	762	89	28	K12
APR 04...	1135	2600	--	86	7.60	0.0	41	14.0	761	96	76	730
MAY 23...	1400	--	862	94	7.60	17.0	15	9.1	762	94	87	47
JUL 06...	1125	--	255	112	7.80	25.0	5.5	7.4	770	89	45	160
AUG 29...	1000	--	84	205	8.30	18.0	4.4	7.4	766	78	48	34

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)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)
NOV 1988												
15...	57	15	4.7	3.2	11	0.2	1.1	50	41	21	4.1	0.10
JAN 1989												
03...	71	19	5.8	3.4	9	0.2	0.80	--	--	16	3.4	0.10
APR 04...	34	9.1	2.7	2.4	13	0.2	1.5	27	22	17	3.7	0.10
MAY 23...	44	12	3.3	2.3	10	0.2	1.0	46	38	3.0	2.6	0.10
JUL 06...	60	16	4.8	2.5	8	0.1	0.70	60	50	<1.0	2.5	0.10
AUG 29...	96	26	7.4	7.3	14	0.3	1.1	106	86	4.0	7.9	0.10

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
NOV 1988												
15...	12	87	87	0.12	109	0.230	0.070	0.050	0.70	0.020	<0.010	<0.010
JAN 1989												
03...	14	119	102	0.16	59.8	0.150	0.060	0.040	0.40	0.020	0.010	<0.010
APR 04...	9.4	68	61	0.09	477	0.280	0.160	0.100	1.0	0.160	0.030	0.010
MAY 23...	6.7	104	54	0.14	242	<0.100	0.050	0.050	0.70	0.010	0.030	0.010
JUL 06...	8.4	97	--	--	--	<0.100	0.040	0.020	0.70	0.030	<0.010	0.010
AUG 29...	10	118	118	0.16	26.7	0.350	0.010	<0.010	0.40	0.020	0.010	<0.010

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

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WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
NOV 1988 15...	1650	--	462	70	<1	20	<0.5	<1	<1	<3	2
APR 1989 04...	1135	2600	--	200	<1	18	<0.5	<1	<1	<3	2
MAY 23...	1400	--	862	80	1	19	<0.5	1	<1	<3	7
AUG 29...	1000	--	84	20	<1	26	<0.5	<1	<1	<3	2

DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
NOV 1988 15...	300	8	<4	13	0.2	<10	<1	1	35	<6	7
APR 1989 04...	370	<5	<4	28	0.2	<10	1	<1	22	<6	14
MAY 23...	330	1	<4	9	<0.1	<10	1	<1	28	<6	7
AUG 29...	78	1	<4	14	0.2	<10	<1	<1	63	<6	4

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)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 1988 15...	1650	--	462	120	1.5	12	15	86
JAN 1989 03...	1250	--	186	161	0.0	1	0.50	100
APR 04...	1135	2600	--	86	0.0	179	1260	83
MAY 23...	1400	--	862	94	17.0	40	93	96
JUL 06...	1125	--	255	112	25.0	11	7.6	94
AUG 29...	1000	--	84	205	18.0	8	1.8	93

## STREAMS TRIBUTARY TO LAKE SUPERIOR

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.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 660.15 ft above National Geodetic Vertical Datum of 1929 (Lake Superior District Power Co. bench mark). Prior to May 20, 1976, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by hydroelectric plant at gage.

AVERAGE DISCHARGE.--41 years, 281 ft<sup>3</sup>/s, 12.68 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,270 ft<sup>3</sup>/s, July 1, 1953, gage height, 7.90 ft from rating curve extended above 3,000 ft<sup>3</sup>/s; minimum, 3.1 ft<sup>3</sup>/s, Apr. 28-30, 1949, gage height, 0.09 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,930 ft<sup>3</sup>/s, May 20, gage height, 3.84 ft; minimum daily, 84 ft<sup>3</sup>/s, Dec. 10.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).

0.8	82	2.0	520
1.0	128	3.0	1,170
1.5	292		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	201	309	202	202	196	433	550	323	171	143	232
2	161	206	211	184	173	194	458	470	304	227	144	260
3	188	167	266	183	119	172	808	454	238	286	146	270
4	161	202	242	176	146	180	1010	380	229	191	147	278
5	161	206	234	178	256	184	921	343	213	238	145	283
6	183	218	244	180	198	183	950	318	234	166	144	269
7	187	225	235	182	205	186	868	302	230	192	135	242
8	151	233	178	182	215	188	829	279	229	166	132	240
9	142	224	132	180	223	210	656	265	249	167	135	214
10	157	244	84	169	201	186	553	257	185	156	141	225
11	165	245	99	160	189	138	423	219	210	158	139	155
12	161	244	169	170	191	258	379	207	274	151	146	199
13	159	244	192	176	215	189	356	197	197	147	145	171
14	158	240	216	176	191	191	479	192	297	148	148	167
15	162	242	172	176	194	175	518	192	188	144	159	168
16	164	723	174	204	197	215	566	176	253	139	154	163
17	201	473	176	175	164	174	567	235	188	156	154	160
18	165	513	177	199	175	194	523	220	203	159	152	161
19	165	511	200	182	195	187	477	264	198	146	152	160
20	200	466	202	179	192	172	384	1010	198	156	152	166
21	162	393	202	179	195	174	351	607	174	151	162	167
22	190	303	184	179	198	208	315	619	177	141	167	173
23	166	297	194	178	208	190	306	444	208	139	163	170
24	193	256	197	178	193	174	282	346	209	128	160	164
25	196	248	198	202	203	213	270	623	219	151	159	160
26	168	251	137	179	197	199	293	491	195	144	155	158
27	213	474	126	180	195	633	298	545	190	136	154	158
28	167	411	159	206	200	1060	277	464	159	135	176	155
29	225	339	172	179	---	719	262	362	194	136	177	154
30	194	330	203	198	---	546	386	324	162	136	165	155
31	167	---	172	174	---	473	---	326	---	139	208	---
TOTAL	5429	9329	5856	5645	5430	8361	15198	11681	6527	5000	4759	5797
MEAN	175	311	189	182	194	270	507	377	218	161	154	193
MAX	225	723	309	206	256	1060	1010	1010	323	286	208	283
MIN	142	167	84	160	119	138	262	176	159	128	132	154
CFSM	.58	1.03	.63	.60	.64	.90	1.68	1.25	.72	.54	.51	.64
IN.	.67	1.15	.72	.70	.67	1.03	1.88	1.44	.81	.62	.59	.72

CAL YR 1988 TOTAL 81544 MEAN 223 MAX 1020 MIN 84 CFSM .74 IN. 10.08  
WTR YR 1989 TOTAL 89012 MEAN 244 MAX 1060 MIN 84 CFSM .81 IN. 11.00



STREAMS TRIBUTARY TO LAKE SUPERIOR

47

04029990 MONTREAL RIVER AT SAXON FALLS NEAR SAXON, WI  
(Formerly published as Montreal River near Saxon)

LOCATION.--Lat 46°32'13", long 90°17'47", 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, 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 (from Power Company data).

REMARKS.--Estimated daily discharges: Jan. 4, 25, and Apr. 4. Records are fair. 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.

AVERAGE DISCHARGE.--35 years (1939-70, 1987-89), 317 ft<sup>3</sup>/s, 16.43 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,600 ft<sup>3</sup>/s, Apr. 24, 1960, gage height, 7.50 ft; minimum discharge, 2 ft<sup>3</sup>/s, Sept. 21, Oct. 8, 1939, Sept. 9, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,040 ft<sup>3</sup>/s, Apr. 17; minimum daily discharge, 57 ft<sup>3</sup>/s, Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	173	250	117	95	178	526	720	526	465	235	185
2	77	149	250	107	95	178	419	720	498	465	235	141
3	71	149	250	103	92	180	720	585	471	400	216	141
4	60	146	250	102	83	185	820	585	370	340	185	125
5	57	193	197	101	86	185	870	585	198	286	186	160
6	95	185	200	104	95	185	1950	718	185	260	186	140
7	83	251	200	107	95	185	650	792	185	260	185	140
8	95	285	179	107	93	185	795	715	185	260	180	121
9	95	250	153	105	87	185	585	585	419	260	165	105
10	95	286	124	92	83	185	470	420	585	235	141	105
11	95	326	111	92	96	185	485	285	585	235	110	100
12	91	286	95	99	113	185	485	250	422	235	116	95
13	77	250	105	107	125	185	420	220	471	235	116	91
14	66	265	140	107	155	185	585	197	693	235	140	91
15	66	250	131	107	152	185	950	185	764	235	117	91
16	66	585	107	105	109	185	1300	185	606	235	100	91
17	89	1030	148	101	167	185	2040	185	533	215	120	91
18	101	869	131	101	167	185	1810	185	286	225	110	81
19	113	718	131	101	167	185	1600	173	260	286	110	80
20	89	585	131	101	165	185	1600	526	235	260	110	80
21	89	370	125	99	161	185	1400	1400	209	234	100	90
22	83	250	113	95	166	185	1600	525	235	234	90	80
23	77	326	131	98	172	185	1600	326	850	234	85	80
24	161	286	131	107	177	185	1600	286	1030	260	85	80
25	314	250	131	115	170	185	1400	1120	1030	260	85	80
26	292	326	131	119	178	185	1300	1400	464	240	85	70
27	228	326	119	131	178	250	1030	1030	400	240	85	100
28	220	326	119	107	178	400	795	646	341	235	85	70
29	220	370	119	107	---	720	605	326	286	235	85	70
30	220	419	117	96	---	790	475	326	260	235	80	70
31	185	---	117	87	---	720	---	348	---	260	100	---
TOTAL	3747	10480	4636	3227	3700	7671	30885	16549	13582	8294	4028	3044
MEAN	121	349	150	104	132	247	1029	534	453	268	130	101
MAX	314	1030	250	131	178	790	2040	1400	1030	465	235	185
MIN	57	146	95	87	83	178	419	173	185	215	80	70
CFSM	.46	1.33	.57	.40	.50	.94	3.93	2.04	1.73	1.02	.50	.39
IN.	.53	1.49	.66	.46	.53	1.09	4.39	2.35	1.93	1.18	.57	.43
CAL YR 1988	TOTAL 83739	MEAN 229	MAX 2630	MIN 36	CFSM .87	IN. 11.89						
WTR YR 1989	TOTAL 109843	MEAN 301	MAX 2040	MIN 57	CFSM 1.15	IN. 15.60						

## STREAMS TRIBUTARY TO LAKE SUPERIOR

## 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, 5.0 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 National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1968, nonrecording gage at same site and at datum 4.00 ft higher.

REMARKS.--No estimated daily discharges. Records good except those below 1.5 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.

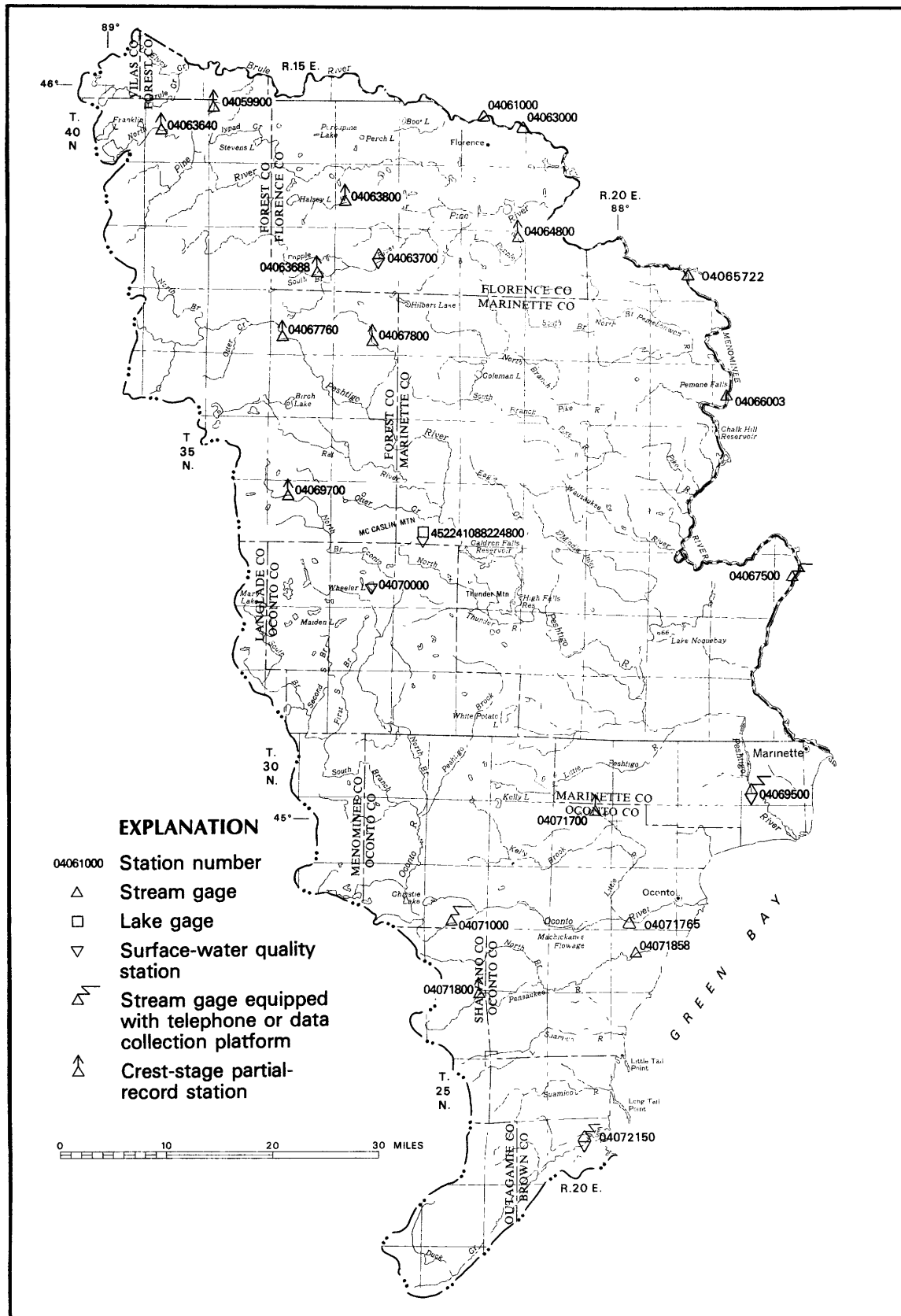
AVERAGE DISCHARGE.--45 years, 46.8 ft<sup>3</sup>/s, 12.54 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 288 ft<sup>3</sup>/s, May 1-4, 1951, gage height, 6.10 ft, present datum; minimum daily, 0.08 ft<sup>3</sup>/s, July 21, Aug. 2, 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 153 ft<sup>3</sup>/s, June 12, gage height, 5.44 ft; minimum daily, 0.21 ft<sup>3</sup>/s, May 13, 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	94	65	61	5.7	23	82	4.6	65	1.2	.31	132
2	1.2	94	64	61	4.9	23	82	4.2	54	.85	.31	97
3	12	92	64	33	6.0	23	62	3.8	54	.55	.28	75
4	28	89	63	6.5	6.4	24	36	2.3	51	.40	.27	74
5	30	90	63	6.9	5.6	24	55	1.2	52	.37	.27	32
6	30	92	62	7.5	13	39	73	1.1	50	.34	.28	.89
7	29	95	40	7.9	22	63	86	.85	44	.34	.30	.42
8	29	95	7.8	9.7	22	63	95	.83	82	.28	.31	.39
9	29	93	8.0	28	22	61	85	.69	138	.28	.31	.33
10	26	89	8.3	45	22	61	74	.51	135	.25	.31	.31
11	26	90	8.5	45	27	60	60	.29	128	.28	.33	.32
12	26	90	8.8	44	37	58	61	.22	123	.28	.30	.31
13	27	88	9.1	44	37	32	58	.21	103	.28	.31	.31
14	26	85	10	43	38	4.4	57	.21	63	.28	.31	.31
15	26	87	42	42	39	6.5	52	15	29	.28	.31	.31
16	26	117	70	42	39	6.9	44	25	23	.31	.31	.31
17	45	136	69	42	38	14	32	23	17	.31	.33	.30
18	72	136	69	42	36	23	22	32	17	.31	.31	.34
19	70	135	67	42	38	24	23	54	16	.28	.27	.34
20	70	131	69	42	29	41	33	86	17	.31	.28	.32
21	68	130	69	43	20	63	40	87	16	.31	.28	.33
22	66	128	68	42	20	62	26	82	21	.31	.29	.34
23	67	126	67	41	20	61	27	95	51	.34	.30	.35
24	90	124	66	40	21	60	54	81	77	.31	.31	.37
25	113	101	66	40	21	34	82	62	76	.28	.31	.35
26	110	83	65	40	22	1.9	94	70	75	.28	.31	.36
27	110	85	65	40	22	1.7	94	76	72	.28	.30	.35
28	103	78	64	40	22	35	74	63	70	.28	.30	.32
29	102	65	63	39	---	85	5.5	50	30	.31	.28	.35
30	100	65	62	26	---	85	5.1	62	1.3	.31	.28	.34
31	98	---	62	5.4	---	84	---	72	---	.31	63	---
TOTAL	1656.4	3003	1584.5	1090.9	655.6	1246.4	1673.6	1056.01	1750.3	11.10	71.97	418.97
MEAN	53.4	100	51.1	35.2	23.4	40.2	55.8	34.1	58.3	.36	2.32	14.0
MAX	113	136	70	61	39	85	95	95	138	1.2	63	132
MIN	1.2	65	7.8	5.4	4.9	1.7	5.1	.21	1.3	.25	.27	.30
CAL YR 1988	TOTAL	12664.09	MEAN	34.6	MAX	136	MIN	.08	CFSM	.68	IN	9.29
WTR YR 1989	TOTAL	14218.75	MEAN	39.0	MAX	138	MIN	.21	CFSM	.77	IN	10.43



## STREAMS TRIBUTARY TO LAKE MICHIGAN

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.--389 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1387: 1914-16. WSP 1911: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,200.55 ft National Geodetic Vertical Datum of 1929 (levels by Owen Ayres Associates). Prior to Aug. 29, 1944, nonrecording gage at bridge 40 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 1 to Apr. 2. 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.

AVERAGE DISCHARGE.--46 years (water years 1915, 1945-89), 359 ft<sup>3</sup>/s, 12.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,700 ft<sup>3</sup>/s, July 2, 1953, gage height, 6.57 ft; maximum gage height, 8.60 ft Dec. 20, 1983, backwater from ice; minimum discharge, 118 ft<sup>3</sup>/s, Dec. 2, 1963 (discharge measurement); minimum gage height, 1.76 ft, July 29, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 717 ft<sup>3</sup>/s, Nov. 17, gage height, 2.96 ft; maximum gage height, 6.45 ft Dec. 4, backwater from ice; minimum discharge, 158 ft<sup>3</sup>/s, Aug. 12, gage height, 1.78 ft.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	220	247	330	205	242	220	460	354	350	213	190	321
2	214	241	320	200	232	220	450	338	327	207	183	263
3	199	233	310	200	230	220	476	332	316	214	177	230
4	198	248	305	198	230	220	561	315	292	201	178	191
5	198	503	280	195	230	220	660	313	268	191	199	191
6	200	588	265	195	230	215	661	324	260	188	179	188
7	198	479	250	195	230	215	650	310	260	185	172	188
8	199	405	240	198	230	212	645	300	325	182	167	185
9	191	370	225	205	230	212	590	293	440	181	163	185
10	189	354	215	210	230	212	514	281	418	187	162	183
11	189	344	210	220	228	212	472	274	352	182	161	182
12	188	321	220	230	225	212	434	268	314	179	164	185
13	190	314	230	240	222	212	398	263	356	181	204	181
14	186	310	240	240	220	212	390	270	512	177	300	177
15	189	304	240	240	220	210	408	283	519	174	280	172
16	193	502	240	240	220	210	425	281	445	171	237	171
17	209	705	235	240	219	210	492	270	376	174	204	181
18	215	614	230	240	219	210	521	257	328	176	185	169
19	216	504	230	242	219	205	497	273	295	184	174	170
20	211	444	235	245	218	205	459	312	275	181	173	172
21	212	397	240	248	218	200	430	331	260	175	173	175
22	213	347	240	248	218	200	413	299	251	171	181	164
23	224	320	240	250	219	200	396	273	263	168	187	162
24	273	302	240	250	220	210	387	266	261	168	181	166
25	318	294	240	253	220	230	390	385	259	167	180	167
26	298	300	235	250	221	260	419	413	240	167	175	166
27	287	356	230	250	222	350	423	344	234	178	171	167
28	323	410	225	248	222	620	399	298	225	215	168	169
29	293	367	220	245	---	580	378	273	220	190	170	165
30	259	347	215	245	---	540	363	292	216	196	163	165
31	260	---	210	245	---	490	---	327	---	198	220	---
TOTAL	6952	11470	7585	7110	6284	8144	14161	9412	9457	5721	5821	5551
MEAN	224	382	245	229	224	263	472	304	315	185	188	185
MAX	323	705	330	253	242	620	661	413	519	215	300	321
MIN	186	233	210	195	218	200	363	257	216	167	161	162
CFSM	.58	.98	.63	.59	.58	.68	1.21	.78	.81	.48	.48	.48
IN.	.66	1.10	.73	.68	.60	.78	1.35	.90	.90	.55	.56	.53

CAL YR 1988 TOTAL 94253 MEAN 258 MAX 1080 MIN 158 CFSM .66 IN 9.01  
WTR YR 1989 TOTAL 97668 MEAN 268 MAX 705 MIN 161 CFSM .69 IN 9.34

## STREAMS TRIBUTARY TO LAKE MICHIGAN

51

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.--1,780 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1707: 1953(M). WSP 1911: Drainage area of former site.

GAGE.--Water-stage recorder. Datum of gage is 1,119.23 ft above National Geodetic Vertical Datum of 1929 (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.--No estimated daily discharges. Records excellent. Prior to July 1950, discharge determined from powerplant records computed on basis of load-discharge rating of hydroelectric units and rating for tailwater gage during periods of spill. Rating developed by U. S. Geological Survey. Flow regulated by powerplants, Michigamme Reservoir, capacity, 119,950 acre-ft, and 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.

AVERAGE DISCHARGE.--75 years, 1,813 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,500 ft<sup>3</sup>/s, Apr. 26, 1960, gage height, 14.15 ft; minimum, 38 ft<sup>3</sup>/s, Aug. 21, 1962, Sept. 26, 1975; minimum gage height, 1.18 ft Aug. 21, 1962, Nov. 4, 1965; minimum daily discharge, 57 ft<sup>3</sup>/s, Sept. 26, 1975.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,610 ft<sup>3</sup>/s, June 11, gage height, 8.47 ft; minimum, 134 ft<sup>3</sup>/s, May 25, gage height, 1.63 ft; minimum daily, 535 ft<sup>3</sup>/s, Aug. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	853	1730	3210	1960	1340	1490	2530	1770	2630	1200	992	1100
2	865	1510	2750	2020	1320	1540	2600	1650	3070	1230	953	949
3	1150	1420	2400	1940	1480	1440	2550	1730	2850	1300	1130	1010
4	1030	1440	2340	1710	1340	1450	2590	1680	2380	1200	1040	971
5	1090	1720	2310	1890	1460	1470	2730	1530	1350	1250	1510	1040
6	1080	2440	2580	1740	1360	1480	2640	1530	1540	1160	1130	1250
7	909	2390	2550	1710	1410	1960	2420	1520	1410	1230	1160	1250
8	995	2760	2360	1390	1290	1950	2470	1440	1880	1310	1000	1220
9	965	2920	2150	1640	1440	1970	2790	1160	3470	1120	1020	1000
10	1080	2780	2210	1780	1400	1950	2520	1180	6800	1060	1010	996
11	1100	3140	2190	1680	1480	2180	2340	1140	7100	1170	890	925
12	846	3020	2220	1670	1420	2070	2360	1220	5950	1010	708	701
13	996	3110	2120	1620	1570	2010	2280	1100	5370	1180	783	768
14	897	2970	2010	1490	1520	2180	2340	1290	4730	1140	1170	693
15	930	2600	2200	1640	1450	2140	2300	1170	4360	728	1360	790
16	796	3030	2280	1500	1570	2130	2310	1250	3440	1030	970	802
17	914	3890	1810	1600	1530	2020	2140	1220	3190	903	938	760
18	896	4700	1960	1270	1420	2110	1930	1480	3260	932	751	795
19	806	5350	1910	1340	1340	1990	1570	1400	3090	956	535	931
20	850	5310	2000	1370	1500	1480	1630	1150	2860	855	834	1020
21	850	4400	2060	1280	1550	1570	1540	1570	2360	793	603	952
22	865	3160	2020	1290	1560	1310	1420	1100	2000	690	591	1060
23	866	2450	1980	1190	1470	1300	1480	1320	2250	609	611	915
24	1310	2580	1970	1240	1480	1550	1550	1240	2820	752	642	872
25	1520	2690	2130	1300	1480	1170	1570	2150	2340	691	664	754
26	1640	2590	2020	1240	1450	1480	1890	2380	2230	680	616	755
27	1200	3340	2020	1240	1440	1850	1800	2090	1750	692	753	806
28	1220	3750	2000	1250	1430	2180	2090	1670	1550	868	822	764
29	1210	3480	1970	1260	---	2520	1860	1370	1390	830	858	640
30	1320	3270	2090	1340	---	2500	1870	1770	1240	953	874	688
31	1470	---	2000	1290	---	2690	---	2030	---	944	1000	---
TOTAL	32519	89940	67820	46880	40500	57130	64110	46300	90660	30466	27918	27177
MEAN	1049	2998	2188	1512	1446	1843	2137	1494	3022	983	901	906
MAX	1640	5350	3210	2020	1570	2690	2790	2380	7100	1310	1510	1250
MIN	796	1420	1810	1190	1290	1170	1420	1100	1240	609	535	640
CAL YR 1988	TOTAL	547865	MEAN	1497	MAX	5350	MIN	508				
WTR YR 1989	TOTAL	621420	MEAN	1703	MAX	7100	MIN	535				

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04063700 POPPLE RIVER NEAR FENCE, WI  
(HYDROLOGIC BENCHMARK STATION)  
(NATIONAL RADIOCHEMICAL SURVEILLANCE NETWORK 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 National Geodetic Vertical Datum of 1929. Prior to June 18, 1964, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

AVERAGE DISCHARGE.--26 years, 120 ft<sup>3</sup>/s, 11.72 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,640 ft<sup>3</sup>/s, Apr. 25, 1979, gage height, 4.52 ft; minimum, 5.9 ft<sup>3</sup>/s, Oct. 28, 1976, gage height, 0.75 ft, result of temporary storage from beaver dam.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Nov. 18	1300	*307	2.33	Mar. 30	1400	ice jam	*2.63

Minimum discharge, 9.7 ft<sup>3</sup>/s, Aug. 12, gage height, 0.89 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Oct. 31, Nov. 22, 23, 30, Dec. 1, 2, 4, Dec. 8 to Jan. 19, Feb. 4 to Mar. 8, and Mar. 20-22, 26-31, Apr. 2, and Apr. 4-6.)

0.9	10	1.7	110
1.0	14	2.0	195
1.2	30	2.5	374
1.4	55		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	93	140	44	42	36	178	147	263	32	26	20
2	37	84	140	43	41	35	150	139	253	31	24	22
3	36	77	118	42	40	34	170	136	235	27	22	23
4	32	89	100	40	39	35	180	120	210	25	19	24
5	30	213	86	40	40	35	220	117	183	23	20	24
6	29	268	81	41	40	35	230	116	150	22	19	23
7	29	280	77	42	39	36	224	113	120	21	21	21
8	28	266	64	44	39	36	238	108	146	20	17	20
9	29	253	52	43	40	36	240	106	189	18	13	19
10	27	244	45	42	41	37	209	95	192	18	12	19
11	26	227	42	42	41	38	213	86	173	17	11	18
12	32	206	40	43	40	39	186	78	152	17	10	18
13	34	192	42	44	39	39	149	75	149	17	14	17
14	31	178	44	44	38	39	131	72	171	16	25	16
15	29	167	45	44	37	38	133	70	211	16	51	16
16	28	234	43	45	35	40	146	69	220	15	48	15
17	37	269	42	45	35	41	169	68	209	16	39	14
18	42	279	42	46	35	41	183	68	191	15	34	14
19	44	281	43	45	36	42	189	67	171	18	29	13
20	42	263	44	44	36	43	190	73	140	18	26	13
21	42	241	47	43	37	43	185	80	106	18	24	12
22	42	220	47	43	37	42	179	88	87	17	23	11
23	58	200	46	44	36	42	173	82	82	15	23	11
24	87	179	46	43	36	45	167	77	70	16	23	11
25	95	153	45	43	38	54	163	127	59	14	22	11
26	102	132	43	43	40	74	165	164	52	13	22	12
27	107	147	43	42	38	110	165	168	49	14	23	14
28	128	156	43	42	36	210	163	151	50	16	23	14
29	123	137	43	43	---	220	159	140	43	20	18	13
30	114	140	43	44	---	230	155	137	36	25	16	15
31	100	---	43	43	---	220	---	237	---	26	18	---
TOTAL	1658	5868	1819	1336	1071	2045	5402	3374	4362	596	715	493
MEAN	53.5	196	58.7	43.1	38.2	66.0	180	109	145	19.2	23.1	16.4
MAX	128	281	140	46	42	230	240	237	263	32	51	24
MIN	26	77	40	40	35	34	131	67	36	13	10	11
CFSM	.38	1.41	.42	.31	.28	.47	1.30	.78	1.05	.14	.17	.12
IN.	.44	1.57	.49	.36	.29	.55	1.45	.90	1.17	.16	.19	.13

CAL YR 1988 TOTAL 26005 MEAN 71.1 MAX 558 MIN 11 CFSM .51 IN. 6.96  
WTR YR 1989 TOTAL 28739 MEAN 78.7 MAX 281 MIN 10 CFSM .57 IN. 7.69

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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

## WATER-QUALITY RECORDS

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (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- TOCOC- CI, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
NOV 1988												
17...	1030	269	118	7.50	0.5	0.80	12.1	728	88	K17	43	58
MAR 1989												
14...	1415	40	242	7.50	1.0	2.4	--	718	--	K8	<1	130
JUN												
20...	1325	138	95	7.50	21.5	0.80	8.6	736	101	30	K4	54
AUG												
23...	1300	23	219	8.00	19.0	0.50	7.7	737	86	33	58	120

DATE	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	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)
NOV 1988												
17...	12	6.7	1.5	5	0.1	0.70	42	34	22	1.8	0.10	9.2
MAR 1989												
14...	28	14	1.9	3	0.1	1.2	142	116	12	1.4	0.10	16
JUN												
20...	12	5.9	1.2	5	0.1	0.30	49	40	<1.0	1.6	0.10	6.0
AUG												
23...	26	13	1.8	3	0.1	0.70	130	106	4.0	1.4	0.10	7.1

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
NOV 1988											
17...	101	76	0.14	73.4	0.210	0.040	0.050	0.40	0.020	0.020	<0.010
MAR 1989											
14...	138	146	0.19	14.9	0.270	0.150	0.170	0.30	0.020	0.020	<0.010
JUN											
20...	113	--	--	--	<0.100	0.050	0.050	1.1	0.030	0.030	0.010
AUG											
23...	115	118	0.16	7.14	<0.100	0.010	<0.010	0.40	0.010	<0.010	0.020

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

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
NOV 1988 17...	1030	269	60	1	12	<0.5	<1	<1	<3	<1	280
MAR 1989 14...	1415	40	<10	1	12	<0.5	1	<1	<3	<1	430
JUN 20...	1325	138	60	1	12	<0.5	1	<1	<3	2	570
AUG 23...	1300	23	<10	1	13	<0.5	<1	1	<3	1	46

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
NOV 1988 17...	<5	<4	22	<0.1	<10	<1	<1	19	<6	4
MAR 1989 14...	6	5	72	<0.1	<10	3	<1	25	<6	4
JUN 20...	14	<4	140	<0.1	10	2	<1	19	<6	<3
AUG 23...	8	5	36	<0.1	<10	1	<1	30	<6	7

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
NOV 1988 17...	1030	269	118	0.5	4	2.9	93
MAR 1989 14...	1415	40	242	1.0	3	0.32	100
JUN 20...	1325	138	95	21.5	7	2.6	88
AUG 23...	1300	23	219	19.0	2	0.12	89

DATE	TIME	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)
NOV 1988 17...	1030	269	<0.4	<0.4	1.8	<0.4	1.5	<0.4	0.03
AUG 1989 23...	1300	23	0.8	<0.4	1.9	<0.4	1.5	<0.4	0.04



## 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. Elevation of gage is 820 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 6-17 and Jan. 14-26. Records good. Flow regulated by powerplants, by Michigamme Reservoir, capacity, 119,950 acre-ft, and 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,760 ft<sup>3</sup>/s, June 10, 1989, gage height, 11.63 ft; minimum, 815 ft<sup>3</sup>/s, Aug. 3, 4, 1988, gage height, 4.67 ft; minimum daily, 846 ft<sup>3</sup>/s, Aug. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,760 ft<sup>3</sup>/s, June 10, gage height, 11.63 ft; minimum, 897 ft<sup>3</sup>/s, Aug. 8, gage height, 4.73 ft; minimum daily, 959 ft<sup>3</sup>/s July 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1230	2540	4420	2760	1700	1820	4550	2920	4160	1860	1390	1580
2	1160	2400	4330	2710	1740	1820	4400	2870	4590	1700	1400	1490
3	1400	2110	3280	2750	1850	1860	4500	2900	4840	1850	1330	1620
4	1470	2050	3300	2400	1870	1850	4530	2730	4240	1680	1490	1530
5	1450	2620	3280	2360	1880	1840	4840	2730	2920	1660	1760	1290
6	1500	4000	3570	2290	1930	1840	5350	2760	2590	1740	1560	1590
7	1450	4600	3540	2230	1740	2030	4510	2630	2350	1780	1270	1630
8	1350	4850	3230	2160	1840	2330	4870	2550	2460	1470	1260	1720
9	1280	4750	2900	2150	1870	2270	4620	2130	4520	1400	1170	1380
10	1410	4550	2860	2240	1790	2240	4430	2260	7630	1470	1230	1300
11	1470	4100	2660	2300	1820	2500	3790	2060	8460	1400	1190	1180
12	1290	4200	2730	2310	1840	2390	3620	2050	8320	1320	1050	1030
13	1290	4300	2880	2170	1860	2520	3620	1920	6960	1350	1020	1100
14	1250	4500	2830	2100	1840	2530	3600	1880	6380	1440	1570	1040
15	1110	4450	2910	2100	1880	2530	3500	1910	6460	1140	2360	1040
16	1110	4550	2960	2200	1980	2500	3550	1790	6090	1130	1710	1020
17	1260	5300	2390	2000	1860	2530	3760	1870	4880	1320	1470	1010
18	1300	6350	2410	1850	1770	2430	3740	2150	5080	1310	1300	1040
19	1310	7320	2770	1900	1700	2330	3290	2150	4580	1050	1130	1160
20	1300	6890	2780	1900	1730	2180	3030	1970	4110	1200	1010	1090
21	1350	6400	2830	1800	1920	1730	3040	2040	3860	1100	986	1330
22	1320	4890	2860	1700	1760	1790	2970	2290	3050	1020	1000	1260
23	1300	4270	2860	1800	1760	1700	2910	1960	2970	1010	1010	1210
24	1740	3360	2840	1800	1710	1750	2910	2050	3860	975	1030	1160
25	2400	3650	2820	1850	1760	1960	2790	2620	3590	962	1020	976
26	2330	3820	2880	1800	1730	2090	2940	4140	3570	959	1010	1020
27	2320	4310	2870	1680	1720	2660	3350	3840	3170	979	992	984
28	2100	5310	2800	1690	1800	3780	3340	3420	2610	999	974	977
29	1960	5290	2990	1660	---	4850	3080	2530	2260	1130	978	970
30	1860	4620	2780	1730	---	5010	3250	2700	2060	1310	1000	965
31	2140	---	2690	1760	---	5010	---	3500	---	1360	1280	---
TOTAL	47210	132350	93250	64150	50650	76670	112680	77320	132620	41074	38950	36692
MEAN	1523	4412	3008	2069	1809	2473	3756	2494	4421	1325	1256	1223
MAX	2400	7320	4420	2760	1980	5010	5350	4140	8460	1860	2360	1720
MIN	1110	2050	2390	1660	1700	1700	2790	1790	2060	959	974	965
CAL YR 1988	TOTAL	778650	MEAN	2127	MAX	7320	MIN	846				
WTR YR 1989	TOTAL	903616	MEAN	2476	MAX	8460	MIN	959				

## 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" prior to August 1982. Monthly discharges only for some periods, published in WSP 1307.

GAGE.--Water-stage recorder. Elevation of gage is 740 ft, from topographic map. October 1949 to Oct. 27, 1972, water-stage recorder at site 1.0 mi upstream at different datum, and Oct. 28, 1972, to August 1982, water-stage recorder at site 1.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is 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.

AVERAGE DISCHARGE.--40 years, 2,972 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,900 ft<sup>3</sup>/s, May 8, 1960, gage height, 13.90 ft site and datum then in use; minimum, 694 ft<sup>3</sup>/s, Sept. 3, 1969, gage height, 1.66 ft site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,660 ft<sup>3</sup>/s, June 11, gage height, 11.79 ft; maximum gage height, 16.39 ft, Dec. 31, backwater from ice; minimum daily, 1,040 ft<sup>3</sup>/s, Sept. 30.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8 to Apr. 6.)

6.8	1,030	9.0	3,840
7.0	1,180	10.0	5,600
8.0	2,370	12.0	10,210

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1340	2190	5070	2800	1900	1800	4700	3120	4670	1920	1400	1560
2	1210	2690	4600	2700	1800	1800	4600	2990	4970	1810	1300	1520
3	1340	2370	4730	2600	1800	1800	4700	2900	5350	1920	1340	1560
4	1450	2120	3950	2500	1800	1800	4700	2920	4500	1870	1370	1630
5	1400	2170	3280	2700	1800	1700	4800	2810	3430	1710	1800	1270
6	1430	3020	3500	2600	1900	1900	5600	2930	2730	1800	1550	1420
7	1430	4410	3360	2500	1900	1900	4900	2750	2540	1920	1420	1700
8	1420	4850	3200	2300	1800	2100	5160	2550	2480	1650	1260	1610
9	1250	4880	2800	2300	1800	2200	4920	2230	4520	1470	1300	1550
10	1310	4680	2600	2400	1800	2200	4690	2200	7510	1550	1200	1300
11	1480	4380	2700	2400	1800	2300	3970	2150	9280	1500	1250	1270
12	1390	4460	2600	2400	1900	2400	3830	2100	9010	1390	1180	1110
13	1270	4800	2800	2300	2000	2300	3670	2070	7580	1430	1100	1120
14	1270	4380	2800	2200	1900	2400	3690	1940	6670	1510	1330	1120
15	1210	4420	2400	2200	1900	2300	3740	1920	6830	1300	2380	1090
16	1130	4210	2400	2300	2000	2300	3600	1950	6610	1210	1800	1090
17	1210	4880	2500	2300	1900	2400	3980	1910	5240	1290	1610	1070
18	1340	5030	2200	1900	1800	2300	3960	2070	5210	1400	1430	1090
19	1350	6490	3000	1900	1800	2300	3590	2270	4850	1250	1190	1130
20	1330	7770	3300	2000	1800	2100	3210	2140	4180	1240	1110	1130
21	1380	7410	3200	1900	1900	1800	3230	2070	4060	1200	1060	1300
22	1390	6910	3100	1700	1800	1700	3190	2340	3300	1120	1080	1300
23	1350	5240	3300	1700	1800	1700	3090	2090	3000	1110	1090	1210
24	1420	4660	3100	1800	1800	1900	3070	2110	3780	1080	1110	1280
25	2110	3650	2900	1800	1800	2300	2990	2830	3780	1060	1090	1060
26	2520	3550	2800	1900	1900	2500	3040	4130	3570	1070	1080	1050
27	2450	3880	3000	2000	1800	4000	3500	4380	3350	1120	1080	1050
28	2350	4100	2800	1900	1800	4500	3520	3680	2710	1090	1050	1050
29	2230	5440	2700	1900	---	5200	3230	2860	2420	1100	1050	1050
30	2170	5520	2800	1900	---	5200	3410	2730	2310	1280	1070	1040
31	2410	---	2800	2000	---	5200	---	3760	---	1340	1150	---
TOTAL	48340	134560	96290	67800	51700	78300	118280	80900	140440	43710	40230	37730
MEAN	1559	4485	3106	2187	1846	2526	3943	2610	4681	1410	1298	1258
MAX	2520	7770	5070	2800	2000	5200	5600	4380	9280	1920	2380	1700
MIN	1130	2120	2200	1700	1800	1700	2990	1910	2310	1060	1050	1040

CAL YR 1988 TOTAL 785062 MEAN 2145 MAX 7950 MIN 952  
WTR YR 1989 TOTAL 938280 MEAN 2571 MAX 9280 MIN 1040

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04067500 MENOMINEE RIVER NEAR MC ALLISTER, WI

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.

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 current year.

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

GAGE.--Water-stage recorder. Datum of gage is 622.20 ft above National Geodetic Vertical Datum of 1929 (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.

REMARKS.--Estimated daily discharges: Oct. 11-13, 26-31, Nov. 11-12, 14, 16-24, 28-30, Dec. 1-5, and ice period listed in rating table below. 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. Gage-height telemeter at station.

AVERAGE DISCHARGE.--24 years (water years 1946-61, 1980-86, 1989), 3,551 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft<sup>3</sup>/s, May 9, 1960, gage height, 20.0 ft, from graph based on gage readings; minimum observed, 538 ft<sup>3</sup>/s, Oct. 6, 1946, gage height, 7.29 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,850 ft<sup>3</sup>/s, June 12, gage height, 13.74 ft; maximum gage height, 14.94 ft, Mar. 31, backwater from ice; minimum daily, 1,070 ft<sup>3</sup>/s, Sept. 29, 30.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 11 to Apr. 5.)

8.2	1,020	11.0	4,600
8.5	1,270	12.0	6,400
9.0	1,760	14.0	10,500
10.0	3,040		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1640	2880	5000	2700	2000	1900	8800	3870	5730	2490	1790	1460
2	1460	2500	5200	2800	2000	1900	7000	3730	6170	2160	1730	1800
3	1440	2780	4500	2700	1900	1900	6800	3680	6400	2120	1630	1660
4	1520	2550	4000	2700	1800	1900	7200	3400	6530	2210	1510	1650
5	1740	2890	3400	2500	1900	1900	7400	3650	5010	2030	1420	1810
6	1610	3490	4520	2800	1900	1800	7530	3450	3730	1860	1930	1580
7	1620	3900	4170	2600	1900	1900	8060	3630	3340	2050	1720	1610
8	1620	4990	3900	2500	1900	1900	6800	3420	3220	2020	1640	1790
9	1750	5240	3400	2400	1800	2200	6790	3100	4340	1950	1350	1810
10	1390	5170	2970	2000	1800	2300	6440	2900	6040	1450	1410	1890
11	1500	4500	2700	2300	1800	2300	5930	2870	8440	1590	1310	1300
12	1600	4700	3000	2200	1800	2400	5170	2670	9490	1730	1320	1430
13	1600	5070	2900	2200	1900	2500	4960	2470	9380	1460	1440	1300
14	1340	4900	2900	2200	2000	2400	4550	2560	8390	1430	1420	1100
15	1480	4870	3000	2200	1900	2500	4640	2450	7510	1770	1700	1340
16	1350	5000	2700	2200	2000	2400	4930	2270	7750	1460	2740	1180
17	1180	6000	2600	2200	2000	2400	4970	2450	7480	1340	1950	1150
18	1540	6600	2800	2200	1900	2500	5100	2400	6360	1370	1710	1250
19	1650	7200	2200	2100	1900	2400	4920	2510	5890	1640	1600	1090
20	1570	8000	3000	2000	1800	2300	4880	2590	5720	1550	1520	1240
21	1510	8000	3500	1900	1900	2200	3940	2800	4530	1370	1220	1410
22	1680	7000	3200	2000	1900	1800	4080	2430	4540	1320	1240	1350
23	1600	5400	3200	1500	1800	1800	4100	2660	3790	1340	1210	1300
24	1870	4900	3300	1800	1800	1800	3920	2450	3840	1240	1150	1240
25	2240	4090	3200	1800	1800	2000	3810	2930	4290	1150	1200	1270
26	2500	4120	3000	1900	1800	2300	3790	4210	4420	1130	1370	1270
27	2500	5110	2900	2000	2000	2800	3840	5170	4050	1340	1180	1210
28	2400	4500	3100	2000	1900	4000	4280	5160	3650	1430	1210	1080
29	2200	6000	3100	1800	---	5400	4070	4030	2700	1380	1270	1070
30	2200	6600	2800	2000	---	6400	4100	3340	2670	1240	1130	1070
31	2400	---	3000	1900	---	8000	---	3840	---	1550	1150	---
TOTAL	53700	148950	103160	68100	52800	82200	162800	99090	165400	50170	46170	41710
MEAN	1732	4965	3328	2197	1886	2652	5427	3196	5513	1618	1489	1390
MAX	2500	8000	5200	2800	2000	8000	8800	5170	9490	2490	2740	1890
MIN	1180	2500	2200	1500	1800	1800	3790	2270	2670	1130	1130	1070

WTR YR 1989 TOTAL 1074250 MEAN 2943 MAX 9490 MIN 1070

STREAMS TRIBUTARY TO LAKE MICHIGAN  
452241088224800 McCASLIN LAKE NEAR LAKEWOOD, WI

LAKE-STAGE RECORDS

LOCATION.--Lat 45°22'41", long 88°22'48", in SW 1/4 sec.33, T.34 N., R.17 E., Marinette County, Hydrologic Unit 04030105, 8.8 mi northeast of Lakewood.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Norman Kratz. Elevation of gage is 1190 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 11.81, May 24, 1989; minimum observed, 10.77, Aug. 3, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 11.81 ft, May 24; minimum observed, 10.82 ft, Aug, 26, Sept. 23.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
OCT. 1	11.08	APR. 16	11.72	MAY 27	11.40	JULY 8	10.96	AUG. 26	10.82
10	10.98	MAY 6	11.72	JUNE 4	11.28	23	10.88	SEPT. 9	10.84
17	10.84	21	11.52	17	11.10	AUG. 13	10.86	23	10.82
APR. 9	11.72	24	11.81	JULY 1	10.98				

WATER-QUALITY RECORDS

LOCATION.--Lat 45°22'51", long 88°22'40", in SW 1/4 sec.33, T.34 N., R.17 E., Marinette County, Hydrologic Unit 04030105, near center of lake, and 9.0 mi northeast of Lakewood.

PERIOD OF RECORD.--May 1985 to current year.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUN 1989		
01...	1400	2.00	17...	1100	1.40
10...	1200	2.00	JUL		
17...	1300	2.10	01...	1300	1.20
APR 1989			08...	1200	1.20
09...	0900	2.30	23...	0900	1.40
16...	1000	2.10	AUG		
MAY			13...	1300	1.40
06...	1000	2.00	26...	0900	1.70
21...	1100	1.80	SEP		
27...	1100	1.80	09...	0900	1.40
JUN			23...	0900	1.70
04...	1200	1.50			

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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## 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are poor. Diurnal fluctuation caused by two powerplants upstream. Gage-height telemeter at station.

AVERAGE DISCHARGE.--36 years, 927 ft<sup>3</sup>/s, 11.66 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,790 ft<sup>3</sup>/s, May 9, 1960, gage height, 11.59 ft, from rating curve extended above 5,000 ft<sup>3</sup>/s on basis of computation of peak flow through dam gates; minimum, 17 ft<sup>3</sup>/s, Nov. 29, 1966, gage height, 1.00 ft; minimum daily, 84 ft<sup>3</sup>/s, Aug. 5, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,240 ft<sup>3</sup>/s, Apr. 2, gage height, 6.52 ft; maximum gage height, 8.22 ft, Mar. 29, backwater from ice; minimum daily, 194 ft<sup>3</sup>/s, Aug. 10.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Apr. 16, 25-27, Aug. 20, 23-24; stage-discharge relation affected by ice Dec. 14 to Jan. 14, Jan. 18-20, and Feb. 1 to Mar. 31.)

1.2	185	3.0	1,060
1.6	340	5.0	2,220
2.0	525	7.0	3,580

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	416	695	879	470	430	390	3010	688	1630	540	641	284
2	350	682	589	450	450	320	2930	757	1670	257	331	263
3	254	605	788	470	420	450	2510	771	1620	439	298	276
4	286	624	801	500	370	540	2140	724	1520	308	313	225
5	266	789	757	390	450	500	2120	704	1300	321	267	267
6	311	1040	791	410	370	400	2000	820	1110	358	243	282
7	245	1280	706	430	410	420	2050	752	833	296	276	255
8	241	1230	556	400	440	500	2040	775	807	304	249	271
9	322	1270	387	500	390	460	1660	860	1030	236	224	350
10	269	1230	441	450	400	440	1640	786	1150	227	194	362
11	284	1080	352	400	420	500	1520	709	1160	207	242	253
12	340	937	396	450	370	480	1270	625	1110	350	203	294
13	228	1010	360	400	410	450	1340	604	1030	309	244	241
14	212	879	450	400	450	500	1250	551	1050	346	347	288
15	255	850	430	354	400	540	1100	559	1150	301	337	256
16	261	1120	500	363	330	500	788	458	1260	352	295	244
17	304	1350	500	359	400	600	827	605	1230	307	323	264
18	289	1360	480	500	350	560	945	620	1110	281	419	248
19	333	1470	430	450	280	500	937	598	955	263	321	273
20	452	1470	450	400	320	480	1040	604	879	252	377	236
21	315	1290	490	541	400	430	1080	672	675	216	345	365
22	392	1190	480	370	350	540	1030	624	693	199	308	249
23	355	1040	560	454	310	640	876	551	617	279	364	244
24	423	980	680	447	270	540	879	486	605	293	340	221
25	657	891	660	404	350	500	830	740	481	329	272	254
26	574	779	580	429	370	900	836	1110	402	198	315	241
27	688	997	600	475	350	1800	806	1350	468	290	305	241
28	784	981	620	385	300	2500	851	1380	362	261	323	230
29	779	1090	560	397	---	2900	882	1090	407	316	286	224
30	770	1010	520	370	---	2500	844	1200	364	277	341	221
31	746	---	490	404	---	2800	---	1260	---	402	277	---
TOTAL	12401	31219	17283	13222	10560	25580	42031	24033	28678	9314	9620	7922
MEAN	400	1041	558	427	377	825	1401	775	956	300	310	264
MAX	784	1470	879	541	450	2900	3010	1380	1670	540	641	365
MIN	212	605	352	354	270	320	788	458	362	198	194	221
CFSM	.37	.96	.52	.39	.35	.76	1.30	.72	.89	.28	.29	.24
IN.	.43	1.08	.60	.46	.36	.88	1.45	.83	.99	.32	.33	.27

CAL YR 1988 TOTAL 236014 MEAN 645 MAX 3040 MIN 166 CFSM .60 IN. 8.13  
WTR YR 1989 TOTAL 231863 MEAN 635 MAX 3010 MIN 194 CFSM .59 IN. 7.99

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04070000 WHEELER LAKE NEAR LAKEWOOD, WI

LAKE-STAGE RECORDS

LOCATION.--Lat 45°19'07", long 88°28'58", in NW 1/4 sec.27, T.33 N., R.16 E., Oconto County, Hydrologic Unit 04030104, on south shore of lake, 2.5 mi northeast of Lakewood.

DRAINAGE AREA.--2.27 mi<sup>2</sup>, approximately. Area of Wheeler Lake, 380 acres.

PERIOD OF RECORD.--August 1936 to September 1981. April 1986 to current year.

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

GAGE.--Nonrecording gage. Datum of gage is 90.00 ft above datum assumed by Wisconsin Department of Natural Resources; gage readings have been reduced to elevations above this datum. Staff gage read by Roy A. Green on south side of lake. Prior to Apr. 19, 1936, nonrecording gage was located on east shore of lake. Apr. 20, 1939, to Apr. 13, 1960, nonrecording gage was located on southwest shore of lake.

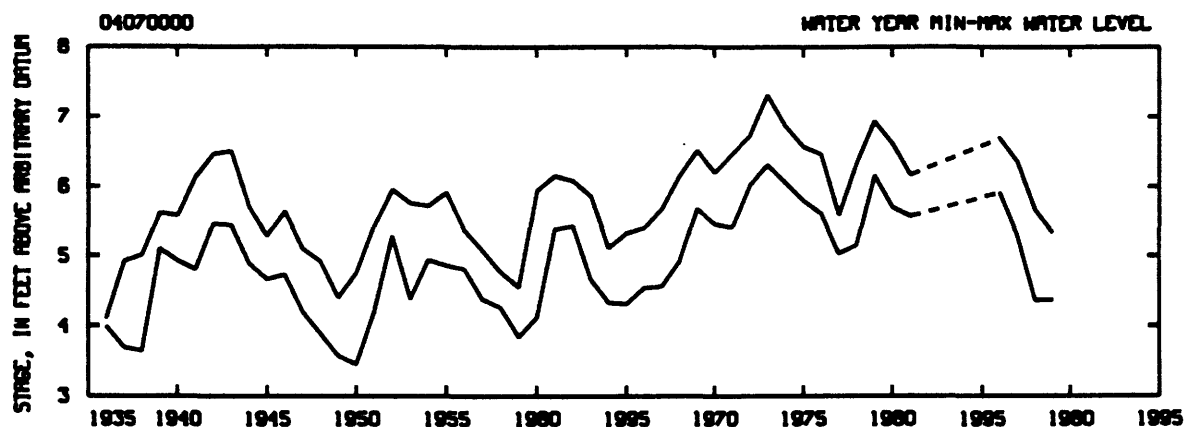
REMARKS.--Add 90 ft to obtain elevation above datum assumed for this lake by Wisconsin Department of Natural Resources. Lake has no surface outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 7.31 ft June 6, 1973; minimum observed, 3.45 ft Feb. 5, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 5.33 ft, June 6; minimum observed, 4.37 ft, Sept. 30.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
Oct. 1	4.74	Oct. 31	4.70	June 17	5.31	July 24	4.95	Aug. 31	4.65
7	4.64	May 22	5.11	22	5.27	31	4.89	Sept. 9	4.63
15	4.58	24	5.09	July 2	5.13	Aug. 6	4.81	18	4.57
23	4.68	31	5.27	9	5.09	10	4.75	21	4.53
24	4.68	June 6	5.33	15	5.03	18	4.74	30	4.37
29	4.70								



WATER-QUALITY RECORDS

LOCATION.--Lat 45°19'07", long 88°28'32", in NE 1/4 sec.27, T.33 N., R.16 E., Oconto County, Hydrologic Unit 04030104, near center of lake, and 2.6 mi northeast of Lakewood.

PERIOD OF RECORD.--July 1985 to current year.

REMARKS.--Secchi disc readings made by Roy A. Green.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUL 1989		
07...	1500	3.96	15...	1400	4.60
15...	1200	4.27	24...	1400	4.60
24...	1400	4.27	31...	1500	4.60
MAY 1989			AUG		
22...	1400	4.30	06...	1500	4.00
JUN			10...	1400	3.40
06...	1400	4.60	18...	1400	3.20
17...	1500	6.70	31...	1430	3.00
22...	1400	6.10	SEP		
JUL			09...	1400	3.00
02...	1500	5.50	18...	1500	3.00
09...	1500	4.60	21...	1500	3.60
			30...	1400	3.80

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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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 only 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 National Geodetic Vertical Datum of 1929 (levels by Wisconsin Department of Transportation). See WSP 1727 for history of changes prior to Aug. 25, 1938.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair. Gage-height telemeter at station.

AVERAGE DISCHARGE.--78 years (water years 1907-08, 1914-89), 580 ft<sup>3</sup>/s, 11.17 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,400 ft<sup>3</sup>/s, Apr. 10, 1922, gage height, 11.2 ft from flood-marks, caused by a failure of dam at Pulcifer 4 mi above station; minimum, 93 ft<sup>3</sup>/s, Nov. 26, 1941, gage height, 0.13 ft flow retarded by anchor ice above station.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	----	(a)*1,800	ice jam	Apr. 1	2000	ice jam	*5.75

(a) Estimated, daily mean discharge.

Minimum discharge, 192 ft<sup>3</sup>/s, Sept. 23, 24, gage height, 0.53 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 2 to Apr. 2.)

0.5	184	2.0	780
1.0	330	3.0	1,400
		4.0	2,100

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	346	489	300	300	250	1300	504	1060	310	272	217
2	269	333	450	290	290	240	1400	495	1130	308	263	215
3	249	312	420	290	280	240	1170	486	1200	291	248	213
4	235	316	440	290	270	240	964	480	1180	281	237	211
5	228	374	460	290	270	240	932	489	1040	280	228	211
6	224	471	470	290	270	250	922	509	888	274	225	211
7	220	563	440	290	270	260	937	546	742	263	219	213
8	215	577	390	290	270	260	920	526	654	253	214	214
9	213	553	350	290	260	260	885	499	644	249	213	241
10	211	528	330	290	260	270	836	476	690	244	212	248
11	208	506	320	290	260	280	761	454	720	238	209	248
12	206	481	320	290	260	310	726	427	739	239	207	241
13	203	460	340	290	260	350	687	391	688	238	228	232
14	205	455	350	290	260	360	654	382	642	239	261	225
15	207	465	330	290	260	360	634	382	684	235	327	222
16	211	530	310	290	260	350	600	383	742	225	325	219
17	218	580	290	290	250	350	601	382	760	230	307	215
18	235	644	280	290	250	340	618	373	695	283	298	211
19	246	650	290	290	250	330	644	364	606	319	273	209
20	248	611	300	290	240	330	639	366	521	325	241	207
21	251	585	300	280	240	340	622	372	471	307	228	206
22	257	557	310	280	240	350	609	372	445	270	236	202
23	278	520	330	290	240	380	584	356	425	253	250	195
24	306	485	340	300	240	410	568	346	405	242	257	194
25	382	443	330	290	240	560	556	461	390	236	247	199
26	418	447	330	280	240	1200	538	700	383	232	242	204
27	383	481	320	270	240	1600	509	825	371	233	242	202
28	354	523	310	270	250	1800	510	834	358	243	245	198
29	347	549	300	280	---	1700	518	671	339	262	238	198
30	351	540	300	290	---	1500	518	697	314	267	228	196
31	365	---	300	300	---	1400	---	994	---	270	220	---
TOTAL	8190	14885	10839	8940	7220	17110	22362	15542	19926	8139	7640	6417
MEAN	264	496	350	288	258	552	745	501	664	263	246	214
MAX	418	650	489	300	300	1800	1400	994	1200	325	327	248
MIN	203	312	280	270	240	240	509	346	314	225	207	194
CFSM	.37	.70	.50	.41	.37	.78	1.06	.71	.94	.37	.35	.30
IN.	.43	.79	.57	.47	.38	.90	1.18	.82	1.05	.43	.40	.34
CAL YR 1988	TOTAL 131656	MEAN 360	MAX 1460	MIN 155	CFSM .51	IN. 6.95						
WTR YR 1989	TOTAL 147210	MEAN 403	MAX 1800	MIN 194	CFSM .57	IN. 7.77						

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04071765 OCONTO RIVER NEAR OCONTO, WI

LOCATION.--Lat 44°51'38", long 87°59'02", in NW 1/4 NW 1/4 sec.32, T.28 N., R.21 E., Oconto County, Hydrologic Unit 04030104, on right bank 40 ft upstream from County Trunk Highway J bridge, 0.7 mi downstream from mouth of Little River, 5.0 mi west and 2.0 mi south of intersection of U.S. Highway 41 and Wisconsin Highway 22 in town of Oconto.

DRAINAGE AREA.--966 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1988 to September 1989.

GAGE.--Water-stage recorder. Datum of gage is 583.14 ft above National Geodetic Vertical Datum of 1929 (levels by Wisconsin Department of Transportation).

REMARKS.--Estimated daily discharges: Oct. 1-19 and ice period listed in rating table below. Records good except those for period of no gage-height record, Oct. 1-19, and period of ice affect, which are fair. Flow regulated by Machickanee Flowage (capacity, 556 acre-ft) 3.9 mi upstream. Gage-height telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,300 ft<sup>3</sup>/s, Mar. 28, gage height, 10.91 ft, backwater from ice; minimum daily, 187 ft<sup>3</sup>/s, Sept. 30.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Sept. 16, 17, 19-30; stage-discharge relation affected by ice Dec. 8 to Mar. 29.)

3.5	172	6.0	1,430
4.0	286	8.0	3,240
4.5	470	10.0	5,540
5.0	752		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	210	396	554	350	330	260	1800	630	1490	216	299	230
2	250	345	452	400	310	250	1630	541	1500	199	317	211
3	300	329	276	330	370	280	1710	553	1450	339	304	210
4	260	412	565	350	240	210	1230	563	1460	280	262	226
5	210	294	553	310	250	210	1170	628	1300	274	214	242
6	220	525	519	350	340	260	1150	374	1060	256	204	227
7	260	603	472	240	310	280	1140	645	945	278	210	232
8	200	691	370	350	350	280	1110	667	738	208	215	238
9	200	643	370	400	330	260	1080	569	707	203	238	221
10	270	596	250	330	260	260	1020	516	610	265	227	211
11	210	582	230	330	230	210	930	521	718	249	230	356
12	200	393	280	300	260	220	796	616	809	234	213	283
13	200	491	280	370	290	380	842	247	786	242	211	254
14	220	578	410	240	260	400	786	405	673	240	246	239
15	200	518	320	250	270	560	767	503	706	212	291	251
16	200	627	320	390	290	470	704	431	866	229	373	213
17	290	691	230	330	280	520	626	431	690	290	363	211
18	250	703	300	300	220	250	741	423	771	255	400	248
19	240	701	400	310	220	340	675	550	704	370	223	228
20	261	690	350	380	360	420	752	238	520	351	208	227
21	302	692	350	220	280	350	693	364	450	400	279	215
22	227	605	350	230	250	350	659	460	475	217	259	217
23	223	583	580	390	250	350	658	433	570	210	266	203
24	408	554	350	340	280	440	683	364	225	332	238	201
25	343	529	500	340	210	700	612	572	370	244	263	200
26	456	406	450	320	210	3000	588	715	508	225	212	191
27	437	521	440	360	270	4200	578	822	401	242	210	188
28	442	671	340	220	260	4600	646	911	337	246	353	195
29	222	659	340	260	---	3600	452	901	341	207	271	200
30	327	653	400	390	---	2910	596	882	494	228	237	187
31	437	---	250	350	---	2120	---	1700	---	315	246	---
TOTAL	8475	16681	11851	10030	7780	28940	26824	18175	22674	8056	8082	6755
MEAN	273	556	382	324	278	934	894	586	756	260	261	225
MAX	456	703	580	400	370	4600	1800	1700	1500	400	400	356
MIN	200	294	230	220	210	210	452	238	225	199	204	187
CFSM	.28	.58	.40	.33	.29	.97	.93	.61	.78	.27	.27	.23
IN.	.33	.64	.46	.39	.30	1.11	1.03	.70	.87	.31	.31	.26

WTR YR 1989 TOTAL 174323 MEAN 478 MAX 4600 MIN 187 CFSM .49 IN. 6.71



## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04071858 PENSANKEE RIVER NEAR PENSANKEE, 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 National Geodetic Vertical Datum of 1929 (Wisconsin Department of Transportation bench mark).

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except for ice-affected period, which is poor.

AVERAGE DISCHARGE.--17 years, 90.1 ft<sup>3</sup>/s, 9.13 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,310 ft<sup>3</sup>/s, May 31, 1979, gage height, 13.58 ft; minimum discharge, 0.44 ft<sup>3</sup>/s, Sept. 13, 1987 and Sept. 22, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 27	1200	(a)*2,700	*11.92	No other peak greater than base discharge.			

(a) Ice jam.

Minimum discharge, 0.44 ft<sup>3</sup>/s, Sept. 22.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 15, 16, Oct. 18 to Nov. 4, and Sept. 21-30;  
stage-discharge relation affected by ice Dec. 1 to Mar. 27.)

2.0	0.2	2.5	29	6.0	610
2.1	1.0	3.0	84	7.0	910
2.2	3.5	4.0	210	9.0	1,650
2.3	9.0	5.0	390	11.0	2,650

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	6.0	50	5.8	13	6.2	166	35	491	8.1	5.4	.84
2	16	9.1	45	5.6	10	6.0	139	34	295	6.3	4.3	.84
3	7.0	22	50	5.6	7.4	5.8	132	31	183	5.7	3.5	.76
4	5.9	44	35	5.2	6.0	5.8	117	29	141	5.4	3.2	.71
5	5.4	64	40	5.0	5.4	5.6	115	33	112	4.7	2.7	.80
6	6.8	76	25	5.2	5.0	5.6	109	39	87	4.0	2.5	.70
7	20	61	18	5.8	4.7	5.4	102	39	65	3.4	1.9	.72
8	17	54	13	6.6	4.6	5.4	97	37	52	3.2	2.1	.76
9	9.7	52	15	6.2	4.6	5.4	87	31	54	3.2	2.2	1.5
10	20	51	12	6.0	5.0	10	70	27	46	3.2	2.3	2.1
11	29	43	10	5.8	5.4	20	62	24	37	3.2	2.2	2.8
12	34	44	9.0	6.4	6.0	35	60	21	31	3.8	2.0	2.9
13	31	51	8.0	5.8	6.4	60	54	20	42	5.1	2.0	2.1
14	27	54	9.0	6.0	7.0	200	51	19	44	5.0	2.1	1.7
15	28	52	10	6.2	7.2	360	52	19	61	4.5	2.1	1.5
16	33	69	8.0	6.4	7.0	390	49	19	66	4.3	2.4	.91
17	3.7	72	6.8	6.4	6.6	200	47	18	55	8.6	2.4	.82
18	11	64	6.0	5.8	6.4	90	48	16	43	6.1	2.1	.75
19	26	61	6.0	7.4	6.2	120	44	15	33	5.8	1.8	.64
20	33	59	8.0	7.0	6.0	180	42	16	26	6.2	1.7	.65
21	36	56	8.8	7.4	5.6	130	40	15	21	6.6	1.2	.60
22	35	50	10	7.0	5.6	110	39	13	17	5.4	1.6	.52
23	37	46	12	7.4	5.6	100	34	11	15	3.9	1.9	.68
24	21	42	35	7.2	6.6	94	32	10	13	3.2	1.8	.69
25	20	40	30	7.0	8.0	300	32	53	11	2.7	1.9	.67
26	15	47	20	10	7.6	1100	32	78	11	2.7	1.5	.68
27	8.6	68	20	8.0	7.0	2200	32	61	9.9	4.1	1.2	.75
28	6.0	72	15	8.2	6.6	1730	32	43	8.5	5.0	1.2	1.2
29	4.7	71	10	7.6	---	789	34	33	8.3	4.0	1.3	.79
30	3.5	67	7.6	8.2	---	378	35	156	8.2	4.5	1.0	.72
31	5.6	---	6.0	10	---	236	---	595	---	6.8	.89	---
TOTAL	569.9	1567.1	558.2	208.2	182.5	8883.2	1985	1590	2086.9	148.7	66.39	31.80
MEAN	18.4	52.2	18.0	6.72	6.52	287	66.2	51.3	69.6	4.80	2.14	1.06
MAX	37	76	50	10	13	2200	166	595	491	8.6	5.4	2.9
MIN	3.5	6.0	6.0	5.0	4.6	5.4	32	10	8.2	2.7	.89	.52
CFSM	.14	.39	.13	.05	.05	2.14	.49	.38	.52	.04	.02	.01
IN.	.16	.44	.15	.06	.05	2.47	.55	.44	.58	.04	.02	.01

CAL YR 1988 TOTAL 12163.94 MEAN 33.2 MAX 500 MIN .80 CFSM .25 IN. 3.38  
WTR YR 1989 TOTAL 17877.89 MEAN 49.0 MAX 2200 MIN .52 CFSM .37 IN. 4.96

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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.

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

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

REMARKS.--Estimated daily discharges: May 1-5, Aug. 21-23, 31, Sept. 1, 1988; Oct. 22, 1988, July 12-20, Aug. 8 to Sept. 30, 1989, and ice-affected period, Dec. 4, 1988 to Mar. 28, 1989. Records good except for estimated daily discharges, which are fair.

EXTREMES FOR CURRENT PERIOD.--May to September, 1988: Maximum discharge, 9.6 ft<sup>3</sup>/s, May 1, gage height, 11.70 ft; minimum, 0.0 ft<sup>3</sup>/s, June 1 to Sept. 1, Sept. 2, 10, 11, 15-17.  
Water year 1989: Maximum discharge, 1,400 ft<sup>3</sup>/s, Mar. 27, gage height, 14.44 ft, estimated because of backwater; minimum, 0.0 ft<sup>3</sup>/s, Aug. 7-21 and Sept. 1-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	9.6	.00	.00	.00	.00
2	---	---	---	---	---	---	---	8.2	.00	.00	.00	.03
3	---	---	---	---	---	---	---	7.0	.00	.00	.00	.00
4	---	---	---	---	---	---	---	5.9	.00	.00	.00	.56
5	---	---	---	---	---	---	---	5.0	.00	.00	.00	.62
6	---	---	---	---	---	---	---	4.3	.00	.00	.00	.32
7	---	---	---	---	---	---	---	3.7	.00	.00	.00	.14
8	---	---	---	---	---	---	---	3.4	.00	.00	.00	.07
9	---	---	---	---	---	---	---	3.1	.00	.00	.00	.02
10	---	---	---	---	---	---	---	3.0	.00	.00	.00	.00
11	---	---	---	---	---	---	---	3.0	.00	.00	.00	.00
12	---	---	---	---	---	---	---	3.0	.00	.00	.00	.18
13	---	---	---	---	---	---	---	3.0	.00	.00	.00	.14
14	---	---	---	---	---	---	---	2.9	.00	.00	.00	.04
15	---	---	---	---	---	---	---	3.3	.00	.00	.00	.00
16	---	---	---	---	---	---	---	3.0	.00	.00	.00	.00
17	---	---	---	---	---	---	---	2.7	.00	.00	.00	.00
18	---	---	---	---	---	---	---	2.4	.00	.00	.00	.39
19	---	---	---	---	---	---	---	2.1	.00	.00	.00	.43
20	---	---	---	---	---	---	---	2.3	.00	.00	.00	.32
21	---	---	---	---	---	---	---	1.5	.00	.00	.00	.22
22	---	---	---	---	---	---	---	1.1	.00	.00	.00	.66
23	---	---	---	---	---	---	---	.86	.00	.00	.00	1.5
24	---	---	---	---	---	---	---	.61	.00	.00	.00	.93
25	---	---	---	---	---	---	---	.43	.00	.00	.00	.50
26	---	---	---	---	---	---	---	.38	.00	.00	.00	.31
27	---	---	---	---	---	---	---	.30	.00	.00	.00	.17
28	---	---	---	---	---	---	---	.21	.00	.00	.00	.09
29	---	---	---	---	---	---	---	.13	.00	.00	.00	.06
30	---	---	---	---	---	---	---	.05	.00	.00	.00	.05
31	---	---	---	---	---	---	---	.03	---	.00	.00	---
TOTAL	---	---	---	---	---	---	---	86.50	0.00	0.00	0.00	7.75
MEAN	---	---	---	---	---	---	---	2.79	.00	.00	.00	.26
MAX	---	---	---	---	---	---	---	9.6	.00	.00	.00	1.5
MIN	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
CFSM	---	---	---	---	---	---	---	.03	.00	.00	.00	.00
IN.	---	---	---	---	---	---	---	.03	.00	.00	.00	.00

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04072150 DUCK CREEK NEAR HOWARD, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.51	14	.86	1.1	.37	63	19	269	.80	.28	.00
2	.16	.53	13	.83	.90	.35	45	17	117	.79	.22	.00
3	.13	.55	9.1	.80	.80	.33	36	15	63	.69	.14	.00
4	.10	.81	7.4	.78	.75	.32	29	16	46	.51	.14	.00
5	.07	3.0	6.0	.77	.70	.30	19	22	34	.40	.10	.00
6	.04	3.9	6.7	.78	.62	.30	23	20	24	.31	.04	.00
7	.06	4.7	6.1	.81	.56	.30	41	22	16	.21	.00	.00
8	.06	4.1	5.8	.86	.52	.32	44	17	12	.13	.00	.00
9	.03	3.7	4.9	.76	.47	.36	44	13	11	.58	.00	.00
10	.04	4.4	4.2	.74	.43	.50	30	11	11	.85	.00	.00
11	.03	4.0	3.6	.78	.42	.80	21	11	9.0	.73	.00	.00
12	.02	3.3	3.2	.84	.43	3.2	18	9.3	8.5	.69	.00	.00
13	.02	4.8	3.1	.80	.44	17	15	8.9	8.7	.54	.00	.00
14	.03	8.0	3.3	.78	.46	110	15	8.3	9.6	.42	.00	.00
15	.11	5.7	2.6	.78	.50	370	15	8.1	13	.33	.00	.00
16	.19	14	2.2	.78	.49	440	17	7.4	18	.26	.00	.00
17	.19	11	1.8	.79	.46	150	17	6.9	16	.20	.00	.00
18	.23	13	1.5	.80	.44	60	18	6.3	13	.70	.00	.00
19	.25	12	1.4	.80	.41	47	17	6.0	10	.67	.00	.00
20	.23	9.9	1.5	.80	.38	59	16	6.0	8.1	.63	.00	.00
21	.21	8.0	1.8	.80	.36	46	15	5.7	6.7	.62	.00	.00
22	.21	6.8	2.2	.82	.34	35	15	6.1	5.5	.53	.03	.00
23	.35	6.2	2.8	.85	.33	25	14	5.8	4.4	.35	.03	.00
24	.98	5.5	4.3	.82	.36	38	14	8.3	3.7	.21	.02	.00
25	.80	4.7	3.5	.82	.39	130	14	177	3.0	.13	.02	.00
26	.59	7.5	2.9	.84	.47	560	14	280	2.6	.14	.02	.00
27	.51	9.5	2.4	.90	.43	1400	14	101	2.4	.68	.01	.00
28	.56	11	1.8	.87	.40	850	15	46	1.8	.54	.02	.00
29	.61	17	1.4	.85	---	509	17	27	1.5	.42	.02	.00
30	.55	15	1.1	.90	---	178	19	39	1.1	.41	.02	.00
31	.51	---	.97	1.0	---	96	---	211	---	.35	.01	---
TOTAL	7.97	203.10	126.57	25.41	14.36	5127.45	694	1157.1	749.6	14.82	1.12	0.00
MEAN	.26	6.77	4.08	.82	.51	165	23.1	37.3	25.0	.48	.036	.00
MAX	.98	17	14	1.0	1.1	1400	63	280	269	.85	.28	.00
MIN	.02	.51	.97	.74	.33	.30	14	5.7	1.1	.13	.00	.00
CFSM	.00	.06	.04	.01	.00	1.53	.21	.35	.23	.00	.00	.00
IN.	.00	.07	.04	.01	.00	1.77	.24	.40	.26	.01	.00	.00

WTR YR 1989 TOTAL 8121.50 MEAN 22.3 MAX 1400 MIN .00 CFSM .21 IN. 2.80

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

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1988 to September 1989.

INSTRUMENTATION.--Water-quality sampler since April 1988. Continuous water temperature and dissolved-oxygen recorder during open-water periods.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
JAN 1989								
19...	1030	80020	0.79	1280	7.80	0.0	130	55
MAR								
16...	0920	80020	E467	195	7.50	1.0	13	4.7
28...	0947	80020	E686	220	7.70	2.5	21	7.1
MAY								
09...	1400	80020	13	865	8.70	14.5	99	41
31...	1730	80020	287	570	7.86	15.0	67	22

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)	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)
JAN 1989							
19...	54	11	342	180	110	0.10	7.8
MAR							
16...	4.3	12	41	22	11	0.10	2.6
28...	3.9	8.1	66	27	10	0.10	2.9
MAY							
09...	24	7.3	215	180	54	0.10	0.28
31...	13	7.7	164	71	33	0.20	7.6

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988					
22...	0835	80020	0.21	0.50	0.070
NOV					
03...	0905	80020	0.55	0.40	0.080
05...	0230	80020	2.5	0.70	0.100
06...	0230	80020	2.7	0.70	0.080
07...	0230	80020	5.4	0.70	0.080
09...	0230	80020	4.0	0.90	0.120
09...	1201	80020	3.5	0.80	0.130
09...	1504	80020	3.4	0.90	0.130
12...	0230	80020	3.5	0.80	0.180
13...	0230	80020	4.8	0.80	0.180
14...	0030	80020	10	0.70	0.150
15...	0030	80020	5.8	1.1	0.140
16...	0001	80020	11	0.70	--
17...	0001	80020	13	0.70	0.100
18...	0001	80020	10	0.60	0.140
28...	2300	80020	15	1.3	0.140
DEC					
01...	0445	80020	18	1.0	0.110

E Estimated.

## STREAMS TRIBUTARY TO LAKE MICHIGAN

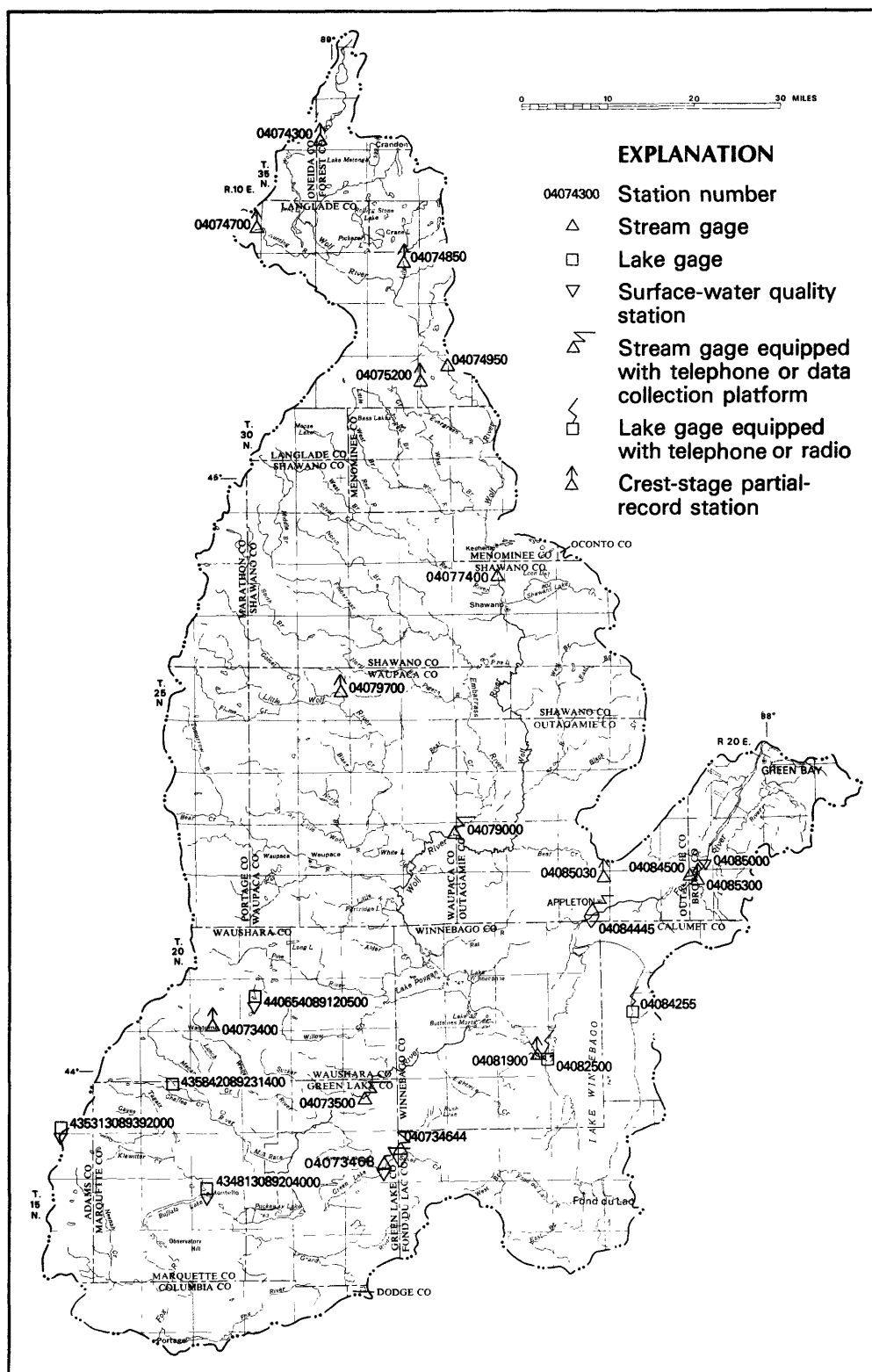
67

04072150 DUCK CREEK NEAR HOWARD, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
MAR 1989											
15...	1710	80020	E749	0.070	2.20	2.30	2.30	3.5	0.560	0.420	0.260
17...	1900	80020	E26	0.080	2.20	2.80	2.30	4.1	0.570	0.410	0.280
18...	1415	80020	E108	0.070	2.40	2.90	2.50	3.8	0.620	0.470	0.320
19...	1430	80020	E152	0.080	2.20	2.90	2.50	5.1	0.510	0.420	0.300
20...	1700	80020	E149	0.100	2.40	3.00	2.70	4.5	0.500	0.460	0.330
21...	0900	80020	E58	0.100	2.40	3.00	2.70	4.0	0.500	0.430	0.320
22...	1458	80020	E93	0.130	2.40	3.00	2.70	3.7	0.440	0.400	0.310
22...	1500	80020	E93	0.110	2.10	3.00	2.40	3.7	0.440	0.350	0.260
22...	2115	80020	E18	0.130	2.30	2.90	2.50	3.5	0.400	0.350	0.280
24...	0900	80020	E11	0.070	1.80	2.40	2.00	3.1	0.350	0.290	0.230
24...	1545	80020	E53	0.070	1.70	2.50	2.00	3.6	0.340	0.310	0.230
24...	1915	80020	E195	0.070	1.70	2.20	2.00	3.7	0.300	0.270	0.210
25...	1230	80020	E218	0.080	1.40	2.10	1.80	2.9	0.430	0.360	0.280
25...	1545	80020	E664	0.070	1.40	1.50	1.60	1.6	0.370	0.310	0.250
25...	1715	80020	E218	0.070	1.10	1.50	1.40	2.4	0.370	0.290	0.220
25...	2145	80020	E577	0.170	0.400	1.50	1.50	3.1	0.650	0.510	0.410
26...	0215	80020	E524	0.180	0.910	1.90	1.60	1.8	0.660	0.390	0.310
26...	1315	80020	E876	0.080	0.790	2.30	2.00	3.0	0.460	0.380	0.310
26...	2230	80020	E283	0.360	0.460	2.00	1.80	1.7	0.600	0.510	0.420
27...	0915	80020	E1570	0.080	0.650	2.20	1.60	3.7	0.720	0.480	0.400
28...	0415	80020	E1010	0.050	0.680	1.30	1.30	2.1	0.430	0.370	0.290
28...	0948	80020	E686	0.060	0.760	1.30	1.30	2.7	0.530	0.370	0.270
28...	1623	80020	E584	0.070	0.810	1.20	1.10	2.4	0.460	0.540	0.500
28...	1624	80020	E584	0.060	0.800	1.10	1.00	2.2	0.400	0.310	0.220
29...	0700	80020	591	0.090	1.10	1.00	1.00	1.3	0.300	0.290	0.220
MAY											
25...	1715	80020	299	0.110	1.30	0.320	0.260	3.3	0.260	0.190	0.160
26...	0735	80020	340	0.160	1.70	0.420	0.430	2.7	0.310	0.260	0.210
26...	0736	80020	340	0.150	1.60	0.450	0.400	3.6	0.330	0.230	0.200
27...	0930	80020	106	0.250	3.80	0.360	0.370	2.7	0.280	0.250	0.210
29...	0930	80020	28	0.270	3.90	0.130	0.170	1.9	0.170	0.170	0.140
30...	2045	80020	58	0.130	1.80	0.110	0.120	2.2	0.140	0.120	0.110
31...	0700	80020	130	0.130	2.40	0.120	0.140	1.8	0.180	0.160	0.150
31...	1245	80020	232	0.110	2.10	0.120	0.150	2.2	0.230	0.200	0.180
31...	1731	80020	287	0.120	2.60	0.200	0.200	1.3	0.330	0.210	0.180
31...	2030	80020	348	0.110	2.70	0.160	0.160	4.3	0.250	0.220	0.200
JUN											
01...	2030	80020	189	0.140	4.40	0.070	0.100	1.8	0.220	0.210	0.180
03...	2030	80020	55	0.160	4.70	0.030	0.080	2.3	0.170	0.180	0.130

E Estimated.



FOX-WOLF RIVER BASIN

STREAMS TRIBUTARY TO LAKE MICHIGAN  
435313089392000 PATRICK LAKE NEAR GRAND MARSH, WI

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LAKE-STAGE RECORDS

LOCATION.--Lat 43°53'13", long 89°39'20", in NW 1/4 sec.10, T.16 N., R.7 E., Adams County, Hydrologic Unit 04030201, 2.5 mi east of Grand Marsh.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Orval Vierck. Elevation of gage is 973 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 16.01 ft, Oct. 25, 1986; minimum observed, 10.34 ft, July 17, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 11.38 ft, Oct. 11; minimum observed, 10.34 ft, July 17.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
OCT. 11	11.38	APR. 26	10.86	JUNE 12	10.77	JUNE 30	10.59
18	11.36	MAY 16	10.62	13	10.77	JULY 7	10.45
25	11.36	JUNE 5	10.83	16	10.71	17	10.34
31	11.30						

WATER-QUALITY RECORDS

LOCATION.--Lat 43°53'09", long 89°39'33", in NE 1/4 sec.9, T.16 N., R.7 E., Adams County, Hydrologic Unit 04030201, near center of lake, and 2.3 mi east of Grand Marsh.

PERIOD OF RECORD.--July 1985 to current year.

REMARKS.--Secchi disc readings made by Orval Vierck.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUN 1989		
11...	1200	4.57	13...	1200	2.60
31...	1230	4.34	30...	1330	2.00
MAY 1989			JUL		
16...	1230	3.60	07...	1130	1.80
JUN			17...	1530	1.50
05...	1330	1.80			

STREAMS TRIBUTARY TO LAKE MICHIGAN  
434813089204000 MONTELLO LAKE AT MONTELLO, WI

LAKE-STAGE RECORDS

LOCATION.--Lat 43°48'13", long 89°20'40", in SW 1/4 sec.5, T.15 N., R.10 E., Marquette County, Hydrologic Unit 04030201, at Montello.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Harry Clark. Elevation of gage is 783 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 11.94 ft, July 26, 1985; minimum observed, 10.24 ft, Aug. 23, 24, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 11.21 ft, July 3, 13-21. 28-29; minimum observed, 11.01 ft, June 13-14.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	11.06	---	---
3	---	---	---	---	---	---	---	---	---	11.21	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	11.18	---	---
6	---	---	---	---	---	---	---	---	---	11.16	---	---
7	---	---	---	---	---	---	---	---	---	11.16	---	---
8	---	---	---	---	---	---	---	---	---	11.16	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	11.16	---	---
12	---	---	---	---	---	---	---	---	11.03	11.16	---	---
13	---	---	---	---	---	---	---	---	11.01	11.21	---	---
14	---	---	---	---	---	---	---	---	11.01	11.21	---	---
15	---	---	---	---	---	---	---	---	11.04	11.21	---	---
16	---	---	---	---	---	---	---	---	11.04	11.21	---	---
17	---	---	---	---	---	---	---	---	11.05	11.21	---	---
18	---	---	---	---	---	---	---	---	11.05	11.21	---	---
19	---	---	---	---	---	---	---	---	11.06	11.21	---	---
20	---	---	---	---	---	---	---	---	11.06	11.21	---	---
21	---	---	---	---	---	---	---	---	11.06	11.21	---	---
22	---	---	---	---	---	---	---	---	11.06	---	---	---
23	---	---	---	---	---	---	---	---	11.07	---	---	---
24	---	---	---	---	---	---	---	---	11.08	---	---	---
25	---	---	---	---	---	---	---	---	11.11	11.18	---	---
26	---	---	---	---	---	---	11.20	---	11.11	11.16	---	---
27	---	---	---	---	---	---	---	---	11.11	11.16	---	---
28	---	---	---	---	---	---	---	---	11.13	11.21	---	---
29	---	---	---	---	---	---	---	---	11.11	11.21	---	---
30	---	---	---	---	---	---	---	---	11.06	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	---	---	11.20	---	11.13	11.21	---	---
MIN	---	---	---	---	---	---	11.20	---	11.01	11.06	---	---

WATER-QUALITY RECORDS

LOCATION.--Lat 43°48'01", long 89°20'29", in NW 1/4 sec.8, T.15 N., R.10 E., Marquette County, Hydrologic Unit 04030201, near center of lake, at Montello.

PERIOD OF RECORD.--May 1985 to current year.

REMARKS.--Secchi disc readings made by Harry Clark.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M)	DATE	TIME	SECCHI DISC (M)
JUN 1989			JUL 1989		
19...	1200	2.10	08...	1200	3.30
20...	1200	2.40	11...	1200	3.40
21...	1200	2.40	12...	1200	3.40
24...	1200	2.40	13...	1200	2.60
26...	1200	2.70	14...	1200	2.40
27...	1200	2.80	15...	1200	2.10
28...	1200	2.50	18...	1200	2.20
29...	1200	2.40	19...	1200	2.40
30...	1200	2.90	20...	1200	2.50
JUL			21...	1200	2.60
02...	1200	2.30	25...	1200	2.70
03...	1200	2.20	26...	1200	2.90
05...	1200	2.90	27...	1200	3.00
06...	1200	3.00	28...	1200	3.40
07...	1200	3.00	29...	1200	3.50



## STREAMS TRIBUTARY TO LAKE MICHIGAN

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435842089231400 SHARON LAKE NEAR DAKOTA, WI

LOCATION.--Lat 43°58'42", long 89°23'14", in NE 1/4 sec.2, T.17 N., R.9 E., Marquette County, Hydrologic Unit 04030201, 1.7 mi southwest of Dakota.

PERIOD OF RECORD.--November 1984 to current year.

GAGE.--Staff gage read by Mike Jacobi. Elevation of gage is 845 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.21 ft, Oct. 4-6, 12-15, 1986; minimum observed, 6.10 ft, Sept. 18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 7.56 ft, June 15-16, 26; minimum observed, 6.28 ft, Oct. 16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.42	---	---	---	---	---	---	---	7.46	7.48	---	---
2	6.40	---	---	---	---	---	---	---	7.46	7.46	---	---
3	6.40	---	---	---	---	---	---	---	7.46	7.46	---	---
4	6.40	---	---	---	---	---	---	---	7.48	7.44	---	---
5	6.38	---	---	---	---	---	---	---	7.48	7.42	---	---
6	6.38	---	---	---	---	---	---	---	7.48	7.42	---	---
7	6.36	---	---	---	---	---	---	---	7.46	7.40	---	---
8	6.34	---	---	---	---	---	---	---	7.48	7.38	---	---
9	6.34	---	---	---	---	---	---	---	7.48	7.36	---	---
10	6.34	---	---	---	---	---	---	---	7.48	7.34	---	---
11	6.34	---	---	---	---	---	---	---	7.48	7.34	---	---
12	6.32	---	---	---	---	---	---	---	7.52	7.38	---	---
13	6.32	---	---	---	---	---	---	---	7.52	7.38	---	---
14	6.30	---	---	---	---	---	---	---	7.52	7.36	---	---
15	6.30	---	---	---	---	---	---	---	7.56	7.34	---	---
16	6.28	---	---	---	---	---	---	---	7.56	7.32	---	---
17	6.32	---	---	---	---	---	---	---	7.54	7.30	---	---
18	6.34	---	---	---	---	---	---	---	7.54	7.34	---	---
19	6.34	---	---	---	---	---	---	---	7.52	7.44	---	---
20	6.34	---	---	---	---	---	---	---	7.52	7.44	---	---
21	6.36	---	---	---	---	---	---	---	7.50	7.42	---	---
22	6.36	---	---	---	---	---	---	---	7.50	7.42	---	---
23	6.36	---	---	---	---	---	---	---	7.48	7.40	---	---
24	6.38	---	---	---	---	---	---	---	7.48	7.38	---	---
25	6.38	---	---	---	---	---	---	---	7.48	7.36	---	---
26	6.38	---	---	---	---	---	6.88	---	7.56	7.34	---	---
27	6.38	---	---	---	---	---	---	---	7.54	7.34	---	---
28	6.38	---	---	---	---	---	---	---	7.52	7.32	---	---
29	6.38	---	---	---	---	---	---	---	7.52	7.30	---	---
30	6.36	---	---	---	---	---	---	---	7.50	7.36	---	---
31	6.36	---	---	---	---	---	---	---	---	7.36	---	---
MAX	6.42	---	---	---	---	---	6.88	---	7.56	7.48	---	---
MIN	6.28	---	---	---	---	---	6.88	---	7.46	7.30	---	---

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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 and crest-stage gage. Elevation of gage is 810 ft, from topographic map.

REMARKS.--Estimated daily discharges: Aug. 4-9, and 25-30. Records good, except for estimated daily discharges which are fair. Approximately 2.3 ft<sup>3</sup>/s of daily flow is effluent from Ripon Wastewater Treatment Plant.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 545 ft<sup>3</sup>/s, May 31, 1989, gage height, 10.83 ft; minimum daily, 1.8 ft<sup>3</sup>/s, July 31, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 545 ft<sup>3</sup>/s, May 31, gage height, 10.83 ft; minimum daily, 3.3 ft<sup>3</sup>/s, Mar. 5.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).

5.1	2.8	7.0	105
5.4	9.4	8.0	195
5.7	18	9.0	294
6.0	31	10.0	412
6.5	64	11.0	570

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	6.0	12	4.2	11	4.0	89	15	357	17	12	20
2	4.2	5.8	12	4.3	10	4.0	68	15	233	15	11	12
3	4.3	6.1	12	4.4	7.4	6.1	52	14	179	13	11	11
4	4.0	7.9	11	4.4	6.2	4.4	42	14	143	11	30	11
5	4.0	8.2	11	4.5	5.6	3.3	34	14	113	10	18	11
6	3.9	8.3	11	4.7	5.7	3.7	28	12	89	10	16	11
7	4.1	9.1	11	5.8	5.4	3.9	24	12	68	10	20	11
8	3.7	10	10	4.7	4.9	3.9	21	12	50	8.6	18	11
9	3.8	11	9.5	4.8	4.6	4.2	18	12	39	18	17	13
10	4.0	13	7.7	4.2	4.6	5.8	16	11	32	14	16	11
11	3.8	11	6.0	4.3	4.3	11	17	11	27	18	15	11
12	3.6	13	5.6	5.1	4.1	18	17	9.2	32	16	13	9.9
13	3.8	13	6.0	4.1	5.2	19	16	9.2	29	15	12	10
14	4.3	12	6.2	3.9	5.1	63	15	8.9	29	14	12	9.8
15	4.6	15	5.8	3.8	4.9	93	14	9.1	27	12	13	9.8
16	5.5	19	5.3	4.3	4.8	106	14	8.6	26	12	12	9.1
17	7.2	16	4.7	4.4	4.7	85	16	8.4	18	11	11	8.4
18	7.5	16	4.4	4.5	4.3	56	16	8.0	13	20	10	8.4
19	7.0	16	5.0	6.1	4.2	34	16	8.2	13	21	9.8	8.1
20	5.8	15	6.8	5.1	4.7	18	15	7.7	13	18	9.8	7.8
21	6.6	14	6.3	4.4	4.7	14	16	6.6	11	16	9.7	7.5
22	5.6	13	8.3	4.3	4.8	11	15	6.8	8.5	16	11	7.1
23	10	12	10	5.7	4.4	15	14	6.4	8.5	15	10	6.3
24	9.8	12	8.6	5.2	4.3	58	13	14	8.1	13	9.4	5.8
25	8.3	11	6.8	6.9	4.7	170	13	64	23	12	9.6	6.1
26	7.3	16	5.9	6.7	4.3	270	13	38	39	11	9.2	6.2
27	6.9	16	8.5	5.3	4.6	298	13	30	34	12	10	6.0
28	6.1	16	6.1	6.0	4.4	232	15	21	25	11	12	6.0
29	5.5	15	5.1	6.1	---	183	15	25	22	13	9.6	6.2
30	4.9	15	4.7	7.7	---	146	15	239	20	13	9.2	6.0
31	5.6	---	4.5	13	---	116	---	478	---	13	12	---
TOTAL	170.1	371.4	237.8	162.9	147.9	2059.3	690	1148.1	1729.1	428.6	398.3	277.5
MEAN	5.49	12.4	7.67	5.25	5.28	66.4	23.0	37.0	57.6	13.8	12.8	9.25
MAX	10	19	12	13	11	298	89	478	357	21	30	20
MIN	3.6	5.8	4.4	3.8	4.1	3.3	13	6.4	8.1	8.6	9.2	5.8
CFSM	.15	.34	.21	.15	.15	1.84	.64	1.02	1.59	.38	.35	.26
IN.	.17	.38	.24	.17	.15	2.12	.71	1.18	1.78	.44	.41	.29
CAL YR 1988	TOTAL 4609.2	MEAN 12.6	MAX 111	MIN 1.8	CFSM .35	IN. 4.74						
WTR YR 1989	TOTAL 7821.0	MEAN 21.4	MAX 478	MIN 3.3	CFSM .59	IN. 8.04						

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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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. Water-quality analyses by the Wisconsin State Laboratory of Hygiene.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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 DISCHARGE: Maximum daily, 378 tons, May 30; minimum daily, 0.04 ton, Oct. 29-30, Jan. 13-18, 21-22, 24.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 1,620 lb, May 30; minimum daily, 3.2 lb, Feb. 19.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1988					MAR 1989				
13...	1000	3.9	0.250	16	11...	2215	17	0.300	--
16...	1020	12	--	41	12...	0015	14	--	14
17...	0915	3.9	0.200	8	12...	0025	13	0.290	--
17...	1755	13	0.230	17	12...	1225	13	0.300	13
17...	1955	16	0.380	26	12...	1250	18	--	21
17...	2355	10	0.360	16	12...	1450	22	0.490	--
24...	1215	11	--	5	12...	1610	29	--	58
25...	1140	11	--	3	12...	1810	35	0.590	78
26...	1155	7.7	--	--	12...	2010	29	--	49
NOV					14...	1415	88	2.82	1400
12...	1345	16	--	12	15...	1250	98	0.940	149
12...	1800	17	--	14	15...	1450	107	--	147
12...	2400	15	--	11	15...	1550	111	0.850	--
15...	1830	23	0.390	14	15...	1750	115	--	115
15...	1845	31	--	67	15...	1850	116	0.890	--
15...	1905	36	0.630	162	15...	2050	116	--	114
15...	2305	20	0.220	22	15...	2250	116	0.890	--
16...	0135	32	0.250	54	15...	2350	107	--	93
16...	0735	18	--	12	16...	0250	102	0.880	--
16...	1555	17	0.140	--	16...	0350	102	--	111
16...	1605	17	--	5	16...	0650	102	--	78
17...	0535	16	--	5	16...	0750	102	0.800	--
17...	0735	16	0.160	--	16...	0950	104	--	95
18...	0735	15	--	4	16...	1050	106	0.780	--
18...	1135	17	0.160	4	16...	1550	111	--	95
19...	0335	16	--	4	16...	1650	112	0.820	--
19...	0735	18	--	4	16...	1750	112	--	97
20...	1425	16	--	4	16...	2350	107	--	73
20...	1625	15	0.220	--	17...	0050	105	0.790	--
26...	0645	29	--	65	17...	0950	89	--	69
29...	1615	16	--	7	17...	1050	88	0.820	--
29...	1630	15	--	--	17...	1750	79	0.810	55
DEC					17...	2350	64	0.750	50
15...	1435	7.4	--	6	18...	2125	46	0.790	77
JAN 1989					19...	0925	52	--	51
13...	1245	5.6	0.160	4	19...	1130	37	--	37
25...	1330	5.2	0.250	3	19...	2135	23	0.670	36
31...	1700	20	0.610	23	20...	2135	16	0.640	--
FEB					21...	0630	13	0.600	30
20...	0940	4.5	0.130	18	21...	1130	18	0.570	29
20...	0945	4.6	--	--	22...	1115	13	0.470	22
28...	1145	5.6	0.530	25	22...	1116	13	0.500	21
MAR					23...	1420	13	0.560	23
03...	1350	13	--	70	23...	1530	18	--	56
03...	1355	14	0.210	--	23...	1615	24	0.610	93
03...	1555	12	--	16	24...	0415	17	0.500	43
11...	1455	13	0.230	25	24...	1245	23	0.520	26
11...	1615	18	0.320	41	24...	1325	31	--	36
11...	1815	23	0.400	56	24...	1425	52	--	120
11...	2015	20	--	35	24...	1450	63	0.730	--

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1989					MAY 1989				
24...	1540	92	--	395	30...	1735	309	--	393
24...	1615	107	1.06	--	30...	1830	286	0.950	305
24...	1705	119	1.07	465	31...	0025	306	0.510	121
24...	2305	124	0.690	178	31...	0115	327	--	164
25...	0505	109	0.570	68	31...	0155	348	0.550	137
25...	1100	122	--	109	31...	0240	370	--	142
25...	1220	139	0.770	--	31...	0325	391	0.640	168
25...	1305	152	--	235	31...	0415	413	--	211
25...	1405	168	--	346	31...	0510	433	0.680	192
25...	1425	183	1.03	--	31...	0610	455	--	213
25...	1450	197	--	308	31...	0735	477	0.660	186
25...	1530	213	0.960	--	31...	0920	501	0.690	242
25...	1615	231	--	258	31...	1051	542	0.650	203
25...	1650	247	0.890	227	31...	1055	543	0.610	157
26...	1850	383	0.660	--	31...	1600	528	0.550	156
26...	1855	383	--	70	31...	2200	495	0.520	163
26...	1915	382	0.610	79	JUN				
26...	2230	350	0.590	75	01...	1005	371	0.490	104
27...	0430	319	--	66	01...	1410	331	0.470	100
27...	1009	295	0.560	44	01...	2150	282	0.560	97
27...	1010	295	0.550	61	02...	0950	239	--	71
27...	1630	288	--	91	02...	2150	205	0.430	--
27...	2230	273	0.530	--	03...	0350	193	--	64
28...	0430	249	--	65	03...	2150	162	0.460	--
28...	1030	236	0.510	39	04...	0350	153	--	107
28...	1630	220	--	42	04...	2150	130	0.570	--
28...	1720	223	--	--	05...	0350	121	--	38
28...	2230	208	0.470	--	05...	2150	103	0.660	--
29...	0430	195	--	36	06...	0350	96	--	30
29...	1630	176	--	27	06...	2150	80	0.670	--
29...	2230	164	0.440	--	07...	0350	74	--	25
30...	0430	155	--	28	08...	0350	53	--	55
30...	1630	141	--	22	09...	1550	38	0.600	--
30...	2230	132	0.390	--	10...	0350	33	--	25
31...	1630	111	--	20	11...	1550	26	0.430	--
31...	2230	104	0.360	--	12...	0350	25	--	24
APR					12...	1450	43	--	52
01...	1630	84	--	15	12...	1530	53	0.490	60
01...	2230	78	0.330	--	13...	0845	28	0.380	--
02...	1030	68	--	24	13...	1845	28	--	21
02...	1730	64	0.330	--	14...	0835	37	0.340	29
03...	0530	54	--	12	15...	0835	26	0.340	17
04...	0530	43	--	11	17...	0835	22	0.280	17
04...	1730	40	0.320	--	25...	1850	29	1.06	334
05...	0530	34	--	11	25...	1900	56	--	794
06...	1730	27	0.220	--	25...	1905	71	1.76	912
07...	0530	24	--	8	25...	1915	89	--	1150
08...	0530	21	--	9	25...	1955	118	1.82	1400
08...	1730	21	0.220	--	25...	2150	70	--	159
09...	1730	18	--	12	25...	2250	49	0.380	79
10...	1730	17	--	9	26...	0230	34	0.340	40
11...	0530	17	0.170	--	26...	1430	43	--	64
27...	1410	14	0.410	59	26...	1445	57	0.490	103
MAY					27...	0805	35	--	17
17...	0945	9.1	0.300	11	27...	2005	31	0.450	--
17...	0950	9.2	--	11	28...	0805	26	--	14
23...	1205	7.7	--	--	29...	0805	21	0.490	11
23...	1220	7.7	0.400	10	30...	0805	19	--	13
24...	2205	18	0.660	80	JUL				
24...	2210	25	1.42	145	02...	0805	15	--	12
24...	2215	39	--	736	02...	2005	14	0.480	--
25...	1140	50	0.590	--	09...	0125	21	0.690	111
25...	1145	49	0.510	86	09...	0135	29	--	206
26...	1345	38	0.350	69	09...	0330	17	--	63
30...	1005	215	2.66	2030	09...	0510	40	0.570	158
30...	1015	229	--	1690	09...	1300	16	0.320	12
30...	1018	237	2.52	--	11...	0950	13	0.510	36
30...	1025	252	1.97	1310	11...	1005	13	--	72
30...	1035	276	--	1240	11...	1030	19	0.630	181
30...	1045	297	1.77	1180	11...	1820	19	--	15
30...	1055	317	--	1120	12...	0620	16	0.390	--
30...	1110	340	1.66	1120	13...	1820	15	--	9
30...	1135	375	--	1020	14...	1310	15	0.370	--
30...	1508	393	1.25	436	18...	1255	16	--	32
30...	1545	378	1.46	549	18...	1320	21	0.520	--
30...	1546	377	1.38	483	18...	1345	30	--	97

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
JUL 1989					AUG 1989				
18...	1400	45	0.650	--	04...	0400	78	1.30	577
18...	1410	58	--	266	10...	1545	17	--	6
18...	1425	69	0.800	268	11...	1545	16	--	5
18...	1555	50	--	81	15...	0015	16	--	28
18...	1655	34	0.360	--	15...	0040	14	--	50
18...	2030	21	--	24	31...	2250	20	--	94
19...	0815	32	--	49	31...	2305	42	--	343
19...	1015	23	0.310	--	31...	2310	52	0.940	--
20...	1015	18	--	10	31...	2320	69	--	981
21...	2215	16	--	16	SEP				
22...	2215	15	0.380	--	01...	0055	47	--	188
23...	1015	15	--	7	01...	0240	32	0.340	--
27...	1750	21	--	50	01...	0655	21	--	26
28...	1250	11	0.360	5	09...	0730	17	0.450	34
AUG					29...	0932	5.3	0.310	--
04...	0305	17	--	50	29...	1000	5.8	--	3
04...	0320	24	0.570	--	29...	1020	6.2	0.300	--
04...	0330	32	--	127	29...	1130	7.4	0.420	--
04...	0340	48	0.790	--	29...	1200	7.4	--	4
04...	0350	65	--	364	29...	1230	7.2	0.560	--
					29...	1515	7.4	0.600	--
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 1988					MAR 1989				
26...	1155	7.7	1250	7.5	28...	1720	223	250	7.0
NOV					MAY				
29...	1630	15	1590	5.0	23...	1205	7.7	1200	19.5
JAN 1989					JUL				
13...	1245	5.6	1070	3.5	28...	1250	11	1610	20.5
FEB									
20...	0945	4.6	1100	0.0					

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.05	.22	.05	.71	.20	4.0	1.7	109	.58	.16	4.3
2	.07	.05	.21	.05	.61	.14	3.5	1.5	46	.49	.15	.38
3	.07	.05	.21	.06	.45	.36	1.7	1.4	37	.42	.15	.29
4	.08	.17	.20	.05	.37	.14	1.2	1.2	30	.34	5.6	.25
5	.08	.12	.20	.05	.33	.10	.96	1.1	11	.30	.46	.24
6	.09	.11	.20	.06	.33	.11	.68	.93	6.8	.30	.37	.21
7	.10	.12	.20	.07	.31	.11	.54	.83	6.1	.28	.43	.18
8	.10	.13	.18	.05	.28	.11	.53	.78	6.5	.24	.35	.16
9	.11	.13	.16	.05	.25	.12	.52	.70	3.5	2.6	.31	.48
10	.13	.14	.13	.05	.25	.20	.41	.58	2.2	.41	.27	.17
11	.14	.12	.10	.05	.23	.83	.46	.52	1.8	1.8	.21	.16
12	.14	.33	.09	.06	.22	1.8	.49	.41	2.9	.51	.18	.15
13	.16	.33	.10	.04	.28	1.4	.51	.38	1.8	.40	.16	.15
14	.17	.24	.10	.04	.27	55	.56	.34	1.8	.34	.16	.14
15	.16	1.3	.09	.04	.26	34	.59	.32	1.3	.30	.58	.13
16	.28	.88	.09	.04	.24	26	.65	.28	1.2	.28	.26	.12
17	.30	.21	.07	.04	.24	15	.85	.25	.82	.26	.23	.10
18	.21	.18	.07	.04	.22	9.5	.91	.23	.58	3.8	.21	.10
19	.16	.18	.08	.06	.21	4.5	1.0	.23	.55	1.1	.20	.09
20	.10	.16	.10	.05	.23	1.7	1.1	.21	.53	.51	.20	.09
21	.10	.15	.09	.04	.24	1.1	1.3	.17	.43	.61	.19	.08
22	.08	.14	.12	.04	.25	.65	1.3	.17	.32	.50	.22	.07
23	.38	.13	.15	.05	.24	2.2	1.4	.16	.30	.29	.19	.06
24	.15	.13	.12	.04	.25	38	1.5	.35	.28	.25	.17	.06
25	.07	.12	.10	.18	.28	82	1.7	134	28	.23	.17	.06
26	.06	.85	.08	.13	.27	69	1.9	7.0	4.4	.21	.16	.06
27	.06	.32	.12	.10	.30	57	2.0	4.0	1.6	.43	.18	.05
28	.05	.27	.08	.15	.29	31	2.2	1.9	.93	.22	.21	.05
29	.04	.28	.07	.20	---	15	2.1	12	.68	.17	.16	.06
30	.04	.27	.06	.35	---	9.7	1.9	378	.68	.17	.15	.07
31	.05	---	.06	.76	---	6.4	---	221	---	.17	5.4	---
TOTAL	3.79	7.66	3.85	3.04	8.41	463.37	38.46	807.29	309.00	18.51	17.84	8.51

WTR YR 1989 TOTAL 1689.73

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	6.5	13	3.9	36	8.5	165	31	975	45	21	48
2	4.7	6.2	13	4.0	29	6.2	120	30	608	39	19	24
3	4.8	6.6	13	4.1	20	7.1	91	28	433	34	18	21
4	4.6	8.5	12	4.0	15	5.0	72	27	403	28	107	22
5	4.6	8.9	12	4.1	13	3.7	51	27	380	24	36	24
6	4.7	9.0	12	4.2	12	4.1	35	24	321	24	30	24
7	4.9	9.9	12	5.2	10	4.3	28	23	239	22	37	25
8	4.6	11	11	4.2	8.7	4.3	25	23	171	19	34	25
9	4.7	12	10	4.2	7.5	4.6	20	22	127	50	31	32
10	5.1	14	8.2	3.7	7.0	6.3	16	20	91	23	30	26
11	4.9	12	6.3	3.7	6.1	17	16	19	65	49	28	25
12	4.8	14	5.8	4.4	5.3	42	16	16	80	34	24	23
13	5.0	14	6.2	3.6	6.3	50	16	16	59	31	21	23
14	5.4	13	6.4	3.5	5.7	609	17	15	53	28	21	22
15	5.3	23	5.9	3.5	5.1	545	17	15	48	23	24	21
16	8.2	19	5.4	4.2	4.5	471	17	14	43	21	21	19
17	11	14	4.8	4.5	4.1	369	21	14	27	18	19	18
18	11	14	4.4	4.7	3.5	233	21	14	19	48	18	17
19	8.4	17	5.0	6.6	3.2	134	22	15	18	36	17	16
20	6.2	17	6.8	5.7	3.4	65	23	14	18	33	17	15
21	7.1	16	6.3	5.2	4.0	44	25	13	14	31	17	15
22	6.0	15	8.2	5.2	4.9	29	25	14	10	32	19	14
23	11	14	10	7.1	5.4	42	25	13	10	30	17	12
24	11	14	8.4	6.7	6.2	249	25	103	9.2	27	16	11
25	8.9	12	6.6	9.6	8.1	734	27	445	109	24	16	11
26	7.8	19	5.6	10	8.8	1000	28	75	86	22	15	11
27	7.4	18	8.1	9.6	11	892	29	52	86	24	17	10
28	6.6	18	5.8	12	12	629	33	33	64	22	20	10
29	5.9	17	4.9	15	---	447	33	85	57	24	16	14
30	5.3	16	4.4	22	---	326	31	1620	52	23	15	13
31	6.0	---	4.2	41	---	235	---	1520	---	23	33	---
TOTAL	200.7	408.6	245.7	229.4	265.8	7216.1	1090	4380	4675.2	911	774	591

WTR YR 1989 TOTAL 20987.5

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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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. Data are stored using CR-21X datalogger with phone modem connection for daily retrieval.

REMARKS.--Discharge estimated based on discharge from upstream station, Silver Creek near Ripon (040734644) adjusted for drainage area. Approximately 2.3 ft<sup>3</sup>/s of daily flow is effluent from Ripon Wastewater Treatment Plant.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 705 ft<sup>3</sup>/s, MAY 31, 1989; minimum daily, 1.6 ft<sup>3</sup>/s, July 31, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 705 ft<sup>3</sup>/s, May 31; minimum daily, 3.8 ft<sup>3</sup>/s, Mar. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	7.8	17	5.1	15	4.8	130	21	527	24	17	28
2	5.1	7.5	17	5.3	14	4.8	99	21	343	21	15	17
3	5.3	7.9	17	5.4	9.8	7.9	76	20	263	18	15	15
4	4.8	11	15	5.4	8.1	5.4	61	20	210	15	43	15
5	4.8	11	15	5.6	7.2	3.8	49	20	166	14	26	15
6	4.7	11	15	5.8	7.3	4.4	40	17	130	14	23	15
7	5.0	12	15	7.5	6.9	4.7	34	17	99	14	28	15
8	4.4	14	14	5.8	6.1	4.7	30	17	73	12	26	15
9	4.5	15	13	6.0	5.7	5.1	26	17	57	26	24	18
10	4.8	18	10	5.1	5.7	7.5	23	15	46	20	23	15
11	4.5	15	7.8	5.3	5.3	15	24	15	39	26	21	15
12	4.2	18	7.2	6.4	5.0	26	24	12	46	23	18	14
13	4.5	18	7.8	5.0	6.6	27	23	12	42	21	17	14
14	5.3	17	8.1	4.7	6.4	92	21	12	42	20	17	13
15	5.7	21	7.5	4.5	6.1	136	20	12	39	17	18	13
16	7.0	27	6.7	5.3	6.0	156	20	12	37	17	17	12
17	9.5	23	5.8	5.4	5.8	125	23	11	26	15	15	11
18	10	23	5.4	5.6	5.3	82	23	11	18	28	14	11
19	9.2	23	6.3	7.9	5.1	49	23	11	18	30	13	11
20	7.5	21	9.0	6.4	5.8	26	21	10	18	26	13	10
21	8.7	20	8.2	5.4	5.8	20	23	8.7	15	23	13	10
22	7.2	18	11	5.3	6.0	15	21	9.0	11	23	15	9.4
23	14	17	14	7.3	5.4	21	20	8.4	11	21	14	8.2
24	13	17	12	6.6	5.3	85	18	20	11	18	13	7.5
25	11	15	9.0	9.1	5.8	250	18	93	33	17	13	7.9
26	9.7	23	7.6	8.8	5.3	398	18	55	57	15	12	8.1
27	9.1	23	11	6.7	5.7	439	18	43	49	17	14	7.8
28	7.9	23	7.9	7.8	5.4	342	21	30	36	15	17	7.8
29	7.0	21	6.4	7.9	---	269	21	36	31	18	13	8.1
30	6.1	21	5.8	10	---	215	21	352	28	18	12	7.8
31	7.2	---	5.6	18	---	170	---	705	---	18	17	---
TOTAL	217.1	519.2	318.1	206.4	187.9	3011.1	989	1663.1	2521	604	556	374.6
MEAN	7.00	17.3	10.3	6.66	6.71	97.1	33.0	53.6	84.0	19.5	17.9	12.5
MAX	14	27	17	18	15	439	130	705	527	30	43	28
MIN	4.2	7.5	5.4	4.5	5.0	3.8	18	8.4	11	12	12	7.5
CFSM	.13	.32	.19	.12	.13	1.82	.62	1.00	1.57	.36	.34	.23
IN.	.15	.36	.22	.14	.13	2.09	.69	1.16	1.75	.42	.39	.26
CAL YR 1988	TOTAL 6419.4	MEAN 17.5	MAX 163	MIN 1.6	CFSM .33	IN. 4.46						
WTR YR 1989	TOTAL 11167.5	MEAN 30.6	MAX 705	MIN 3.8	CFSM .57	IN. 7.77						

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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 fair. Water-quality analyses by the Wisconsin State Laboratory of Hygiene.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 456 tons, May 31, 1989; minimum daily, 0.03 tons, Sept. 10-11, 14-17, 1988, Feb. 18 to Mar. 2, 1989.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 3,230 lb, May 31, 1989; minimum daily, 0.27 lb, Sept. 11, 1988.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 456 tons, May 31; minimum daily, 0.03 tons, Feb. 18 to Mar. 2.

TOTAL-PHOSPHORUS DISCHARGE: Maximum daily, 3,230 lb, May 31; minimum daily, 0.68 lb, Oct. 12.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 1988					MAY 1989				
13...	1040	4.5	0.030	5	23...	0815	8.4	0.280	73
18...	1040	10	0.070	26	25...	1045	93	0.330	50
NOV					30...	1040	352	--	701
16...	1520	27	--	308	30...	1045	352	1.45	--
16...	1530	27	0.160	--	30...	1805	352	0.680	260
17...	1615	23	--	67	31...	0835	705	1.07	286
17...	1620	23	0.230	--	31...	1545	705	0.730	210
18...	1135	23	0.170	28	JUN				
DEC					01...	1205	527	--	135
15...	1345	7.5	--	5	01...	1210	527	0.610	--
JAN 1989					01...	1615	527	0.500	116
13...	1425	5.0	0.060	3	02...	1410	343	0.500	78
25...	1415	9.1	0.070	--	03...	1030	263	0.360	68
25...	1420	9.1	--	4	05...	1145	166	0.410	73
31...	1615	18	0.170	10	07...	1215	99	0.310	50
FEB					12...	2045	46	0.390	52
20...	1350	5.8	0.140	2	14...	1115	42	0.310	55
28...	1130	5.4	0.100	2	26...	1000	57	0.220	36
MAR					29...	1310	31	0.260	28
03...	1445	7.9	--	13	JUL				
14...	1445	92	0.510	47	11...	1340	26	--	55
16...	1220	156	0.700	63	12...	1000	23	0.110	23
17...	1330	125	0.670	46	12...	1340	23	0.270	--
20...	1045	26	--	27	19...	1645	30	0.090	34
20...	1050	26	0.650	--	20...	1035	26	0.240	30
22...	1235	15	0.530	27	24...	1035	18	0.200	44
23...	1745	21	0.510	27	28...	1420	15	0.130	36
24...	1115	85	0.500	35	31...	1125	18	0.170	87
25...	1515	250	0.680	105	AUG				
26...	1945	398	0.660	65	04...	1045	43	0.220	37
27...	1107	439	0.500	36	07...	1100	28	0.180	16
28...	1540	342	0.410	21	21...	1015	13	0.290	46
31...	1445	170	0.330	--	22...	1200	15	0.220	--
APR					28...	1030	17	0.210	--
04...	1335	61	0.270	8	SEP				
06...	1050	40	--	40	02...	1400	17	0.110	--
11...	1115	24	0.200	25	11...	1045	15	--	18
27...	1345	18	0.310	22	13...	1030	14	--	37
MAY					22...	1200	9.4	--	43
16...	1530	12	0.240	34	26...	1315	8.1	0.030	4



## 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 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.12	.56	.05	.38	.03	4.3	1.3	192	1.6	1.3	4.1
2	.07	.11	.53	.05	.33	.03	2.9	1.3	78	1.3	1.1	1.8
3	.07	.13	.49	.05	.21	.21	1.9	1.3	49	1.0	1.1	1.1
4	.06	.23	.41	.05	.16	.12	1.5	1.4	40	.80	4.0	.97
5	.06	.29	.38	.05	.13	.06	2.6	1.4	32	.70	2.0	.93
6	.06	.37	.36	.05	.12	.06	3.9	1.2	21	.65	1.3	.89
7	.07	.50	.34	.07	.11	.08	3.3	1.2	14	.61	1.3	.86
8	.06	.73	.30	.05	.09	.08	2.7	1.3	9.9	.52	1.2	.82
9	.06	.98	.26	.05	.08	.10	2.1	1.3	7.8	1.6	1.2	.95
10	.06	1.4	.19	.04	.07	.21	1.7	1.2	6.3	1.9	1.3	.76
11	.06	1.1	.14	.04	.06	.61	1.6	1.2	5.4	3.3	1.2	.72
12	.06	1.2	.12	.05	.05	1.5	1.6	.99	6.4	1.6	1.1	.61
13	.06	1.1	.12	.04	.06	2.3	1.5	1.0	6.0	1.3	1.2	.55
14	.10	1.1	.12	.04	.06	11	1.4	1.0	6.1	1.2	1.3	.47
15	.15	4.9	.10	.04	.05	20	1.3	1.1	5.2	.97	1.4	.42
16	.26	17	.09	.04	.05	25	1.3	1.1	4.4	.94	1.5	.35
17	.48	6.4	.08	.04	.04	16	1.5	1.1	2.8	.84	1.4	.29
18	.64	2.0	.07	.05	.03	8.6	1.4	1.2	1.7	1.9	1.4	.26
19	.55	1.6	.08	.06	.03	4.3	1.4	1.4	1.5	2.5	1.4	.24
20	.41	1.4	.11	.05	.03	1.9	1.3	1.4	1.4	2.2	1.5	.20
21	.47	1.2	.10	.04	.03	1.5	1.4	1.4	1.0	2.1	1.6	.18
22	.41	1.1	.13	.04	.03	1.1	1.3	1.6	.67	2.3	1.7	.15
23	1.1	.93	.16	.06	.03	1.6	1.2	1.6	.62	2.3	1.5	.12
24	.86	.88	.14	.05	.03	9.1	1.1	3.2	.73	2.1	1.3	.10
25	.59	.73	.10	.07	.03	59	1.0	13	2.7	1.9	1.2	.09
26	.42	1.0	.08	.09	.03	80	1.0	6.9	5.4	1.6	1.0	.09
27	.32	.98	.12	.08	.03	45	1.0	5.0	4.4	1.7	1.3	.08
28	.23	.92	.08	.11	.03	21	1.2	3.4	3.0	1.5	1.6	.08
29	.16	.79	.07	.14	---	14	1.3	8.4	2.4	1.7	1.1	.09
30	.12	.74	.06	.21	---	9.4	1.3	394	2.0	1.6	.88	.08
31	.12	---	.06	.46	---	6.5	---	456	---	1.5	1.8	---
TOTAL	8.21	51.93	5.95	2.31	2.38	340.39	53.0	918.89	513.82	47.73	44.18	18.35

WTR YR 1989 TOTAL 2007.14

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.87	1.8	12	2.1	14	2.4	222	33	1660	30	14	39
2	.83	1.7	12	2.1	13	2.2	160	33	898	25	12	12
3	.86	1.9	12	2.1	8.8	3.4	117	31	537	20	11	8.5
4	.78	2.9	10	2.1	7.2	2.2	89	31	437	16	48	8.0
5	.78	3.2	10	2.1	6.3	1.5	69	30	358	14	29	7.6
6	.76	3.5	9.9	2.1	6.3	1.8	54	25	251	13	24	7.2
7	.81	4.2	9.7	2.7	5.9	2.1	44	25	170	12	28	6.8
8	.71	5.5	8.9	2.1	5.2	2.3	37	25	128	11	26	6.5
9	.73	6.4	8.1	2.1	4.8	2.8	31	24	104	34	25	7.4
10	.78	8.5	6.1	1.8	4.8	5.6	26	21	88	23	25	5.8
11	.73	7.8	4.7	1.8	4.4	16	26	21	77	33	23	5.5
12	.68	10	4.2	2.1	4.1	37	27	16	95	15	21	4.9
13	.75	11	4.5	1.6	5.3	53	26	16	81	12	20	4.6
14	1.0	12	4.6	1.5	5.1	243	25	16	71	11	21	4.0
15	1.3	16	4.2	1.5	4.8	436	24	16	60	9.3	23	3.8
16	1.9	23	3.7	1.8	4.7	574	25	16	53	9.0	23	3.4
17	3.1	26	3.1	1.8	4.5	455	29	15	34	7.7	21	2.9
18	3.6	22	2.8	1.9	4.1	294	30	15	22	14	20	2.8
19	2.9	21	3.3	2.8	3.9	174	31	15	20	16	19	2.6
20	2.1	19	4.6	2.3	4.4	90	29	14	19	30	20	2.2
21	2.3	17	4.1	1.9	4.2	63	33	13	14	28	19	2.1
22	2.1	15	5.4	1.9	4.2	43	31	13	9.7	27	18	1.9
23	6.9	14	6.7	2.7	3.6	58	30	13	9.2	24	17	1.6
24	6.4	14	5.6	2.5	3.4	239	28	33	10	19	15	1.4
25	4.9	12	4.2	3.5	3.6	872	28	164	35	16	15	1.4
26	3.9	18	3.4	3.8	3.1	1420	29	95	68	13	14	1.3
27	3.3	18	4.9	3.4	3.2	1220	30	72	62	13	16	1.3
28	2.6	18	3.5	4.5	2.9	782	35	50	48	11	19	1.3
29	2.1	16	2.7	5.3	---	560	34	86	43	14	12	1.3
30	1.7	15	2.4	7.8	---	416	34	1900	37	15	10	1.3
31	1.8	---	2.3	16	---	306	---	3230	---	16	20	---
TOTAL	63.97	364.4	183.6	93.7	149.8	8377.3	1433	6107	5498.9	551.0	628	160.4

WTR YR 1989 TOTAL 23611.07 MEAN 65 MAX 3230 MIN .68

## 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. 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 period listed in rating table below. Records good except for period of ice effect, 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.

AVERAGE DISCHARGE.--91 years, 1,123 ft<sup>3</sup>/s, 11.38 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,900 ft<sup>3</sup>/s, Mar. 17, 18, 1946, gage height, 15.5 ft; minimum observed, 210 ft<sup>3</sup>/s, June 27, 1988, gage height, 7.30 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,360 ft<sup>3</sup>/s, Mar. 27, gage height, 13.10 ft; minimum discharge, 438 ft<sup>3</sup>/s, Sept. 23, gage height, 7.87 ft.

RATING TABLE (gage height, in feet, and discharge in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Mar. 26.)

7.9	450	10.0	1,370
8.0	490	11.0	1,950
9.0	910	12.0	2,560
		14.0	4,100

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1090	750	1110	620	660	580	2760	1050	1990	1110	619	566
2	1080	720	1210	620	640	560	2710	1050	2270	1060	609	570
3	1040	795	1210	600	620	560	2640	1050	2470	1010	596	584
4	1010	828	1170	600	600	560	2570	1050	2610	954	629	587
5	951	832	1160	600	600	560	2510	1080	2670	891	661	583
6	919	801	1130	600	600	560	2440	1060	2680	837	656	578
7	890	831	1110	600	600	560	2370	1050	2660	786	609	578
8	849	872	1060	600	600	560	2300	1060	2600	728	599	588
9	811	881	1000	600	600	580	2230	1050	2540	709	604	606
10	770	898	900	600	600	580	2150	1010	2480	703	606	601
11	696	880	880	580	600	600	2100	1000	2420	689	613	620
12	677	892	840	580	600	620	2040	992	2400	670	609	630
13	677	927	800	580	600	660	1970	972	2380	658	605	632
14	692	944	780	580	600	720	1900	954	2340	629	595	633
15	686	939	760	580	600	880	1830	939	2290	630	588	619
16	683	984	720	580	580	1000	1760	905	2230	615	577	597
17	678	1060	700	580	580	1100	1710	879	2170	591	578	586
18	665	1080	680	580	580	1100	1640	853	2110	619	578	578
19	677	1070	660	580	580	1000	1580	839	2050	715	563	577
20	684	1070	660	600	580	1000	1520	839	1980	723	564	570
21	712	1050	660	600	580	980	1470	797	1910	725	535	554
22	711	1050	660	600	580	980	1420	786	1810	718	530	545
23	739	1060	660	600	580	1000	1360	766	1680	663	537	459
24	772	1060	660	600	580	1100	1310	759	1540	621	499	476
25	791	1050	660	620	580	1700	1270	884	1430	599	493	509
26	801	1060	640	620	580	2600	1170	928	1400	585	506	477
27	811	1080	640	620	580	3330	1060	946	1350	595	502	460
28	852	1120	640	640	580	3180	995	949	1280	575	501	479
29	843	1120	620	640	---	3040	984	991	1220	555	507	487
30	783	1130	620	660	---	2940	1030	1360	1160	598	513	456
31	745	---	620	660	---	2840	---	1720	---	612	517	---
TOTAL	24785	28834	25620	18720	16660	38030	54799	30568	62120	22173	17698	16785
MEAN	800	961	826	604	595	1227	1827	986	2071	715	571	559
MAX	1090	1130	1210	660	660	3330	2760	1720	2680	1110	661	633
MIN	665	720	620	580	580	560	984	759	1160	555	493	456
CFSM	.60	.72	.62	.45	.44	.92	1.36	.74	1.55	.53	.43	.42
IN.	.69	.80	.71	.52	.46	1.06	1.52	.85	1.72	.62	.49	.47

CAL YR 1988 TOTAL 329780 MEAN 901 MAX 2530 MIN 217 CFSM .67 IN. 9.16  
WTR YR 1989 TOTAL 356792 MEAN 978 MAX 3330 MIN 456 CFSM .73 IN. 9.90

## STREAMS TRIBUTARY TO LAKE MICHIGAN

81

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, from topographic map. Prior to Oct. 1, 1976, nonrecording gage 50 ft downstream at same elevation.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair.

AVERAGE DISCHARGE.--22 years (water years 1967-79, 1981-89), 448 ft<sup>3</sup>/s, 13.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,200 ft<sup>3</sup>/s, Mar. 15, 1973, gage height, 9.48 ft; maximum gage height, 10.06 ft, Dec. 20, 21, 24, 1984, backwater from ice; minimum discharge, 119 ft<sup>3</sup>/s, Nov. 8, 1976, gage height, 7.24 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 1,500 ft<sup>3</sup>/s, Mar. 28; maximum gage height, 9.91 ft, Mar. 28, backwater from ice; minimum discharge, 138 ft<sup>3</sup>/s, Sept. 30, gage height, 7.34 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Nov. 30 to Apr. 3.)

7.3	135	8.5	647
7.5	197	9.0	973
8.0	397	9.5	1,420
		10.0	1,960

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	261	371	470	270	280	230	940	511	616	225	195	190
2	253	445	420	270	270	230	900	491	603	220	170	188
3	241	469	520	260	250	220	780	472	595	212	161	180
4	230	472	500	260	250	230	727	440	543	209	177	186
5	230	660	430	260	260	240	703	436	493	201	184	193
6	224	688	450	270	250	250	694	401	426	196	170	200
7	219	641	460	270	250	260	688	382	382	191	163	203
8	217	631	410	270	250	270	673	375	431	185	158	221
9	221	649	330	250	240	280	639	364	567	187	156	206
10	212	672	290	260	240	300	596	361	496	185	154	196
11	206	663	270	260	250	340	572	343	473	182	155	184
12	203	645	260	270	250	330	549	335	458	182	189	179
13	200	638	280	260	240	320	523	330	460	191	222	176
14	200	628	310	260	240	340	520	326	477	181	259	167
15	204	623	300	260	240	340	531	322	515	169	272	168
16	206	779	280	260	240	330	535	319	501	164	245	168
17	213	793	260	260	240	320	570	309	475	162	214	159
18	224	714	270	270	230	310	579	299	451	185	194	159
19	233	697	280	270	230	300	566	308	423	207	189	161
20	236	683	290	260	230	310	548	334	394	189	184	158
21	243	660	300	250	240	320	532	349	365	171	181	156
22	248	615	290	260	240	320	508	332	308	163	207	154
23	269	590	300	280	240	340	489	312	287	162	200	153
24	336	553	320	280	230	400	483	306	279	161	192	147
25	371	541	300	270	240	480	483	453	268	156	184	147
26	347	550	290	260	240	680	489	481	263	156	178	145
27	341	591	290	260	240	1000	495	423	255	159	178	157
28	385	583	280	260	240	1500	501	391	243	175	176	146
29	368	537	280	270	---	1400	526	384	231	177	182	144
30	335	500	280	270	---	1200	529	460	228	178	173	140
31	378	---	280	280	---	1100	---	595	---	188	172	---
TOTAL	8054	18281	10290	8210	6840	14490	17868	11944	12506	5669	5834	5131
MEAN	260	609	332	265	244	467	596	385	417	183	188	171
MAX	385	793	520	280	280	1500	940	595	616	225	272	221
MIN	200	371	260	250	230	220	483	299	228	156	154	140
CFSM	.56	1.32	.72	.57	.53	1.01	1.29	.83	.90	.39	.41	.37
IN.	.65	1.47	.83	.66	.55	1.16	1.44	.96	1.00	.46	.47	.41
CAL YR 1988	TOTAL 124174	MEAN 339	MAX 1160	MIN 137	CFSM .73	IN. 9.98						
WTR YR 1989	TOTAL 125117	MEAN 343	MAX 1500	MIN 140	CFSM .74	IN. 10.05						

## 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 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	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)	ALKA- LITY LAB (MG/L AS CACO3) (90410)
OCT 1988											
17...	1350	80020	210	--	--	--	26	14	2.7	1.1	115
NOV											
16...	1125	80020	800	--	--	--	18	9.4	2.1	0.90	70
DEC											
13...	0945	80020	281	--	--	--	25	13	3.0	1.1	106
JAN 1989											
23...	1255	80020	E261	220	7.86	1.5	26	13	2.5	1.1	112
FEB											
15...	1050	80020	241	260	--	0.0	29	14	2.8	1.3	120
APR											
24...	1450	80020	475	162	8.40	13.5	18	8.4	2.1	1.0	72
JUN											
19...	1515	80020	411	173	8.66	24.0	20	9.5	2.1	0.60	83
AUG											
07...	1530	80020	162	235	8.80	20.0	27	13	2.4	0.70	118

DATE	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, AMMONIA TOTAL (MG/L AS N) (00610)	ARSENIC TOTAL (UG/L AS AS) (01002)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA) (01007)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD) (01027)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR) (01034)
OCT 1988											
17...	9.2	2.8	0.10	6.2	134	--	<0.010	<1	<100	3	<1
NOV											
16...	16	2.4	0.10	7.7	112	--	<0.010	<1	100	3	<1
DEC											
13...	16	3.0	0.10	11	152	--	0.020	<1	<100	1	<1
JAN 1989											
23...	11	2.6	0.10	13	145	--	0.080	<1	<100	1	2
FEB											
15...	10	2.6	0.20	13	156	--	0.080	<1	<100	2	<1
APR											
24...	5.7	2.3	--	--	99	--	--	--	--	4	<1
JUN											
19...	6.0	2.1	--	--	107	<0.100	--	--	--	1	<1
AUG											
07...	6.0	2.6	--	--	137	<0.100	--	--	--	2	1

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB) (01051)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV- ERABLE (UG/L AS HG) (71900)	NICKEL, TOTAL RECOV- ERABLE (UG/L AS NI) (01067)	SELE- NIUM, TOTAL (UG/L AS SE) (01147)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG) (01077)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN) (01092)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT 1988										
17...	2	80	17	20	<0.10	1	<1	<1	<10	<0.010
NOV										
16...	4	310	20	60	<0.10	4	<1	<1	<10	<0.010
DEC										
13...	2	210	16	30	<0.10	6	<1	<1	10	<0.010
JAN 1989										
23...	3	290	7	40	<0.10	<1	<1	<1	<10	<0.010
FEB										
15...	1	170	18	20	<0.10	3	<1	<1	10	<0.010
APR										
24...	2	300	13	40	--	--	--	--	--	--
JUN										
19...	3	540	34	80	--	--	--	--	--	--
AUG										
07...	3	110	18	50	--	--	--	--	--	--

STREAMS TRIBUTARY TO LAKE MICHIGAN

83

04077400 WOLF RIVER NEAR SHAWANO, WI

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.

DRAINAGE AREA.--816 mi<sup>2</sup>.

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.

REVISED RECORDS.--WSP 1337: 1914-15(M), 1918-19(M), 1921, 1923(M), 1926(M), 1928(M), 1933. WDR WI-80-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 810 ft above National Geodetic Vertical Datum of 1929, 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.

REMARKS.--Estimated daily discharges: Dec. 4, 8-12, 17-19, 25-26, and ice periods listed in rating table below. Records good except those for estimated daily discharges, which are fair. Minor regulation by power dam upstream.

AVERAGE DISCHARGE.--80 years (1908, 1911-89), 760 ft<sup>3</sup>/s, 12.65 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge 5,200 ft<sup>3</sup>/s, Mar. 15, 1973; maximum gage height, 15.59 ft, Dec. 2, 1983, from high-water mark in well, at site and datum then in use (backwater from ice); minimum discharge, 91 ft<sup>3</sup>/s, Dec. 22, 1939, gage height, 4.67 ft, site end datum then in use, result of ice storage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,050 ft<sup>3</sup>/s, Nov. 23, gage height 10.03 ft; maximum gage height, 10.47 ft, Mar. 29, backwater from ice; minimum daily, 293 ft<sup>3</sup>/s Sept. 26.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1-8, Apr. 11-28, and July 10 to Sept. 6;  
stage-discharge relation affected by ice Dec. 13-16 and Dec. 27 to Apr. 1.)

7.3	255	9.0	1,260
7.5	335	10.0	2,030
8.0	590		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	398	618	534	500	450	340	e920	848	1530	365	450	375
2	404	658	650	500	420	330	1130	824	1470	367	498	403
3	394	672	670	470	390	320	1270	799	1190	434	459	421
4	371	726	740	460	370	320	1300	765	1030	435	367	426
5	366	804	901	500	370	320	1310	758	983	392	336	417
6	361	1040	878	500	360	360	1300	777	862	359	344	424
7	355	957	764	470	350	390	1310	741	688	364	349	432
8	349	968	550	450	350	390	1210	679	825	327	352	476
9	420	979	380	430	350	400	1050	673	729	382	396	535
10	365	888	370	430	350	420	915	613	848	413	388	526
11	361	876	460	400	370	450	883	589	770	392	329	401
12	336	772	510	400	380	450	853	579	676	404	361	366
13	318	899	560	400	400	470	810	552	718	390	419	402
14	337	851	580	400	390	500	800	559	759	417	586	417
15	336	752	540	410	370	460	813	566	896	378	774	422
16	353	957	480	420	360	440	823	561	944	366	666	407
17	363	1250	450	430	360	430	872	544	854	371	582	378
18	398	1030	480	440	340	430	918	529	736	388	488	347
19	429	886	460	440	340	430	906	512	701	433	454	372
20	417	927	645	410	340	450	895	515	651	431	444	388
21	436	929	707	410	340	440	870	527	659	407	422	392
22	530	916	767	440	340	420	845	575	565	383	461	380
23	583	845	654	420	350	420	788	528	568	365	491	377
24	683	800	662	420	380	520	740	486	511	304	468	350
25	589	703	610	450	400	700	772	1060	505	395	475	308
26	577	736	520	440	380	1000	779	948	541	436	445	293
27	595	873	470	430	360	1300	795	876	554	418	428	388
28	562	773	450	420	340	1400	807	714	473	379	422	322
29	562	836	420	420	---	1500	823	614	475	399	432	339
30	448	773	400	460	---	1300	859	934	467	416	450	331
31	546	---	430	480	---	1100	---	1480	---	445	423	---
TOTAL	13542	25694	17692	13650	10300	18200	28366	21725	23178	12155	13959	11815
MEAN	437	856	571	440	368	587	946	701	773	392	450	394
MAX	683	1250	901	500	450	1500	1310	1480	1530	445	774	535
MIN	318	618	370	400	340	320	740	486	467	304	329	293
CFSM	.54	1.05	.70	.54	.45	.72	1.16	.86	.95	.48	.55	.48
IN.	.62	1.17	.81	.62	.47	.83	1.29	.99	1.06	.55	.64	.54

CAL YR 1988 TOTAL 207054 MEAN 566 MAX 1990 MIN 253 CFSM .69 IN. 9.44  
WTR YR 1989 TOTAL 210276 MEAN 576 MAX 1530 MIN 293 CFSM .71 IN. 9.59

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04079000 WOLF RIVER AT NEW LONDON, WI

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 National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 4, 1951, nonrecording gage.

REMARKS.--Estimated daily discharges: Ice period listed in rating tables below. Records good except those for ice-affected period, which is fair. Gage-height telemeter and data-collection platform at station.

AVERAGE DISCHARGE.--93 years, 1,756 ft<sup>3</sup>/s, 10.55 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 15,500 ft<sup>3</sup>/s, Apr. 13, 1922, gage height, 11.4 ft; maximum gage height, 11.83 ft, Apr. 3, 1979, backwater from ice; minimum daily, 150 ft<sup>3</sup>/s, Mar. 1, 1900.

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.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 5,600 ft<sup>3</sup>/s (estimated) Apr. 1-2; maximum gage height, 8.70 ft, Mar. 31, Apr. 1, backwater from ice; minimum discharge, 413 ft<sup>3</sup>/s, Sept. 24, gage height, 0.11 ft.

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 12 to Apr. 7.)

Oct. 1-10 and May 24 to Sept. 30

Oct. 11 to May 23

0.1	410	5.0	2,230	0.6	560	7.0	3,730
1.0	680	6.0	2,760	1.0	700	8.0	4,990
2.0	1,000	7.0	3,450	3.0	1,460	9.0	7,540
4.0	1,740			5.0	2,380		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	753	1020	1770	860	840	720	5600	1760	2820	949	593	575
2	723	910	1640	860	840	720	5600	1770	2970	924	597	586
3	674	812	1510	860	820	720	5400	1780	3110	897	602	600
4	647	861	1440	860	800	720	5200	1770	3150	861	601	580
5	618	897	1410	840	780	740	4900	1790	3180	822	637	574
6	616	984	1360	840	780	740	4600	1770	3230	792	655	570
7	617	1180	1340	840	760	760	4400	1750	3270	748	648	577
8	613	1380	1340	840	760	780	4220	1770	3250	718	627	574
9	607	1500	1340	820	740	800	3970	1760	3200	757	599	588
10	605	1540	1300	820	740	820	3780	1720	3060	822	573	594
11	593	1530	1210	820	740	840	3620	1640	2850	820	528	610
12	588	1560	1100	820	740	880	3450	1560	2650	793	535	659
13	599	1610	1100	820	740	940	3270	1470	2480	768	578	681
14	597	1610	1000	820	740	1000	3110	1410	2320	753	603	652
15	592	1610	960	800	740	1200	2940	1350	2210	742	627	604
16	607	1700	940	800	720	1400	2780	1280	2160	731	631	567
17	622	1740	920	800	720	1500	2630	1230	2150	701	679	537
18	670	1790	900	800	720	1500	2480	1200	2130	695	712	529
19	699	1850	900	800	720	1400	2370	1200	2120	760	707	573
20	699	1860	900	800	720	1400	2280	1230	2060	793	693	589
21	716	1820	900	800	720	1300	2210	1160	1910	799	658	544
22	715	1800	900	800	720	1300	2100	1120	1700	824	658	494
23	707	1760	900	800	720	1200	2050	1120	1510	793	654	443
24	719	1690	900	800	740	1300	2010	1120	1350	723	650	418
25	748	1620	900	800	740	1600	1970	1260	1250	684	649	427
26	832	1590	880	820	740	2000	1910	1630	1190	652	647	458
27	1030	1610	880	820	720	2500	1830	1990	1140	596	639	498
28	1140	1650	880	820	720	3200	1770	2230	1070	580	628	472
29	1100	1750	880	820	---	4000	1750	2300	1010	582	624	433
30	1050	1860	880	840	---	4800	1770	2440	980	585	598	435
31	1040	---	880	840	---	5400	---	2670	---	590	581	---
TOTAL	22536	45094	34160	25480	20980	48180	95970	50250	67480	23254	19411	16441
MEAN	727	1503	1102	822	749	1554	3199	1621	2249	750	626	548
MAX	1140	1860	1770	860	840	5400	5600	2670	3270	949	712	681
MIN	588	812	880	800	720	720	1750	1120	980	580	528	418
CFSM	.32	.67	.49	.36	.33	.69	1.42	.72	1.00	.33	.28	.24
IN.	.37	.74	.56	.42	.35	.79	1.58	.83	1.11	.38	.32	.27

CAL YR 1988 TOTAL 414888 MEAN 1134 MAX 4330 MIN 413 CFSM .50 IN. 6.83  
WTR YR 1989 TOTAL 469236 MEAN 1286 MAX 5600 MIN 418 CFSM .57 IN. 7.72

STREAMS TRIBUTARY TO LAKE MICHIGAN

85

440654089120500 LAKE MORRIS AT MOUNT MORRIS, WI

LOCATION.--Lat 44°06'54", long 89°12'05", in SE 1/4 SE 1/4 sec.16, T.19 N., R.11 E., Waushara County, Hydrologic Unit 04030202, at Mount Morris.

DRAINAGE AREA.--8.94 mi<sup>2</sup>.

LAKE-STAGE RECORDS

PERIOD OF RECORD.--June 1983 to current year.

GAGE.--Staff gage read at dam outlet by Henry Pagenkopf.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.82 ft May 1, 1984; minimum observed, 4.80 ft Feb. 8, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 5.48 ft, Aug. 31; minimum observed, 5.14 ft Oct. 8.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	HEIGHT	DATE	HEIGHT	DATE	HEIGHT	DATE	HEIGHT
OCT. 8	5.14	MAY 15	5.30	JULY 26	5.38	AUG. 31	5.48
APR. 25	5.34	JUNE 21	5.34	AUG. 3	5.36	SEPT. 7	5.42
26	5.32	JULY 7	5.40	8	5.34	14	5.32
MAY 9	5.31	13	5.42	18	5.46	21	5.38
		21	5.42	24	5.37	27	5.34

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1983 to current year.

REMARKS.--Secchi-disc readings by Nils Dahlstrand near lake center.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			AUG 1989		
08...	1015	4.27	03...	1030	4.00
JUN 1989			10...	1445	3.50
10...	1100	1.70	17...	1115	3.70
22...	1200	1.70	25...	1430	4.00
JUL			31...	1115	4.00
14...	1000	3.00	SEP		
29...	1145	4.10	08...	1500	4.70
			16...	1200	4.60
			27...	1415	5.20

## 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, 3.88 ft, May 30; minimum, 1.11 ft, Mar. 14.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.57	2.23	2.28	2.05	1.71	1.27	1.71	2.86	3.51	2.92	2.85	2.66
2	2.57	2.25	2.26	2.04	1.69	1.27	1.75	2.88	3.43	2.93	2.83	2.65
3	2.54	2.24	2.23	2.03	1.68	1.32	1.80	2.91	3.39	2.94	2.81	2.62
4	2.50	2.26	2.20	2.01	1.66	1.38	1.84	2.92	3.29	2.95	2.86	2.58
5	2.51	2.27	2.19	2.00	1.64	1.37	1.89	2.84	3.24	2.94	2.89	2.60
6	2.47	2.35	2.18	1.99	1.62	1.36	1.94	2.97	3.17	2.92	2.89	2.60
7	2.43	2.37	2.15	1.97	1.60	1.33	1.99	2.98	3.09	2.93	2.85	2.59
8	2.42	2.37	2.14	1.98	1.55	1.29	1.96	2.99	3.07	2.92	2.82	2.61
9	2.40	2.37	2.16	1.96	1.55	1.26	2.00	3.02	3.05	2.89	2.81	2.64
10	2.33	2.34	2.15	1.94	1.53	1.23	2.06	3.03	3.05	2.92	2.80	2.63
11	2.34	2.38	2.14	1.92	1.50	1.20	2.06	3.04	3.04	2.92	2.80	2.61
12	2.31	2.35	2.13	1.93	1.49	1.17	2.10	3.05	3.04	2.91	2.80	2.60
13	2.25	2.34	2.12	1.92	1.48	1.15	2.16	3.05	3.03	2.92	2.78	2.62
14	2.23	2.39	2.11	1.89	1.47	1.16	2.17	3.06	3.06	2.90	2.78	2.60
15	2.24	2.39	2.10	1.88	1.44	1.20	2.26	3.07	3.01	2.87	2.79	2.60
16	2.21	2.20	2.09	1.87	1.43	1.21	2.29	3.07	3.03	2.85	2.78	2.59
17	2.26	2.39	2.08	1.86	1.42	1.23	2.35	3.07	3.05	2.85	2.77	2.59
18	2.26	2.41	2.07	1.85	1.41	1.24	2.37	3.06	3.05	2.85	2.74	2.57
19	2.28	2.33	2.06	1.84	1.40	1.23	2.44	3.06	3.06	2.94	2.71	2.55
20	2.26	2.32	2.05	1.84	1.38	1.23	2.49	3.05	3.06	2.94	2.70	2.56
21	2.24	2.32	2.05	1.81	1.37	1.23	2.52	3.11	3.04	2.92	2.72	2.55
22	2.27	2.27	2.03	1.80	1.36	1.21	2.58	3.10	3.03	2.89	2.70	2.51
23	2.22	2.25	2.05	1.78	1.35	1.20	2.60	3.08	3.02	2.88	2.75	2.52
24	2.27	2.25	2.06	1.77	1.33	1.19	2.62	3.11	3.04	2.88	2.74	2.48
25	2.31	2.24	2.07	1.76	1.32	1.23	2.67	3.29	3.01	2.88	2.69	2.44
26	2.30	2.28	2.06	1.78	1.31	1.30	2.72	3.24	3.01	2.88	2.67	2.47
27	2.20	2.24	2.09	1.77	1.29	1.40	2.76	3.28	3.01	2.90	2.67	2.42
28	2.15	2.26	2.10	1.75	1.27	1.46	2.80	3.22	3.03	2.91	2.67	2.39
29	2.26	2.28	2.08	1.75	---	1.52	2.80	3.22	2.96	2.89	2.65	2.42
30	2.24	2.27	2.07	1.74	---	1.57	2.79	3.51	2.92	2.86	2.66	2.40
31	2.19	---	2.06	1.73	---	1.64	---	3.55	---	2.85	2.63	---
MEAN	2.32	2.31	2.12	1.88	1.47	1.29	2.28	3.09	3.09	2.90	2.76	2.56
MAX	2.57	2.41	2.28	2.05	1.71	1.64	2.80	3.55	3.51	2.95	2.89	2.66
MIN	2.15	2.20	2.03	1.73	1.27	1.15	1.71	2.84	2.92	2.85	2.63	2.39

WTR YR 1989 MEAN 2.34 MAX 3.55 MIN 1.15



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.

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, 3.82 ft, May 30, 1989, local condition due to seiche. Minimum observed, 0.30 ft, Mar. 1, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 3.82 ft, May 30, local condition due to seiche; minimum, 1.05 ft, Mar. 14.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.54	2.24	2.32	2.01	1.67	1.24	1.68	2.82	3.50	2.91	2.83	2.61
2	2.53	2.20	2.28	2.01	1.66	1.23	1.72	2.85	3.46	2.90	2.85	2.62
3	2.55	2.20	2.22	1.99	1.65	1.28	1.77	2.91	3.34	2.91	2.84	2.59
4	2.54	2.22	2.22	1.98	1.63	1.34	1.82	2.90	3.30	2.92	2.88	2.57
5	2.47	2.30	2.19	1.96	1.61	1.34	1.88	2.97	3.22	2.91	2.92	2.57
6	2.44	2.46	2.17	1.96	1.59	1.33	1.91	2.97	3.14	2.90	2.85	2.56
7	2.44	2.36	2.17	1.94	1.56	1.29	1.95	2.95	3.12	2.89	2.82	2.58
8	2.39	2.36	2.18	1.96	1.56	1.25	2.00	2.96	3.07	2.85	2.82	2.58
9	2.36	2.33	2.14	1.92	1.53	1.22	2.07	2.95	3.06	2.90	2.79	2.57
10	2.38	2.39	2.12	1.91	1.50	1.19	2.08	2.96	3.03	2.89	2.79	2.60
11	2.32	2.38	2.11	1.89	1.48	1.16	2.08	2.98	3.01	2.83	2.79	2.61
12	2.27	2.30	2.08	1.90	1.46	1.14	2.09	2.99	2.96	2.85	2.77	2.61
13	2.27	2.39	2.08	1.88	1.45	1.12	2.13	3.00	2.99	2.84	2.78	2.56
14	2.23	2.37	2.08	1.85	1.43	1.12	2.19	3.02	2.95	2.85	2.77	2.57
15	2.20	2.31	2.08	1.85	1.41	1.17	2.23	3.03	2.95	2.83	2.75	2.57
16	2.24	2.62	2.05	1.84	1.39	1.17	2.28	3.03	3.01	2.83	2.75	2.56
17	2.22	2.54	2.05	1.83	1.38	1.19	2.31	3.03	3.04	2.83	2.72	2.56
18	2.29	2.34	2.03	1.82	1.37	1.20	2.36	3.03	3.03	2.81	2.70	2.55
19	2.28	2.31	2.02	1.80	1.36	1.18	2.43	3.01	3.03	2.78	2.69	2.54
20	2.25	2.32	2.02	1.80	1.35	1.19	2.45	3.08	3.02	2.83	2.71	2.54
21	2.25	2.31	2.01	1.77	1.34	1.19	2.46	3.09	3.00	2.82	2.69	2.53
22	2.23	2.27	1.99	1.75	1.33	1.17	2.48	3.06	2.99	2.84	2.69	2.49
23	2.28	2.23	2.02	1.75	1.31	1.16	2.52	3.08	3.01	2.85	2.66	2.55
24	2.43	2.22	2.03	1.74	1.28	1.15	2.57	3.07	3.00	2.86	2.63	2.50
25	2.42	2.21	2.04	1.72	1.27	1.19	2.62	3.28	2.96	2.86	2.62	2.48
26	2.33	2.21	2.02	1.75	1.28	1.27	2.66	3.36	3.00	2.87	2.64	2.41
27	2.30	2.35	2.07	1.73	1.25	1.35	2.64	3.28	3.01	2.87	2.65	2.41
28	2.43	2.31	2.07	1.71	1.24	1.44	2.65	3.22	2.93	2.82	2.64	2.45
29	2.29	2.28	2.05	1.71	---	1.50	2.72	3.18	2.90	2.82	2.68	2.39
30	2.22	2.31	2.03	1.70	---	1.56	2.85	3.42	2.91	2.79	2.66	2.38
31	2.26	---	2.02	1.69	---	1.63	---	3.53	---	2.82	2.62	---
MEAN	2.34	2.32	2.10	1.84	1.44	1.26	2.25	3.06	3.06	2.85	2.74	2.54
MAX	2.55	2.62	2.32	2.01	1.67	1.63	2.85	3.53	3.50	2.92	2.92	2.62
MIN	2.20	2.20	1.99	1.69	1.24	1.12	1.68	2.82	2.90	2.78	2.62	2.38

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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. Single-path, mid-depth transducer installation. Data are stored using CR-21x datalogger with phone modem connection for daily retrieval.

REMARKS.--Estimated daily discharges: Dec. 7 to Mar. 9. Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 16,300 ft<sup>3</sup>/s, Oct. 7, 1987; minimum daily, 840 ft<sup>3</sup>/s, Aug. 17, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 14,400 ft<sup>3</sup>/s, June 2, 3; minimum daily, 1,050 ft<sup>3</sup>/s, Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2570	2070	4980	3000	3600	1800	8960	1670	14300	2250	1730	1420
2	2540	2060	5580	2700	3400	2100	9090	1730	14400	1870	1890	1410
3	2570	2090	5480	2900	3500	2300	9380	1850	14400	1710	1930	1440
4	3120	2110	5430	2800	3500	2100	9450	2170	14200	1840	1910	1470
5	3310	2160	5040	2800	3400	2100	9070	2100	13600	1840	2140	1380
6	3450	2180	4550	2900	3500	3200	8570	1870	13700	1820	1760	1340
7	3670	2940	4200	2900	3300	4100	8170	1920	12800	1760	1640	1350
8	3510	3380	3200	2100	3300	4100	7800	1970	11200	1700	1690	1350
9	3410	3580	2800	3000	3400	4100	7770	2000	9710	1880	1740	1290
10	3330	4080	2700	2900	3400	4290	7910	1980	8120	1980	1750	1310
11	3070	4080	2700	2700	3400	4280	6650	1960	8140	1790	1760	1350
12	3100	4120	2700	2700	3300	4270	4610	2020	7940	1570	1710	1290
13	3280	4130	2700	2800	3500	3870	4220	2090	7960	1690	1780	1280
14	2900	4100	2800	2800	3800	3950	2430	2150	7790	1790	1730	1290
15	2300	4090	2700	2700	3400	4240	2770	2230	6310	1830	1620	1290
16	2220	4750	2800	2800	2800	4270	2890	2230	4880	1810	1610	1290
17	1860	4950	2700	2700	2800	4190	2790	2250	5040	1770	1720	1310
18	2230	5930	2700	2700	2800	4310	2120	2330	5150	2060	1650	1340
19	2190	6380	2800	2900	2700	4300	1180	2360	5190	1870	1660	1350
20	2170	6290	2800	2800	2700	4280	1160	2250	5130	1660	1620	1320
21	2190	6320	2900	2800	2600	4280	1180	2290	5060	1730	1560	1310
22	2120	6070	2900	2800	2500	4220	1200	2290	5020	1820	1660	1390
23	2220	5190	3000	2800	2500	4210	1240	2300	5030	1890	1530	1160
24	2210	4590	2900	2900	2500	4400	1280	2330	4990	1880	1350	1050
25	2830	4520	2800	2900	2700	4750	1370	4340	4920	1840	1410	1220
26	3340	4550	2800	3000	2600	5470	1400	4870	4990	1830	1460	1090
27	3370	4730	2900	2900	3200	6110	1400	5210	4250	1830	1480	1110
28	2630	4590	2800	2900	2600	7500	1410	5380	3580	1580	1480	1200
29	2060	4660	2700	2900	---	8490	1500	5140	3200	1670	1430	1140
30	2070	4610	2800	2900	---	8660	1600	6870	3120	1720	1470	1120
31	2200	---	3000	3500	---	8800	---	13900	---	1710	1400	---
TOTAL	84040	125300	102860	87900	86700	139041	130570	96050	234120	55990	51270	38660
MEAN	2711	4177	3318	2835	3096	4485	4352	3098	7804	1806	1654	1289
MAX	3670	6380	5580	3500	3800	8800	9450	13900	14400	2250	2140	1470
MIN	1860	2060	2700	2100	2500	1800	1160	1670	3120	1570	1350	1050
AC-FT	166700	248500	204000	174300	172000	275800	259000	190500	464400	111100	101700	76680
CFSM	.46	.70	.56	.48	.52	.75	.73	.52	1.31	.30	.28	.22
CAL YR 1988	TOTAL 1074431	MEAN 2936	MAX 7740	MIN 840	AC-FT 2131000	CFSM .49						
WTR YR 1989	TOTAL 1232501	MEAN 3377	MAX 14400	MIN 1050	AC-FT 2445000	CFSM .57						

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

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WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: July 1986 to current year.  
WATER TEMPERATURE: October 1986 to current year.  
POLYCHLORINATED BIPHENYLS: April 1987 to current year.  
ORGANIC CARBON: April 1987 to current year.

REMARKS.--Suspended-sediment records are considered good, except for periods of estimated record, when the automated sampler was not functioning. Two samples per day were normally collected using the automated samplers, and EWI suspended-sediment measurements were made approximately every four weeks during the open-water period. Suspended-sediment records are considered fair for winter periods due to estimated record, and fewer EWI measurements.

Water-temperature records are considered good to excellent, based on the daily average of 15-minute thermistor probe readings.

Polychlorinated biphenyls were analyzed by use of a capillary-column gas chromatograph. Sample size was 20 liters.

EXTREMES FOR PERIOD OF RECORD.--

SUSPENDED-SEDIMENT CONCENTRATION--Maximum daily average concentration, 128 mg/L, Mar. 24, 1988; minimum daily average concentration, 5.0 mg/L, Jan. 19, 21-22, and Feb. 25, 1988.

SUSPENDED-SEDIMENT DISCHARGE--Maximum discharge, 1,918 tons, Apr. 4, 1988; minimum discharge, 18 tons, Sept. 27, 1989.

WATER TEMPERATURE--Maximum daily average, 29.0°C, Aug. 2, 3, 1987; minimum daily average, 0.5°C, on many days during winter of the 1987 water year.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATION--Maximum daily average concentration, 76 mg/L, Nov. 16; minimum daily average concentration, 6.0 mg/L, Sept. 27.

SUSPENDED-SEDIMENT DISCHARGE--Maximum discharge, 1,195 tons, Mar. 28; minimum discharge, 18 tons, Sept. 27.

WATER TEMPERATURE: Maximum daily average, 27.7°C, July 7; minimum daily average, 1.2°C, Feb. 9.

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1988				OCT 1988			
01...	0400	2570	16	21...	1600	2190	25
01...	1600	2570	23	22...	0400	2120	13
02...	0400	2540	21	22...	1600	2120	13
02...	1600	2540	23	23...	0400	2220	10
03...	0400	2570	24	23...	1600	2220	19
03...	1200	2570	11	24...	0400	2210	15
03...	1202	2570	15	24...	1600	2210	20
03...	1600	2570	45	25...	0400	2830	11
04...	0400	3120	27	25...	1600	2830	11
04...	1600	3120	36	26...	0400	3340	5
05...	0400	3310	20	26...	1600	3340	7
05...	1310	3310	12	27...	0400	3370	4
05...	1440	3310	24	27...	1600	3370	14
05...	1600	3310	20	28...	0400	2630	20
06...	0400	3450	11	28...	1600	2630	29
06...	1600	3450	15	29...	0400	2060	14
07...	0400	3670	10	30...	1600	2070	16
07...	1600	3670	16	31...	0400	2200	16
08...	0400	3510	11	31...	1600	2200	21
08...	1600	3510	15	NOV			
09...	0400	3410	9	01...	0400	2070	17
09...	1600	3410	13	01...	1600	2070	19
10...	0400	3330	12	02...	0400	2060	10
10...	1600	3330	15	02...	1600	2060	11
11...	0400	3070	14	03...	0400	2090	15
11...	1600	3070	16	03...	1600	2090	10
12...	0400	3100	8	04...	0400	2110	11
12...	1600	3100	9	04...	1600	2110	8
13...	0400	3280	4	05...	0400	2160	9
13...	1600	3280	13	05...	1600	2160	12
14...	0400	2900	6	06...	0400	2180	7
14...	1600	2900	12	06...	1600	2180	13
15...	0400	2300	7	07...	0400	2940	7
15...	1600	2300	9	07...	1600	2940	23
16...	0400	2220	9	08...	0400	3380	17
16...	1600	2220	14	08...	1600	3380	21
17...	0400	1860	12	09...	0400	3580	9
17...	1600	1860	10	09...	1600	3580	15
18...	0400	2230	8	10...	0400	4080	7
18...	1600	2230	15	10...	1600	4080	15
19...	0400	2190	9	11...	0400	4080	13
19...	1600	2190	14	11...	1600	4080	15
20...	0400	2170	9	12...	0400	4120	7
20...	1600	2170	19	12...	1600	4120	8
21...	0400	2190	11	13...	0400	4130	7

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
NOV 1988				JAN 1989			
13...	1600	4130	13	27...	0400	2900	4
14...	0400	4100	9	27...	1600	2900	6
14...	1600	4100	28	28...	1600	2900	3
15...	0400	4090	9	29...	0400	2900	8
15...	1600	4090	19	29...	1203	2900	10
16...	0400	4750	21	30...	0400	2900	3
16...	1600	4750	137	30...	1600	2900	19
17...	0400	4950	50	31...	0400	3500	11
17...	1600	4950	44	31...	1600	3500	50
18...	0400	5930	19	FEB			
18...	1600	5930	29	01...	0400	3600	22
19...	0400	6380	15	13...	1600	3500	28
19...	1600	6380	16	MAR			
20...	0400	6290	13	24...	0400	4400	6
20...	1600	6290	19	24...	1600	4400	5
21...	0400	6320	12	25...	0400	4750	7
21...	1600	6320	14	25...	1600	4750	25
22...	0400	6070	13	26...	0400	5470	14
22...	1600	6070	16	26...	1600	5470	32
23...	0400	5190	10	27...	0400	6110	33
23...	1600	5190	14	27...	1600	6110	104
24...	0400	4590	10	28...	0400	7500	42
24...	1600	4590	16	28...	1600	7500	81
25...	0400	4520	21	29...	0400	8490	27
25...	1600	4520	5	29...	1600	8490	28
26...	0400	4550	13	30...	0400	8660	15
26...	1600	4550	17	30...	1600	8660	10
27...	0400	4730	12	31...	0400	8800	11
27...	1600	4730	30	31...	1600	8800	11
28...	0400	4590	10	APR			
28...	1600	4590	17	01...	0400	8960	9
29...	0400	4660	13	01...	1600	8960	6
30...	0400	4610	11	02...	0400	9090	9
DEC				02...	1600	9090	9
02...	0400	5580	12	03...	0400	9380	8
03...	0400	5480	13	03...	1600	9380	9
03...	1600	5480	26	04...	0400	9450	11
04...	0400	5430	11	04...	1600	9450	10
05...	0400	5040	9	05...	0400	9070	10
05...	1600	5040	30	05...	1600	9070	13
06...	0400	4550	19	06...	0400	8570	11
06...	1600	4550	21	06...	1600	8570	8
07...	0400	4200	26	07...	0400	8170	9
07...	1600	4200	15	07...	1600	8170	11
12...	0400	2700	14	08...	0400	7800	10
13...	0400	2700	10	08...	1600	7800	14
13...	1600	2700	22	09...	0400	7770	12
14...	1600	2800	14	09...	1600	7770	8
19...	0400	2800	13	11...	0400	6650	31
19...	1600	2800	7	11...	1600	6650	4
20...	0400	2800	7	12...	0400	4610	16
20...	1600	2800	7	12...	1600	4610	3
21...	0400	2900	21	13...	0400	4220	8
21...	1600	2900	17	13...	1600	4220	2
22...	0400	2900	7	14...	0400	2430	6
22...	1600	2900	6	14...	1600	2430	14
23...	0400	3000	17	15...	0400	2770	23
23...	1600	3000	25	15...	1600	2770	9
26...	0400	2800	12	16...	0400	2890	26
JAN 1989				16...	1600	2890	20
11...	0400	2700	31	17...	0400	2790	94
14...	0400	2800	29	17...	1600	2790	38
15...	0400	2700	8	18...	0400	2120	86
16...	0400	2800	4	18...	1600	2120	44
17...	0400	2700	54	19...	0400	1180	48
18...	0400	2700	10	19...	1130	1180	17
19...	1600	2900	24	19...	1230	1180	10
20...	0400	2800	6	19...	1600	1180	25
21...	1600	2800	19	20...	0400	1160	23
22...	1600	2800	25	20...	0830	1160	8
23...	0400	2800	18	20...	1600	1160	38
23...	1600	2800	4	21...	0400	1180	20
24...	0400	2900	9	21...	1600	1180	28
24...	1600	2900	18	22...	0400	1200	25
25...	0400	2900	40	22...	1600	1200	29
25...	1600	2900	35	23...	0400	1240	26
26...	0400	3000	11	23...	1600	1240	36
26...	1600	3000	5	24...	0400	1280	33

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04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
APR 1989				JUN 1989			
24...	1600	1280	28	01...	1600	14300	17
25...	0400	1370	30	02...	1600	14400	19
25...	1600	1370	37	03...	1600	14400	12
26...	0400	1400	28	04...	0400	14200	18
26...	1600	1400	30	04...	1600	14200	16
27...	0400	1400	31	05...	0400	13600	14
27...	1600	1400	33	05...	1600	13600	12
28...	0400	1410	25	06...	0400	13700	13
28...	1600	1410	33	06...	1600	13700	17
29...	0400	1500	29	07...	0400	12800	15
29...	1600	1500	28	07...	1600	12800	16
30...	0400	1600	23	08...	0400	11200	11
30...	1600	1600	24	08...	1600	11200	14
MAY				09...	0400	9710	13
01...	0400	1670	20	09...	1600	9710	17
02...	0400	1730	21	10...	0400	8120	17
02...	1524	1730	10	10...	1600	8120	23
02...	1525	1670	10	11...	0400	8140	14
02...	1600	1730	24	11...	1600	8140	28
03...	0400	1850	20	12...	0400	7940	15
03...	1600	1850	32	12...	1600	7940	23
04...	0400	2170	25	13...	0400	7960	18
04...	1600	2170	34	13...	1600	7960	19
05...	0400	2100	32	14...	0400	7790	19
05...	1600	2100	52	14...	1055	7790	11
06...	0400	1870	23	14...	1600	7790	18
06...	1600	1870	24	15...	0400	6310	10
07...	0400	1920	19	15...	1600	6310	15
07...	1600	1920	17	16...	0400	4880	12
08...	0400	1970	13	16...	1600	4880	19
08...	1600	1970	26	17...	0400	5040	12
09...	0400	2000	23	17...	1600	5040	27
09...	1600	2000	27	18...	0400	5150	13
10...	0400	1980	28	18...	1600	5150	24
10...	1600	1980	27	19...	0400	5190	19
11...	0400	1960	26	19...	1600	5190	17
11...	1600	1960	37	20...	0400	5130	19
12...	0400	2020	26	20...	1600	5130	21
12...	1600	2020	30	21...	0400	5060	21
13...	0400	2090	26	21...	1600	5060	27
13...	1600	2090	27	22...	0400	5020	31
14...	0400	2150	25	22...	1600	5020	33
14...	1600	2150	30	23...	0400	5030	33
15...	0400	2230	27	23...	1600	5030	39
15...	1600	2230	30	24...	0400	4990	36
16...	0400	2230	27	24...	1600	4990	36
16...	1600	2230	23	25...	0400	4920	31
17...	1325	2250	12	25...	1600	4920	42
18...	0400	2330	34	26...	0400	4990	31
18...	1600	2330	55	26...	1600	4990	32
19...	0400	2360	34	27...	0400	4250	24
19...	1600	2360	36	27...	1050	4250	25
20...	0400	2250	28	27...	1135	4250	28
20...	1600	2250	27	27...	1215	4250	20
21...	0400	2290	28	27...	1600	4250	27
21...	1600	2290	28	28...	0400	3580	20
22...	0400	2290	32	28...	1600	3580	31
22...	1600	2290	26	29...	0400	3200	24
23...	0400	2300	25	29...	1600	3200	22
23...	1600	2300	29	30...	0400	3120	23
24...	0400	2330	26	30...	1600	3120	22
24...	1600	2330	39	JUL			
25...	0400	4340	53	01...	0400	2250	25
25...	1600	4340	37	01...	1600	2250	25
26...	0400	4870	31	02...	0400	1870	27
26...	1600	4870	32	02...	1600	1870	22
27...	0400	5210	22	03...	0400	1710	22
27...	1600	5210	31	03...	1600	1710	18
28...	0400	5380	17	04...	0400	1840	17
28...	1600	5380	30	04...	1600	1840	18
29...	0400	5140	19	05...	1600	1840	15
29...	1600	5140	30	06...	0400	1820	24
30...	0400	6870	19	06...	1600	1820	16
30...	1600	6870	29	07...	0400	1760	25
31...	0400	13900	36	07...	1600	1760	16
31...	1110	13900	31	08...	1600	1700	21
31...	1210	13900	24	09...	0400	1880	28
31...	1440	13900	16	09...	1600	1880	25
31...	1600	13900	25	10...	0400	1980	38

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04084445 FOX RIVER AT APPLETON, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
JUL 1989				AUG 1989			
10...	1600	1980	23	18...	0400	1650	23
11...	1600	1790	24	18...	1600	1650	30
11...	2015	1790	19	19...	0400	1660	29
12...	0400	1570	26	19...	1600	1660	33
12...	0845	1570	19	20...	0400	1620	40
12...	1600	1570	30	20...	1600	1620	38
13...	1645	1690	23	21...	0400	1560	30
13...	2030	1690	23	21...	1600	1560	38
14...	0400	1790	29	22...	0400	1660	27
14...	1600	1790	26	22...	1320	1660	20
15...	0400	1830	27	22...	1600	1660	31
15...	1600	1830	24	23...	0400	1530	33
16...	0400	1810	27	23...	1600	1530	29
16...	1600	1810	30	24...	0400	1350	26
17...	0400	1770	28	24...	1600	1350	28
17...	1600	1770	27	25...	0400	1410	23
18...	0400	2060	30	25...	1115	1410	21
18...	1600	2060	28	25...	1600	1410	30
19...	1045	1870	34	26...	0400	1460	22
19...	1600	1870	26	26...	1600	1460	26
20...	1600	1660	27	27...	0400	1480	22
21...	0400	1730	36	27...	1600	1480	27
21...	1600	1730	31	28...	0400	1480	22
22...	0400	1820	29	28...	1600	1480	22
22...	1600	1820	31	29...	0400	1430	19
23...	0400	1890	28	29...	1600	1430	20
23...	1600	1890	27	30...	0400	1470	19
24...	1600	1880	29	30...	1600	1470	26
25...	0400	1840	38	31...	0400	1400	18
25...	1200	1840	18	31...	1600	1400	24
25...	1600	1840	29	SEP			
26...	0400	1830	33	01...	0400	1420	25
26...	1600	1830	33	01...	1600	1420	23
27...	1600	1830	30	02...	0400	1410	19
28...	1600	1580	32	02...	1600	1410	25
29...	0400	1670	32	03...	0400	1440	20
29...	1600	1670	34	03...	1600	1440	23
30...	0400	1720	25	04...	0400	1470	27
30...	1600	1720	29	04...	1600	1470	26
31...	0400	1710	27	05...	0400	1380	23
31...	1600	1710	29	05...	1315	1380	16
AUG				05...	1600	1380	21
01...	0400	1730	23	06...	0400	1340	19
01...	1600	1730	25	06...	1600	1340	22
02...	1110	1890	22	07...	0400	1350	18
02...	1120	1890	18	07...	1600	1350	12
02...	1210	1890	19	08...	0400	1350	20
02...	1600	1890	24	08...	1600	1350	22
03...	0400	1930	28	09...	0400	1290	18
03...	1600	1930	31	09...	1600	1290	21
04...	0400	1910	34	10...	0400	1310	15
04...	1600	1910	35	10...	1600	1310	17
05...	0400	2140	35	11...	0400	1350	13
05...	1600	2140	37	11...	1600	1350	15
06...	0400	1760	35	12...	1050	1290	17
06...	1600	1760	37	12...	1140	1290	14
07...	0400	1640	33	12...	1600	1290	16
07...	1600	1640	37	13...	0400	1280	12
08...	0400	1690	31	13...	1600	1280	10
08...	1415	1690	34	14...	0400	1290	2
08...	1600	1690	33	14...	1600	1290	11
09...	0400	1740	32	15...	0400	1290	5
09...	1600	1740	32	15...	1600	1290	3
10...	0400	1750	37	16...	0400	1290	10
10...	1600	1750	35	16...	1600	1290	8
11...	0400	1760	38	17...	0400	1310	9
11...	1600	1760	33	17...	1600	1310	12
12...	0400	1710	32	18...	0400	1340	9
12...	1600	1710	34	18...	1600	1340	9
13...	0400	1780	35	19...	0400	1350	10
13...	1600	1780	31	19...	1600	1350	11
14...	0400	1730	34	20...	0400	1320	3
14...	1600	1730	32	20...	1145	1320	13
15...	0400	1620	29	20...	1600	1320	14
15...	1600	1620	30	21...	0400	1310	14
16...	0400	1610	27	21...	1600	1310	12
16...	1600	1610	32	22...	0400	1390	11
17...	0400	1720	27	22...	1600	1390	14
17...	1600	1720	31	23...	0400	1160	15

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04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
SEP 1989				SEP 1989			
23...	1600	1160	11	27...	1600	1110	2
24...	0400	1050	12	28...	0400	1200	11
24...	1600	1050	16	28...	1600	1200	14
25...	0400	1220	16	29...	0400	1140	17
25...	1600	1220	13	29...	1600	1140	13
26...	0400	1090	7	30...	0400	1120	12
26...	1600	1090	10	30...	1600	1120	15
27...	0400	1110	3				

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TRANS- PAR- ENCY (SECCHI DISK) (M) (00078)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT 1988									
03...	1345	85543	2570	349	8.90	16.0	0.60	10.9	--
03...	1346	85543	2570	--	--	--	--	--	--
APR 1989									
20...	0830	85543	1160	396	8.50	8.0	0.80	12.9	180
MAY									
02...	1525	85543	1670	397	9.00	10.0	0.80	12.4	190
17...	1325	85543	2250	374	8.80	18.0	0.60	11.8	180
17...	1600	85543	2250	374	8.80	18.0	0.50	12.3	180
31...	1440	85543	13900	348	8.40	17.0	--	8.6	170
JUN									
14...	1055	85543	7790	351	8.00	18.0	0.80	6.9	150
27...	1050	85543	4250	347	8.60	24.0	0.50	8.7	170
JUL									
12...	0845	85543	1570	362	8.60	25.0	0.40	7.6	160
25...	1200	85543	1840	343	8.90	27.0	0.40	11.1	160
AUG									
08...	1415	85543	1690	350	8.90	22.5	0.40	12.4	170
22...	1320	85543	1660	327	9.20	24.0	0.50	11.3	150
SEP									
05...	1315	85543	1380	356	9.00	21.0	0.60	10.6	180
20...	1145	85543	1320	385	8.80	20.0	0.50	10.9	190
20...	1410	85543	1320	387	8.80	20.5	0.60	11.4	190

DATE	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	ALKA- LINITY WAT WE TOT FET LAB (MG/L AS CACO3) (00417)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (MG/L) (00530)	RESIDUE VOLATILE, 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)
OCT 1988									
03...	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--
APR 1989									
20...	35	22	166	17	2.1	19	9	0.280	0.100
MAY									
02...	38	24	169	19	<0.20	18	9	0.220	0.040
17...	35	22	163	18	<0.20	26	15	0.120	0.020
17...	36	23	164	18	<0.20	27	14	0.110	<0.020
31...	32	22	150	14	0.40	27	15	0.180	0.080
JUN									
14...	32	18	150	13	3.3	20	10	0.220	0.150
27...	35	20	150	14	5.5	37	17	0.050	<0.020
JUL									
12...	34	19	151	16	9.0	36	19	0.060	<0.020
25...	33	20	144	17	13	37	21	<0.020	0.030
AUG									
08...	36	20	153	17	--	44	23	<0.020	<0.020
22...	29	18	139	17	16	33	19	<0.020	<0.020
SEP									
05...	38	21	160	18	22	23	13	<0.020	<0.020
20...	39	22	166	17	20	19	11	<0.020	<0.020
20...	39	22	166	17	19	20	12	0.020	<0.020

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CHLORO- PHYLL A TRICHR. UNCORR. WHOLE TOTAL (UG/L) (32210)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988								
03...	--	--	--	7.8	6.7	--	--	--
03...	--	--	--	7.3	6.4	--	--	--
APR 1989								
20...	1.1	0.080	0.002	6.7	6.0	32.0	8	95
MAY								
02...	1.1	0.070	0.002	7.1	6.3	34.0	10	98
17...	1.3	0.080	0.008	6.5	6.1	29.0	12	98
17...	1.2	0.090	0.005	7.0	6.9	31.0	--	--
31...	1.2	0.090	0.004	6.3	6.3	28.0	16	94
JUN								
14...	1.2	0.080	0.014	8.4	6.7	22.0	11	100
27...	1.2	0.090	0.004	6.7	6.0	42.0	25	63
JUL								
12...	1.6	0.110	0.004	11	7.3	72.0	19	94
25...	2.0	0.130	0.004	11	7.4	130	18	98
AUG								
08...	1.8	0.140	0.007	8.1	7.3	110	34	79
22...	1.5	0.110	0.004	7.9	7.3	77.0	20	97
SEP								
05...	1.6	0.130	0.009	8.6	8.4	64.0	16	94
20...	1.4	0.100	0.010	8.1	7.2	56.0	13	98
20...	1.4	0.100	0.012	9.8	7.2	61.0	--	--

SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	19	14	e19	24	e29	10	22	20	27	26	25
2	24	14	15	e20	e24	e26	11	21	20	26	25	24
3	29	14	20	e22	e24	e23	11	28	16	22	31	24
4	32	12	13	e23	e25	e21	13	31	18	20	35	27
5	20	13	22	e24	e25	e19	14	41	16	19	37	23
6	15	13	23	e25	e25	e20	11	25	17	22	36	22
7	15	18	22	e26	e26	e35	12	20	17	22	35	18
8	15	20	e17	e28	e26	e27	14	22	15	22	34	22
9	13	14	e17	e29	e27	e18	12	27	17	29	33	21
10	16	14	e17	e31	e27	e16	e21	29	21	30	37	18
11	16	16	e16	32	e28	e15	18	32	22	25	36	17
12	10	10	15	e31	28	e15	11	29	21	27	34	17
13	11	12	19	e31	29	e14	7	28	21	26	34	12
14	12	20	18	23	e28	e13	14	29	18	28	33	9
15	11	17	e16	9	e28	e12	18	30	15	27	30	8
16	14	76	e16	19	e27	e12	29	26	17	30	31	11
17	13	45	e16	36	e26	e11	62	e19	21	29	30	13
18	14	25	e16	15	e26	e11	60	43	21	31	29	12
19	14	18	12	21	e25	e10	30	35	20	31	33	12
20	16	18	10	11	e25	e10	26	29	22	29	39	12
21	20	15	19	19	e24	e9	26	30	26	34	35	15
22	15	16	10	25	e23	e9	28	29	33	31	29	15
23	17	14	23	13	e23	e9	32	28	37	29	31	15
24	19	16	e22	18	e22	8	32	36	36	31	28	16
25	13	15	e17	34	e23	18	34	43	37	34	26	16
26	9	17	15	10	e28	26	31	31	32	34	26	11
27	13	22	e15	8	e34	65	33	27	26	32	26	6
28	25	16	e16	7	e32	59	31	25	27	33	24	15
29	17	14	e17	10	---	28	29	26	25	33	21	17
30	18	14	e18	14	---	15	25	27	25	29	24	16
31	20	---	e18	32	---	13	---	29	---	29	23	---
TOTAL	518	567	524.0	665.0	732.0	616.0	705.0	897.0	679	871	951	489

WTR YR 1989 TOTAL 8214.0

e Estimated



## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04084445 FOX RIVER AT APPLETON, WI--CONTINUED

## SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	153	106	188	154	233	141	242	99	772	164	121	96
2	165	78	226	146	220	147	270	98	778	131	128	91
3	201	79	296	172	227	143	279	140	622	102	162	93
4	270	68	191	174	236	119	332	182	690	99	180	107
5	179	76	299	181	229	108	343	232	588	94	214	86
6	140	77	283	196	236	173	255	126	629	108	171	80
7	149	143	249	204	232	387	265	104	588	105	155	66
8	142	183	147	159	232	299	295	117	454	101	155	80
9	120	135	129	235	248	199	252	146	446	147	155	73
10	144	154	124	243	248	185	448	155	460	160	175	64
11	133	176	117	233	257	173	323	169	484	121	171	62
12	84	111	109	226	249	173	137	158	450	114	157	59
13	97	134	139	234	274	146	80	158	451	119	163	41
14	94	221	136	174	287	139	92	168	379	135	154	31
15	68	188	117	66	257	137	135	181	256	133	131	28
16	84	975	121	144	204	138	226	157	224	147	135	38
17	65	601	117	262	197	124	467	115	286	139	139	46
18	84	400	117	109	197	128	343	271	292	172	129	43
19	83	310	91	164	182	116	96	223	280	157	148	44
20	94	306	76	83	182	116	81	176	305	130	171	43
21	118	256	149	144	168	104	83	185	355	159	147	53
22	86	262	78	189	155	103	91	179	447	152	130	56
23	102	196	186	98	155	102	107	174	502	148	128	47
24	113	198	172	141	148	95	111	226	485	157	102	45
25	99	183	129	266	168	231	126	504	492	169	99	53
26	81	209	113	81	197	384	117	408	431	168	102	32
27	118	281	117	63	294	1072	125	380	298	158	104	18
28	178	198	121	55	225	1195	118	363	261	141	96	49
29	95	176	124	78	---	642	117	361	216	149	81	52
30	101	174	136	110	---	351	108	501	211	135	95	48
31	119	---	146	302	---	309	---	1088	---	134	87	---
TOTAL	3759	6654	4743	5086	6137	7879	6064	7544	13132	4248	4285	1724

WTR YR 1989 TOTAL 71255

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.5	5.6	2.6	1.8	3.3	2.0	3.9	11.1	19.2	23.4	24.2	23.0
2	18.1	5.7	1.9	2.1	1.8	1.4	4.8	11.4	19.5	23.8	25.9	22.3
3	17.2	6.3	2.1	1.6	1.5	1.3	5.6	11.9	19.6	25.2	25.8	22.2
4	15.4	7.1	2.0	1.6	1.4	1.3	5.4	12.7	19.4	26.2	26.8	21.3
5	14.2	7.1	2.0	1.6	1.6	1.4	5.6	12.0	19.7	26.7	27.1	21.0
6	13.9	5.8	2.3	1.8	1.6	1.4	5.6	10.2	20.4	27.4	25.5	21.8
7	14.1	5.7	2.4	2.0	1.7	1.5	6.3	9.8	21.4	27.7	23.5	22.1
8	14.0	5.7	2.1	1.6	1.7	1.7	5.8	10.3	21.6	27.0	22.7	22.4
9	14.6	6.0	2.3	1.8	1.2	1.9	4.3	11.8	20.6	27.3	23.2	21.9
10	14.5	6.4	1.6	1.5	1.3	2.3	2.9	12.9	20.4	27.5	24.4	21.0
11	13.3	6.2	1.5	1.4	1.9	3.1	3.1	13.4	21.3	26.7	24.6	20.8
12	12.1	5.5	1.4	1.6	2.3	3.0	3.9	14.3	20.7	25.8	24.5	19.6
13	12.0	5.4	1.5	1.8	2.0	3.1	4.4	14.8	20.0	25.3	24.4	18.9
14	11.8	5.5	1.6	1.6	2.6	3.2	6.1	15.6	19.1	24.9	23.7	18.4
15	12.8	5.6	1.6	2.0	3.2	2.8	7.4	16.5	17.9	25.0	23.3	18.8
16	13.6	7.2	1.5	2.2	3.1	2.6	8.9	17.6	17.8	25.3	22.7	19.3
17	13.0	5.0	1.5	2.3	2.6	1.6	9.5	18.8	18.9	25.5	23.2	19.5
18	12.7	4.2	1.5	2.4	2.4	1.4	8.8	19.2	20.7	25.1	23.7	20.0
19	12.0	4.7	1.6	2.8	2.8	2.3	9.3	18.9	22.0	23.3	24.3	20.1
20	11.3	4.7	1.7	2.6	3.1	2.7	9.9	19.1	23.6	22.6	24.0	20.2
21	10.8	4.1	1.9	1.9	3.5	2.9	10.8	19.4	24.7	22.3	23.7	20.4
22	10.6	3.7	1.9	2.1	3.3	3.0	11.6	19.8	24.7	23.2	24.4	20.0
23	10.0	3.7	2.0	2.8	2.7	3.6	11.8	20.3	25.0	24.2	23.8	17.3
24	9.1	4.0	2.2	2.3	2.2	4.2	12.5	21.0	25.5	25.6	22.8	15.8
25	8.2	4.5	1.9	2.1	2.2	4.1	13.6	21.6	25.1	26.7	22.1	15.1
26	7.6	4.7	1.5	2.7	3.1	4.2	13.9	20.7	25.0	27.4	22.7	14.8
27	7.5	5.1	1.6	3.0	3.2	4.7	14.6	19.7	25.2	27.4	23.5	14.6
28	7.0	4.3	1.6	3.2	2.3	5.4	13.1	20.1	24.6	26.2	23.8	14.7
29	6.0	3.2	1.6	3.6	---	4.7	12.0	19.6	23.6	24.4	24.2	15.1
30	5.6	3.0	1.6	4.2	---	4.3	11.4	18.9	23.3	23.5	23.2	15.5
31	5.0	---	1.7	4.3	---	4.2	---	18.2	---	23.4	23.3	---
MEAN	11.8	5.2	1.8	2.3	2.3	2.8	8.2	16.2	21.7	25.4	24.0	19.3
MAX	18.5	7.2	2.6	4.3	3.5	5.4	14.6	21.6	25.5	27.7	27.1	23.0
MIN	5.0	3.0	1.4	1.4	1.2	1.3	2.9	9.8	17.8	22.3	22.1	14.6

CAL YR 1988 MEAN 12.5 MAX 28.7 MIN 1.0  
WTR YR 1989 MEAN 11.8 MAX 27.7 MIN 1.2

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04084445 FOX RIVER AT APPLETON, WI--CONTINUED

POLYCHLORINATED BIPHENYLS AND ORGANIC CARBON, APRIL 1987 TO SEPTEMBER 1989

DATE	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	PCB, TOTAL (NG/L)	PCB, DIS- SOLVED (NG/L)	PCB, SUS- PENDE (NG/L)	CARBON, ORGANIC, TOTAL, (MG/L) (00680)	CARBON, ORGANIC, DISSOLVED, (MG/L) (00681)
APR 1987						
07...	85543	64	15	49	10	-
30...	85543	115	23	92	9.2	-
MAY						
26...	85543	66	16	50	9.0	7.6
JUN						
30...	85543	84	27	57	9.3	7.2
JUL						
14...	85543	80	30	50	11	7.4
28...	85543	99	30	66	12	8.1
AUG						
12...	85543	137	34	103	14	8.4
25...	85543	67	17	50	13	8.1
SEP						
08...	85543	77	22	55	14	9.3
22...	85543	84	25	59	11	7.5
OCT						
06...	85543	45	16	29	11	7.9
20...	85543	43	13	30	10	7.8
NOV						
03...	85543	45	8.9	36	11	8.1
17...	85543	57	11	46	8.7	7.0
DEC						
01...	85543	16	4.4	12	9.2	7.4
17...	85543	7.6	2.4	5.2	-	-
JAN 1988						
05...	85543	3.5	1.4	2.1	7.4	6.4
MAR						
15...	85543	21	9.2	12	8.3	6.8
22...	85543	13	5.1	8.0	7.9	6.4
29...	85543	36	8.6	27	7.5	6.4
APR						
05...	85543	35	11	24	7.6	5.9
12...	85543	45	12	33	10	8.7
19...	85543	58	13	45	12	9.7
MAY						
03...	85543	62	14	48	11	8.1
JUN						
01...	85543	70	21	49	8.2	6.3
21...	85543	55	21	34	11	7.4
JUL						
12...	85543	104	29	75	11	7.8
AUG						
01...	85543	98	28	70	13	7.7
24...	85543	90	23	67	12	-
SEP						
13...	85543	42	17	25	11	8.9

STREAMS TRIBUTARY TO LAKE MICHIGAN

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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 discharge 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 U.S. Army Corps of Engineers. Records reviewed by Geological Survey.

AVERAGE DISCHARGE.--93 years, 4,253 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 24,000 ft<sup>3</sup>/s, Apr. 18, 1952; minimum daily, 138 ft<sup>3</sup>/s, Aug. 2, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge during year, 15,800 ft<sup>3</sup>/s, June 2; minimum daily, 1,090 ft<sup>3</sup>/s, Sept. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2690	2040	5510	3230	3950	1770	9550	1780	15400	2320	1970	1570
2	2680	2110	5900	2770	3680	2110	9930	1830	15800	1590	2050	1530
3	2600	2230	6020	3000	3670	2400	10200	1960	15300	1890	2170	1590
4	3410	2220	5820	2890	3640	2200	9880	2630	15400	2130	2120	1630
5	3470	2260	5670	2940	3540	2200	9910	2110	15200	2020	2350	1490
6	3690	2340	5030	3040	3660	3470	9910	1990	15400	2240	1940	1380
7	3440	3520	4170	3090	3410	4750	9010	2100	13100	1960	1830	1520
8	3700	3500	3160	2160	3460	4730	8940	2070	11200	2110	1860	1440
9	3560	3720	2710	3150	3470	4460	8720	2120	9590	2030	1920	1420
10	3470	4210	2660	2990	3590	4680	8920	2150	8690	2220	1930	1390
11	3110	3470	2810	2950	3550	4590	7070	2130	8860	1990	1920	1490
12	3140	4250	2870	2710	3480	4410	5800	2190	7590	1640	1940	1390
13	3440	4170	2800	2960	3610	3430	5730	2290	8380	1820	1930	1330
14	2740	3680	2890	2890	3990	3460	2000	2430	8260	2050	1930	1350
15	2180	3760	2770	2810	3550	4340	3060	2400	5590	2020	1680	1360
16	2250	4680	2900	2890	2780	4280	3060	2610	5240	2010	1780	1410
17	1760	5220	2840	2820	2780	3970	2860	2540	5790	1900	1770	1330
18	2570	6760	2860	2790	2880	4370	1930	2560	5920	2410	1850	1420
19	2240	6750	2880	3070	2770	4270	1170	2750	6140	2070	1700	1450
20	2290	7180	2990	2910	2760	4400	1260	2380	6060	1760	1690	1400
21	2300	7350	3060	2910	2660	4340	1160	2450	6090	1910	1840	1460
22	2300	6300	3060	2940	2620	4340	1180	2550	5920	2120	1900	1410
23	2490	5160	3130	2970	2560	4100	1290	2610	5820	2060	1590	1100
24	2290	3900	3010	3000	2530	4990	1270	2530	6380	2080	1340	1260
25	2850	4480	2910	3050	2790	5700	1370	5020	5980	2130	1520	1230
26	3250	4510	2820	3160	2760	5820	1440	5800	5640	1980	1620	1090
27	4100	4900	3000	3030	3470	5930	1460	6430	4600	2180	1620	1190
28	2370	5070	2900	2970	2660	8260	1470	6510	3960	1640	1690	1280
29	2220	5010	2790	2990	---	8770	1720	6600	3570	1930	1590	1190
30	2140	4870	2950	3040	---	8590	1620	11900	3390	1870	1460	1170
31	2290	---	3210	3800	---	9820	---	13900	---	1980	1580	---
TOTAL	87030	129620	108100	91920	90270	144950	142890	111320	254260	62060	56080	41270
MEAN	2807	4321	3487	2965	3224	4676	4763	3591	8475	2002	1809	1376
MAX	4100	7350	6020	3800	3990	9820	10200	13900	15800	2410	2350	1630
MIN	1760	2040	2660	2160	2530	1770	1160	1780	3390	1590	1340	1090

CAL YR 1988 TOTAL 1124189 MEAN 3072 MAX 8310 MIN 871  
WTR YR 1989 TOTAL 1319770 MEAN 3616 MAX 15800 MIN 1090

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (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, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)
OCT 1988												
26...	0900	3250	380	8.40	6.5	2.2	10.6	746	88	970	180	180
MAR 1989												
29...	1300	9770	412	8.20	4.5	1.2	12.8	752	100	1900	420	210
JUN												
21...	0845	6090	370	8.40	22.0	12	7.7	757	89	83	26	170
AUG												
31...	1115	1580	415	8.70	23.5	8.7	10.1	743	122	K11	K5	180

DATE	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)	SODIUM AD-SORP-TION RATIO (00932)	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 1988											
26...	34	23	15	15	0.5	2.8	184	6	161	26	0 20
MAR 1989											
29...	41	25	11	10	0.3	2.8	203	--	166	24	0 40
JUN											
21...	36	20	11	12	0.4	3.2	177	10	161	23	0 20
AUG											
31...	37	20	19	19	0.6	3.5	151	16	150	30	0 20

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO. DIS-SOLVED (MG/L AS P) (00671)
OCT 1988												
26...	6.5	233	230	0.32	2040	0.200	0.120	0.140	1.0	0.060	0.020	<0.010
MAR 1989												
29...	4.5	238	228	0.32	6280	0.370	0.200	0.200	1.4	0.120	0.060	0.040
JUN												
21...	4.2	202	220	0.27	3320	0.240	0.050	0.050	0.70	0.050	<0.010	0.020
AUG												
31...	20	231	260	0.31	985	0.120	0.050	0.040	2.2	0.140	0.020	0.010

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

STREAMS TRIBUTARY TO LAKE MICHIGAN  
04085000 FOX RIVER AT WRIGHTSTOWN, WI--CONTINUED

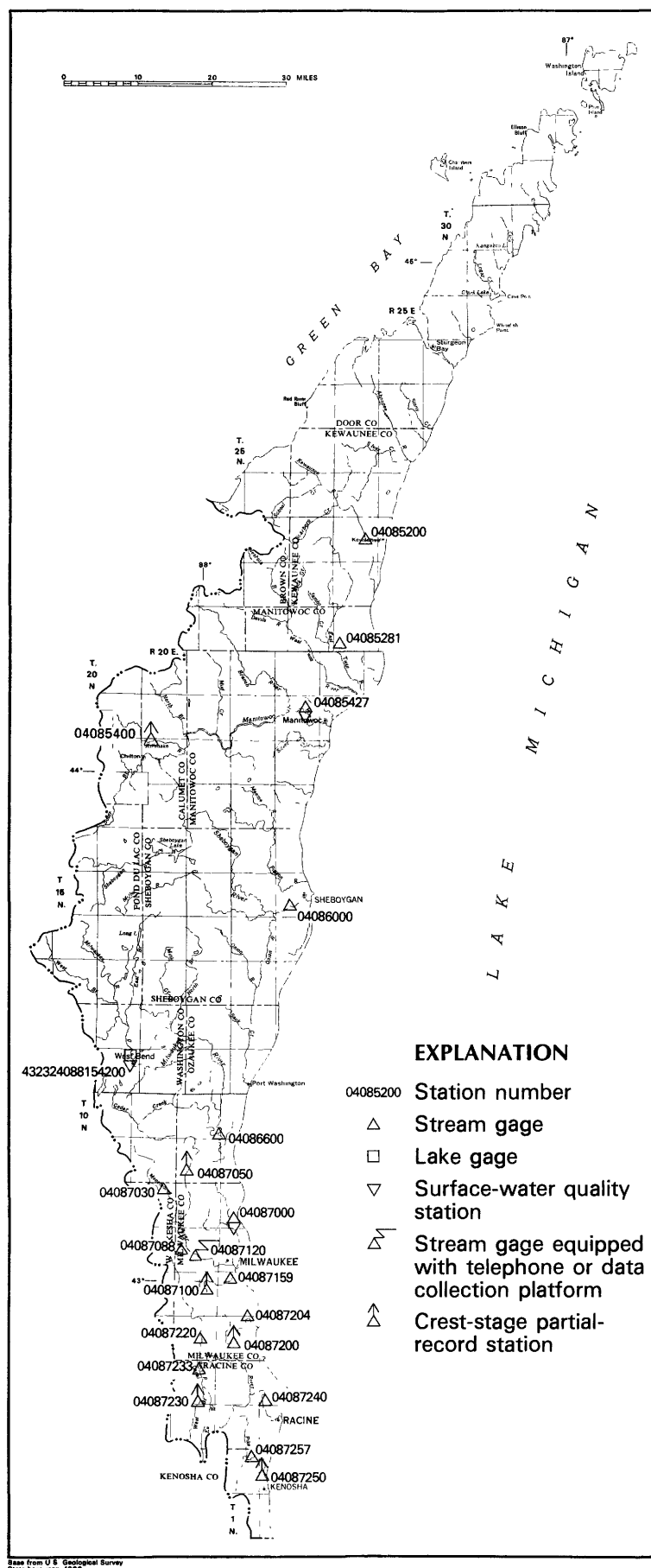
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WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 1988 26...	0900	3250	30	1	25	<0.5	<1	<1	<3	1	10
MAR 1989 29...	1300	9770	<10	<1	26	<0.5	<1	<1	<3	3	14
JUN 21...	0845	6090	10	<1	29	<0.5	<1	<1	<3	2	6
AUG 31...	1115	1580	10	1	26	<0.5	<1	<1	<3	2	6

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 1988 26...	<5	<4	5	<0.1	<10	<1	<1	230	<6	9
MAR 1989 29...	6	<4	13	<0.1	<10	<1	<1	130	<6	5
JUN 21...	<1	<4	4	<0.1	<10	2	<1	160	<6	21
AUG 31...	1	4	1	<0.1	<10	<1	<1	350	<6	6

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988 26...	0900	3250	380	6.5	10	88	93
MAR 1989 29...	1300	9770	412	4.5	29	765	94
JUN 21...	0845	6090	370	22.0	29	477	93
AUG 31...	1115	1580	415	23.5	30	128	90



## LAKE MICHIGAN BASIN

## STREAMS TRIBUTARY TO LAKE MICHIGAN

101

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 National Geodetic Vertical Datum of 1929 (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 period listed in rating table below. Records good except those for ice period, which is poor.

AVERAGE DISCHARGE.--23 years, 84.9 ft<sup>3</sup>/s, 9.08 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,500 ft<sup>3</sup>/s, Mar. 30, 1960, gage height, 16.03 ft (backwater from ice); minimum recorded, 4.0 ft<sup>3</sup>/s, Nov. 22, 1977, gage height, 8.06 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 25	1545	(a)	(a)*13.95	May 25	1630	940	11.37
Mar. 26	0215	*4,680	13.76				
(a) Ice jam.							

Minimum discharge, 5.8 ft<sup>3</sup>/s, Sept. 5, gage height, 8.25 ft, caused by regulation from dam construction upstream of gage.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 7 to Mar. 25.)

8.2	6.0	8.9	48	10.5	448
8.3	9.0	9.1	71	11.0	701
8.5	18	9.5	137	12.0	1,460
8.7	31	10.0	263	13.0	2,680
				14.0	5,390

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	18	49	13	24	14	103	34	469	16	11	10
2	14	17	44	12	17	14	89	32	246	15	11	10
3	13	17	39	12	15	13	86	31	150	17	10	9.6
4	11	19	37	12	14	13	95	29	99	30	16	9.5
5	11	25	37	12	13	12	110	30	70	22	50	8.1
6	11	46	34	12	13	12	109	30	54	17	28	9.0
7	11	60	28	14	12	12	99	29	44	15	18	9.4
8	11	57	23	15	12	12	87	27	42	14	16	9.4
9	11	59	20	14	12	12	74	26	40	14	14	12
10	12	68	17	13	14	20	61	24	37	13	13	14
11	11	74	15	13	15	50	54	23	33	14	13	13
12	11	61	14	13	16	100	52	23	32	16	12	12
13	11	65	14	13	17	200	49	22	37	15	12	10
14	12	66	14	13	17	300	47	22	39	14	12	11
15	12	57	15	13	18	700	47	21	41	13	12	11
16	14	78	14	12	18	820	47	21	39	13	12	11
17	14	99	14	12	18	350	48	20	36	13	12	11
18	16	74	13	12	17	250	47	20	33	13	11	9.2
19	16	59	13	12	17	200	44	20	29	15	11	10
20	15	51	15	12	17	180	42	20	26	17	11	10
21	16	45	16	11	17	170	40	20	24	15	10	10
22	16	41	30	11	17	160	38	19	22	13	13	10
23	21	38	35	11	17	180	36	18	21	13	13	9.9
24	33	35	20	11	16	300	34	19	20	12	12	9.8
25	32	34	17	11	20	1000	34	637	19	11	11	9.5
26	26	40	16	11	17	3350	34	392	19	11	11	10
27	23	53	15	11	15	2210	34	171	19	16	11	10
28	21	64	15	12	15	940	35	99	18	14	11	10
29	19	62	14	13	---	432	37	69	17	12	10	11
30	18	57	14	20	---	216	36	170	17	12	9.6	10
31	18	---	13	30	---	144	---	536	---	12	8.9	---
TOTAL	493	1539	674	406	450	12386	1748	2654	1792	457	425.5	309.4
MEAN	15.9	51.3	21.7	13.1	16.1	400	58.3	85.6	59.7	14.7	13.7	10.3
MAX	33	99	49	30	24	3350	110	637	469	30	50	14
MIN	11	17	13	11	12	12	34	18	17	11	8.9	8.1
CFSM	.13	.40	.17	.10	.13	3.15	.46	.67	.47	.12	.11	.08
IN.	.14	.45	.20	.12	.13	3.63	.51	.78	.52	.13	.12	.09

CAL YR 1988 TOTAL 20710.1 MEAN 56.6 MAX 2900 MIN 7.2 CFSM .45 IN. 6.07  
WTR YR 1989 TOTAL 23333.9 MEAN 63.9 MAX 3350 MIN 8.1 CFSM .50 IN. 6.83

## 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. Datum of gage is 584.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice periods listed in rating tables below. Records good except those for ice-affected periods, which are poor. Occasional regulation caused by recreation dam 0.3 mi upstream.

AVERAGE DISCHARGE.--17 years, 78.1 ft<sup>3</sup>/s, 9.64 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,210 ft<sup>3</sup>/s, Mar. 31, 1979, gage height, 13.75 ft; minimum, 1.7 ft<sup>3</sup>/s, July 20, 1979, gage height, 3.69 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 27	0615	(a)*1,400	(b)*11.23	No other peak greater than base discharge.			

(a) Estimated daily mean.

(b) Ice jam.

Minimum discharge, 6.0 ft<sup>3</sup>/s, Sept. 23, 24, 25, gage height, 3.97.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8-11, 16, Dec. 23 to Mar. 27.)

3.9	4.1	5.0	99
4.0	7.5	6.0	236
4.1	12	7.0	406
4.2	17	8.0	610
4.3	23	9.0	905
4.5	41	10.0	1,300

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	17	53	17	15	8.4	154	51	328	15	12	8.3
2	11	17	42	18	12	8.4	134	44	261	14	11	7.8
3	11	17	44	17	11	8.4	131	44	178	13	9.2	7.5
4	11	18	36	16	10	8.2	131	43	118	15	8.5	6.7
5	10	24	36	15	9.4	8.0	139	41	82	15	11	6.4
6	9.2	41	35	16	9.4	7.6	138	40	63	14	16	6.4
7	9.1	62	36	17	9.0	7.4	130	39	51	12	18	6.4
8	9.1	68	32	18	9.0	7.4	115	37	46	11	14	6.4
9	9.1	62	27	17	8.8	7.4	99	34	49	18	12	16
10	9.1	72	22	16	8.8	8.4	79	32	49	21	11	18
11	9.2	69	19	16	8.8	10	73	31	42	17	8.7	16
12	9.1	57	18	15	10	25	69	27	38	15	8.3	13
13	9.1	68	18	14	11	45	67	27	39	15	8.3	12
14	9.1	63	19	14	11	100	64	26	40	15	8.1	11
15	9.2	54	20	13	11	190	64	26	45	13	12	11
16	11	89	18	13	10	200	64	26	48	11	13	8.2
17	13	92	17	13	10	120	67	25	45	11	13	8.0
18	18	74	17	13	10	96	69	23	38	12	11	7.9
19	17	59	16	13	9.6	78	60	23	32	18	8.7	7.4
20	15	55	19	13	9.6	62	61	23	27	25	8.3	6.7
21	14	48	24	13	9.2	50	58	24	24	22	8.3	6.7
22	15	43	22	14	9.2	45	56	23	22	18	12	6.7
23	20	39	40	14	9.0	35	53	21	22	15	16	6.1
24	43	36	30	13	9.2	46	50	21	21	13	15	6.0
25	37	34	21	13	10	150	49	87	19	12	13	6.4
26	29	41	22	12	9.4	500	49	123	19	10	10	6.7
27	24	69	22	13	9.0	1400	50	146	19	16	9.1	6.7
28	21	69	21	13	8.6	1230	51	99	18	16	8.3	7.3
29	19	60	20	13	---	693	56	62	16	15	8.3	12
30	18	59	19	14	---	381	56	161	15	13	8.3	6.9
31	17	---	18	19	---	229	---	343	---	13	8.3	---
TOTAL	475.3	1576	803	455	277.0	5764.6	2436	1772	1814	463	338.7	262.6
MEAN	15.3	52.5	25.9	14.7	9.89	186	81.2	57.2	60.5	14.9	10.9	8.75
MAX	43	92	53	19	15	1400	154	343	328	25	18	18
MIN	9.1	17	16	12	8.6	7.4	49	21	15	10	8.1	6.0
CFSM	.14	.48	.24	.13	.09	1.69	.74	.52	.55	.14	.10	.08
IN.	.16	.53	.27	.15	.09	1.95	.82	.60	.61	.16	.11	.09

CAL YR 1988 TOTAL 15177.8 MEAN 41.5 MAX 528 MIN 4.5 CFSM .38 IN. 5.13  
WTR YR 1989 TOTAL 16437.2 MEAN 45.0 MAX 1400 MIN 6.0 CFSM .41 IN. 5.56



## STREAMS TRIBUTARY TO LAKE MICHIGAN

103

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 National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is poor.

AVERAGE DISCHARGE.--17 years, 341 ft<sup>3</sup>/s, 8.80 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,280 ft<sup>3</sup>/s, Mar. 31, 1979, gage height, 13.24 ft, from floodmarks; maximum gage height, 13.30 ft, Mar. 25, 1986, from floodmarks; minimum discharge, 6.8 ft<sup>3</sup>/s, July 8, 1988, gage height, 3.61 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 26	1930	ice jam	*11.85	No other peak greater than base discharge.			
Mar. 27	1830	*4,640	11.13				

Minimum discharge, 7.4 ft<sup>3</sup>/s, Sept. 30, gage height, 3.63 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Mar. 27.)

3.6	5.0	5.0	220
3.8	17	6.0	540
4.0	33	7.0	981
4.2	57	8.0	1,570
4.5	108	10.0	3,330

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	60	300	46	70	24	2080	209	728	86	29	20
2	42	59	296	43	66	24	1920	196	743	79	30	19
3	40	64	287	39	60	24	1800	193	727	76	30	16
4	41	68	273	37	50	24	1670	188	706	80	30	15
5	39	86	277	36	42	25	1610	171	696	76	30	15
6	40	140	256	37	38	26	1520	177	682	66	28	13
7	38	179	249	38	34	25	1420	173	659	54	27	13
8	35	205	205	41	30	26	1310	163	647	44	27	14
9	33	251	150	35	27	29	1230	151	620	41	27	24
10	32	297	100	36	25	32	1130	143	598	41	28	22
11	31	305	70	37	24	35	1030	133	569	45	26	20
12	31	299	60	37	24	50	947	128	537	44	26	22
13	33	299	54	32	25	70	865	122	511	42	25	23
14	32	295	62	33	26	90	782	114	487	41	25	22
15	30	294	70	35	26	150	715	109	464	40	25	22
16	32	383	60	35	25	130	638	105	444	37	25	20
17	35	400	50	34	25	120	565	100	417	35	25	19
18	42	386	46	34	25	110	505	93	383	33	25	18
19	41	363	54	35	25	100	449	89	345	51	25	17
20	44	353	70	38	26	90	392	86	308	51	23	17
21	48	355	64	39	26	80	345	93	266	54	20	16
22	45	343	86	39	26	78	306	95	225	58	22	15
23	61	327	78	39	24	76	271	86	200	57	25	14
24	72	313	66	41	26	80	253	85	177	54	21	9.9
25	90	303	62	42	29	200	240	266	151	50	20	11
26	94	320	62	45	30	600	221	273	134	45	19	12
27	90	332	62	46	28	2500	205	298	123	41	18	13
28	82	327	58	47	26	3270	192	302	114	36	18	11
29	84	326	52	48	---	2640	198	311	102	31	65	8.7
30	79	317	50	49	---	2390	205	542	88	31	26	7.6
31	66	---	46	60	---	2240	---	733	---	30	19	---
TOTAL	1543	8049	3675	1233	908	15358	25014	5927	12851	1549	809	489.2
MEAN	49.8	268	119	39.8	32.4	495	834	191	428	50.0	26.1	16.3
MAX	94	400	300	60	70	3270	2080	733	743	86	65	24
MIN	30	59	46	32	24	24	192	85	88	30	18	7.6
CFSM	.09	.51	.23	.08	.06	.94	1.59	.36	.81	.09	.05	.03
IN.	.11	.57	.26	.09	.06	1.09	1.77	.42	.91	.11	.06	.03

CAL YR 1988 TOTAL 62256.4 MEAN 170 MAX 1100 MIN 7.8 CFSM .32 IN. 4.40  
WTR YR 1989 TOTAL 77405.2 MEAN 212 MAX 3270 MIN 7.6 CFSM .40 IN. 5.47

## 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 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (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)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)
OCT 1988												
26...	1330	93	800	8.50	4.0	17	14.2	747	111	1700	>3300	390
MAR 1989												
28...	1800	3110	215	7.70	2.5	14	11.1	740	84	250	2800	87
JUN												
21...	1225	263	690	8.40	23.0	17	9.4	755	111	K51	78	350
AUG												
30...	1500	23	747	8.40	24.0	2.0	12.6	745	154	390	40	360

DATE	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	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 1988 26...	77	48	30	14	0.7	7.4	276	14	250	120	53	0.20
MAR 1989 28...	20	8.9	5.0	10	0.2	6.0	81	--	66	21	11	0.10
JUN 21...	79	38	19	10	0.4	5.9	327	14	292	47	32	0.20
AUG 30...	68	45	33	17	0.8	5.0	376	15	338	41	57	0.20

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1988												
26...	3.7	523	507	0.71	131	0.640	<0.010	0.050	1.1	0.170	0.140	0.100
MAR 1989												
28...	3.7	145	122	0.20	1220	0.860	1.60	1.40	3.6	0.530	0.230	0.160
JUN												
21...	13	467	427	0.64	332	0.410	0.070	0.050	2.0	0.380	0.290	0.310
AUG												
30...	6.2	449	472	0.61	28	<0.100	0.030	0.060	0.80	0.170	0.110	0.090

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

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04085427 MANITOWOC RIVER AT MANITOWOC, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 1988 26...	1330	93	<10	1	41	<0.5	<1	<1	<3	2	26
MAR 1989 28...	1800	3110	70	1	17	<0.5	<1	<1	<3	6	160
JUN 21...	1225	263	20	1	34	<0.5	3	<1	<3	3	130
AUG 30...	1500	23	<10	1	44	<0.5	<1	<1	<3	2	9

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANADIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 1988 26...	<5	7	7	<0.1	<10	3	<1	290	<6	10
MAR 1989 28...	<5	<4	93	<0.1	<10	3	<1	42	<6	7
JUN 21...	1	<4	15	<0.1	<10	4	<1	180	<6	14
AUG 30...	<1	5	5	<0.1	<10	<1	<1	430	<6	17

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988 26...	1330	93	800	4.0	26	6.5	98
MAR 1989 28...	1800	3110	215	2.5	149	1250	90
JUN 21...	1225	263	690	23.0	48	34	97
AUG 30...	1500	23	747	24.0	39	2.4	64

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04086000 SHEBOYGAN RIVER AT SHEBOYGAN, WI

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.

DRAINAGE AREA.--418 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1916 to September 1924 (published as "near Sheboygan"), October 1950 to current year. Monthly discharge only for some periods, published in WSP 1307, 1727.

REVISED RECORDS.--WSP 1307: 1917(M), 1919(M), 1921(M), 1923(M). WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 584.00 ft above National Geodetic Vertical Datum of 1929. 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 period listed in rating table below. Records good except those for ice-affected period, which is poor. Diurnal fluctuation caused by numerous powerplants above station.

AVERAGE DISCHARGE.--47 years (water years 1917-24, 1951-89), 259 ft<sup>3</sup>/s, 8.41 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,680 ft<sup>3</sup>/s, Mar. 22, 1975, gage height, 11.64 ft; minimum observed, about 1 ft<sup>3</sup>/s, Aug. 27, 1922, gage height, 1.48 ft datum then in use, caused by shutdown of powerplants.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 27	2400	*5,610	*10.25	May 31	0315	4,990	9.69

Minimum discharge, 33 ft<sup>3</sup>/s, Sept. 23, gage height, 1.69 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 10 to Mar. 26.)

1.6	30	4.0	570
1.8	50	5.0	992
2.0	80	6.0	1,540
2.5	165	7.0	2,440
3.0	270	9.0	4,260

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	131	352	180	230	60	1540	228	2700	110	106	88
2	187	128	310	160	200	60	1420	223	2120	108	98	153
3	172	121	312	150	160	56	1320	219	1710	101	83	102
4	133	140	311	140	130	60	1180	213	1500	95	133	75
5	114	186	292	130	110	62	1030	208	1400	93	139	65
6	102	322	277	140	100	68	913	209	1280	84	121	60
7	94	427	259	140	96	64	821	194	1080	71	109	56
8	91	495	220	150	90	60	725	184	947	78	97	57
9	74	462	180	150	82	56	625	180	842	161	87	74
10	87	764	160	130	78	60	532	175	742	134	80	70
11	84	715	140	130	76	80	464	119	662	117	76	69
12	82	584	130	150	70	120	422	122	588	108	77	58
13	73	691	120	130	74	150	384	136	538	95	79	92
14	73	593	160	110	76	250	349	129	495	90	85	99
15	78	521	130	100	78	400	291	127	455	82	89	92
16	77	807	120	100	76	350	259	126	409	75	91	87
17	87	807	120	94	74	300	276	122	347	72	89	67
18	102	640	110	90	72	280	296	94	334	72	83	54
19	112	577	130	90	70	260	280	64	301	118	76	51
20	106	516	160	110	70	250	270	94	249	174	86	46
21	105	462	140	100	70	230	268	107	185	149	88	44
22	110	413	120	96	68	220	258	105	140	127	83	42
23	134	380	130	120	66	210	243	95	121	112	75	36
24	185	292	150	130	64	200	233	86	126	100	69	40
25	213	261	130	130	68	350	233	222	118	92	58	38
26	192	346	120	150	68	1000	234	469	133	136	55	38
27	170	621	150	180	66	4240	229	355	144	180	53	39
28	159	563	130	160	62	4230	220	282	146	171	52	39
29	158	432	120	140	---	2780	221	266	132	124	52	39
30	144	397	140	180	---	2000	226	2360	119	114	51	38
31	139	---	160	210	---	1700	---	3810	---	111	50	---
TOTAL	3753	13794	5483	4170	2544	20206	15762	11323	20063	3454	2570	1908
MEAN	121	460	177	135	90.9	652	525	365	669	111	82.9	63.6
MAX	213	807	352	210	230	4240	1540	3810	2700	180	139	153
MIN	73	121	110	90	62	56	220	64	118	71	50	36
CFSM	.29	1.10	.42	.32	.22	1.56	1.26	.87	1.60	.27	.20	.15
IN.	.33	1.23	.49	.37	.23	1.80	1.40	1.01	1.79	.31	.23	.17

CAL YR 1988 TOTAL 78427 MEAN 214 MAX 1340 MIN 31 CFSM .51 IN. 6.98  
WTR YR 1989 TOTAL 105030 MEAN 288 MAX 4240 MIN 36 CFSM .69 IN. 9.35

STREAMS TRIBUTARY TO LAKE MICHIGAN  
432324088154200 BIG CEDAR LAKE NEAR WEST BEND, WI

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LAKE-STAGE RECORDS

LOCATION.--Lat 43°23'24", long 88°15'42", in SE 1/4 sec. 30, T.11 N., R.19 E., Washington County, Hydrologic Unit 04040003, 4.6 mi southwest of West Bend.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Louis Ottmer, Jr. Elevation of gage is 1031 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 8.42 ft, Sept. 12, 1986; minimum observed, 7.32 ft, Aug. 29, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 8.16 ft, May 3; minimum observed, 7.31 ft, Oct. 29.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
OCT. 3	7.72	MAY 15	7.72	JULY 1	7.64	JULY 30	7.52	AUG. 19	7.74
29	7.31	25	7.76	10	7.72	AUG. 5	8.00	25	7.78
APR. 28	7.75	JUNE 17	7.76	21	7.74	8	7.78	SEPT. 19	7.74
MAY 3	8.16	23	7.76	29	7.78				

WATER-QUALITY RECORDS

LOCATION.--Lat 43°24'01", long 88°15'22", in SW 1/4 sec. 20, T.11 N., R.19 E., Washington County, Hydrologic Unit 04040003, at north end of lake, and 4.1 mi southwest of West Bend.

PERIOD OF RECORD.--June 1985 to current year.

REMARKS.--Secchi disc readings made by Louis Ottmer, Jr.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUL 1989		
06...	1300	2.82	01...	1200	2.90
MAY 1989			08...	1200	2.70
15...	1500	1.80	21...	1200	3.80
20...	1400	2.00	29...	1200	4.40
25...	0930	2.10	AUG		
JUN			08...	1300	3.00
17...	1300	5.20	19...	1200	3.00
23...	1900	4.10	SEP		
			19...	1400	4.00

## 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 National Geodetic Vertical Datum of 1929 (South-eastern Wisconsin Regional Planning Commission bench mark).

REMARKS.--Estimated daily discharges: Ice period listed in rating tables below. Records good except those for ice-affected period, which is poor.

AVERAGE DISCHARGE.--7 years, 513 ft<sup>3</sup>/s, 11.48 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,860 ft<sup>3</sup>/s, Mar. 27, 1989, gage height, 12.21 ft; maximum gage height, 12.85 ft, Mar. 1, 1985, backwater from ice; minimum daily, 42 ft<sup>3</sup>/s, July 9, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 27	2345	*4,860	*12.21	No other peak greater than base discharge.			
Minimum daily, 88 ft <sup>3</sup> /s, Oct. 14, 15.							

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8 to Mar. 27.)

5.4	75	7.0	923
5.5	105	8.0	1,520
6.0	350	10.0	2,960
		12.0	4,670

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	369	183	564	230	340	110	1940	390	2120	174	256	451
2	438	176	505	230	310	100	1560	377	2140	161	221	781
3	357	172	507	220	280	100	1270	356	1960	148	187	745
4	296	201	463	210	250	100	1080	334	1780	135	346	589
5	257	232	429	210	230	120	966	324	1500	128	864	496
6	229	314	405	210	220	110	876	319	1220	133	708	458
7	206	333	383	220	200	110	808	300	963	127	392	427
8	185	369	310	200	190	100	750	288	793	111	327	380
9	174	425	250	250	180	100	697	283	630	138	305	449
10	155	554	220	240	160	100	626	274	527	134	255	480
11	141	618	200	240	160	180	568	259	454	146	241	425
12	132	614	190	250	170	300	521	242	410	129	249	354
13	124	642	190	250	160	350	487	221	386	118	187	334
14	88	656	200	200	150	450	458	207	380	114	245	349
15	88	635	220	180	140	800	435	190	372	107	273	355
16	109	724	200	170	140	900	408	188	368	102	272	321
17	117	796	170	160	130	840	405	192	349	93	226	288
18	133	732	160	160	130	700	417	195	325	99	174	258
19	154	671	170	150	120	500	409	199	292	241	149	238
20	161	640	180	160	120	420	397	247	266	284	204	216
21	164	599	200	150	110	360	386	274	257	261	263	194
22	165	556	210	160	110	350	377	215	236	198	365	179
23	196	514	220	170	110	350	378	201	228	177	392	161
24	237	470	230	180	110	600	353	163	202	157	360	151
25	272	435	240	190	120	1200	367	239	181	138	287	142
26	264	475	220	200	120	2100	410	242	276	137	251	135
27	255	598	200	240	120	3500	388	229	272	198	221	125
28	248	677	200	230	110	4430	383	229	234	269	209	124
29	232	640	190	260	---	3870	402	241	210	294	201	124
30	213	600	190	280	---	3170	408	590	187	281	202	121
31	196	---	200	310	---	2490	---	1560	---	287	186	---
TOTAL	6355	15251	8216	6510	4690	28910	18930	9568	19518	5219	9018	9850
MEAN	205	508	265	210	167	933	631	309	651	168	291	328
MAX	438	796	564	310	340	4430	1940	1560	2140	294	864	781
MIN	88	172	160	150	110	100	353	163	181	93	149	121
CFSM	.34	.84	.44	.35	.28	1.54	1.04	.51	1.07	.28	.48	.54
IN.	.39	.93	.50	.40	.29	1.77	1.16	.59	1.20	.32	.55	.60

CAL YR 1988 TOTAL 120887 MEAN 330 MAX 2600 MIN 42 CFSM .54 IN. 7.41  
WTR YR 1989 TOTAL 142035 MEAN 389 MAX 4430 MIN 88 CFSM .64 IN. 8.70

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087000 MILWAUKEE RIVER AT MILWAUKEE, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK 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 National Geodetic Vertical Datum of 1929 (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 discharge: Ice period listed in rating table below. Records good except those for ice-affected period, which is poor. Occasional regulation caused by recreation dam approximately 1,200 ft upstream.

AVERAGE DISCHARGE.--75 years, 426 ft<sup>3</sup>/s, 8.31 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,100 ft<sup>3</sup>/s, Mar. 20, 1918, Aug. 6, 1924, gage height, 9.00 ft datum then in use, from floodmark for 1918, from graph based on gage reading for 1924, no flow Sept. 8, 1943.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Nov. 1	0915	3,060	4.84	Mar. 28	0315	*4,980	*5.90

Minimum discharge, 2.5 ft<sup>3</sup>/s, May 23, gage height, 1.15 ft, result of regulation.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used May 10-29; stage-discharge relation affected by ice Dec. 11 to Mar. 12.)

1.4	7	1.8	81	4.0	1,830
1.5	19	2.0	156	5.0	3,320
1.6	35	2.5	412	6.0	5,180
1.7	54	3.0	756		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	428	485	637	300	520	150	2300	425	2440	193	306	514
2	348	221	542	280	440	150	1830	409	2360	182	258	702
3	360	212	565	250	360	140	1480	399	2110	167	225	783
4	310	394	540	240	320	140	1250	364	1880	154	513	623
5	276	328	508	240	290	160	1070	344	1550	142	1070	518
6	251	403	481	240	280	150	967	335	1350	137	840	539
7	234	411	464	260	260	140	875	319	1080	140	650	462
8	214	434	432	280	240	140	805	309	712	124	510	436
9	201	542	332	320	230	130	739	303	628	492	396	730
10	187	760	294	300	220	130	673	292	514	149	335	599
11	179	712	270	290	240	250	611	282	441	173	297	532
12	167	766	250	320	250	450	569	267	461	155	306	433
13	157	772	230	320	230	567	537	251	393	141	250	596
14	143	752	250	260	220	848	506	241	390	132	281	437
15	110	764	270	230	200	1050	480	238	379	127	317	420
16	140	1010	240	210	190	1080	449	234	366	119	328	376
17	206	926	210	190	180	1110	451	225	340	116	287	338
18	184	869	200	180	170	935	440	220	319	212	239	309
19	173	820	210	180	170	764	448	221	279	779	210	286
20	187	737	230	200	160	695	438	212	271	329	439	268
21	209	690	240	190	160	584	441	255	258	359	281	244
22	195	638	260	200	160	497	428	160	242	271	620	227
23	311	596	270	210	160	507	425	8.2	249	215	500	204
24	246	558	290	230	160	590	401	126	232	195	445	188
25	267	520	300	250	170	1180	634	334	229	176	371	179
26	285	720	270	300	190	2590	447	158	513	389	313	172
27	298	685	260	350	190	3550	445	158	386	211	279	164
28	285	772	250	310	170	4940	435	131	277	294	292	158
29	269	727	240	330	---	4590	423	174	237	360	260	158
30	256	674	230	380	---	3810	431	1140	213	449	252	152
31	244	---	250	440	---	2970	---	1560	---	334	241	---
TOTAL	7320	18898	10015	8280	6530	34987	21428	10094.2	21099	7416	11911	11747
MEAN	236	630	323	267	233	1129	714	326	703	239	384	392
MAX	428	1010	637	440	520	4940	2300	1560	2440	779	1070	783
MIN	110	212	200	180	160	130	401	8.2	213	116	210	152
CFSM	.34	.91	.46	.38	.34	1.62	1.03	.47	1.01	.34	.55	.56
IN.	.39	1.01	.54	.44	.35	1.87	1.15	.54	1.13	.40	.64	.63

CAL YR 1988 TOTAL 143991 MEAN 393 MAX 3130 MIN 45 CFSM .57 IN. 7.70  
WTR YR 1989 TOTAL 169725.2 MEAN 465 MAX 4940 MIN 8.2 CFSM .67 IN. 9.07

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087000 MILWAUKEE RIVER AT MILWAUKEE, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK 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 begin in January 1973.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH (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-TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD-NESS TOTAL (MG/L AS CaCO3) (00900)
OCT 1988												
25...	1030	268	700	8.60	6.0	5.1	11.7	748	96	680	440	350
MAR 1989												
22...	0900	537	568	8.00	1.0	6.3	13.4	758	95	81	60	240
APR												
20...	1130	436	680	8.40	12.5	2.4	12.0	744	116	31	K9	330
AUG												
30...	1030	253	672	8.50	23.0	9.0	12.1	750	144	800	K54	310

DATE	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)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	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 1988												
25...	72	42	33	17	0.8	2.9	285	10	250	70	54	0.10
MAR 1989												
22...	54	26	45	28	1	7.3	229	--	188	54	77	0.20
APR												
20...	71	37	22	13	0.5	2.8	284	8	247	54	40	0.10
AUG												
30...	67	35	30	17	0.7	3.2	276	13	248	41	50	0.20

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
OCT 1988												
25...	2.0	444	440	0.60	321	0.550	0.010	0.030	0.60	0.030	0.020	<0.010
MAR 1989												
22...	7.3	403	395	0.55	584	1.90	1.50	1.50	3.0	0.240	0.180	0.100
APR												
20...	0.84	393	386	0.53	463	0.460	0.020	0.030	0.80	0.050	0.010	<0.010
AUG												
30...	6.9	396	397	0.54	271	0.320	0.020	0.040	1.1	0.130	0.010	0.010

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 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 1988											
25...	1030	268	10	<1	38	<0.5	2	<1	<3	2	26
MAR 1989											
22...	0900	537	20	1	34	<0.5	<1	<1	<3	4	130
APR											
20...	1130	436	10	1	38	<0.5	<1	<1	<3	3	28
AUG											
30...	1030	253	10	1	44	<0.5	1	<1	<3	2	13

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 1988										
25...	<5	12	4	<0.1	<10	<1	2	440	<6	18
MAR 1989										
22...	<5	4	15	<0.1	<10	6	<1	310	<6	17
APR										
20...	<5	6	12	<0.1	<10	3	<1	360	<6	8
AUG										
30...	1	7	3	<0.1	<10	<1	<1	290	<6	6

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988							
25...	1030	268	700	6.0	20	14	84
MAR 1989							
22...	0900	537	568	1.0	15	22	85
APR							
20...	1130	436	680	12.5	39	46	93
AUG							
30...	1030	253	672	23.0	59	40	89

## STREAMS TRIBUTARY TO LAKE MICHIGAN

04087030 MENOMONEE RIVER AT MENOMONEE 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 National Geodetic Vertical Datum of 1929 (University of Wisconsin bench mark).

REMARKS.--Estimated discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is poor. Occasional regulation caused by dam in Menomonee Falls, about 1.0 mi upstream.

AVERAGE DISCHARGE.--12 years (1976-77, 1980-89) 30.0 ft<sup>3</sup>/s, 11.74 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,440 ft<sup>3</sup>/s, Sept. 11, 1986, gage height, 6.49 ft; maximum gage height, 6.57 ft, July 13, 1981; minimum discharge, 0.52 ft<sup>3</sup>/s, Aug. 18, 1988, gage height, 2.47 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 380 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
June 26	1420	*413	*4.90	No other peak greater than base discharge.			

Minimum, 2.7 ft<sup>3</sup>/s Oct. 10, 11, gage height, 2.69 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Mar. 22.)

2.6	2.0	3.4	45
2.8	6.4	3.7	81
2.9	9.6	4.0	131
3.0	14	4.5	264
3.2	28	5.0	456

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	4.5	21	4.5	13	4.5	50	18	112	7.7	20	49
2	4.8	4.4	21	4.5	10	4.5	44	15	111	7.2	14	42
3	3.9	4.4	17	4.5	8.2	4.5	42	14	91	6.7	10	29
4	3.7	11	16	4.6	7.0	5.0	39	13	68	5.8	34	23
5	3.5	10	15	4.7	6.2	4.8	36	13	42	4.9	66	18
6	4.1	12	15	5.0	5.8	4.9	36	12	28	4.5	49	37
7	3.6	12	15	5.6	5.4	5.0	34	11	21	4.7	33	36
8	3.4	13	14	6.2	5.2	5.2	31	11	15	4.2	30	27
9	3.1	21	12	5.6	5.0	7.0	28	11	12	20	20	60
10	2.9	36	11	5.2	4.9	13	25	9.7	10	9.7	14	78
11	3.0	24	10	5.6	5.0	30	24	9.0	8.9	8.1	11	55
12	2.9	23	9.0	5.6	5.2	27	21	9.5	13	7.1	17	39
13	3.0	24	9.0	5.6	5.8	40	20	9.0	12	6.9	41	43
14	3.2	18	11	5.4	5.2	80	20	8.7	16	5.2	34	40
15	3.3	19	10	5.0	5.2	110	18	8.5	14	4.3	31	32
16	3.8	47	9.0	5.0	5.0	54	18	8.7	13	3.6	24	26
17	5.2	35	8.0	5.0	5.0	42	21	8.1	10	3.4	17	23
18	4.6	24	7.0	5.2	5.0	40	19	8.0	8.7	5.9	13	20
19	4.9	22	8.0	5.2	5.2	20	18	8.5	8.1	33	11	16
20	4.4	20	10	5.4	5.2	18	18	8.8	7.5	45	30	15
21	5.1	16	9.0	5.2	5.2	16	20	9.1	6.8	31	23	14
22	3.8	15	8.0	5.2	5.0	17	20	6.9	6.5	21	66	12
23	10	14	6.4	5.4	4.9	38	17	6.3	6.1	14	74	11
24	7.3	13	5.6	5.8	4.8	84	13	6.0	5.6	10	50	10
25	5.8	13	5.0	6.4	4.8	140	31	19	7.5	8.7	35	10
26	5.0	35	4.7	7.0	5.2	127	26	11	21	7.5	26	9.6
27	4.8	47	4.6	7.4	4.8	121	21	8.6	13	20	21	9.2
28	4.5	36	4.5	8.0	4.5	123	20	7.6	12	29	24	8.9
29	4.3	28	4.5	8.8	---	115	21	12	9.6	24	26	8.7
30	4.3	24	4.5	10	---	89	19	81	8.6	32	23	8.1
31	4.3	---	4.5	12	---	64	---	96	---	28	26	---
TOTAL	136.4	625.3	309.3	184.6	161.7	1453.4	770	478.0	717.9	423.1	913	809.5
MEAN	4.40	20.8	9.98	5.95	5.77	46.9	25.7	15.4	23.9	13.6	29.5	27.0
MAX	10	47	21	12	13	140	50	96	112	45	74	78
MIN	2.9	4.4	4.5	4.5	4.5	4.5	13	6.0	5.6	3.4	10	8.1
CFSM	.13	.60	.29	.17	.17	1.35	.74	.44	.69	.39	.85	.78
IN.	.15	.67	.33	.20	.17	1.56	.83	.51	.77	.45	.98	.87

CAL YR 1988 TOTAL 7576.03 MEAN 20.7 MAX 416 MIN .63 CFSM .60 IN. 8.12  
WTR YR 1989 TOTAL 6982.2 MEAN 19.1 MAX 140 MIN 2.9 CFSM .55 IN. 7.49

## 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, from topographic map.

REMARKS.--Estimated daily discharges: Oct. 30 to Nov. 9 and ice periods listed in rating table below. Records good, except those for discharges greater than 600 ft<sup>3</sup>/s and the periods of estimated record, which are poor.

AVERAGE DISCHARGE.--13 years (1976-79, 1981-89), 13.7 ft<sup>3</sup>/s, 10.22 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft<sup>3</sup>/s, July 13, 1981, gage height, 5.55 ft; maximum gage height, 6.58 ft, Feb. 29, 1984, backwater from ice; no flow on all or part of many days during 1977 winter period.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 725 ft<sup>3</sup>/s, July 27, gage height, 4.62 ft; minimum daily discharge, 3.0 ft<sup>3</sup>/s, Oct. 31 to Nov. 3.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8-19, Dec. 28 to Jan. 6, Jan. 9, 10, 16-18, Feb. 2 to Mar. 10, and Mar. 17-22.)

2.6	1.4	3.1	28
2.7	3.7	3.4	64
2.8	7.3	3.7	142
2.9	12	4.0	268

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	3.0	7.4	6.0	11	3.7	11	6.5	52	4.3	16	53
2	12	3.0	7.4	5.4	6.4	3.8	10	8.9	16	3.9	12	15
3	6.3	3.0	7.1	5.0	6.2	4.0	9.5	7.8	19	3.7	10	10
4	5.0	38	6.5	4.7	6.0	13	9.2	7.5	11	3.9	99	9.2
5	4.5	22	6.1	4.6	5.8	5.2	9.3	7.2	8.2	3.6	94	9.1
6	4.2	26	6.5	8.0	5.4	5.0	8.7	5.8	6.8	3.5	30	39
7	4.3	14	6.1	29	5.2	5.0	8.8	5.4	5.8	3.6	17	13
8	4.3	13	5.0	12	5.0	6.6	7.9	8.7	5.2	3.4	13	26
9	4.1	21	4.9	7.2	4.8	12	6.9	6.5	5.0	71	10	94
10	4.4	36	4.7	7.0	4.6	50	6.6	5.5	4.6	10	8.9	37
11	3.8	12	4.5	9.5	4.5	88	7.1	5.6	4.2	13	8.2	21
12	3.5	23	4.2	16	4.7	29	7.0	5.8	20	8.6	27	15
13	3.9	18	4.0	7.9	4.8	25	6.8	5.5	8.4	8.2	28	51
14	4.4	11	4.2	6.3	4.5	30	6.9	5.1	9.4	5.3	20	24
15	4.1	20	4.0	7.0	4.4	25	6.7	6.1	6.2	6.9	15	17
16	6.7	69	3.9	5.8	4.3	13	8.4	5.4	7.9	5.0	13	13
17	16	16	3.8	5.6	4.2	7.8	8.2	4.8	5.3	4.7	12	11
18	7.7	11	4.5	6.4	4.1	7.4	6.3	5.4	4.8	31	9.9	10
19	7.2	19	7.4	10	4.0	7.4	6.0	6.4	4.7	159	9.0	10
20	4.0	11	20	6.3	3.9	7.8	6.2	5.3	4.6	48	47	9.4
21	9.0	8.7	5.7	5.1	3.8	7.6	6.2	4.6	4.4	20	12	9.0
22	4.6	7.9	7.6	6.6	3.8	10	5.5	4.7	3.8	12	80	9.0
23	26	7.2	10	8.3	3.7	38	5.3	4.3	4.5	9.5	18	7.7
24	7.7	7.0	5.9	8.1	3.8	32	5.5	4.1	3.8	8.9	12	7.5
25	4.5	7.1	4.5	23	4.3	23	65	33	7.3	8.1	10	7.7
26	4.0	45	4.1	18	3.8	18	13	5.1	23	8.0	8.7	7.4
27	5.4	21	40	11	3.7	19	8.9	3.6	6.6	72	8.6	6.9
28	4.2	14	10	9.3	3.7	45	11	3.4	5.1	34	22	6.9
29	3.4	9.8	8.6	17	---	23	9.0	6.4	4.5	44	12	6.2
30	3.2	8.5	7.6	15	---	16	7.3	113	3.9	44	9.0	5.9
31	3.0	---	7.0	15	---	13	---	31	---	24	13	---
TOTAL	239.4	525.2	233.2	306.1	134.4	593.3	294.2	338.4	276.0	685.1	704.3	560.9
MEAN	7.72	17.5	7.52	9.87	4.80	19.1	9.81	10.9	9.20	22.1	22.7	18.7
MAX	54	69	40	29	11	88	65	113	52	159	99	94
MIN	3.0	3.0	3.8	4.6	3.7	3.7	5.3	3.4	3.8	3.4	8.2	5.9
CFSM	.42	.96	.41	.54	.26	1.05	.54	.60	.51	1.21	1.25	1.03
IN.	.49	1.07	.48	.63	.27	1.21	.60	.69	.56	1.40	1.44	1.15

CAL YR 1988 TOTAL 5063.0 MEAN 13.8 MAX 261 MIN 3.0 CFSM .76 IN. 10.35  
WTR YR 1989 TOTAL 4890.5 MEAN 13.4 MAX 159 MIN 3.0 CFSM .74 IN. 10.00

## 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>.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 630.86 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1974, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are poor. Low flow affected by three sewage treatment plants upstream. CR-21X with telephone connection at station.

AVERAGE DISCHARGE.--28 years, 97.9 ft<sup>3</sup>/s, 10.81 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,500 ft<sup>3</sup>/s, Apr. 21, 1973, gage height, 13.92 ft from rating curve extended above 6,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum daily, 2.8 ft<sup>3</sup>/s, Jan. 18, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
July 9	0235	2,270	5.76	Aug 4	0915	2,190	5.65
July 27	1650	*2,670	*6.33				

Minimum daily discharge, 16 ft<sup>3</sup>/s, Oct. 11-15 and July 8.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 10-18, Dec. 30 to Jan. 6, Feb 3 to Mar. 10, and Mar. 19-22.)

0.3	15	2.0	260
0.5	24	2.5	402
0.7	38	3.0	630
1.0	80	4.0	1,140
1.5	166		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	17	68	32	104	25	144	49	477	26	113	309
2	61	17	53	29	59	25	123	71	271	22	79	126
3	27	17	51	28	44	27	113	59	263	21	58	87
4	22	195	45	27	38	120	106	49	197	19	478	65
5	20	120	42	26	36	110	97	46	144	18	592	57
6	20	132	41	30	34	90	87	36	102	18	229	186
7	19	80	38	135	33	70	80	32	72	17	153	102
8	18	71	34	101	32	68	72	47	56	16	150	114
9	17	153	31	54	31	86	63	39	43	513	131	460
10	17	272	29	46	30	180	55	31	35	79	76	247
11	16	124	27	51	29	378	52	31	30	83	57	176
12	16	156	25	95	28	333	50	28	116	47	177	130
13	16	155	23	60	29	226	48	26	64	34	170	289
14	16	94	24	72	30	273	46	25	60	24	139	167
15	16	120	23	53	28	268	43	29	74	23	105	125
16	26	374	21	28	27	176	48	28	54	21	79	98
17	72	154	20	26	26	111	62	25	37	18	60	78
18	52	106	21	28	26	88	48	25	30	138	46	67
19	30	131	24	52	26	82	44	29	28	737	38	61
20	20	81	65	47	26	70	41	26	25	359	264	54
21	41	64	26	37	26	62	46	24	23	172	93	49
22	22	54	31	35	25	68	37	25	22	109	357	48
23	137	47	61	41	25	191	35	23	31	74	201	37
24	57	42	31	50	25	298	33	29	23	53	148	33
25	29	38	25	91	30	344	346	211	50	42	109	32
26	23	248	25	119	34	289	104	43	225	183	83	32
27	28	178	214	59	28	270	76	28	162	386	67	30
28	25	134	96	54	25	394	89	23	72	200	123	29
29	18	102	60	87	---	290	70	61	44	196	91	27
30	17	84	50	107	---	227	58	604	32	284	70	26
31	17	---	37	103	---	182	---	325	---	160	62	---
TOTAL	1095	3560	1361	1803	934	5421	2316	2127	2862	4092	4598	3341
MEAN	35.3	119	43.9	58.2	33.4	175	77.2	68.6	95.4	132	148	111
MAX	180	374	214	135	104	394	346	604	477	737	592	460
MIN	16	17	20	26	25	25	33	23	22	16	38	26
CFSM	.29	.96	.36	.47	.27	1.42	.63	.56	.78	1.07	1.21	.91
IN.	.33	1.08	.41	.55	.28	1.64	.70	.64	.87	1.24	1.39	1.01

CAL YR 1988	TOTAL 27473.4	MEAN 75.1	MAX 1130	MIN 9.4	CFSM .61	IN. 8.31
WTR YR 1989	TOTAL 33510	MEAN 91.8	MAX 737	MIN 16	CFSM .75	IN. 10.13

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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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 from river-profile map.

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except those for ice-affected periods and those for discharges greater than 500 ft<sup>3</sup>/s, which are fair.

AVERAGE DISCHARGE.--7 years, 26.0 ft<sup>3</sup>/s, 17.48 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft<sup>3</sup>/s, Aug. 6, 1986, from rating curve extended above 600 ft<sup>3</sup>/s on basis of step-backwater analysis at peak gage height, gage height, 14.41 ft from inside gage, 16.01 ft, from floodmarks; minimum discharge, 1.3 ft<sup>3</sup>/s, Jan. 26 and 27, 1986, gage height, 5.80 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,350 ft<sup>3</sup>/s, Aug. 22, gage height, 11.85 ft; minimum discharge, 3.0 ft<sup>3</sup>/s, Feb. 23, gage height, 5.96 ft, result of freezeup.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 10-18, Dec. 28 to Jan. 4, Jan. 8-10, 13-16, Feb. 3 to Mar. 8, and Mar. 17-19.)

6.0	3.7	6.6	33
6.1	5.8	6.8	55
6.2	8.7	7.0	83
6.3	12	7.5	179
6.4	18	8.0	315
6.5	25	8.5	499

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247	7.3	13	6.2	10	5.8	12	7.8	52	5.4	11	136
2	29	7.3	11	5.6	8.3	7.0	11	15	9.9	5.5	10	15
3	12	7.7	11	6.0	6.8	11	11	9.2	40	6.7	11	9.1
4	11	141	9.9	6.6	6.2	50	14	11	9.2	6.1	356	8.7
5	10	27	10	7.6	6.0	10	15	9.4	8.0	6.3	198	10
6	9.8	47	11	13	5.8	9.0	12	8.1	7.7	7.0	22	39
7	9.3	22	10	61	5.8	8.6	11	7.1	7.2	7.8	14	14
8	8.2	17	9.6	12	5.8	9.4	9.8	13	7.3	6.7	45	35
9	7.9	95	8.7	7.4	5.6	34	8.1	8.8	7.1	214	18	273
10	8.2	90	6.6	10	5.6	96	8.0	7.8	6.1	11	12	23
11	8.5	16	6.4	15	5.6	73	8.9	7.0	5.5	54	11	14
12	8.2	55	6.6	29	5.8	16	11	7.1	56	19	96	12
13	8.3	25	7.0	9.0	6.2	17	7.5	6.5	9.2	12	31	154
14	8.2	14	8.0	7.4	6.0	32	7.4	6.0	8.0	7.9	15	25
15	7.6	60	6.6	8.0	5.8	27	6.7	8.4	7.0	7.0	11	15
16	12	210	6.0	7.0	5.4	10	8.6	8.0	8.1	7.1	9.1	12
17	26	21	6.4	8.0	5.2	9.0	9.9	7.3	6.1	7.6	8.4	10
18	15	15	7.2	9.3	5.2	8.6	7.7	6.9	6.2	92	8.2	10
19	16	50	8.0	18	5.0	9.6	7.4	8.6	6.5	456	7.2	10
20	8.8	15	31	10	5.0	14	7.7	6.4	7.1	84	85	9.6
21	20	12	8.2	6.8	4.9	12	8.7	7.0	6.8	18	10	9.2
22	8.7	12	13	8.1	4.8	17	9.6	8.4	7.0	12	281	8.4
23	72	11	12	10	4.9	42	6.4	9.2	9.5	9.7	16	7.1
24	13	10	7.4	11	5.0	24	6.8	8.1	6.9	10	11	7.0
25	10	9.5	7.1	40	5.4	18	143	82	12	10	10	7.8
26	9.9	121	17	24	6.0	14	10	7.6	75	14	8.9	8.0
27	14	31	89	10	5.8	16	8.7	5.8	10	173	8.5	7.4
28	9.8	19	8.4	9.3	5.6	151	17	5.4	7.2	17	35	8.3
29	7.7	18	8.0	17	---	29	9.5	7.4	6.6	45	11	8.1
30	6.6	17	7.6	13	---	17	7.8	217	6.1	50	10	7.5
31	7.0	---	6.8	12	---	14	---	30	---	12	15	---
TOTAL	649.7	1202.8	378.5	417.3	163.5	811.0	422.2	557.3	421.3	1393.8	1395.3	913.2
MEAN	21.0	40.1	12.2	13.5	5.84	26.2	14.1	18.0	14.0	45.0	45.0	30.4
MAX	247	210	89	61	10	151	143	217	75	456	356	273
MIN	6.6	7.3	6.0	5.6	4.8	5.8	6.4	5.4	5.5	5.4	7.2	7.0
CFSM	1.04	1.98	.60	.67	.29	1.30	.70	.89	.70	2.23	2.23	1.51
IN.	1.20	2.22	.70	.77	.30	1.49	.78	1.03	.78	2.57	2.57	1.68

CAL YR 1988 TOTAL 8138.1 MEAN 22.2 MAX 533 MIN 5.8 CFSM 1.10 IN. 14.99  
WTR YR 1989 TOTAL 8725.9 MEAN 23.9 MAX 456 MIN 4.8 CFSM 1.18 IN. 16.07

## 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair. Low flows may occasionally be affected by construction and activity at gravel pit upstream.

AVERAGE DISCHARGE.--26 years, 22.3 ft<sup>3</sup>/s, 12.11 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,140 ft<sup>3</sup>/s, Aug. 6, 1986, gage height, 9.88 ft; no flow Jan. 8-13, 15-18, 27-31, Feb. 6-8, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Sept. 9	1715	*422	*6.88	No other peak greater than base discharge.			
Minimum discharge, 1.1 ft <sup>3</sup> /s, July 7, gage height, 2.24 ft.							

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used June 1-20; stage-discharge relation affected by ice Dec. 15-18, Feb. 6 to Mar. 9, and Mar. 18-20.)

2.2	.99	3.0	37
2.3	2.3	4.0	101
2.4	4.9	5.0	181
2.5	8.7	6.0	290
2.6	14		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	2.5	16	5.1	19	2.4	23	7.8	25	2.0	12	93
2	50	2.6	13	4.6	11	2.3	21	8.4	14	1.8	8.2	26
3	15	2.4	13	4.3	9.6	2.3	21	9.6	17	1.7	6.3	12
4	7.2	46	11	3.8	7.2	17	21	8.5	21	1.6	119	7.9
5	4.8	42	11	3.7	6.2	23	23	8.7	9.8	1.3	127	6.8
6	3.8	31	10	5.6	5.4	21	19	7.9	6.7	1.3	40	104
7	3.2	25	9.5	23	5.0	11	18	6.7	5.3	1.1	19	155
8	2.8	19	7.9	24	4.7	10	17	7.0	3.9	1.4	18	42
9	2.4	29	7.0	14	4.4	23	16	8.3	3.6	75	34	262
10	2.1	107	6.1	8.7	4.1	96	15	7.2	3.2	20	17	178
11	1.9	36	5.1	8.3	4.0	131	14	6.0	3.2	15	11	54
12	1.8	32	4.5	20	4.0	74	13	5.5	14	16	11	35
13	1.8	40	5.2	13	4.1	31	12	5.2	16	7.9	14	120
14	1.8	21	5.9	7.4	3.9	29	12	4.8	7.2	4.7	8.4	84
15	1.8	28	4.3	5.9	3.7	42	12	4.8	4.8	3.2	6.6	41
16	2.6	184	3.5	5.3	3.4	21	12	4.8	4.0	2.6	5.6	29
17	3.9	58	3.0	5.0	3.2	15	15	4.6	3.7	2.2	4.8	21
18	6.5	27	2.9	6.2	3.1	14	13	4.5	2.7	8.4	3.9	17
19	4.2	32	3.4	11	3.0	12	12	4.8	2.3	131	3.5	14
20	3.3	26	8.8	14	2.9	15	11	4.8	2.2	188	17	13
21	4.8	19	7.9	8.8	2.8	16	11	4.2	2.0	41	8.8	13
22	4.9	17	6.8	6.3	2.7	20	11	3.7	1.9	19	35	11
23	20	15	10	8.0	2.7	35	10	3.3	1.8	13	19	8.2
24	18	13	8.1	12	2.6	37	9.1	3.0	1.5	9.4	7.9	7.4
25	7.7	12	5.1	22	2.6	34	39	15	1.6	7.7	4.8	6.9
26	4.8	53	4.4	48	2.7	27	18	9.6	18	6.5	3.6	6.1
27	3.9	51	25	18	2.6	33	11	4.6	20	18	3.1	5.4
28	3.4	29	21	14	2.5	169	13	3.1	6.2	38	9.8	5.2
29	3.4	22	13	17	---	129	13	2.8	3.2	19	8.0	4.9
30	2.8	18	7.5	24	---	50	9.4	37	2.5	45	4.2	4.5
31	2.6	---	5.7	19	---	32	---	43	---	20	4.2	---
TOTAL	236.2	1039.5	265.6	390.0	133.1	1174.0	464.5	259.2	228.3	722.8	594.7	1387.3
MEAN	7.62	34.6	8.57	12.6	4.75	37.9	15.5	8.36	7.61	23.3	19.2	46.2
MAX	50	184	25	48	19	169	39	43	25	188	127	262
MIN	1.8	2.4	2.9	3.7	2.5	2.3	9.1	2.8	1.5	1.1	3.1	4.5
CFSM	.30	1.39	.34	.50	.19	1.51	.62	.33	.30	.93	.77	1.85
IN.	.35	1.55	.40	.58	.20	1.75	.69	.39	.34	1.08	.88	2.06

CAL YR 1988 TOTAL 6833.55 MEAN 18.7 MAX 429 MIN .58 CFSM .75 IN. 10.17  
WTR YR 1989 TOTAL 6895.2 MEAN 18.9 MAX 262 MIN 1.1 CFSM .76 IN. 10.26

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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04087220 ROOT RIVER NEAR FRANKLIN, WI

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 National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharge: Ice period listed in rating table below. Records fair. Flow affected by urbanization in the drainage basin.

AVERAGE DISCHARGE.--26 years, 44.0 ft<sup>3</sup>/s, 12.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,700 ft<sup>3</sup>/s, Apr. 21, 1973, gage height, 9.31 ft; minimum, 0.38 ft<sup>3</sup>/s, Aug. 10, 1971, gage height, 1.45 ft.

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.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
July 20	1400	*442	*6.99				

Minimum daily discharge, 1.6 ft<sup>3</sup>/s, July 7.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Mar. 13-16, Mar. 23 to Apr. 1, Apr. 25, 26, May 31 to June 2, June 17-25, June 28 to July 9, July 11, 13-19, 21, 28-31, Aug. 4, 6, 7, 13, 20, 22, 23, Sept. 1, 2, 6, 7, and 11-15; stage-discharge relation affected by ice Dec. 9 to Mar. 26.)

1.4	1.2	1.9	8.5	4.0	112
1.5	1.8	2.0	12	5.0	169
1.6	2.5	2.5	47	6.0	270
1.7	3.5	3.0	69	7.0	444
1.8	5.5				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	7.8	26	14	30	5.4	52	16	68	2.1	44	114
2	105	6.2	22	12	22	5.4	45	15	46	1.9	24	80
3	32	6.3	22	10	18	6.0	41	19	23	1.8	17	27
4	17	32	19	9.4	14	12	38	16	36	1.7	99	16
5	13	78	17	8.0	12	40	39	15	15	2.1	212	13
6	11	59	17	10	11	30	30	16	11	1.9	124	89
7	7.5	53	16	13	10	28	25	13	7.0	1.6	50	107
8	7.8	43	15	45	9.4	25	21	12	5.3	2.0	29	44
9	6.4	34	12	34	9.0	28	19	16	4.5	51	31	258
10	6.4	130	10	21	8.6	110	17	15	4.5	30	19	272
11	6.1	84	8.6	20	8.4	200	16	14	3.4	4.1	15	92
12	5.9	54	7.8	40	8.8	180	17	11	6.1	40	26	50
13	6.4	71	8.2	32	9.0	80	17	11	28	6.6	79	85
14	6.7	51	8.2	20	9.4	70	13	10	7.3	3.1	23	122
15	7.7	45	7.8	17	8.6	82	13	10	5.1	2.7	15	62
16	8.9	233	7.0	13	8.0	43	11	10	5.3	2.0	12	39
17	13	117	6.6	14	7.6	32	14	10	4.8	1.9	10	27
18	18	57	6.4	15	7.2	25	15	9.9	3.5	5.5	7.5	22
19	14	57	7.6	20	6.8	21	11	7.9	3.1	128	6.8	19
20	11	55	14	27	6.6	19	10	8.8	2.9	393	38	16
21	12	43	16	20	6.4	21	11	8.3	2.9	121	20	15
22	16	34	11	15	6.2	24	11	6.7	3.0	43	73	12
23	29	29	12	22	6.0	50	9.9	6.6	2.4	23	95	11
24	58	25	12	35	5.8	60	9.8	5.9	2.5	16	25	9.1
25	24	23	11	39	5.8	58	61	29	2.4	14	18	8.9
26	12	64	9.0	74	6.0	56	46	17	11	12	13	9.0
27	10	84	17	45	5.8	63	21	6.1	32	23	9.6	6.6
28	12	55	44	30	5.6	167	21	4.3	4.0	171	15	6.0
29	11	41	30	37	---	184	24	3.9	2.7	76	26	5.4
30	11	34	20	50	---	96	19	27	2.6	118	9.9	5.1
31	10	---	16	38	---	69	---	95	---	86	7.5	---
TOTAL	565.8	1705.3	456.2	799.4	272.0	1889.8	697.7	465.4	355.3	1386.0	1193.3	1642.1
MEAN	18.3	56.8	14.7	25.8	9.71	61.0	23.3	15.0	11.8	44.7	38.5	54.7
MAX	105	233	44	74	30	200	61	95	68	393	212	272
MIN	5.9	6.2	6.4	8.0	5.6	5.4	9.8	3.9	2.4	1.6	6.8	5.1
CFSM	.37	1.16	.30	.52	.20	1.24	.47	.31	.24	.91	.78	1.11
IN.	.43	1.29	.34	.60	.21	1.43	.53	.35	.27	1.05	.90	1.24

CAL YR 1988 TOTAL 11974.5 MEAN 32.7 MAX 470 MIN 1.6 CFSM .66 IN. 9.05  
WTR YR 1989 TOTAL 11428.3 MEAN 31.3 MAX 393 MIN 1.6 CFSM .64 IN. 8.64

## 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, from topographic map.

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records fair.

AVERAGE DISCHARGE.--26 years, 47.6 ft<sup>3</sup>/s, 11.34 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,440 ft<sup>3</sup>/s Mar. 4, 1974, gage height, 9.88 ft; minimum daily, 0.40 ft<sup>3</sup>/s Dec. 19, 1963, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Sept. 2	1145	*760	*9.09	No other peak greater than base discharge.			
Minimum daily discharge, 1.9 ft <sup>3</sup> /s July 17, 18.							

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 17, 18, Jan. 7-9, 12, 13, 19, 20, Feb. 2 to Mar. 11, and Mar. 18-20.)

1.8	1.5	4.0	109
1.9	2.8	5.0	169
2.0	4.8	6.0	244
2.1	7.4	7.0	337
2.3	14	8.0	485
3.0	50	9.0	730
		10.0	1,140

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	9.5	50	15	48	5.6	101	10	6.2	2.5	56	458
2	23	8.9	42	13	27	5.6	87	10	5.7	2.4	30	742
3	19	8.4	39	12	20	5.6	74	11	5.1	2.5	18	608
4	12	20	33	11	15	20	64	9.8	6.8	2.6	172	295
5	8.5	69	32	11	14	40	55	10	4.9	2.4	389	153
6	6.8	54	30	12	13	40	48	9.0	4.1	2.4	278	206
7	5.7	55	27	21	12	24	42	8.3	4.0	2.4	148	244
8	5.3	54	23	60	11	24	38	8.1	3.9	2.5	87	160
9	4.8	52	21	30	10	40	32	9.0	3.6	3.4	55	231
10	5.1	207	19	26	9.8	180	26	7.7	3.6	4.5	39	292
11	6.6	175	17	18	9.4	250	25	7.1	3.5	2.7	29	179
12	7.0	119	15	50	9.2	199	23	7.1	3.9	4.0	23	119
13	7.6	143	17	28	9.8	107	20	6.8	5.8	3.7	39	120
14	8.1	104	18	21	9.4	91	20	6.7	4.5	2.4	30	146
15	8.6	82	13	17	8.8	105	18	6.8	4.2	2.2	20	107
16	10	378	12	13	8.0	64	17	6.9	4.5	2.0	15	78
17	12	344	10	13	7.6	46	18	6.5	4.6	1.9	12	60
18	13	178	11	13	7.4	37	17	6.3	4.5	1.9	9.6	48
19	13	132	12	25	7.2	33	16	6.4	4.1	6.5	8.3	39
20	12	120	16	35	7.0	42	15	7.0	3.8	24	7.8	33
21	13	90	13	21	6.8	44	14	6.0	3.7	15	6.8	29
22	14	71	11	16	6.6	55	14	5.3	3.2	13	5.9	26
23	18	60	15	19	6.4	77	13	5.0	3.1	6.8	5.5	22
24	25	52	13	24	6.2	82	12	4.8	2.9	4.0	5.2	19
25	16	45	11	29	6.2	90	15	5.4	2.8	3.1	4.7	18
26	12	80	9.5	83	6.2	83	15	5.4	2.9	2.7	4.3	16
27	11	138	22	39	6.0	95	13	3.8	3.2	5.7	4.1	14
28	10	104	38	26	5.8	238	13	3.4	3.1	50	4.5	14
29	9.6	76	24	31	---	335	14	3.4	2.9	34	6.2	13
30	8.6	62	21	51	---	183	12	4.6	2.6	107	4.8	12
31	8.5	---	18	47	---	132	---	5.3	---	113	4.3	---
TOTAL	340.1	3090.8	652.5	830	313.8	2772.8	891	212.9	121.7	433.2	1522.0	4501
MEAN	11.0	103	21.0	26.8	11.2	89.4	29.7	6.87	4.06	14.0	49.1	150
MAX	25	378	50	83	48	335	101	11	6.8	113	389	742
MIN	4.8	8.4	9.5	11	5.8	5.6	12	3.4	2.6	1.9	4.1	12
CFSM	.19	1.81	.37	.47	.20	1.57	.52	.12	.07	.25	.86	2.63
IN.	.22	2.02	.43	.54	.20	1.81	.58	.14	.08	.28	.99	2.94

CAL YR 1988 TOTAL 16039.5 MEAN 43.8 MAX 740 MIN 1.6 CFSM .77 IN. 10.47  
WTR YR 1989 TOTAL 15681.8 MEAN 43.0 MAX 742 MIN 1.9 CFSM .75 IN. 10.23



## 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 Borlick 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, from topographic map. Prior to Feb. 5, 1964, nonrecording gage on bridge 30 ft upstream.

REMARKS.--Estimated daily discharge: Ice-affected periods listed in rating table below. Records good except those for periods of ice affect and Oct. 26 to Dec. 8, which are fair.

AVERAGE DISCHARGE.--26 years, 153 ft<sup>3</sup>/s, 10.99 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,500 ft<sup>3</sup>/s, Mar. 5, 1974, gage height, 8.54 ft; minimum, 0.90 ft<sup>3</sup>/s Jan. 17, 1977; minimum daily, no flow, July 9-15, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s, and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 30	0415	*847	*4.41	Sept. 11	1430	840	*4.41

Minimum daily, 3.0 ft<sup>3</sup>/s, July 8.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 11-18, Feb. 3 to Mar. 2, and Mar. 18-20.)

2.1	2.5	2.8	65
2.2	6.0	3.0	116
2.3	11	3.5	290
2.4	18	4.0	560
2.5	26	5.0	1,310
2.6	37		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	17	164	45	160	16	346	52	100	12	226	250
2	59	15	134	40	126	16	266	48	72	9.4	125	496
3	136	14	119	35	64	16	227	48	58	7.7	75	605
4	62	29	107	31	52	18	198	54	37	7.3	349	633
5	37	77	96	30	43	20	177	57	42	6.9	575	484
6	28	161	89	30	37	31	160	54	31	4.8	574	425
7	23	138	81	42	33	60	140	53	24	3.7	569	494
8	20	129	73	82	30	49	126	49	21	3.0	327	534
9	17	125	59	106	28	44	110	49	18	6.6	186	438
10	16	294	51	89	26	138	95	51	16	14	135	644
11	13	366	43	52	24	430	85	50	13	43	97	764
12	11	364	40	61	24	622	82	49	14	31	72	582
13	10	305	36	84	25	693	75	47	14	31	81	340
14	9.5	285	35	73	25	488	70	49	21	29	133	432
15	8.6	223	34	46	25	333	61	53	24	22	77	403
16	9.0	577	33	38	23	294	56	53	22	18	53	263
17	9.1	597	32	34	22	190	53	53	19	14	43	190
18	9.1	630	30	34	21	100	53	54	18	10	35	152
19	8.9	472	31	38	20	94	54	59	16	40	29	124
20	11	320	36	53	19	100	50	56	14	253	28	104
21	13	255	40	67	19	112	46	47	11	285	38	89
22	14	196	47	49	19	121	44	41	10	221	41	76
23	15	159	44	41	18	167	43	36	9.6	88	79	61
24	25	141	43	47	17	259	41	32	9.4	49	94	55
25	58	128	40	67	16	284	46	31	8.0	34	39	49
26	42	163	36	134	16	259	97	32	13	29	29	45
27	30	329	42	204	16	254	85	39	21	28	25	41
28	22	350	52	130	16	449	61	27	27	64	22	36
29	18	257	86	99	---	736	56	23	24	213	22	33
30	17	199	69	121	---	813	60	20	19	260	32	30
31	17	---	50	167	---	572	---	27	---	300	25	---
TOTAL	786.2	7315	1872	2169	964	7778	3063	1393	746.0	2137.4	4235	8872
MEAN	25.4	244	60.4	70.0	34.4	251	102	44.9	24.9	68.9	137	296
MAX	136	630	164	204	160	813	346	59	100	300	575	764
MIN	8.6	14	30	30	16	16	41	20	8.0	3.0	22	30
CFSM	.13	1.29	.32	.37	.18	1.33	.54	.24	.13	.36	.72	1.56
IN.	.15	1.44	.37	.43	.19	1.53	.60	.27	.15	.42	.83	1.75

CAL YR 1988 TOTAL 47808.65 MEAN 131 MAX 1980 MIN .00 CFSM .69 IN. 9.41  
WTR YR 1989 TOTAL 41330.6 MEAN 113 MAX 813 MIN 3.0 CFSM .60 IN. 8.13

## STREAMS TRIBUTARY TO LAKE MICHIGAN

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 mean sea level (Southeastern Wisconsin Regional Planning Commission).

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except those for periods of ice effect, 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.

AVERAGE DISCHARGE.--18 years, 35.8 ft<sup>3</sup>/s, 12.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,480 ft<sup>3</sup>/s, Mar. 4, 1976, gage height, 8.15 ft; minimum daily, 0.35 ft<sup>3</sup>/s, Sept. 28, 1976.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Sept. 1	0700	*601	*5.67	No other peak greater than base discharge.			
Minimum daily, 4.5 ft <sup>3</sup> /s, Oct. 7 and July 5.							

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 10-19, Feb. 3 to Mar. 9, and Mar. 18-21.)

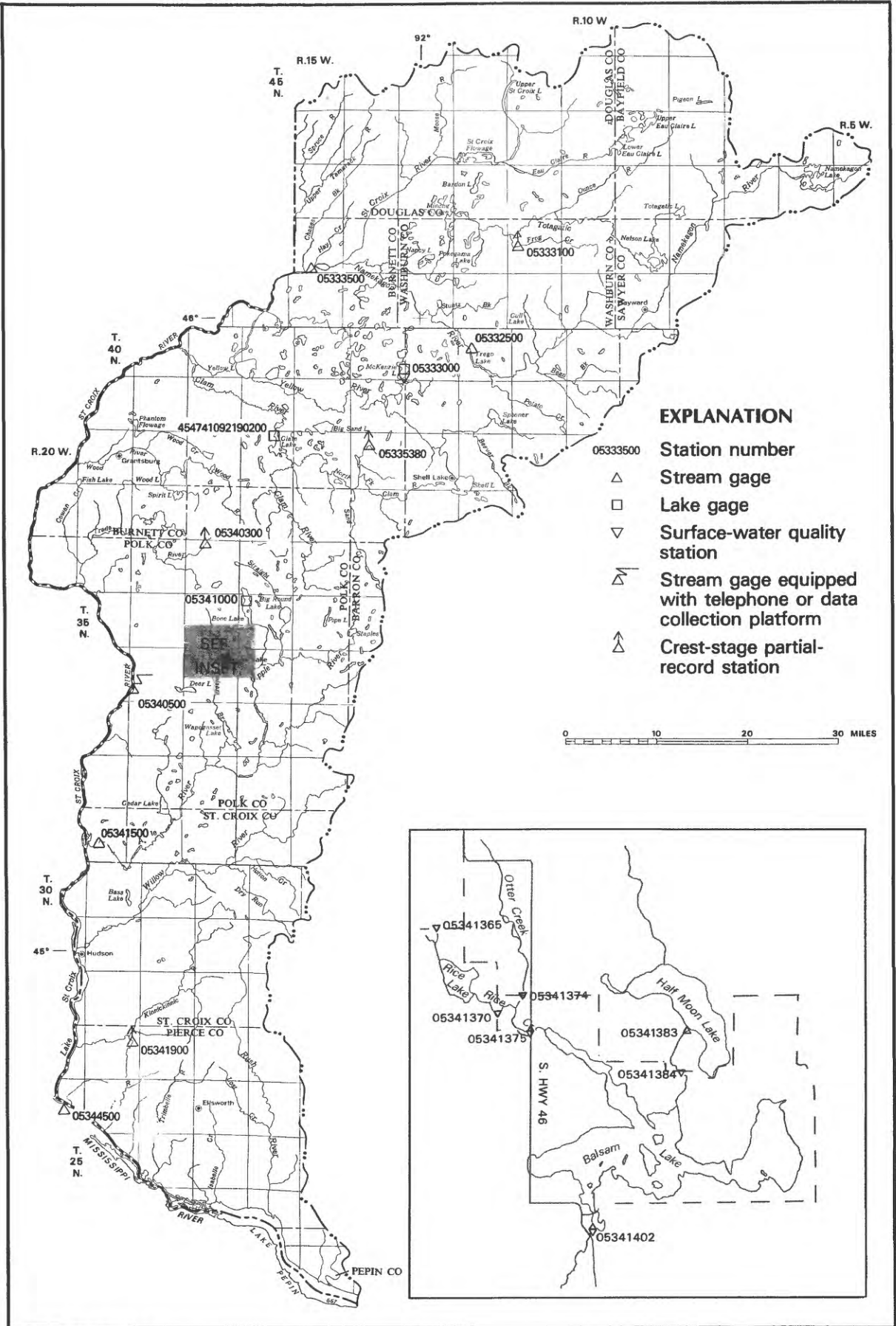
1.7	3.8	2.5	44
1.8	6.4	3.0	93
2.0	14	4.0	242
2.2	24	5.0	440

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	6.3	20	9.0	20	6.2	30	11	18	8.3	21	399
2	11	6.7	17	7.8	16	6.0	28	11	9.9	7.0	17	176
3	7.4	6.8	16	9.6	14	6.8	26	11	14	5.6	15	74
4	7.8	41	14	12	13	15	24	11	8.3	4.9	181	43
5	7.5	25	14	13	11	21	22	11	6.1	4.5	126	33
6	5.9	20	15	19	10	19	20	11	6.6	5.6	55	111
7	4.5	17	13	33	9.6	14	19	10	7.4	6.3	28	65
8	4.6	15	12	46	8.8	15	18	9.8	7.9	6.3	25	41
9	4.8	21	11	29	8.2	35	15	11	7.9	7.5	24	43
10	6.5	72	10	22	7.8	92	13	11	7.4	9.6	20	37
11	11	30	9.6	13	7.4	100	13	11	7.0	9.0	17	28
12	11	27	9.4	21	7.6	56	13	10	7.0	9.4	11	22
13	7.6	31	9.6	15	8.0	34	13	10	8.8	8.7	9.3	38
14	4.9	22	9.6	9.9	7.4	33	13	9.3	8.4	8.3	9.7	42
15	5.1	25	9.4	9.2	7.0	38	12	9.4	7.8	7.9	10	26
16	5.2	147	8.8	8.4	6.8	26	11	11	7.7	7.0	10	22
17	13	63	8.6	8.3	6.6	21	12	11	7.8	6.4	11	19
18	7.0	39	8.8	9.4	6.4	17	11	11	7.6	6.9	11	17
19	5.9	37	9.8	13	6.4	16	11	12	7.3	23	10	16
20	5.9	32	12	15	6.4	17	9.3	12	7.3	48	9.6	12
21	7.5	25	10	11	6.4	18	9.6	11	7.3	15	9.5	11
22	6.0	21	9.4	9.4	6.2	19	9.1	11	7.7	17	9.6	12
23	14	19	13	9.7	6.2	20	8.6	11	7.7	12	9.7	11
24	9.4	16	9.7	11	6.2	22	8.7	11	7.6	11	9.4	9.6
25	7.8	14	7.8	14	6.2	25	12	12	7.2	10	9.3	9.3
26	7.5	32	7.5	28	6.2	26	13	13	21	11	9.3	10
27	6.6	44	20	18	6.2	32	12	11	33	24	8.8	10
28	7.1	32	18	14	6.2	77	11	11	11	29	11	10
29	6.5	25	14	14	---	78	12	10	8.2	16	25	9.4
30	5.6	23	12	18	---	50	12	10	8.3	73	15	8.4
31	5.7	---	11	19	---	39	---	12	---	27	8.4	---
TOTAL	230.3	934.8	370.0	488.7	238.2	994.0	441.3	337.5	289.2	445.2	745.6	1364.7
MEAN	7.43	31.2	11.9	15.8	8.51	32.1	14.7	10.9	9.64	14.4	24.1	45.5
MAX	14	147	20	46	20	100	30	13	33	73	181	399
MIN	4.5	6.3	7.5	7.8	6.2	6.0	8.6	9.3	6.1	4.5	8.4	8.4
CFSM	.19	.81	.31	.41	.22	.83	.38	.28	.25	.37	.62	1.18
IN.	.22	.90	.36	.47	.23	.96	.43	.33	.28	.43	.72	1.32

CAL YR 1988	TOTAL 10138.1	MEAN 27.7	MAX 598	MIN 3.3	CFSM .72	IN. 9.80
WTR YR 1989	TOTAL 6879.5	MEAN 18.8	MAX 399	MIN 4.5	CFSM .49	IN. 6.65

## UPPER MISSISSIPPI RIVER BASIN RECORDS



Base from U.S. Geological Survey  
State base map, 1968

**ST CROIX RIVER BASIN**

## ST. CROIX RIVER BASIN

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05332500 NAMEKAGON RIVER NEAR TREGO, WI

LOCATION.--Lat 45°56'53", long 91°53'17", in SW 1/4 sec.17, T.40 N., R.12 W., Washburn County, Hydrologic Unit 07030002, at powerplant of Northern States Power Co., 4.0 mi downstream from Potato Creek, and 4.4 mi northwest of Trego.

DRAINAGE AREA.--488 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1927 to September 1970. October 1987 to current year.

REVISED RECORD.--WDR WI-88-1: Drainage area.

GAGE.--Headwater and tailwater read hourly. April 1914 to September 1927, nonrecording gage at railroad bridge in Trego, 5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Diurnal fluctuation caused by Trego powerplant.

COOPERATION.--Records of daily discharge furnished by Northern States Power Co.

AVERAGE DISCHARGE.--45 years (water years 1928-70, 1988-89), 467 ft<sup>3</sup>/s, 13.00 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 5,200 ft<sup>3</sup>/s, Sept. 2, 1941; minimum daily, 113 ft<sup>3</sup>/s, Aug. 17, Sept. 7, 1930.

EXTREMES FOR CURRENT YEAR. Maximum daily discharge, 1,130 ft<sup>3</sup>/s, Apr. 7; minimum daily, 194 ft<sup>3</sup>/s, Oct. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	487	320	392	285	314	277	517	586	556	556	266	512
2	487	320	320	285	314	300	512	586	512	472	266	512
3	383	320	378	285	307	285	451	556	512	431	266	396
4	278	329	378	285	307	285	561	556	512	396	266	512
5	278	285	320	314	273	285	617	477	477	396	251	556
6	328	285	337	307	270	277	627	477	437	382	251	689
7	378	378	378	277	256	249	1130	512	437	288	251	588
8	273	378	378	277	258	249	933	556	437	288	250	588
9	273	378	285	320	258	249	833	556	437	288	256	396
10	320	328	249	320	256	285	627	583	437	273	250	396
11	320	320	249	314	307	277	627	512	437	288	256	382
12	300	300	249	285	307	277	512	477	437	288	256	382
13	300	300	285	285	307	277	556	437	437	310	477	356
14	300	320	285	285	320	378	556	437	512	288	400	323
15	270	353	285	285	320	285	556	472	477	288	251	310
16	270	353	277	285	320	285	556	437	477	288	382	310
17	270	393	320	320	277	285	556	437	477	288	323	310
18	270	588	320	320	277	285	556	437	477	302	273	356
19	291	508	320	320	277	285	617	472	400	323	288	330
20	285	508	320	280	277	288	617	612	359	323	288	330
21	320	508	320	320	292	300	556	612	359	288	288	330
22	285	397	320	320	277	300	556	612	359	273	382	288
23	285	433	320	320	277	302	512	512	359	273	556	288
24	285	433	320	320	264	320	512	512	359	280	251	288
25	353	392	320	285	264	320	512	630	349	280	288	288
26	320	392	378	320	264	353	472	796	512	280	288	288
27	320	392	378	320	264	353	472	687	400	278	323	288
28	194	392	285	320	277	512	472	687	400	288	323	273
29	194	433	285	320	---	594	472	687	359	288	323	288
30	194	392	285	320	---	517	472	556	359	288	323	288
31	307	---	285	307	---	517	---	612	---	288	382	---
TOTAL	9418	11428	9821	9406	7981	10051	17525	17078	13059	9860	9494	11441
MEAN	304	381	317	303	285	324	584	551	435	318	306	381
MAX	487	588	392	320	320	594	1130	796	556	556	556	689
MIN	194	285	249	277	256	249	451	437	349	273	250	273

CAL YR 1988 TOTAL 127702 MEAN 349 MAX 1200 MIN 194  
WTR YR 1989 TOTAL 136562 MEAN 374 MAX 1130 MIN 194

## ST. CROIX RIVER BASIN

05333000 MCKENZIE LAKE NEAR SPOONER, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 45°55'58", long 92°02'17", in SE 1/4 sec.24, T.40 N., R.14 W., Burnett County, Hydrologic Unit 07030002, at outlet of McKenzie Lake, 10.2 mi northwest of Spooner.

DRAINAGE AREA.--32.3 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1936 to September 1976, April 1985 to current year. Data 1936 to 1976 unpublished in district files.

GAGE.--Staff gage read by Eugene Muellner. Elevation of gage is 990 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD (EXCLUDING 1985 WATER YEAR).--Maximum gage height observed, 1.36 ft May 30, 1937; minimum observed, -0.52 ft Sept. 16, 1950.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 0.44 ft, May 19; minimum observed, -0.18 ft, Oct. 14.

REVISED RECORDS.--The gage datum for water year 1985 is given incorrectly at 990 ft from topographic map; gage datum is unknown.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
OCT. 5	-0.07	MAY 19	0.44	JULY 19	0.20	AUG. 8	-0.08
14	- .18	JUNE 10	.41	22	.19	12	.06
						SEPT. 1	.35

## WATER-QUALITY RECORDS

LOCATION.--Lat 45°55'06", long 92°01'54", in SW 1/4 sec.30, T.40 N., R.13 W., Burnett County, Hydrologic Unit 07030002, near center of lake, and 9.8 mi northwest of Spooner.

PERIOD OF RECORD.--April 1985 to current year.

REMARKS.--Secchi disc readings made by Eugene Muellner.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUL 1989		
05...	1400	3.20	22...	1140	3.00
14...	1130	3.73	AUG		
JUN 1989			09...	1530	2.40
10...	1500	4.60	12...	1100	1.90
JUL			SEP		
19...	1400	4.30	01...	1500	1.80

## 05333500 ST. CROIX RIVER NEAR DANBURY, WI

LOCATION.--Lat 46°04'28", long 92°14'50", in SW 1/4 sec.33, T.42 N., R.15 W., Burnett County, Hydrologic Unit 07030001, St. Croix National Scenic Waterway, on left bank at downstream side of bridge on State Highway 35, 3.5 mi downstream from Namekagon River, 10 mi northeast of Danbury, and at mile 129.2.

DRAINAGE AREA.--1,580 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1914 to September 1981, October 1984 to current year. Prior to October 1933, published as "at Swiss".

REVISED RECORDS.--WSP 1438: 1915(M), 1919-20, 1923-24(M), 1927(M), 1931(M), 1934, 1935-37(M). WSP 1628: 1918. WDR WI-85-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.21 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 23, 1937, nonrecording gage 40 ft downstream at same datum. Apr. 23, 1937, to Jan. 5, 1939, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair.

AVERAGE DISCHARGE.--72 years (water years 1915-81, 1985-89), 1,307 ft<sup>3</sup>/s, 11.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft<sup>3</sup>/s, May 6, 1950, gage height, 8.22 ft; minimum observed, 393 ft<sup>3</sup>/s, Aug. 6, 13, 1934, gage height, -0.20 ft, site then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Apr. 8	0800	*3,450	*3.49	May 27	1900	3,130	3.22

Minimum discharge, 555 ft<sup>3</sup>/s, Aug. 9, gage height, 0.29 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Nov. 29 to Apr. 4.)

0.2	508	2.0	1,900
0.4	620	3.0	2,880
1.0	1,020	4.0	4,050

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	821	1100	840	860	780	1900	1690	2110	1060	676	2160
2	1080	780	1100	840	840	760	1900	1780	1950	1120	671	1980
3	1020	871	1100	820	820	760	2000	1800	1770	1130	655	1760
4	915	842	1000	820	820	740	2000	1780	1650	1020	696	1690
5	899	934	980	820	800	760	2290	1840	1450	982	696	2000
6	853	962	1000	820	800	760	2710	1680	1240	974	600	2040
7	891	945	960	840	800	780	2940	1580	1370	902	584	1870
8	779	901	880	840	780	800	3380	1630	1370	819	574	1670
9	779	898	740	840	780	820	3210	1770	1230	829	562	1560
10	752	861	820	860	800	840	3190	1760	1180	824	569	1330
11	793	911	880	860	820	880	2980	1790	1060	745	587	1050
12	814	922	900	860	820	900	2570	1590	981	734	576	1110
13	800	962	920	860	840	960	2390	1450	1190	734	712	1130
14	792	969	920	880	840	980	2260	1350	1250	734	1130	1020
15	762	1020	900	880	820	1000	2310	1320	1370	692	1010	953
16	765	1360	900	880	820	1000	2410	1260	1200	639	723	905
17	768	1490	880	860	820	1000	2520	1270	1160	636	768	885
18	782	1620	880	860	820	980	2470	1270	1010	651	729	868
19	812	1720	880	880	820	980	2290	1400	1020	679	677	885
20	797	1700	880	880	800	960	2170	1580	959	673	700	940
21	856	1570	860	880	800	940	2080	1640	918	660	667	936
22	818	1490	860	880	800	940	2010	1710	943	677	797	906
23	866	1400	860	900	800	980	1920	1740	997	607	918	831
24	850	1290	860	900	800	1100	1770	1700	981	597	789	821
25	829	1200	860	900	780	1200	1590	2580	971	600	692	806
26	812	1140	880	900	780	1300	1660	2860	1110	616	705	768
27	793	1450	920	900	780	1500	1700	3040	1070	590	843	765
28	889	1350	900	900	780	1800	1650	2740	920	583	803	711
29	841	1200	880	900	---	2000	1590	2230	921	641	759	683
30	885	1100	860	880	---	2000	1730	2250	987	803	701	684
31	881	---	860	880	---	2000	---	2230	---	770	1160	---
TOTAL	26273	34679	28220	26860	22640	33200	67590	56310	36338	23721	22729	35717
MEAN	848	1156	910	866	809	1071	2253	1816	1211	765	733	1191
MAX	1100	1720	1100	900	860	2000	3380	3040	2110	1130	1160	2160
MIN	752	780	740	820	780	740	1590	1260	918	583	562	683
CFSM	.54	.73	.58	.55	.51	.68	1.43	1.15	.77	.48	.46	.75
IN.	.62	.82	.66	.63	.53	.78	1.59	1.33	.86	.56	.54	.84

CAL YR 1988 TOTAL 351439 MEAN 960 MAX 2580 MIN 464 CFSM .61 IN. 8.27  
WTR YR 1989 TOTAL 414277 MEAN 1135 MAX 3380 MIN 562 CFSM .72 IN. 9.75

## ST. CROIX RIVER BASIN

454741092190200 CLAM LAKE NEAR SIREN, WI

LOCATION.--Lat 45°47'41", long 92°19'02", in NW 1/4 sec.11, T.38 N., R.16 W., Burnett County, Hydrologic Unit 07030001, 3.1 mi east of Siren.

PERIOD OF RECORD.--April 1985 to September 1986, May to September 1989.

REMARKS.--Records for 1986 water year were published as station 454711090203000. The published longitude for the 1986 water year (90°20'30") is incorrect. The correct longitude is 92°20'30". Staff read by John Mulroy.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 11.19 ft, May 12, 1986; minimum observed, 7.79 ft, Oct. 28, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observer, 9.17 ft, May 19; minimum gage height observed, 8.76 ft July 17-18, 28.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	9.08	---	---
2	---	---	---	---	---	---	---	---	---	9.06	---	---
3	---	---	---	---	---	---	---	---	---	9.06	---	---
4	---	---	---	---	---	---	---	---	---	9.06	---	---
5	---	---	---	---	---	---	---	---	---	9.02	---	---
6	---	---	---	---	---	---	---	---	---	9.00	---	---
7	---	---	---	---	---	---	---	---	---	8.98	---	---
8	---	---	---	---	---	---	---	---	---	8.92	---	---
9	---	---	---	---	---	---	---	---	---	8.90	---	---
10	---	---	---	---	---	---	---	---	---	8.86	---	---
11	---	---	---	---	---	---	---	---	---	8.86	---	---
12	---	---	---	---	---	---	---	---	---	8.84	---	---
13	---	---	---	---	---	---	---	---	---	8.82	---	---
14	---	---	---	---	---	---	---	---	---	8.82	---	---
15	---	---	---	---	---	---	---	---	9.10	8.80	---	---
16	---	---	---	---	---	---	---	---	9.10	8.78	---	---
17	---	---	---	---	---	---	---	---	9.12	8.76	---	---
18	---	---	---	---	---	---	---	---	9.14	8.76	---	---
19	---	---	---	---	---	---	---	9.17	9.12	8.84	---	---
20	---	---	---	---	---	---	---	---	9.06	8.84	---	---
21	---	---	---	---	---	---	---	---	9.06	8.84	---	---
22	---	---	---	---	---	---	---	---	9.10	8.84	---	---
23	---	---	---	---	---	---	---	---	9.08	8.82	---	---
24	---	---	---	---	---	---	---	---	9.08	8.80	---	---
25	---	---	---	---	---	---	---	---	9.08	8.80	---	---
26	---	---	---	---	---	---	---	---	9.10	8.78	---	---
27	---	---	---	---	---	---	---	---	9.08	8.78	---	---
28	---	---	---	---	---	---	---	---	9.08	8.76	---	---
29	---	---	---	---	---	---	---	---	9.02	8.82	---	---
30	---	---	---	---	---	---	---	---	9.06	8.80	---	---
31	---	---	---	---	---	---	---	---	---	8.82	---	---
MAX	---	---	---	---	---	---	---	9.17	9.14	9.08	---	---
MIN	---	---	---	---	---	---	---	9.17	9.02	8.76	---	---



## ST. CROIX RIVER BASIN

127

05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI

LOCATION.--Lat 45°24'25", long 92°38'49", in SW 1/4 NW 1/4 sec.30, T.34 N., R.18 W., Polk County, Hydrologic Unit 07030005, St. Croix National Scenic Riverway, on left bank, 1,500 ft downstream from powerplant of Northern States Power Co., in St. Croix Falls, and at mile 52.2.

DRAINAGE AREA.--6,240 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1902 to current year. Prior to January 1910, monthly discharge only, published in WSP 1308. Prior to October 1939, published as "near St. Croix Falls."

REVISED RECORDS.--WSP 1115: 1929. WDR WI-82-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 689.94 ft above National Geodetic Vertical Datum of 1929. Prior to July 1905, gage heights and discharge measurements were used by Loweth and Wolff, consulting engineers of St. Paul, Minn., to determine the flow. July 1905 to February 1940, records were computed from power generation at the St. Croix Falls Powerplant. February 1940 to Sept. 30, 1979, water-stage recorder at site 300 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by St. Croix Falls Powerplant 1,500 ft upstream. Data-collection platform at station.

AVERAGE DISCHARGE.--87 years, 4,309 ft<sup>3</sup>/s, 9.38 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 54,900 ft<sup>3</sup>/s, May 8, 1950, gage height, 25.19 ft; minimum daily, 75 ft<sup>3</sup>/s, July 17, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,100 ft<sup>3</sup>/s, Apr. 9, May 27, gage height, 8.97 ft; minimum daily, 1,200 ft<sup>3</sup>/s, Aug. 9-12.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).

2.3	1,100	4.0	4,950
2.5	1,400	6.0	10,700
3.0	2,350	8.0	15,700
		9.0	18,200

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3090	2250	2550	2260	2340	1810	7020	6490	10100	2420	1590	3100
2	2530	1880	2700	1990	1860	1770	7280	6580	9270	2690	1570	3500
3	2770	2150	2650	2080	2040	1950	8110	6940	8410	2390	1400	4110
4	2590	2550	3120	2010	2080	1760	9170	6730	7630	2460	1430	4290
5	2430	2660	2820	2000	1740	1870	11900	6760	6990	2430	1430	4020
6	2380	1990	3070	2120	2000	1890	14000	6560	6120	2360	1420	4090
7	2010	2690	2780	1900	1870	2070	15200	6350	5290	2000	1320	4120
8	1900	2300	2690	2020	2250	1780	16900	6300	4210	1680	1220	3820
9	1900	2460	2420	2090	1830	1740	17900	6510	4400	1680	1200	3590
10	2130	2600	1640	1970	1980	1930	17600	7150	3730	1850	1200	3090
11	1960	2440	1550	2050	1700	1650	16000	7700	3420	1690	1200	3160
12	1950	2440	1660	2030	1990	1860	14600	7430	3520	1680	1200	2800
13	1920	2400	1660	2210	1910	2180	12900	6960	3200	1670	1340	2300
14	2070	2910	2070	2080	2090	1950	11600	6200	3540	1530	1500	2340
15	1920	2680	2060	1900	1940	2120	11300	5800	3590	1580	1650	2430
16	1910	3380	2250	1920	1950	2220	11300	5380	3700	1580	2150	2180
17	2180	3300	1950	1910	1940	2130	11500	4670	3660	1520	1740	2000
18	1950	4200	2000	1820	1990	2110	11800	4260	3330	1580	1460	1940
19	1890	4120	2100	1780	1830	2200	11900	4790	3120	1700	1590	1950
20	2020	4370	2330	1990	1920	1980	11200	4770	2790	1600	1640	2100
21	2110	3790	2340	2370	1850	2010	10100	5500	2750	1540	1570	2030
22	2290	3200	2050	1950	1880	2080	9130	6660	2770	1530	1950	2230
23	2250	3330	2220	1980	2110	2200	8410	6600	2660	1410	1760	1980
24	2160	3740	2420	2100	2010	2260	7570	5600	2700	1430	2050	1930
25	2170	4120	2110	2100	1740	2580	7180	10200	2500	1350	1780	1950
26	2290	3720	2160	2010	1790	2970	6240	16400	2740	1340	1790	2130
27	2070	3430	1980	2280	1780	4800	5950	17900	2940	1320	2200	1760
28	2220	3270	1930	1900	1850	6000	5780	16100	2930	1320	2060	1820
29	2400	3110	2070	2140	---	6490	5760	13400	2710	1270	2070	1860
30	2460	3000	2180	1920	---	6400	6010	11700	2670	1350	1910	1670
31	2470	---	1790	2020	---	6680	---	10100	---	1560	1980	---
TOTAL	68390	90480	69320	62900	54260	83440	321310	244490	127390	53510	50370	80290
MEAN	2206	3016	2236	2029	1938	2692	10710	7887	4246	1726	1625	2676
MAX	3090	4370	3120	2370	2340	6680	17900	17900	10100	2690	2200	4290
MIN	1890	1880	1550	1780	1700	1650	5760	4260	2500	1270	1200	1670
CFSM	.35	.48	.36	.33	.31	.43	1.72	1.26	.68	.28	.26	.43
IN.	.41	.54	.41	.37	.32	.50	1.92	1.46	.76	.32	.30	.48

CAL YR 1988 TOTAL 1012540 MEAN 2767 MAX 10900 MIN 1100 CFSM .44 IN. 6.04  
WTR YR 1989 TOTAL 1306150 MEAN 3578 MAX 17900 MIN 1200 CFSM .57 IN. 7.79

## ST. CROIX RIVER BASIN

05341000 BONE LAKE NEAR LUCK, WI

LOCATION.--Lat 45°33'21", long 92°23'16", in SE 1/4 sec.31, T.36 N., R.16 W., Polk County, Hydrologic Unit 07030005, 4.9 mi southeast of Luck.

PERIOD OF RECORD.--September 1936 to September 1940 (fragmentary), October 1940 to September 1964 (fragmentary), in files of district office, October 1984 to September 1986, May to September 1989.

GAGE.--Staff gage read by A. D. Brosveen. Elevation of gage is 1152 ft, from topographic map. Prior to 1964, staff gage 0.2 mi south at different datum.

EXTREMES FOR PERIOD OF RECORD (OCTOBER 1984 TO CURRENT YEAR).--Maximum gage height observed, 6.83 ft, July 29, 1986; minimum observed, 5.80 ft, Aug. 8, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 6.20 ft, July 3 and Sept. 7; minimum observed, 5.80 ft, Aug. 8.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
MAY 19	6.12	JUNE 15	6.18	JULY 10	6.10	AUG. 8	5.80	SEPT. 7	6.20
31	6.18	22	6.14	17	5.98	16	5.90	15	6.08
JUNE 3	6.14	27	6.10	26	5.88	23	6.08	21	6.00
9	6.10	JULY 3	6.20	AUG. 2	5.84	31	6.10	28	5.88

## ST. CROIX RIVER BASIN

129

05341365 RICE CREEK AT MILLTOWN, WI

LOCATION.--Lat 45°30'45", long 92°30'06", in SE 1/4 SW 1/4 sec.17, T.35 N., R.17 W., Polk County, Hydrologic Unit 07030005, at culvert under 210th Avenue, about 1 mi south of Milltown.

DRAINAGE AREA.--2.89 mi<sup>2</sup>.

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1988									
24...	1300	1028	0.0	--	--	--	--	--	--
NOV									
15...	--	1028	0.0	--	--	--	--	--	--
JAN 1989									
31...	--	1028	0.0	--	--	--	--	--	--
MAR									
28...	1345	80020	<1.0	146	0.5	--	--	1.20	--
APR									
21...	1315	85543	0.0	338	15.0	0.590	2.4	0.520	--
MAY									
01...	1500	85543	0.0	419	5.5	0.300	1.2	0.170	--
16...	1250	85543	0.0	429	20.0	0.040	1.4	0.510	0.330
25...	1145	85543	<0.05	308	18.0	0.040	1.3	0.440	--
30...	1045	85543	--	378	9.5	<0.020	1.0	0.340	0.270
JUN									
13...	0830	85543	0.0	320	14.0	0.030	1.2	0.360	0.240
28...	1215	85543	0.0	--	24.5	0.050	1.2	0.640	0.530
JUL									
11...	1000	85543	--	380	20.0	0.420	6.6	3.75	0.820
19...	--	1028	0.0	--	--	--	--	--	--
AUG									
08...	0900	85543	0.0	435	14.5	1.30	7.4	3.79	0.680
11...	--	1028	0.0	--	--	--	--	--	--
22...	1030	85543	<0.05	246	17.0	0.050	1.6	0.550	0.440
SEP									
01...	1205	80020	<0.20	332	17.0	--	--	0.480	--

## ST. CROIX RIVER BASIN

05341370 RICE CREEK AT 155th STREET NEAR MILLTOWN, WI

LOCATION.--Lat 45°29'38", long 92°28'43", in SE 1/4 NW 1/4 sec.28, T.35 N., R.17 W., Polk County, Hydrologic Unit 07030005, at culvert under 155th Street, about 2.5 mi southeast of Milltown.

DRAINAGE AREA.--3.98 mi<sup>2</sup>.

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988							
04...	1134	80020	1.1	--	--	--	0.03
12...	0936	80020	1.0	--	--	--	0.03
19...	1441	80020	1.2	--	--	--	0.03
24...	1200	80020	1.5	--	290	3.5	0.03
25...	1107	80020	1.4	--	--	--	0.03
NOV							
02...	1030	80020	1.8	--	--	--	0.02
08...	1044	80020	2.1	--	--	--	0.04
16...	1050	80020	3.5	--	--	--	0.05
23...	1202	80020	1.7	--	--	--	0.04
30...	1123	80020	1.4	--	--	--	0.04
DEC							
02...	1535	80020	--	1.2	302	2.0	0.04
07...	1455	80020	1.2	--	--	--	0.03
14...	1127	80020	1.5	--	--	--	0.03
21...	1116	80020	1.8	--	--	--	0.04
28...	1050	80020	3.0	--	--	--	0.05
JAN 1989							
04...	1515	80020	3.0	--	--	--	0.03
10...	1500	80020	3.1	--	415	0.0	0.02
11...	1127	80020	3.1	--	--	--	0.01
18...	1232	80020	2.6	--	--	--	0.02
25...	1115	80020	2.1	--	--	--	0.02
31...	1425	80020	1.8	--	365	0.5	0.03
FEB							
01...	1217	80020	1.8	--	--	--	0.02
08...	1140	80020	1.8	--	--	--	0.03
15...	1125	80020	1.9	--	--	--	0.02
22...	1214	80020	1.9	--	--	--	0.02
28...	1425	80020	--	2.0	388	0.0	0.02
MAR							
01...	1205	80020	1.9	--	--	--	0.01
08...	1144	80020	1.9	--	--	--	0.01
15...	1130	80020	1.4	--	--	--	0.02
22...	1000	80020	1.6	--	--	--	0.02
28...	1305	80020	--	11	234	1.5	0.08
29...	1130	80020	10	--	--	--	0.03
APR							
03...	1630	80020	8.0	--	--	--	0.33
05...	1007	80020	4.1	--	--	--	0.17
13...	0955	80020	3.0	--	--	--	0.08
19...	1151	80020	2.6	--	--	--	0.09
21...	1335	85543	2.4	--	127	13.5	0.07
26...	1520	85543	3.0	--	--	13.0	0.06
29...	1523	80020	4.2	--	--	--	0.06
MAY							
01...	1420	85543	3.3	--	147	9.5	0.04
10...	1214	80020	2.7	--	--	--	0.05
16...	1305	85543	2.1	--	155	23.5	0.08
24...	1033	80020	2.4	--	--	--	0.06
24...	2025	80020	2.4	--	--	--	0.09
25...	1120	85543	4.2	--	215	20.0	0.09
29...	1845	80020	4.2	--	--	--	0.12
30...	1115	85543	3.7	--	188	13.5	0.13
JUN							
06...	1152	80020	1.6	--	--	--	0.13
13...	1000	85543	3.1	--	218	17.5	0.16
22...	1057	80020	1.3	--	--	--	0.08
28...	1200	85543	2.6	--	--	24.0	0.16
JUL							
05...	1201	80020	1.1	--	--	--	0.05
11...	0940	85543	0.70	--	228	23.5	0.11
19...	1010	80020	1.8	--	--	--	0.11
19...	1640	85543	1.8	--	--	24.0	0.12
25...	0930	80020	--	0.65	215	24.0	0.20
29...	1020	80020	1.9	--	--	--	0.12
AUG							
02...	1030	80020	1.6	--	--	--	0.09
08...	0830	85543	1.3	--	236	16.0	0.12
16...	1050	80020	2.6	--	--	--	0.09
22...	1000	85543	4.6	--	--	20.5	0.13
22...	1018	80020	4.6	--	--	--	0.10
30...	1013	80020	1.9	--	--	--	0.07

## ST. CROIX RIVER BASIN

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05341370 RICE CREEK AT 155th STREET NEAR MILLTOWN, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

		AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
SEP 1989							
01...		1008	80020	5.2	--	--	0.05
01...		1150	80020	--	5.5	200	0.10
04...		1103	80020	5.4	--	--	0.05
13...		1021	80020	0.60	--	--	0.02
27...		1151	80020	0.10	--	--	0.03

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TOTAL COLOR (PLAT- INUM COBALT UNITS) (00081)	TUR- BID- ITY (NTU) (00076)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM TOTAL RECOV- ERABLE (MG/L AS CA) (00916)	MAGNE- SIUM, TOTAL RECOV- ERABLE (MG/L AS MG) (00927)	SODIUM, TOTAL RECOV- ERABLE (MG/L AS NA) (00929)	POTAS- SIUM, TOTAL RECOV- ERABLE (MG/L AS FE) (00939)
APR 1989 26...	1520	85543	3.0	9.40	13.0	20	3.0	51	12	5.0	3.0	1.1

DATE	ALKA- LITY WAT WH TOT FET LAB MG/L AS CACO3 (00417)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	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)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)
APR 1989 26...	53	4.2	7.6	1.3	10	90	0.280	<0.020	1.0	0.004	160

## ST. CROIX RIVER BASIN

05341374 OTTER CREEK NEAR MILLTOWN, WI

LOCATION.--Lat 45°29'52", long 92°28'15", in SE 1/4 SE 1/4 sec.21, T.35 N., R.17 W., Polk County, Hydrologic Unit 07030005, at culvert under 200th Avenue, about 2.8 mi southeast of Milltown.

DRAINAGE AREA.--4.55 mi<sup>2</sup>.

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988						
24...	--	1028	0.0	--	--	--
JAN 1989						
31...	--	1028	0.0	--	--	--
FEB						
28...	--	1028	0.0	--	--	--
MAR						
28...	1625	80020	1.7	110	1.0	0.48
APR						
03...	1635	80020	E1.5	--	--	0.23
13...	0943	80020	E0.05	--	--	0.06
21...	1300	80020	<0.50	--	--	0.05
MAY						
01...	1545	80020	0.39	185	8.0	0.06
25...	--	1028	<0.10	--	--	--
JUN						
28...	--	1028	0.0	--	--	--
JUL						
19...	1240	80020	0.0	--	--	0.25
AUG						
22...	--	1028	0.0	--	--	--
SEP						
01...	1147	80020	0.10	205	16.5	0.63

## ST. CROIX RIVER BASIN

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05341375 RICE CREEK NEAR BALSAM LAKE, WI

LOCATION.--Lat 45°29'27", long 92°28'07", in SE 1/4 NE 1/4 sec.28, T.35 N., R.17 W., Polk County, Hydrologic Unit 07030005, on left bank 150 ft upstream from State Highway 46, 0.6 mi downstream from Otter Creek, and 0.3 mi upstream from mouth.

DRAINAGE AREA.--12.5 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1987 to November 1989 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 1,150 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 29-31 and May 11-25, 1989. Records good except those for estimated daily discharges, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29 ft<sup>3</sup>/s, Aug. 21, 1989, gage height, 2.73 ft; minimum discharge, 1.3 ft<sup>3</sup>/s, July 11, 1988, gage height, 1.10 ft.

EXTREMES FOR CURRENT PERIOD.--Water Year 1989: Maximum discharge, 29 ft<sup>3</sup>/s, Aug. 21, gage height, 2.73 ft; minimum discharge, 1.7 ft<sup>3</sup>/s, July 16, gage height, 1.13 ft.

October to November 1989: Maximum discharge, 6.6 ft<sup>3</sup>/s, Nov. 15, gage height, 1.46 ft; minimum discharge, 2.1 ft<sup>3</sup>/s, Oct. 2, 4, gage height, 1.16 ft.

## RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).

Oct. 1 to Feb. 28

Mar. 1 to Sept. 30

1.1	1.3	1.5	6.4	1.1	1.3	1.7	9.8
1.3	3.7	1.6	8.2	1.3	3.7	2.0	14.7
				1.5	6.6	2.2	18.5

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	3.3	2.9	4.2	3.7	3.7	14	5.5	5.0	4.7	3.7	7.1
2	2.8	3.2	3.0	4.2	3.6	3.7	14	5.0	4.5	4.1	3.5	5.4
3	2.5	3.3	2.9	4.3	3.6	3.7	14	4.5	4.1	3.7	3.8	5.1
4	2.5	3.6	2.8	4.2	3.5	3.7	14	4.5	3.9	3.3	4.7	7.1
5	2.4	4.6	3.0	4.3	3.3	3.7	12	5.4	3.6	3.1	4.2	6.6
6	2.4	4.6	3.0	4.2	3.4	3.7	10	4.6	3.3	2.6	3.7	5.5
7	2.5	4.1	3.0	4.2	3.5	3.7	9.5	4.5	3.0	2.6	3.3	5.1
8	2.6	3.6	2.9	4.3	3.6	3.8	8.7	4.7	2.8	2.6	3.3	4.7
9	2.5	3.8	2.9	4.4	3.5	3.8	7.6	5.1	3.1	2.5	3.4	4.2
10	2.6	3.7	3.0	4.4	3.6	3.8	7.1	4.7	3.1	2.7	3.3	3.8
11	2.5	3.4	2.9	4.3	3.7	3.5	7.0	4.8	2.9	2.6	3.6	3.7
12	2.4	3.7	3.1	4.3	3.6	3.1	6.4	4.7	3.9	2.4	3.7	3.5
13	2.4	4.2	3.7	4.2	3.8	2.7	5.9	4.6	4.7	2.4	4.8	3.1
14	2.4	3.8	3.6	4.2	3.8	2.6	5.6	4.5	5.0	2.1	5.1	2.9
15	2.5	5.2	3.3	4.3	3.7	2.6	5.0	4.3	4.4	2.1	4.7	2.7
16	2.6	7.5	3.7	4.1	3.6	2.7	4.9	4.2	4.0	2.0	4.5	2.6
17	2.6	5.5	4.1	4.0	3.6	2.9	5.4	3.7	3.7	2.0	4.3	2.5
18	2.6	4.9	3.8	4.0	3.6	3.3	5.3	4.5	3.5	3.5	3.7	2.5
19	2.7	4.8	3.6	4.0	3.7	3.6	5.1	5.4	3.3	3.6	4.1	2.6
20	2.8	4.3	3.7	4.0	3.9	3.8	4.8	5.0	2.9	3.8	4.5	2.6
21	3.2	3.8	3.8	3.9	3.8	3.6	4.6	4.5	2.5	3.6	5.3	2.6
22	3.0	3.9	4.1	4.2	3.8	3.3	4.6	4.9	2.8	3.0	7.5	2.5
23	2.9	3.6	4.5	4.2	3.8	2.8	4.3	5.6	3.0	2.8	6.0	2.5
24	3.2	3.6	4.1	4.2	3.7	3.0	4.2	5.4	3.0	2.8	5.0	2.4
25	3.1	3.4	3.3	4.1	3.8	3.2	4.3	5.6	3.5	2.8	4.3	2.5
26	3.0	3.3	3.7	3.9	3.7	6.4	4.7	5.8	4.1	2.6	4.3	2.4
27	3.3	4.1	4.7	3.8	3.6	16	4.9	5.1	3.8	2.7	4.4	2.3
28	3.7	3.9	4.3	3.8	3.8	15	5.1	4.3	3.6	2.5	4.1	2.3
29	3.2	3.4	4.3	3.8	---	18	6.9	5.3	3.4	4.1	3.9	2.2
30	3.1	3.0	4.3	3.7	---	18	6.4	5.9	4.7	3.7	3.7	2.2
31	3.3	---	4.1	3.7	---	16	---	5.5	---	3.6	4.8	---
TOTAL	86.3	121.1	110.1	127.4	102.3	173.4	216.3	152.1	109.1	92.6	133.2	107.2
MEAN	2.78	4.04	3.55	4.11	3.65	5.59	7.21	4.91	3.64	2.99	4.30	3.57
MAX	3.7	7.5	4.7	4.4	3.9	18	14	5.9	5.0	4.7	7.5	7.1
MIN	2.4	3.0	2.8	3.7	3.3	2.6	4.2	3.7	2.5	2.0	3.3	2.2
CFSM	.22	.32	.28	.33	.29	.45	.58	.39	.29	.24	.34	.29
IN.	.26	.36	.33	.38	.30	.52	.64	.45	.32	.28	.40	.32

CAL YR 1988 TOTAL 1405.5 MEAN 3.84 MAX 12 MIN 1.7 CFSM .31 IN. 4.18  
WTR YR 1989 TOTAL 1531.1 MEAN 4.19 MAX 18 MIN 2.0 CFSM .34 IN. 4.56

1.1	1.3	1.5	6.4
1.3	3.7	1.6	8.2

[illegible]



## ST. CROIX RIVER BASIN

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05341375 RICE CREEK NEAR BALSAM LAKE, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1987 to November 1989 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988						
04...	1126	--	--	--	--	0.03
12...	0930	--	2.4	--	--	0.03
19...	1434	--	2.7	--	--	0.04
24...	1032	--	3.2	262	5.5	0.04
25...	1102	--	3.1	--	--	0.03
NOV						
02...	1025	--	3.2	--	--	0.04
08...	1037	--	3.6	--	--	0.05
16...	1044	--	7.7	--	--	0.13
23...	1154	--	3.6	--	--	0.04
30...	1115	--	3.0	--	--	0.04
DEC						
02...	1348	--	3.0	268	3.5	0.03
07...	1448	--	3.1	--	--	0.04
14...	1118	--	3.6	--	--	0.06
21...	1106	--	3.8	--	--	0.04
28...	1041	--	4.2	--	--	0.05
JAN 1989						
04...	1506	--	4.3	--	--	0.03
10...	1220	--	4.4	357	1.0	0.02
11...	1117	--	4.3	--	--	0.03
18...	1222	--	4.0	--	--	0.03
25...	1107	--	4.0	--	--	0.03
31...	1335	--	3.6	298	4.0	0.02
FEB						
01...	1210	--	3.7	--	--	0.03
08...	1130	--	3.7	--	--	0.02
15...	1100	--	3.8	--	--	0.02
22...	1202	--	3.8	--	--	0.02
28...	1215	--	3.8	322	2.5	0.03
MAR						
01...	1155	--	3.7	--	--	0.04
08...	1123	--	3.8	--	--	0.01
15...	1120	--	2.6	--	--	0.03
22...	0952	--	3.3	--	--	0.01
28...	1118	--	15	197	1.5	0.18
29...	1123	--	18	--	--	0.16
APR						
03...	1640	--	16	--	--	0.26
05...	1000	--	12	--	--	0.12
13...	1002	--	6.0	--	--	0.04
19...	1145	--	5.2	--	--	0.06
21...	1405	--	4.5	174	13.0	0.07
26...	1148	--	4.7	--	--	0.09
29...	1516	--	7.4	--	--	0.10
MAY						
01...	1308	--	5.7	181	8.5	0.07
10...	1207	--	4.8	--	--	0.06
16...	1340	4.2	--	192	19.0	0.08
24...	1024	5.4	--	--	--	0.07
24...	2016	5.4	--	--	--	0.20
25...	1010	5.6	--	210	15.0	0.11
29...	1715	--	8.4	--	--	0.93
29...	1853	--	7.9	--	--	0.26
29...	1915	--	7.6	--	--	1.00
30...	1150	--	5.8	208	11.5	0.11
JUN						
06...	1145	--	3.4	--	--	0.10
13...	0940	--	4.8	218	13.5	0.13
22...	1048	--	2.8	--	--	0.05
28...	1135	--	3.8	--	17.5	0.12
30...	1815	--	9.1	--	--	0.08
30...	1915	--	11	--	--	0.06
30...	2015	--	7.4	--	--	0.34
JUL						
05...	1152	--	3.1	--	--	0.06
11...	1145	--	2.6	245	16.0	0.10
19...	1002	--	3.7	--	--	0.14
25...	1110	--	3.0	225	16.5	0.09
29...	0630	--	7.2	--	--	1.20
29...	0700	--	7.6	--	--	0.94
29...	0745	--	8.4	--	--	0.84
29...	1013	--	4.5	--	--	0.13

## ST. CROIX RIVER BASIN

05341375 RICE CREEK NEAR BALSAM LAKE, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

				DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)			
AUG 1989										
	02...	1022		3.7	--	--	0.13			
	08...	0930		3.4	245	13.5	0.10			
	16...	1043		4.5	--	--	0.12			
	21...	2200		9.8	--	--	1.00			
	21...	2215		19	--	--	1.48			
	21...	2315		22	--	--	0.76			
	22...	0015		14	--	--	1.10			
	22...	0115		11	--	--	0.57			
	22...	0615		7.2	--	--	0.60			
	22...	1010		7.1	--	--	0.29			
	22...	1305		7.1	208	18.5	0.28			
	22...	1915		6.6	--	--	0.36			
	23...	0315		6.5	--	--	0.50			
	30...	1006		3.2	--	--	0.11			
SEP										
	01...	1002		6.8	--	--	0.30			
	01...	1325		6.7	212	17.5	0.25			
	04...	1000		8.7	--	--	0.23			
	04...	1030		9.5	--	--	0.23			
	04...	1056		9.5	--	--	0.19			
	04...	1130		8.8	--	--	0.23			
	13...	1015		3.2	--	--	0.04			
	27...	1140		2.2	--	--	0.01			
DATE	TIME	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00060)	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, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)		
APR 1989										
	21...	1405	85543	--	4.5	0.810	0.090	0.80	--	
MAY										
	01...	1308	85543	--	5.7	0.620	0.100	0.60	--	
	16...	1340	85543	4.2	--	0.710	0.110	0.90	0.015	
	25...	1010	85543	5.6	--	0.500	0.170	1.3	--	
	30...	1150	85543	--	5.8	0.550	0.190	1.1	0.022	
JUN										
	13...	0940	85543	--	4.8	0.680	0.310	1.6	0.030	
	28...	1135	85543	--	3.8	0.830	0.340	1.4	0.022	
JUL										
	11...	1145	85543	--	2.6	1.12	0.320	1.1	0.025	
AUG										
	08...	0930	85543	--	3.4	1.03	0.200	0.90	0.014	
	21...	2215	85543	--	19	0.590	0.040	4.6	0.015	
	22...	1305	85543	--	7.1	0.520	0.160	1.4	0.034	
DATE	TIME	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	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-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00665)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
OCT 1989										
	02...	1310	85543	2.1	228	9.0	1.36	0.220	0.60	0.04
	11...	1112	80020	2.8	--	--	--	--	0.06	--
	25...	1029	80020	3.4	--	--	--	--	0.05	--
	30...	1140	85543	6.5	245	8.5	0.590	0.130	1.1	0.10
NOV										
	08...	1000	80020	4.8	--	--	--	--	0.06	--
	15...	1015	85543	4.8	254	3.5	0.880	0.230	0.90	0.05
	27...	1050	85543	4.1	268	4.0	0.960	0.270	0.80	0.05

## 05341383 HARDER CREEK AT HALF MOON LAKE OUTLET NEAR BALSAM LAKE, WI

LOCATION.--Lat 45°29'25", long 92°25'13", in SE 1/4 NW 1/4 sec.25, T.35 N., R.17 W., Polk County, Hydrologic Unit 07030005, at outlet of Half Moon Lake, about 3 mi northeast of the village of Balsam Lake.

DRAINAGE AREA.--10.7 mi<sup>2</sup>.

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
MAR 1989						
28...	1442	80020	6.1	194	1.5	0.01
MAY						
25...	1055	80020	6.9	158	19.0	0.01
SEP						
01...	1122	80020	4.9	152	21.0	0.03

## 05341384 HARDER CREEK NEAR BALSAM LAKE, WI

LOCATION.--Lat 45°28'53", long 92°25'22", in NW 1/4 NW 1/4 sec.36, T.35 N., R.17 W., Polk County, Hydrologic Unit 07030005, at bridge on 190th Avenue, about 2.5 mi northeast of the village of Balsam Lake.

DRAINAGE AREA.--10.9 mi<sup>2</sup>.

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
MAR 1989						
28...	1420	80020	E8.0	142	0.0	0.05
29...	1145	80020	E10	--	--	0.02
APR						
03...	1655	80020	E20	--	--	0.05
13...	0930	80020	E10	--	--	0.03
MAY						
01...	1615	80020	2.6	159	9.5	0.02
25...	1010	80020	7.7	155	17.5	0.03
JUN						
28...	1300	80020	1.7	--	--	0.02
JUL						
05...	1220	80020	E1.0	--	--	0.02
19...	1025	80020	E0.50	--	--	0.08
25...	1030	80020	E0.10	--	--	0.08
AUG						
22...	0930	80020	E4.0	--	--	0.08
22...	1100	80020	E4.0	--	--	0.08
SEP						
04...	1115	80020	E7.0	--	--	0.01

E Estimated.

## ST. CROIX RIVER BASIN

05341402 BALSAM BRANCH AT BALSAM LAKE, WI

LOCATION.--Lat 45°26'49", long 92°27'01", in SE 1/4 NE 1/4 sec.10, T.34 N., R.17 W., Polk County, Hydrologic Unit 07030005, on right bank 120 ft upstream from State Highway 46 and 400 ft downstream from powerplant of Northwestern Wisconsin Electric Co., in Balsam Lake.

DRAINAGE AREA.--52.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1987 to November 1989 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 1,100 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuation caused by Balsam Lake Powerplant 400 ft upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76 ft<sup>3</sup>/s, May 31, 1989, gage height, 5.02 ft; minimum discharge, 0.46 ft<sup>3</sup>/s, Sept. 15, 1988.

EXTREMES FOR CURRENT PERIOD.--Water Year 1989: Maximum discharge, 76 ft<sup>3</sup>/s, May 31, gage height, 5.02 ft; minimum discharge, 1.1 ft<sup>3</sup>/s, Nov. 2.

October to November 1989: Maximum discharge, 4.7 ft<sup>3</sup>/s, Oct. 1, 2, 6, gage height, 3.98 ft; minimum discharge, 0.98 ft<sup>3</sup>/s, Nov. 12, 16-19, 21, 25-27.

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1 to Jan. 15.)

Oct. 1 to Jan. 31 (1100)				Jan. 31 (1200) to Sept. 30			
3.6	1.2	3.9	6.0	3.8	2.6	4.4	26
3.7	2.2	4.0	9.3	3.9	4.3	4.6	46
3.8	3.7	4.1	14	4.0	6.6	4.7	60
				4.2	14		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	1.4	3.5	3.9	5.6	5.8	28	26	58	6.3	5.1	16
2	4.9	1.2	3.4	4.0	5.6	5.8	29	25	52	6.3	5.0	14
3	5.4	1.4	3.8	4.1	5.6	6.4	29	24	40	6.5	5.4	12
4	6.1	1.7	3.7	4.1	5.6	6.9	30	23	26	6.5	6.1	11
5	5.4	2.3	3.8	4.2	5.7	6.8	30	23	34	6.3	6.1	10
6	4.8	2.4	3.8	4.5	5.6	6.6	30	22	44	6.2	6.0	20
7	4.5	3.5	4.1	4.6	5.6	6.8	31	21	38	5.9	5.7	36
8	4.8	4.4	3.7	4.9	5.7	6.9	32	13	35	6.0	5.5	27
9	4.7	4.6	3.4	5.0	5.8	6.9	32	12	18	5.9	5.3	21
10	5.7	6.1	3.2	5.0	5.8	7.0	31	21	4.9	5.9	5.3	14
11	6.4	5.3	3.2	5.4	5.7	7.1	31	19	4.9	5.8	5.3	8.9
12	5.8	4.9	3.0	5.5	5.8	7.1	31	15	5.2	6.0	5.1	8.7
13	4.9	6.2	3.0	5.7	5.8	7.3	31	11	5.5	5.7	5.6	8.4
14	4.3	5.3	3.0	5.9	5.8	16	30	9.4	5.8	5.6	5.8	8.3
15	4.2	5.4	3.0	6.0	5.8	29	29	8.0	5.8	5.4	5.7	8.0
16	4.7	6.4	3.0	6.3	5.8	29	28	7.2	5.8	5.3	5.7	7.3
17	5.4	5.9	3.0	6.5	5.8	29	24	7.1	5.9	5.2	5.7	7.1
18	5.1	5.2	3.1	6.6	5.8	29	23	7.1	6.1	5.8	5.5	6.9
19	4.9	4.9	3.2	7.1	5.8	29	23	7.2	6.1	5.7	5.8	6.7
20	4.9	4.0	3.2	7.3	5.8	28	21	7.2	5.8	5.6	6.1	6.6
21	5.3	3.6	3.2	7.4	5.8	29	22	7.1	5.7	5.7	6.3	6.3
22	4.8	3.2	3.4	7.5	5.8	29	21	15	5.7	5.6	6.7	6.2
23	5.3	3.1	3.5	7.7	5.8	30	20	23	5.7	5.5	7.1	6.1
24	4.4	3.4	3.5	7.7	5.8	30	20	22	5.6	5.3	7.5	5.8
25	3.4	3.7	3.5	7.8	5.7	27	20	31	5.8	5.3	10	5.7
26	3.3	3.5	3.8	8.0	5.6	20	19	40	6.0	5.0	13	5.4
27	3.3	3.6	4.1	8.4	5.6	24	22	40	6.0	4.9	12	5.1
28	2.9	4.0	4.1	9.2	5.8	28	26	39	5.9	4.7	14	5.0
29	2.5	4.0	4.1	9.8	---	28	27	40	5.8	5.4	13	4.9
30	1.9	4.0	4.1	9.2	---	29	26	37	6.0	5.5	12	4.8
31	1.5	---	4.0	7.2	---	28	---	52	---	5.3	13	---
TOTAL	140.1	118.6	108.4	196.5	160.4	578.4	796	654.3	465.0	176.1	226.4	313.2
MEAN	4.52	3.95	3.50	6.34	5.73	18.7	26.5	21.1	15.5	5.68	7.30	10.4
MAX	6.4	6.4	4.1	9.8	5.8	30	32	52	58	6.5	14	36
MIN	1.5	1.2	3.0	3.9	5.6	5.8	19	7.1	4.9	4.7	5.0	4.8
CFSM	.09	.07	.07	.12	.11	.35	.50	.40	.29	.11	.14	.20
IN.	.10	.08	.08	.14	.11	.41	.56	.46	.33	.12	.16	.22
CAL YR 1988	TOTAL 2958.47	MEAN 8.08	MAX 32	MIN .49	CFSM .15	IN. 2.08						
WTR YR 1989	TOTAL 3933.4	MEAN 10.8	MAX 58	MIN 1.2	CFSM .20	IN. 2.77						

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3.63	0.98	3.9	4.3
3.7	1.5	4.0	6.6
3.8	2.6		

[illegible]

## ST. CROIX RIVER BASIN

05341402 BALSAM BRANCH AT BALSAM LAKE, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1987 to November 1989 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988						
04...	1114	80020	6.3	--	--	0.02
12...	0913	80020	6.0	--	--	0.03
19...	1417	80020	4.7	--	--	0.03
24...	1405	80020	4.3	235	8.0	0.03
25...	1050	80020	3.4	--	--	0.02
NOV						
02...	1000	80020	1.1	--	--	0.02
08...	1026	80020	4.5	--	--	0.02
16...	1029	80020	6.3	--	--	0.03
23...	1140	80020	3.2	--	--	0.03
30...	1058	80020	4.3	--	--	0.02
DEC						
02...	1140	80020	3.3	230	3.0	0.01
07...	1433	80020	3.9	--	--	0.01
14...	1105	80020	3.0	--	--	0.02
21...	1050	80020	3.2	--	--	0.02
28...	1027	80020	4.1	--	--	0.01
JAN 1989						
04...	1450	80020	4.1	--	--	0.02
10...	1000	80020	5.0	245	1.5	0.01
11...	1055	80020	5.5	--	--	0.02
18...	1208	80020	6.6	--	--	0.02
25...	1051	80020	7.9	--	--	0.01
31...	1240	80020	5.6	238	2.0	0.01
FEB						
01...	1154	80020	5.6	--	--	0.01
08...	1113	80020	5.8	--	--	0.01
15...	1046	80020	5.8	--	--	0.01
22...	1147	80020	5.8	--	--	0.01
28...	1050	80020	5.8	252	1.5	0.01
MAR						
01...	1135	80020	5.8	--	--	0.01
08...	1105	80020	6.9	--	--	0.01
15...	1103	80020	29	--	--	0.01
22...	0935	80020	29	--	--	0.01
28...	1002	80020	27	237	2.0	0.02
29...	1105	80020	28	--	--	0.01
APR						
05...	0945	80020	30	--	--	0.01
13...	1011	80020	30	--	--	0.01
19...	1133	80020	23	--	--	0.03
26...	1130	80020	19	--	--	0.03
29...	1502	80020	26	--	--	0.03
MAY						
01...	1150	80020	26	202	9.0	0.02
10...	1150	80020	24	--	--	0.02
24...	1000	80020	22	--	--	0.02
24...	2005	80020	22	--	--	0.03
25...	1400	80020	41	180	20.0	0.02
29...	1904	80020	38	--	--	0.12
JUN						
06...	1134	80020	45	--	--	0.01
22...	1035	80020	5.7	--	--	0.02
28...	1020	80020	6.0	185	23.0	0.01
JUL						
05...	1130	80020	6.1	--	--	0.01
19...	0948	80020	5.8	--	--	0.02
25...	0813	80020	5.3	190	24.5	0.01
29...	0956	80020	5.6	--	--	0.02
AUG						
02...	1005	80020	4.9	--	--	0.02
16...	1025	80020	5.6	--	--	0.02
22...	0955	80020	6.6	--	--	0.02
30...	0950	80020	12	--	--	0.02
SEP						
01...	0945	80020	17	--	--	<0.01
01...	1010	80020	16	205	20.5	0.02
04...	1044	80020	11	--	--	<0.01
13...	1002	80020	8.4	--	--	<0.01
27...	1124	80020	5.1	--	--	<0.01

## ST. CROIX RIVER BASIN

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05341402 BALSAM BRANCH AT BALSAM LAKE, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1989						
02...	1110	80020	4.1	254	8.5	0.02
11...	1055	80020	3.5	--	--	0.02
25...	1015	80020	1.7	--	--	0.02
30...	1345	80020	1.3	264	10.0	0.02
NOV						
08...	0940	80020	1.0	--	--	0.02
27...	0950	80020	1.0	275	4.0	0.02

## ST. CROIX RIVER BASIN

05341500 APPLE RIVER NEAR SOMERSET, WI

LOCATION.--Lat 45°09'27", long 92°42'59", in sec.21, T.31 N., R.19 W., St. Croix County, Hydrologic Unit 07030005, at powerplant of Northern States Power Co., 3.5 mi downstream from Somerset.

DRAINAGE AREA.--579 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1901 to September 1914 (monthly discharge only), October 1914 to September 1970, October 1986 to current year.

REVISED RECORDS.--WSP 1388: 1929, 1933. WDR-87-1: Drainage area.

GAGE.--Headwater and tailwater gages read hourly.

REMARKS.--No estimated daily discharges. Records of daily discharge computed on the basis of gate openings, head, and plant efficiency. Flow regulated by many powerplants upstream, but service ponds are small and monthly flows are only slightly affected.

COOPERATION.--Records of daily discharge furnished by Northern States Power Co.

AVERAGE DISCHARGE.--72 years (water years 1902-70, 1987-89), 303 ft<sup>3</sup>/s, 7.11 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,510 ft<sup>3</sup>/s, Apr. 13, 1965; minimum daily, 7 ft<sup>3</sup>/s, Aug. 21, 1927, Sept. 30, 1929, July 19, 1932, Aug. 2, 3, 1933.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 971 ft<sup>3</sup>/s, Mar. 31; minimum daily, 95 ft<sup>3</sup>/s, Dec. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	292	204	260	225	218	148	835	271	498	193	167	218
2	280	204	259	191	136	163	768	347	470	172	163	268
3	244	190	350	259	136	190	836	364	410	174	163	243
4	201	190	263	218	213	171	807	309	347	160	150	361
5	211	186	250	218	215	205	676	394	347	139	150	289
6	218	192	275	218	216	232	660	397	335	159	150	258
7	270	186	260	218	218	218	714	349	298	178	144	344
8	314	218	218	218	201	231	923	340	245	143	136	384
9	159	278	190	168	207	204	681	408	278	138	136	345
10	98	263	191	177	195	190	771	304	254	138	134	311
11	188	218	219	177	199	211	597	275	224	150	131	297
12	136	264	214	190	198	243	563	239	245	171	127	306
13	150	281	258	218	199	253	447	314	247	242	113	303
14	163	287	231	215	204	204	442	332	315	149	142	286
15	141	218	218	231	213	218	413	335	294	191	169	251
16	133	231	177	193	189	231	406	297	275	142	170	249
17	136	218	119	218	213	286	354	285	294	145	145	228
18	136	231	134	218	213	240	272	207	322	167	167	297
19	163	343	128	245	213	224	408	223	283	178	192	220
20	190	347	95	267	159	258	326	239	258	160	182	273
21	190	349	177	227	204	150	254	186	245	191	164	334
22	261	245	177	227	190	218	241	116	272	156	208	245
23	250	218	175	223	122	253	231	325	245	141	213	183
24	210	225	182	231	204	251	227	289	250	170	213	207
25	204	380	173	218	217	288	269	290	204	128	286	211
26	220	330	180	313	157	273	263	406	235	150	286	173
27	220	369	228	204	207	293	278	409	229	144	286	200
28	261	364	245	238	214	876	294	368	213	131	233	190
29	253	351	204	228	---	715	345	344	208	186	217	188
30	217	305	198	241	---	842	316	332	220	143	190	187
31	199	---	224	150	---	971	---	503	---	203	213	---
TOTAL	6308	7885	6472	6782	5470	9450	14617	9797	8560	5032	5540	7849
MEAN	203	263	209	219	195	305	487	316	285	162	179	262
MAX	314	380	350	313	218	971	923	503	498	242	286	384
MIN	98	186	95	150	122	148	227	116	204	128	113	173
CAL YR 1988	TOTAL 77026	MEAN 210	MAX 536	MIN 52								
WTR YR 1989	TOTAL 93762	MEAN 257	MAX 971	MIN 95								



## 05344500 MISSISSIPPI RIVER AT PRESCOTT, WI

LOCATION.--Lat 44°44'45", long 92°48'00", in sec.9, T.26 N., R.20 W., Pierce County, Hydrologic Unit 07040001, on left bank at Prescott, 200 ft downstream from St. Croix River, 300 ft south of Chicago, Burlington & Quincy Railroad bridge, 800 ft south of bridge on U.S. Highway 10, and at mile 811.4 upstream from Ohio River.

DRAINAGE AREA.--44,800 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--June 1928 to current year.

REVISED RECORDS.--WSP 1508: 1941. WRD MN-74: 1973.

GAGE.--Water-stage recorder. Datum of gage is 649.50 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 2, 1932, nonrecording gage at railroad bridge 300 ft upstream at following datums: June 3, 1928, to Sept. 30, 1929, 19.27 ft higher; Oct. 1, 1929, to Sept. 30, 1930, 17.68 ft higher; Oct. 1, 1930, to Aug. 1, 1932, 19.28 ft higher. Aug. 2, 1932, to Oct. 30, 1938, water-stage recorder at present site at datum 19.28 ft higher; Nov. 1, 1938, to Sept. 7, 1971, water-stage recorder at present site at datum 50.00 ft lower.

REMARKS.--Records good. Some regulation by reservoirs, navigation dams, and powerplants at low and medium stages. Flood flow not materially affected by artificial storage.

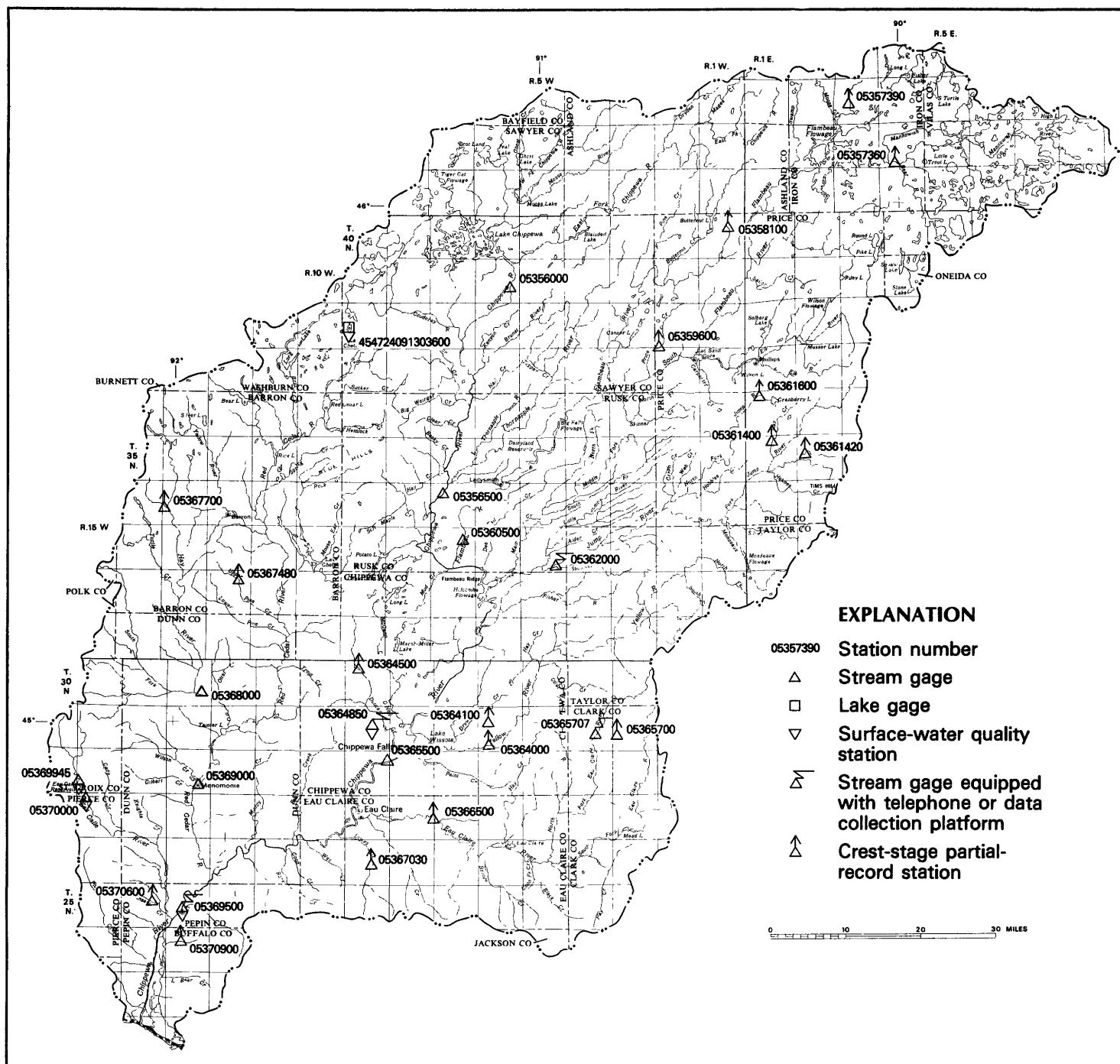
AVERAGE DISCHARGE.--61 years, 17,150 ft<sup>3</sup>/s, 5.20 in/yr; median of yearly mean discharges, 16,000 ft<sup>3</sup>/s, 4.85 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 228,000 ft<sup>3</sup>/s, Apr. 18, 1965, gage height, 43.11 ft; minimum daily, 1,380 ft<sup>3</sup>/s, July 13, 1940; minimum gage height, 15.08 ft, Aug. 29, 1934, present datum.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 49,000 ft<sup>3</sup>/s, Apr. 11; maximum gage height, 30.33 ft, Apr. 11; minimum daily discharge, 3,920 ft<sup>3</sup>/s, Aug. 21; minimum gage height, 24.79 ft, July 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8010	6340	7560	6160	6920	6670	31100	27400	23900	11500	5840	5350
2	9270	6620	6770	6470	6750	6130	31000	29300	24000	10500	6270	6470
3	8990	5940	6340	6250	5190	6210	31300	29100	22500	10700	6070	7400
4	9130	6310	6690	6220	4990	6430	32700	29600	21100	10200	5360	9050
5	8750	6590	8900	6200	6230	5470	35200	29000	19600	10700	5320	8430
6	8950	6940	7870	6180	6080	6350	38700	28800	18500	10800	5160	9530
7	8900	6180	8250	6760	6630	7000	41200	28400	17100	10400	5120	10600
8	7730	6920	8040	6470	6980	7160	44200	26400	15300	9630	4730	10800
9	7880	6320	7860	6220	7260	7050	46700	27100	13700	9370	4280	9900
10	7290	6380	6750	5630	6360	7120	48800	26800	13300	9330	4400	9550
11	7380	6400	5540	5840	6470	7030	49000	28000	12500	8610	4090	10000
12	6980	6280	5450	5740	6680	6300	47900	28300	11600	8440	4250	9820
13	6970	6720	4920	5670	7130	7130	45700	27900	11300	8350	4280	9470
14	6040	6500	5750	6050	7020	7090	43300	26500	10900	7990	4530	8970
15	6470	7340	7320	6230	7090	6750	41400	24800	11500	7620	4660	8470
16	6210	6800	6590	5550	6930	7070	40300	23400	11700	8040	4700	8800
17	6810	7690	4830	6350	6850	7010	39200	22100	11200	7290	4900	8310
18	6190	6860	5220	5890	6800	6690	39400	20100	11000	7040	4500	7440
19	5980	9090	5820	5990	6800	6990	38700	19000	10500	7610	4080	7950
20	6330	8620	6480	5970	6490	7030	37600	18800	10600	7400	4050	8040
21	6010	8820	7280	6420	6210	6780	35600	18600	10500	7580	3920	7790
22	6000	8140	7080	6800	6730	6820	34400	17200	9450	7110	4250	7890
23	5950	7200	6340	6620	6640	6860	32800	18500	9830	6820	5040	8030
24	6940	7210	6930	6390	6620	7770	30600	18700	10400	6760	4690	7860
25	6120	7920	6820	6850	6920	8340	28600	17700	9750	5980	5000	7910
26	7110	8580	5970	6210	7000	9500	28000	22100	9940	6360	4500	7750
27	6840	8800	5960	6100	6850	10300	27400	28800	11700	5920	4580	8030
28	6290	8530	6120	6760	6300	15000	26600	30300	12100	5690	4960	7690
29	6620	9270	5670	6320	---	24100	26200	29200	12700	6160	5180	7690
30	6350	8480	5650	6640	---	30200	25800	27300	11400	5480	5090	7480
31	6430	---	6330	6180	---	30500	---	25700	---	6090	5060	---
TOTAL	220920	219790	203100	193130	184920	290850	1099400	774900	409570	251470	148860	252470
MEAN	7126	7326	6552	6230	6604	9382	36650	25000	13650	8112	4802	8416
MAX	9270	9270	8900	6850	7260	30500	49000	30300	24000	11500	6270	10800
MIN	5950	5940	4830	5550	4990	5470	25800	17200	9450	5480	3920	5350
CFSM	.16	.16	.15	.14	.15	.21	.82	.56	.30	.18	.11	.19
IN.	.18	.18	.17	.16	.15	.24	.91	.64	.34	.21	.12	.21
CAL YR 1988	TOTAL 3102600	MEAN 8477	MAX 28200	MIN 2700	CFSM .19	IN. 2.58						
WTR YR 1989	TOTAL 4249380	MEAN 11640	MAX 49000	MIN 3920	CFSM .26	IN. 3.53						



Base from U.S. Geological Survey  
State base map, 1969

## CHIPPEWA RIVER BASIN

## 05356000 CHIPPEWA RIVER AT BISHOPS BRIDGE, NEAR WINTER, WI

LOCATION.--Lat 45°50'57", long 91°04'44", in SW 1/4 NE 1/4 sec.23, T.39 N., R.6 W., Sawyer County, Hydrologic Unit 07050001, on right bank 15 ft upstream from highway bridge on County Trunk Highway G, 3.2 mi downstream from Lake Chippewa Dam, and 3.7 mi northwest of Winter.

DRAINAGE AREA.--790 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1912 to current year. December to April 1913, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: 1913(M), 1915-18(M), 1919, 1920-23(M), 1924, 1925(M), 1927(M), 1928, 1929-30(M), 1939(M). WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,256.78 ft above National Geodetic Vertical Datum of 1929 (levels by Wilhelm Engineering Co.). See WSP 1708 or 1728 for history of changes prior to July 23, 1930.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Moose Lake and Lake Chippewa.

AVERAGE DISCHARGE.--77 years, 718 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,520 ft<sup>3</sup>/s, Sept. 4, 5, 1941, gage height, 11.05 ft; minimum, 14 ft<sup>3</sup>/s, Apr. 17-20, 1925, gage height, 3.25 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,810 ft<sup>3</sup>/s, Dec. 12, gage height, 6.43 ft; minimum discharge, 158 ft<sup>3</sup>/s, Oct. 19, 27, gage height 4.08 ft.

## RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).

4.1	164	5.0	660
4.3	248	6.0	1,430
4.6	399	7.0	2,400

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	268	266	617	732	702	721	301	527	1100	673	364	218
2	267	371	537	725	703	733	307	526	1240	681	285	215
3	270	342	274	721	701	719	326	525	1320	678	284	217
4	268	270	275	719	704	717	335	526	1320	677	282	227
5	368	271	622	716	703	714	337	520	1320	653	282	219
6	339	271	536	714	706	712	344	527	1320	636	281	216
7	269	269	622	715	706	715	333	547	1320	631	282	215
8	271	271	537	716	706	706	324	546	1310	665	282	251
9	271	371	650	715	705	704	313	544	1220	670	279	281
10	271	342	289	714	702	702	309	543	1090	645	354	281
11	271	271	365	713	700	703	311	542	1090	636	271	281
12	370	272	1130	714	694	703	305	541	984	636	271	281
13	345	271	932	713	699	439	308	542	890	635	285	281
14	276	271	715	713	698	275	308	543	891	641	281	281
15	276	277	719	710	708	276	301	543	848	666	278	281
16	278	401	721	715	717	276	301	543	833	665	278	281
17	277	359	719	715	716	275	304	545	1020	648	277	281
18	273	280	719	713	715	276	302	547	1020	637	245	281
19	243	281	716	713	714	277	301	543	886	632	225	281
20	268	280	717	713	711	274	300	541	793	638	223	281
21	418	390	715	715	708	279	301	531	711	619	220	281
22	262	393	794	710	713	280	302	530	781	667	225	278
23	263	276	897	708	710	278	301	528	770	665	217	278
24	262	276	893	707	705	276	304	540	772	487	216	281
25	262	276	892	704	692	278	301	567	794	474	217	279
26	363	277	892	704	689	283	298	542	802	474	218	278
27	313	281	893	705	687	301	299	534	768	470	216	280
28	267	281	889	705	691	329	301	531	759	470	217	277
29	266	279	784	705	---	316	307	534	601	475	215	231
30	266	617	725	703	---	306	312	613	620	474	217	197
31	267	---	732	701	---	302	---	928	---	473	222	---
TOTAL	8948	9353	21518	22086	19705	14145	9296	17139	29193	18791	8009	7810
MEAN	289	312	694	712	704	456	310	553	973	606	258	260
MAX	418	617	1130	732	717	733	344	928	1320	681	364	281
MIN	243	266	274	701	687	274	298	520	601	470	215	197

CAL YR 1988 TOTAL 138974 MEAN 380 MAX 1910 MIN 80  
WTR YR 1989 TOTAL 185993 MEAN 510 MAX 1320 MIN 197

## CHIPPEWA RIVER BASIN

454724091303600 BIG SISSABAGAMA LAKE NEAR STONE LAKE, WI

LOCATION.--Lat 45°47'24", long 91°30'36", in NW 1/4 SE 1/4 sec.6, T.38 N., R.9 W., Sawyer County, Hydrologic Unit 070500001, near Stone Lake.

DRAINAGE AREA.--9.47 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

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

GAGE.--Staff gage read on south side of lake by Harold Kissinger. Elevation of gage is 1,320 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD: Maximum gage-height observed, 6.03 ft, Apr. 21, May 25, 1989; minimum observed, 4.78 ft, Sept. 15, 16, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height observed, 6.03 ft, Apr. 21, May 25; minimum observed, 5.02 ft, Oct. 14-16, 26, 29, Nov. 1, 4.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.12	5.02	---	---	---	---	---	5.99	5.93	5.75	5.41	5.59
2	5.10	5.04	---	---	---	---	---	5.99	5.91	5.77	5.39	5.59
3	5.08	5.04	---	---	---	---	---	5.97	5.91	5.75	5.39	5.61
4	5.10	5.02	---	---	---	---	---	5.97	5.89	5.71	5.39	5.65
5	5.10	5.04	---	---	---	---	---	5.93	5.85	5.71	5.39	5.65
6	5.08	5.04	---	---	---	---	---	5.91	5.83	5.69	5.37	5.65
7	5.08	5.04	---	---	---	---	---	5.89	5.83	5.67	5.35	5.65
8	5.08	5.10	---	---	---	---	---	5.89	5.81	5.63	5.31	5.65
9	5.08	5.14	---	---	---	---	---	5.91	5.79	5.61	5.29	5.63
10	5.06	5.12	---	---	---	---	---	5.93	5.77	5.61	5.29	5.61
11	5.06	5.14	---	---	---	---	---	5.95	5.75	5.62	5.27	5.59
12	5.04	5.16	---	---	---	---	---	5.93	5.79	5.59	5.25	5.57
13	5.04	5.16	---	---	---	---	---	5.91	5.81	5.57	5.33	5.57
14	5.02	5.16	---	---	---	---	---	5.91	5.87	5.55	5.43	5.55
15	5.02	5.18	---	---	---	---	---	5.89	5.83	5.53	5.41	5.53
16	5.02	5.24	---	---	---	---	---	5.87	5.83	5.51	5.39	5.53
17	5.04	5.30	---	---	---	---	---	5.85	5.81	5.51	5.39	5.51
18	5.06	5.30	---	---	---	---	---	5.83	5.81	5.53	5.39	5.49
19	5.06	5.30	---	---	---	---	5.88	5.85	5.79	5.55	5.37	5.49
20	5.06	5.30	---	---	---	---	5.93	5.91	5.79	5.57	5.39	5.49
21	5.06	---	---	---	---	---	6.03	5.89	5.77	5.55	5.39	5.47
22	5.06	---	---	---	---	---	5.93	5.85	5.75	5.53	5.57	5.45
23	5.06	---	---	---	---	---	5.93	5.83	5.77	5.51	5.57	5.41
24	5.04	---	---	---	---	---	5.89	5.83	5.75	5.51	5.55	5.37
25	5.04	---	---	---	---	---	5.92	6.03	5.75	5.49	5.53	5.33
26	5.02	---	---	---	---	---	5.92	6.01	5.77	5.49	5.53	5.31
27	5.04	---	---	---	---	---	5.95	5.97	5.75	5.47	5.55	5.29
28	5.04	---	---	---	---	---	5.97	5.93	5.73	5.43	5.55	5.27
29	5.02	---	---	---	---	---	5.99	5.91	5.71	5.45	5.53	5.25
30	5.04	---	---	---	---	---	6.01	5.95	5.73	5.43	5.51	5.23
31	5.04	---	---	---	---	---	---	5.93	---	5.43	5.55	---
MAX	5.12	5.30	---	---	---	---	6.03	6.03	5.93	5.77	5.57	5.65
MIN	5.02	5.02	---	---	---	---	5.88	5.83	5.71	5.43	5.25	5.23

454724091303600 BIG SISSABAGAMA LAKE NEAR STONE LAKE, WI--CONTINUED

## WATER-QUALITY RECORDS

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

REMARKS.--Lake sampled near center at a lake depth of about 48 ft. Lake ice-covered during March 17 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene. Additional water-quality data for Big Sissabagama Lake on page 372.

WATER-QUALITY DATA, MARCH 17 TO AUGUST 22, 1989  
(Milligrams per liter unless otherwise indicated)

	Mar. 17		Apr. 25		June 13		July 11		Aug. 22	
Depth of sample (ft)	3.00	48.0	1.50	46.0	1.50	48.0	1.50	48.0	1.50	48.0
Lake stage (ft)	---	---	5.92	---	5.81	---	5.62	---	5.57	---
Specific conductance ( $\mu\text{S}/\text{cm}$ )	70	104	71	84	73	117	77	103	78	102
pH (units)	7.00	6.50	6.50	6.60	7.70	6.50	8.10	6.50	7.70	7.00
Water temperature ( $^{\circ}\text{C}$ )	1.5	4.0	7.0	5.0	17.5	8.5	26.0	9.5	22.0	10.0
Color (Pt-Co. scale)	---	---	15	15	---	---	---	---	---	---
Turbidity (NTU)	---	---	1.4	1.9	---	---	---	---	---	---
Secchi-disc (meters)	---	---	2.40	---	3.40	---	3.40	---	1.50	---
Dissolved oxygen	10.8	0.2	10.5	9.9	8.7	0.3	8.4	0.0	8.2	0.0
Hardness, as $\text{CaCO}_3$	---	---	35	35	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	9.0	9.0	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	3.0	3.0	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	2.0	2.0	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	0.80	0.78	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	37	36	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	2.8	2.8	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.0	0.0	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	0.70	0.70	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	7.3	7.6	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	54	52	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	0.080	0.080	---	---	---	---	---	---
Nitrogen, ammonia, diss. (as N)	---	---	<0.020	0.040	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.40	0.50	---	---	---	---	---	---
Total phosphorus (as P)	---	---	0.020	0.027	0.014	0.079	0.021	0.170	0.021	0.310
Phosphorus, ortho, diss (as P)	---	---	0.006	0.006	0.003	0.046	0.004	0.132	0.003	0.230
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	60	150	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	140	220	---	---	---	---	---	---
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	---	---	5.00	---	3.00	---	6.00	---	22.0	---

3-17-89

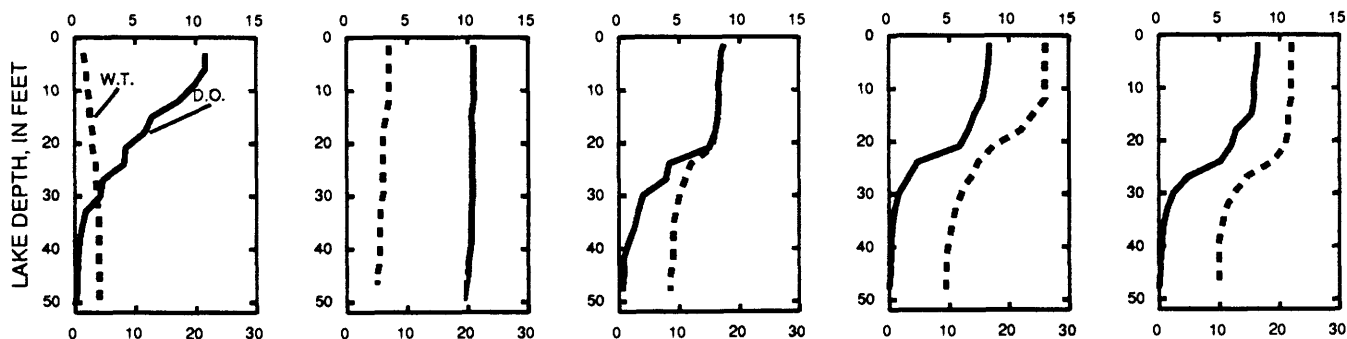
4-25-89

6-13-89

7-11-89

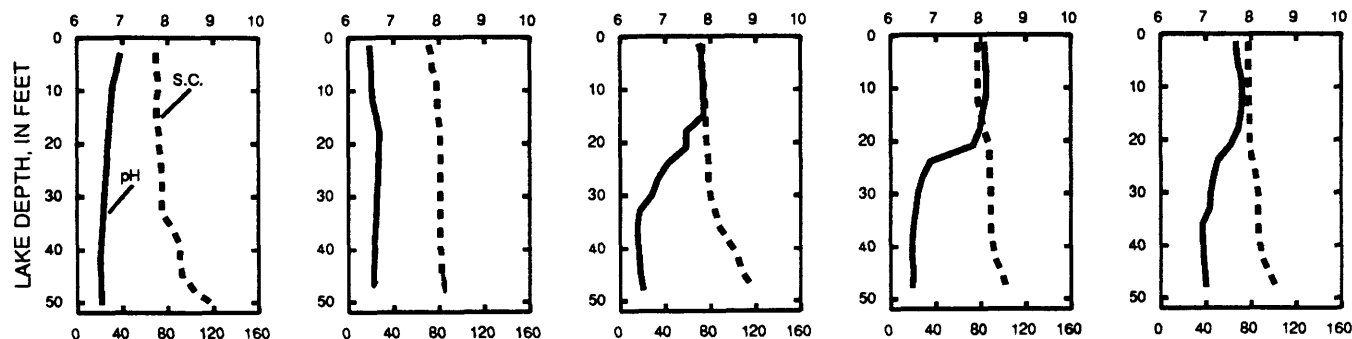
8-22-89

## 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

## CHIPPEWA RIVER BASIN

## 05356500 CHIPPEWA RIVER NEAR BRUCE, WI

LOCATION.--Lat 45°27'08", long 91°15'39", in SE 1/4 sec.5, T.34 N., R.7 W., Rusk County, Hydrologic Unit 07050001, on right bank 1.0 mi east of Bruce and 1.0 mi downstream from Thornapple River.

DRAINAGE AREA.--1,650 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1913 to current year.

REVISED RECORDS.--WSP 875: 1936-38. WSP 1308: 1922, 1937(M). WSP 1508: 1914-26(M), 1927, 1928-31(M), 1932, 1933(M), 1934-36, 1938. WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,059.62 ft above National Geodetic Vertical Datum of 1929. Prior to May 28, 1935, nonrecording gage at railroad bridge 0.8 mi upstream at datum 2.30 ft higher.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair. Flow from 48 percent of the drainage area regulated by Moose Lake and Lake Chippewa.

AVERAGE DISCHARGE.--75 years, 1,467 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,800 ft<sup>3</sup>/s, Sept. 1, 1941, gage height, 20.46 ft, from floodmarks, from rating curve extended above 20,000 ft<sup>3</sup>/s; minimum, 155 ft<sup>3</sup>/s, June 10, 1932, gage height, 0.9 ft, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,090 ft<sup>3</sup>/s, Apr. 5, gage height, 6.70 ft; maximum gage height, 7.55 ft, Mar. 29, backwater from ice; minimum, 240 ft<sup>3</sup>/s, Oct. 15, gage height, 1.19 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Nov. 26 to Apr. 4.)

1.4	360	4.0	2,380
2.0	761	6.0	4,300
		7.0	5,440

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	564	490	820	880	880	880	3600	2230	2240	1230	710	731
2	490	479	900	880	840	900	3300	2050	2110	1350	641	922
3	494	560	740	860	840	920	4200	1730	1990	1260	494	702
4	471	528	620	860	820	940	5000	1530	1960	1110	500	755
5	436	527	640	860	820	940	4520	1590	1860	1010	580	1230
6	570	633	780	880	840	960	4320	1730	1800	932	480	1180
7	543	589	740	900	860	960	4010	1560	1740	920	509	844
8	411	562	800	920	880	980	3570	1510	1620	899	566	731
9	422	525	760	920	900	980	2800	1890	1580	919	440	744
10	435	651	800	900	900	1000	2200	1730	1410	904	498	641
11	439	652	700	880	900	1000	1880	1520	1370	894	552	656
12	427	566	620	880	880	1100	1650	1280	1340	831	602	643
13	505	582	1100	860	880	1100	1440	1160	1290	902	659	608
14	510	570	1100	860	880	780	1340	1150	1470	879	855	609
15	408	566	1000	860	880	680	1380	1020	1810	887	962	536
16	407	1180	960	860	860	660	1370	990	1540	906	706	578
17	437	1880	960	860	860	640	1390	963	1350	896	598	565
18	483	1600	980	860	840	640	1370	927	1380	928	666	518
19	469	1230	980	860	840	640	1320	918	1340	1010	531	519
20	477	1170	960	860	840	640	1290	1130	1130	967	612	591
21	434	937	960	860	820	640	1150	1390	1010	938	586	478
22	620	885	960	840	820	660	968	1130	998	863	1170	512
23	447	886	1000	840	820	660	1000	1030	1100	932	1450	509
24	503	707	1100	840	800	680	957	1050	1120	926	1030	429
25	467	690	1100	820	800	700	848	2030	1110	737	812	523
26	466	680	1000	820	820	760	914	2540	1100	712	712	446
27	589	720	1000	820	840	1200	858	1870	1230	762	680	439
28	493	780	980	840	860	3000	1010	1520	1020	643	672	442
29	507	760	980	860	---	4800	1420	1250	1020	729	629	372
30	473	760	920	880	---	4500	2240	1540	919	850	547	392
31	467	---	880	880	---	4100	---	1920	---	680	578	---
TOTAL	14864	23345	27840	26800	23820	39040	63315	45878	42957	28406	21027	18845
MEAN	479	778	898	865	851	1259	2110	1480	1432	916	678	628
MAX	620	1880	1100	920	900	4800	5000	2540	2240	1350	1450	1230
MIN	407	479	620	820	800	640	848	918	919	643	440	372

CAL YR 1988 TOTAL 273588 MEAN 748 MAX 3300 MIN 292  
WTR YR 1989 TOTAL 376137 MEAN 1031 MAX 5000 MIN 372

## CHIPPEWA RIVER BASIN

149

05360500 FLAMBEAU RIVER NEAR BRUCE, WI

LOCATION.--Lat 45°22'21", long 91°12'34", in Lot 7 of NW 1/4 sec.2, T.33 N., R.7 W., Rusk County, Hydrologic Unit 07050002, on right bank 2.5 mi downstream from Thornapple Powerplant, 6.0 mi upstream from mouth, and 7.0 mi southeast of Bruce.

DRAINAGE AREA.--1,860 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair. Flow regulated by several powerplants above station and by Rest Lake and Flambeau Flowage Reservoirs.

AVERAGE DISCHARGE.--38 years, 1,815 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft<sup>3</sup>/s, Apr. 2, 1986, gage height, 10.45 ft; maximum gage height, 10.90 ft, May 1, 1954; minimum, about 100 ft<sup>3</sup>/s, Aug. 7, 9, 1957, gage height, 2.06 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,330 ft<sup>3</sup>/s, May 4, gage height, 5.95 ft; maximum gage height, 8.63 ft, Mar. 28, backwater from ice; minimum, 192 ft<sup>3</sup>/s, Sept. 25, gage height, 1.98 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Mar. 31.)

2.5	461	5.0	3,480
3.0	833	6.0	5,440
4.0	1,920		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	753	702	1140	1000	940	820	2730	2560	1930	2320	769	828
2	621	835	918	1000	900	800	2580	2510	1710	2840	859	776
3	676	932	1120	980	960	860	2690	2460	1630	2480	791	925
4	720	673	1140	1000	960	840	2840	2490	1390	2090	783	943
5	574	1040	1120	980	940	800	3620	2340	1600	2210	967	1020
6	595	872	1060	1000	920	900	4520	2020	1360	1690	653	1030
7	613	1110	1070	980	900	860	3560	2110	1240	1600	626	1120
8	625	945	897	920	940	860	3790	2110	1100	1130	719	864
9	626	1010	760	980	980	880	3740	2140	1090	1150	697	920
10	591	956	660	940	1000	900	2690	1640	1110	1030	590	831
11	572	987	680	860	920	960	2580	1870	1110	1170	689	763
12	544	1000	540	820	900	1200	2530	1640	1130	1140	599	738
13	572	1200	560	860	920	880	1370	1380	1170	1080	661	619
14	549	1170	960	940	940	820	1310	1260	1600	977	1330	650
15	524	1290	840	900	920	1000	1770	1180	1470	935	907	676
16	590	1450	780	860	920	1000	1850	1080	1540	1070	781	679
17	637	2090	780	860	920	860	2150	1080	1500	1140	635	661
18	765	2760	760	940	900	760	2730	1160	1620	1180	594	690
19	645	2470	560	960	860	860	2800	1030	1360	1190	590	622
20	663	2000	740	1000	880	760	2560	1130	1510	1140	536	579
21	742	1980	900	1000	900	840	2230	1350	1370	1070	533	553
22	741	1590	940	960	880	880	2000	1270	1130	1010	1080	594
23	654	1440	1000	880	820	800	1980	1250	1310	914	1150	558
24	562	1590	1100	840	760	880	1760	1310	2200	1010	1020	575
25	720	1350	1000	740	760	1000	1760	1580	2340	1020	821	540
26	758	1270	1000	860	760	1200	1850	1830	2290	949	588	535
27	811	1480	1000	900	800	1600	1730	1300	2330	914	604	549
28	713	1490	1100	960	860	2800	1730	1430	1850	846	822	535
29	789	1440	1100	900	---	4900	2030	1330	1970	1010	795	485
30	610	1440	960	960	---	4500	2540	1320	1880	923	467	470
31	589	---	920	940	---	3000	---	1580	---	861	775	---
TOTAL	20144	40562	28105	28720	25060	40020	74020	50740	46840	40089	23431	21328
MEAN	650	1352	907	926	895	1291	2467	1637	1561	1293	756	711
MAX	811	2760	1140	1000	1000	4900	4520	2560	2340	2840	1330	1120
MIN	524	673	540	740	760	760	1310	1030	1090	846	467	470

CAL YR 1988 TOTAL 358576 MEAN 980 MAX 4290 MIN 419  
WTR YR 1989 TOTAL 439059 MEAN 1203 MAX 4900 MIN 467

## CHIPPEWA RIVER BASIN

05362000 JUMP RIVER AT SHELDON, WI

LOCATION.--Lat 45°18'29", long 90°57'23", in sec.26, T.33 N., R.5 W., Rusk County, Hydrologic Unit 07050004, on right bank just downstream from highway bridge in Sheldon, 1,500 ft upstream from Shoulder Creek and 11 mi upstream from mouth.

DRAINAGE AREA.--576 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1915 to current year.

REVISED RECORDS.--WSP 975: 1938. WSP 1175: Drainage area. WSP 1438: 1916-17(M), 1919(M), 1920, 1921(M), 1922, 1923-26(M), 1927, 1928-31(M), 1932, 1933-37(M), 1945-46(M), 1948-50(M).

GAGE.--Water-stage recorder. Datum of gage is 1,092.75 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 9, 1939, and Sept. 1, 1941, to Apr. 1, 1953, Feb. 18, 1954, to Sept. 27, 1964, nonrecording gage at same site and datum. Apr. 2, 1953, to Feb. 18, 1954, nonrecording gage in creamery wellhouse 400 ft upstream at same datum. Feb. 9, 1939, to Aug. 31, 1941, and from Sept. 27, 1964, water-stage recorder at present site and datum.

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except for ice-affected periods, which are poor. Data-collection platform at station.

AVERAGE DISCHARGE.--74 years, 515 ft<sup>3</sup>/s, 12.14 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 46,000 ft<sup>3</sup>/s, Aug. 31, 1941, gage height, 18.8 ft from floodmark, from rating curve extended above 13,000 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; minimum observed, 11 ft<sup>3</sup>/s, Dec. 18, 1943, gage height, 3.99 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	0600	ice jam	*9.65	Mar. 29	0100	*3,500	8.04

Minimum discharge, 30 ft<sup>3</sup>/s, Sept. 27, gage height 2.95 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1 to Nov. 15; stage-discharge relation affected by ice Oct. 29 to Nov. 3, Nov. 21-25, Nov. 29 to Mar. 28.)

2.8	24	3.5	142	6.0	1,410
2.9	33	4.0	291	7.0	2,290
3.0	45	4.5	475	8.0	3,450
3.2	72	5.0	727		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	78	230	84	70	52	1650	1190	1120	813	56	70
2	50	70	200	78	70	52	1510	1010	892	1010	55	70
3	48	74	230	74	70	54	1710	795	659	679	52	72
4	48	80	210	70	70	56	2300	649	502	435	58	87
5	44	97	200	68	60	58	2700	605	386	305	51	117
6	42	120	190	66	56	58	2290	652	310	233	47	127
7	44	152	180	64	54	60	2030	609	260	185	57	119
8	44	155	200	64	52	64	1830	553	235	146	57	103
9	44	154	190	62	52	70	1490	540	206	135	53	90
10	42	158	160	60	52	76	1150	472	180	130	50	86
11	41	159	150	58	52	80	952	406	159	134	46	85
12	40	164	130	56	52	84	782	344	148	133	45	78
13	40	166	130	58	52	88	657	305	141	124	45	69
14	44	159	120	60	50	92	586	273	215	115	121	61
15	43	162	110	60	50	94	547	254	589	100	168	54
16	42	253	100	60	50	96	557	234	646	91	193	51
17	43	594	100	60	50	98	591	211	482	79	168	49
18	45	557	100	60	49	98	642	193	351	73	129	46
19	48	479	110	60	49	100	618	180	276	154	102	44
20	63	441	110	60	48	110	562	189	222	244	91	41
21	60	380	110	60	47	100	509	260	183	198	81	39
22	59	310	120	66	47	110	463	257	157	155	93	44
23	64	290	120	68	46	140	441	230	202	125	117	41
24	72	270	120	68	49	230	413	228	367	102	154	34
25	88	250	110	68	54	400	401	1360	387	84	130	33
26	98	236	100	68	52	720	400	2360	342	75	113	32
27	94	256	94	68	50	1400	392	1750	378	66	103	31
28	92	353	86	68	52	3000	405	1130	333	59	87	31
29	84	330	86	70	---	3240	605	738	267	59	74	31
30	80	290	92	70	---	2810	1070	892	245	58	66	32
31	86	---	90	70	---	2150	---	1190	---	56	63	---
TOTAL	1783	7237	4278	2026	1505	15840	30253	20059	10840	6355	2745	1867
MEAN	57.5	241	138	65.4	53.7	511	1008	647	361	205	88.5	62.2
MAX	98	594	230	84	70	3240	2700	2360	1120	1010	193	127
MIN	40	70	86	56	46	52	392	180	141	56	45	31
CFSM	.10	.42	.24	.11	.09	.89	1.75	1.12	.63	.36	.15	.11
IN.	.12	.47	.28	.13	.10	1.02	1.95	1.30	.70	.41	.18	.12

CAL YR 1988 TOTAL 82678 MEAN 226 MAX 2510 MIN 28 CFSM .39 IN. 5.34  
WTR YR 1989 TOTAL 104788 MEAN 287 MAX 3240 MIN 31 CFSM .50 IN. 6.77



## CHIPPEWA RIVER BASIN

151

05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI

LOCATION.--Lat 44°59'20", long 91°26'52", in SW 1/4 SW 1/4 sec.14, T.29 N., R.9 W., Chippewa County, Hydrologic Unit 07050005, on right bank 15 ft downstream from town road, approximately 0.4 mi upstream from U.S. Highway 53, and 1.4 mi southwest of Tilden.

DRAINAGE AREA.--4.17 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1986 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 940 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Ice periods, Dec. 10-19, and Dec. 23 to Mar. 24. Records good except those for ice-affected periods and values less than 5 ft<sup>3</sup>/s, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 454 ft<sup>3</sup>/s, Mar. 27, 1989, gage height, 5.98 ft; minimum, 0.50 ft<sup>3</sup>/s, July 10, 11, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 454 ft<sup>3</sup>/s, Mar. 27, gage height, 5.98 ft; minimum, 0.50 ft<sup>3</sup>/s, July 10, 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.98	1.1	.84	.70	.60	3.1	1.2	2.9	23	.62	4.3
2	1.1	.95	1.1	.82	.70	.60	4.5	1.1	1.4	3.0	.62	1.3
3	1.0	1.0	1.1	.82	.70	.60	11	1.0	1.1	2.1	.60	1.0
4	1.0	1.1	1.1	.82	.70	.58	4.9	1.1	.95	.78	.59	6.5
5	1.0	1.5	1.1	.82	.70	.58	3.3	1.3	.89	.60	.59	1.8
6	1.0	1.2	1.1	.82	.70	.58	1.9	1.3	.87	.57	.56	1.1
7	1.0	1.2	1.1	.80	.68	.58	1.6	1.2	.90	.55	.57	.95
8	1.0	1.1	1.2	.80	.68	.58	1.4	1.0	.92	.55	.58	.95
9	1.0	1.1	1.1	.80	.68	.58	1.3	1.1	.88	.54	.62	.95
10	.97	1.1	.98	.80	.68	.62	1.2	.97	.85	.51	.62	1.0
11	.93	1.0	.96	.80	.68	1.0	1.2	.95	.85	2.2	.61	1.1
12	.92	1.2	.94	.78	.68	1.4	1.2	1.2	.85	.68	.64	.85
13	.92	1.3	.96	.74	.66	1.6	1.2	1.4	.90	.60	2.7	.84
14	.95	1.3	.98	.74	.66	1.5	1.2	1.5	8.5	.58	5.9	.81
15	.97	1.7	.96	.74	.66	1.4	1.2	1.4	2.0	.58	1.1	.78
16	1.0	3.4	.96	.74	.66	1.3	1.2	1.2	.88	.58	.87	.76
17	.96	1.3	.96	.74	.66	1.1	1.3	1.2	.80	.57	.78	.71
18	.97	1.1	.98	.74	.66	1.0	1.2	1.2	.75	2.2	.75	.68
19	1.0	1.2	1.0	.74	.66	.94	1.2	1.3	.71	.74	.74	.65
20	.96	1.1	5.2	.74	.66	.82	1.2	1.3	.67	.61	.93	.65
21	1.1	1.1	2.2	.74	.66	.72	1.1	1.2	.63	.59	.85	.65
22	.93	1.1	1.9	.72	.66	.72	1.2	1.2	.64	.57	8.8	.66
23	.96	1.1	1.1	.72	.64	.78	1.1	1.2	.76	.56	1.1	.66
24	.92	1.1	.96	.72	.64	1.2	1.1	6.1	.63	.56	.89	.64
25	.88	1.2	.94	.72	.64	5.9	1.2	6.7	.63	.56	.78	.64
26	.90	1.5	.90	.72	.62	81	1.2	1.7	2.0	.54	.80	.64
27	1.0	1.7	.88	.72	.62	180	1.2	1.4	.77	.55	.84	.64
28	.97	1.3	.86	.72	.62	57	1.5	1.3	.57	.52	.83	.64
29	.88	1.1	.86	.72	---	17	2.0	3.4	.55	1.9	.82	.64
30	.87	1.1	.86	.70	---	8.0	1.5	45	28	1.0	.92	.66
31	.94	---	.84	.70	---	4.0	---	4.0	---	.65	1.4	---
TOTAL	30.20	38.13	37.18	23.54	18.66	374.28	59.4	97.12	63.75	49.54	39.02	34.15
MEAN	.97	1.27	1.20	.76	.67	12.1	1.98	3.13	2.12	1.60	1.26	1.14
MAX	1.2	3.4	5.2	.84	.70	180	11	45	28	23	8.8	6.5
MIN	.87	.95	.84	.70	.62	.58	1.1	.95	.55	.51	.56	.64

CAL YR 1988 TOTAL 475.24 MEAN 1.30 MAX 7.5 MIN .67  
WTR YR 1989 TOTAL 864.97 MEAN 2.37 MAX 180 MIN .51

## CHIPPEWA RIVER BASIN

05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--December 1986 to September 1989 (discontinued).

## PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: December 1986 to September 1989.

TOTAL PHOSPHORUS DISCHARGE: December 1986 to September 1989.

TOTAL AMMONIA NITROGEN DISCHARGE: December 1986 to September 1989.

WATER TEMPERATURE: May 1987 to September 1989.

INSTRUMENTATION.--Water-quality sampler since December 1986. Water-quality monitor since May 1987.

## EXTREMES FOR PERIOD OF RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 280 tons, Mar. 26, 1989; minimum daily, 0.01 ton, Apr. 29, 1988.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 1,970 lbs, Mar. 26, 1989; minimum daily, 0.10 lbs, June 13, 1989.

TOTAL AMMONIA NITROGEN DISCHARGE: Maximum daily, 3,410 lbs, Mar. 27, 1989; minimum daily, 0.05 lbs, July 15, 1988.

WATER TEMPERATURE: Maximum observed, 26.5°C, Aug. 1, 1988; minimum observed, 0.0°C, Feb. 8-9, Mar. 1-2, 1989.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 280 tons, Mar. 26; minimum daily, 0.02 ton, Dec. 26-31, Jan. 1-5, Apr. 18-27, May 1-12, July 31, and Aug. 1-8.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 1,970 lbs, Mar. 26; minimum daily, 0.10 lbs, June 13.

TOTAL AMMONIA NITROGEN DISCHARGE: Maximum daily, 3,410 lbs, Mar. 27; minimum daily, 0.12 lbs, July 28.

WATER TEMPERATURE: Maximum observed, 22.0°C, June 26; minimum observed, 0.0°C, Feb. 8-9, Mar. 1-2.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	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 1988						MAY 1989				
26...	0950	0.89	148	6.0	--	01...	1335	1.1	170	8.5
26...	1045	0.91	148	6.0	11.2	01...	1420	1.1	170	8.5
DEC						30...	1121	18	145	14.5
30...	1040	0.83	150	1.0	--	30...	1240	13	145	14.5
MAR 1989						JUN				
13...	1210	1.6	360	2.5	--	01...	1352	2.7	--	17.5
27...	0940	109	--	2.5	--	12...	1150	0.86	195	15.0
27...	1420	430	--	2.5	--	AUG				
27...	1500	413	--	2.5	--	14...	1022	7.2	155	18.0
28...	0946	73	--	2.5	--					

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1988					
26...	1030	0.88	--	--	23
26...	1045	0.91	0.050	0.280	--
NOV					
15...	2045	2.7	0.600	5.20	787
15...	2145	3.2	0.470	3.10	542
15...	2230	3.8	0.870	4.50	646
16...	0100	6.0	0.480	2.30	266
16...	0600	4.8	0.740	2.70	358
16...	0945	3.2	0.520	1.90	227
16...	1210	2.7	0.380	1.60	177
DEC					
20...	1815	6.4	1.90	2.40	275
21...	0015	4.3	1.90	2.20	136
30...	1040	0.83	0.110	0.330	10
MAR 1989					
13...	1210	1.6	7.90	2.30	37
24...	2145	11.2	6.80	1.70	--
25...	0730	2.6	10.0	2.10	44
25...	1000	3.1	12.0	2.80	56
25...	1145	3.8	13.0	3.20	75
25...	1230	4.7	--	--	139
25...	1330	5.8	--	--	130
25...	1515	7.4	--	--	187
25...	1645	9.4	11.0	3.00	223
26...	1215	16	8.80	2.80	--
26...	1300	22	7.80	3.10	516
26...	1330	31	7.80	3.40	436
26...	1331	31	13.0	3.30	--
26...	1415	48	7.20	4.00	837
26...	1445	66	6.60	3.70	913

## CHIPPEWA RIVER BASIN

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05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1989					
26...	1515	108	6.40	5.70	1450
26...	1545	179	6.20	4.70	1580
26...	1615	237	5.80	6.80	1130
27...	0940	109	4.60	2.00	205
27...	1420	430	2.90	2.50	755
27...	1421	431	3.40	1.10	672
27...	1450	439	2.90	3.00	809
27...	1630	372	2.80	2.20	574
27...	1745	322	--	--	498
27...	1900	230	3.20	2.00	360
27...	1945	175	--	--	351
27...	2045	126	3.20	1.70	251
27...	2215	87	--	--	309
28...	0001	61	3.20	1.50	145
28...	0045	53	--	--	131
28...	0615	79	3.10	1.20	310
28...	0940	74	3.10	1.40	188
28...	0946	73	3.40	1.20	92
28...	1115	63	3.00	1.40	140
28...	1145	63	--	--	128
28...	2100	42	2.60	1.20	183
29...	0430	16	2.70	0.990	93
29...	1050	8.5	2.60	0.940	--
30...	0850	7.7	3.00	0.750	26
31...	0920	4.0	3.00	0.760	16
MAY					
01...	1420	1.1	0.060	0.370	6
24...	1745	2.8	--	6.70	--
25...	1430	3.1	1.00	0.960	426
26...	0400	1.9	0.760	1.10	193
29...	1715	2.4	1.00	0.900	--
29...	1945	4.0	0.700	2.70	--
29...	2115	5.7	1.00	3.90	916
29...	2200	8.2	1.40	4.80	1280
29...	2245	12	1.60	7.30	1040
29...	2315	23	0.960	2.20	3460
30...	0015	49	0.880	3.20	2650
30...	0100	66	0.900	4.20	2740
30...	0115	95	0.830	3.70	2250
30...	0645	73	0.770	2.80	1350
30...	0800	47	0.740	2.10	1350
30...	0930	30	0.720	1.90	1200
30...	1121	18	0.740	0.920	1360
30...	1145	16	0.660	0.400	1230
30...	1203	15	--	--	1080
JUN					
14...	0700	2.6	0.750	0.030	1370
14...	0815	3.7	0.270	3.20	791
14...	0915	5.4	0.280	0.970	251
14...	0945	7.0	0.620	1.30	265
14...	1015	11	0.750	1.80	300
14...	1030	16	0.700	1.20	383
14...	1045	21	0.660	4.60	446
14...	1100	28	0.600	0.970	556
14...	1130	36	0.490	0.880	700
14...	1415	20	0.300	0.760	443
14...	1545	11	0.250	0.740	289
14...	1730	6.0	0.240	0.640	244
14...	2045	3.8	0.300	0.560	142
15...	1515	1.3	--	--	120
15...	1525	1.3	0.370	0.770	--
26...	1350	3.4	0.350	0.520	--
26...	1400	3.7	0.690	2.10	465
26...	1445	4.8	0.510	0.920	297
26...	1915	2.6	0.680	0.690	434
27...	1350	0.68	0.450	0.920	--
30...	1945	13	0.280	2.70	1040
30...	2015	17	0.500	0.970	3020
30...	2045	137	0.750	3.30	4340
30...	2100	236	0.840	0.880	5260
30...	2115	261	1.40	0.920	5120
30...	2245	183	0.640	0.800	3010
30...	2315	133	0.570	0.970	2440
JUL					
01...	0001	88	0.570	0.920	1500
01...	0100	61	0.550	0.860	1300
01...	0230	38	0.520	0.850	1020

## CHIPPEWA RIVER BASIN

05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUL 1989					
01...	0400	24	0.490	0.880	727
01...	0600	14	0.500	0.910	634
01...	0900	21	0.750	1.00	765
01...	0915	35	0.780	2.40	790
01...	0930	53	0.650	0.830	954
01...	0945	62	0.410	0.760	1440
01...	1200	38	0.560	0.900	1100
01...	1315	24	0.580	0.980	707
01...	1500	13	0.530	0.970	497
01...	1730	7.2	0.530	0.810	359
01...	2015	5.0	0.200	0.850	308
02...	0945	3.0	0.330	0.760	215
03...	0945	2.4	0.660	0.790	122
05...	1000	0.62	0.230	0.340	43
13...	1530	0.60	0.120	0.380	--
13...	1600	0.60	--	--	21
29...	1715	3.4	0.470	1.00	120
29...	1800	4.1	0.340	1.40	78
30...	0015	2.1	0.260	1.20	191
31...	1000	0.64	0.100	0.430	--
31...	1015	0.64	--	--	10
AUG					
09...	1010	0.64	0.040	0.310	--
13...	0130	2.4	1.00	3.90	1510
13...	0515	3.6	0.690	3.90	1890
13...	2045	1.6	0.630	1.00	151
13...	2145	2.7	0.760	3.30	3110
13...	2330	3.8	0.670	3.00	724
14...	0045	4.4	0.630	2.50	452
14...	0245	5.2	0.410	1.30	124
14...	0330	6.0	0.580	1.50	75
14...	0415	8.3	0.830	2.30	64
14...	0530	12	0.780	2.30	56
14...	1022	7.2	0.650	2.10	--
14...	1030	6.9	0.660	2.30	88
14...	1100	6.2	0.620	2.00	79
14...	1315	4.7	0.520	1.70	66
14...	1700	3.5	0.350	0.990	46
15...	1100	1.1	--	--	19
15...	1115	1.1	0.260	0.620	--
22...	0330	5.4	0.130	1.90	1080
22...	0415	6.4	0.230	1.30	185
22...	0445	10	0.370	1.90	973
22...	0515	17	0.520	2.00	137
22...	0545	23	0.460	1.90	150
22...	1015	13	0.240	1.70	201
22...	1145	7.0	0.210	1.60	178
22...	1345	4.8	0.160	1.40	158
22...	1815	3.6	0.120	0.960	78
22...	2359	1.6	--	--	95
22...	2400	1.6	0.140	0.900	--
23...	1500	0.99	--	--	54
23...	1510	0.99	0.110	0.540	--
29...	1203	0.85	--	--	74
31...	2345	1.7	0.080	0.750	99
SEP					
01...	0100	2.8	0.140	1.10	95
01...	0215	3.7	0.750	1.20	83
01...	0315	4.4	0.120	0.890	594
01...	0530	5.0	0.190	0.920	110
01...	0745	5.7	0.270	2.50	56
01...	1630	4.3	0.970	1.60	95
01...	2000	2.8	0.540	1.30	75
04...	0645	2.0	0.230	1.80	--
04...	0745	3.3	0.310	2.00	1210
04...	0845	4.0	0.400	2.10	840
04...	1045	4.7	0.140	1.50	450
04...	1145	5.5	0.220	1.10	134
04...	1230	7.7	0.260	1.00	105
04...	1315	12	0.540	1.50	94
04...	1415	16	0.780	1.70	63
04...	1930	9.1	0.660	1.40	63
04...	2145	5.3	0.520	1.40	80
05...	0030	3.9	0.450	1.40	69
05...	0445	2.2	0.320	1.10	70
05...	1130	1.5	0.150	0.600	85

## 05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.06	.05	.02	.03	.04	.23	.02	.39	56	.02	1.1
2	.03	.06	.05	.02	.03	.05	1.7	.02	.19	1.5	.02	.24
3	.03	.06	.05	.02	.03	.05	6.0	.02	.15	.63	.02	.19
4	.03	.07	.05	.02	.03	.05	.47	.02	.13	.14	.02	2.2
5	.03	.19	.05	.02	.03	.05	.22	.02	.12	.07	.02	.35
6	.03	.08	.05	.03	.04	.05	.05	.02	.12	.06	.02	.24
7	.03	.08	.04	.02	.04	.05	.04	.02	.12	.06	.02	.21
8	.03	.07	.04	.03	.04	.05	.04	.02	.12	.05	.02	.20
9	.04	.07	.04	.03	.04	.05	.03	.02	.12	.05	.03	.19
10	.04	.07	.03	.03	.04	.05	.03	.02	.11	.04	.03	.20
11	.04	.07	.03	.03	.04	.09	.03	.02	.11	.86	.03	.21
12	.04	.08	.03	.03	.04	.12	.03	.02	.11	.08	.04	.16
13	.04	.09	.03	.03	.04	.14	.03	.03	.12	.04	2.7	.15
14	.04	.09	.03	.03	.04	.14	.03	.03	9.4	.03	1.3	.14
15	.04	.92	.03	.03	.04	.13	.03	.03	.63	.03	.06	.13
16	.04	2.3	.03	.03	.04	.12	.03	.03	.12	.03	.04	.13
17	.04	.19	.03	.03	.04	.10	.03	.03	.10	.03	.04	.11
18	.05	.08	.03	.03	.04	.10	.02	.03	.10	.12	.04	.11
19	.05	.08	.03	.03	.04	.09	.02	.03	.09	.79	.04	.10
20	.05	.07	4.9	.03	.04	.08	.02	.03	.08	.09	.05	.10
21	.08	.07	.60	.03	.04	.07	.02	.03	.08	.03	.05	.09
22	.05	.06	.39	.03	.04	.07	.02	.03	.07	.03	4.1	.09
23	.05	.06	.03	.03	.04	.08	.02	.03	.09	.03	.18	.09
24	.05	.06	.03	.03	.04	.13	.02	28	.07	.03	.13	.08
25	.05	.06	.03	.03	.04	3.3	.02	25	.07	.03	.12	.08
26	.06	.19	.02	.03	.04	280	.02	.72	1.4	.03	.13	.08
27	.06	.28	.02	.03	.04	202	.02	.40	.19	.03	.14	.08
28	.06	.06	.02	.03	.05	30	.05	.26	.06	.03	.14	.07
29	.06	.06	.02	.03	---	8.5	.08	12	.06	.48	.15	.07
30	.06	.05	.02	.03	---	.70	.05	180	252	.24	.19	.07
31	.06	---	.02	.03	---	.36	---	.54	---	.02	.31	---
TOTAL	1.39	5.73	6.82	0.87	1.08	526.81	9.40	247.49	266.52	61.68	10.20	7.26

WTR YR 1989 TOTAL 1145.25

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.61	1.30	1.06	1.48	.99	.69	8.48	2.33	1.72	103	1.39	34.6
2	1.51	1.23	1.07	1.43	.98	.69	33.2	2.15	.74	11.3	1.33	5.73
3	1.45	1.27	1.09	1.42	.97	.68	87.5	1.98	.50	7.83	1.24	2.40
4	1.41	1.35	1.06	1.41	.97	.66	14.0	2.14	.37	2.08	1.18	49.2
5	1.42	3.71	1.10	1.40	.96	.65	12.7	2.63	.30	1.14	1.13	8.22
6	1.44	1.46	1.12	1.39	.95	.65	4.67	2.52	.26	1.06	1.04	3.36
7	1.44	1.35	1.08	1.35	.92	.64	3.76	2.22	.23	1.04	1.02	2.89
8	1.42	1.30	1.13	1.34	.91	.64	3.46	1.95	.20	1.05	1.00	2.80
9	1.42	1.24	1.07	1.33	.91	.63	3.18	2.00	.17	1.05	1.08	2.71
10	1.39	1.20	.96	1.32	.90	.67	2.89	1.84	.14	1.01	1.37	2.86
11	1.32	1.12	.94	1.31	.89	1.08	2.83	1.78	.12	6.36	1.77	3.00
12	1.32	1.23	.92	1.27	.89	1.50	2.71	2.23	.11	1.37	1.61	2.21
13	1.32	2.42	.94	1.19	.85	1.70	2.68	2.61	.10	1.23	27.3	2.12
14	1.37	2.42	.96	1.19	.85	1.58	2.80	2.79	38.2	1.17	59.0	1.98
15	1.41	12.4	.94	1.18	.84	1.47	2.65	2.54	6.66	1.16	3.64	1.86
16	1.46	33.5	.94	1.17	.84	1.35	2.66	2.22	1.30	1.15	1.69	1.76
17	1.40	2.88	.94	1.16	.83	1.14	2.87	2.11	1.17	1.12	1.17	1.59
18	1.43	1.12	.96	1.15	.83	1.03	2.60	2.10	1.10	6.36	1.15	1.46
19	1.51	1.17	.98	1.14	.82	.96	2.56	2.38	1.04	1.42	1.18	1.38
20	1.42	1.12	73.8	1.14	.81	.83	2.54	2.38	.99	1.16	1.53	1.33
21	1.68	1.08	12.4	1.13	.81	.72	2.47	2.15	.93	1.11	1.45	1.29
22	1.39	1.06	7.51	1.09	.80	.72	2.50	2.14	.94	1.06	76.6	1.27
23	1.43	1.07	1.82	1.08	.77	.77	2.43	2.06	1.12	1.02	3.57	1.23
24	1.38	1.12	1.60	1.07	.77	3.92	2.39	13.9	.93	1.01	1.87	1.15
25	1.33	1.16	1.59	1.07	.76	79.5	2.49	33.6	.93	1.00	1.33	1.11
26	1.36	3.71	1.54	1.06	.73	1970	2.45	8.00	7.78	.96	1.33	1.08
27	1.50	5.39	1.52	1.05	.73	1940	2.44	4.51	2.76	.96	1.36	1.04
28	1.41	1.27	1.50	1.04	.72	365	4.27	2.92	.84	.90	1.32	1.01
29	1.25	1.12	1.52	1.04	---	138	6.34	42.5	.82	9.81	1.28	.99
30	1.21	1.13	1.53	1.00	---	34.3	4.27	631	142	4.58	1.40	.98
31	1.28	---	1.49	.99	---	15.4	---	2.75	---	1.61	4.00	---
TOTAL	43.69	92.90	127.08	37.39	24.00	4567.57	232.79	790.43	214.47	177.08	207.33	144.61

WTR YR 1989 TOTAL 6659.34

## CHIPPEWA RIVER BASIN

05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI--CONTINUED

NITROGEN, AMMONIA, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	.26	.69	.49	.29	.18	40.7	.47	2.3	72.4	.33	11.6
2	.46	.26	.69	.47	.28	.18	59.2	.35	.80	6.1	.30	1.0
3	.43	.27	.70	.47	.28	.17	129	.32	.56	7.3	.26	.55
4	.40	.36	.68	.46	.28	.17	22.3	.35	.46	1.8	.23	22.1
5	.39	.94	.71	.45	.27	.16	6.3	.42	.40	.82	.21	2.7
6	.39	.38	.71	.45	.27	.16	2.3	.41	.37	.58	.18	.71
7	.38	.31	.68	.43	.26	.16	1.2	.36	.36	.42	.16	.51
8	.36	.31	.72	.43	.26	.16	.70	.31	.35	.32	.15	.41
9	.35	.30	.67	.42	.25	.16	.57	.32	.31	.24	.15	.34
10	.33	.29	.60	.42	.25	.44	.52	.29	.29	.17	.14	.33
11	.31	.28	.59	.41	.25	3.0	.50	.28	.27	3.2	.14	.57
12	.30	.44	.58	.40	.25	17.8	.48	.36	.25	.52	.35	.36
13	.29	.65	.59	.37	.24	49.3	.47	.42	.25	.43	11.1	.34
14	.30	.55	.60	.37	.23	20.8	.49	.44	19.4	.34	21.0	.32
15	.30	2.8	.58	.37	.23	13.3	.46	.40	3.9	.28	1.7	.31
16	.30	9.9	.58	.36	.23	8.5	.46	.35	.71	.22	.79	.29
17	.28	1.0	.58	.36	.22	4.9	.49	.34	.41	.18	.45	.26
18	.28	.84	.59	.35	.22	3.1	.44	.33	.35	3.7	.38	.25
19	.29	.82	.60	.35	.22	2.0	.43	.38	.31	.50	.36	.23
20	.29	.73	60.6	.35	.22	1.2	.42	.38	.28	.36	.43	.23
21	.38	.66	11.4	.34	.21	.72	.41	.34	.24	.31	.42	.22
22	.25	.61	4.2	.33	.21	.55	.41	.34	.23	.27	15.6	.22
23	.26	.57	1.4	.33	.20	.53	.40	.32	.25	.24	.76	.21
24	.25	.56	.62	.32	.20	15.4	.39	34.2	.19	.21	.56	.20
25	.24	.54	.60	.32	.20	373	.40	41.6	.18	.19	.48	.20
26	.24	1.3	.56	.31	.19	2670	.39	3.2	6.7	.16	.47	.19
27	.39	2.1	.54	.31	.19	3410	.40	.69	2.0	.15	.47	.19
28	.28	.85	.52	.31	.19	1000	3.3	.60	.43	.12	.45	.18
29	.24	.74	.52	.30	---	283	6.5	17.9	.36	3.5	.43	.18
30	.24	.74	.51	.29	---	130	1.7	202	145	1.2	.46	.18
31	.25	---	.49	.29	---	62.7	---	5.0	---	.41	.66	---
TOTAL	9.95	30.36	94.10	11.63	6.59	8071.74	281.73	313.47	187.91	106.64	59.57	45.38

WTR YR 1989 TOTAL 9219.07

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.5	16.0	16.5	6.5	5.5	6.0	3.5	3.0	3.5	1.5	1.0	1.5
2	15.5	13.5	14.5	6.0	5.0	5.5	3.5	3.0	3.0	1.0	1.0	1.0
3	13.5	12.0	12.5	7.5	6.0	6.5	3.5	3.5	3.5	1.0	1.0	1.0
4	12.0	11.0	11.5	7.5	6.5	7.0	3.5	3.0	3.0	1.0	1.0	1.0
5	11.0	9.5	10.0	7.0	5.5	6.5	3.5	3.0	3.0	1.5	1.0	1.0
6	10.0	9.0	9.5	5.5	5.0	5.5	3.5	3.0	3.0	1.5	1.5	1.5
7	11.0	9.5	10.0	6.5	5.5	6.0	3.5	3.0	3.0	2.0	1.5	1.5
8	11.5	10.0	10.5	7.0	6.0	6.5	3.0	2.5	2.5	2.0	1.5	1.5
9	11.5	10.5	11.0	8.0	7.0	7.5	2.5	2.0	2.5	1.5	1.5	1.5
10	11.5	11.5	11.5	8.0	6.0	6.5	2.0	1.0	1.5	1.5	1.5	1.5
11	11.0	9.5	10.5	6.0	5.5	6.0	1.0	.5	.5	1.5	1.0	1.5
12	9.0	8.0	8.5	6.0	6.0	6.0	1.0	.5	1.0	1.5	1.0	1.5
13	8.5	7.0	7.5	7.0	6.0	6.0	1.0	1.0	1.0	1.5	1.5	1.5
14	10.0	8.0	9.0	6.5	5.5	6.0	1.5	1.0	1.5	2.0	1.5	1.5
15	11.5	9.5	10.5	8.0	6.0	6.5	1.0	.5	.5	2.0	1.5	2.0
16	12.5	11.5	12.0	8.0	5.0	7.0	1.0	.5	.5	2.0	2.0	2.0
17	11.5	10.5	11.0	5.0	4.0	4.5	1.0	.5	.5	2.0	2.0	2.0
18	10.5	9.5	10.0	4.5	4.0	4.0	1.0	1.0	1.0	2.0	2.0	2.0
19	9.5	9.0	9.0	5.5	4.5	5.0	1.0	1.0	1.0	2.0	2.0	2.0
20	9.0	8.0	8.5	5.0	4.0	4.5	1.5	1.0	1.5	2.0	2.0	2.0
21	9.5	9.0	9.0	4.0	4.0	4.0	1.5	1.5	1.5	2.0	2.0	2.0
22	9.0	7.5	8.0	4.0	4.0	4.0	2.0	1.5	2.0	2.0	2.0	2.0
23	8.5	8.5	8.5	5.0	4.0	4.5	2.0	2.0	2.0	2.0	2.0	2.0
24	8.0	7.0	7.5	5.5	4.5	5.0	2.0	1.5	2.0	2.0	2.0	2.0
25	7.0	6.5	6.5	6.0	5.5	5.5	1.5	1.0	1.5	2.5	2.0	2.5
26	6.5	6.0	6.5	6.0	5.0	5.5	1.0	1.0	1.0	2.5	2.5	2.5
27	8.0	6.5	7.5	6.0	5.0	5.5	1.5	1.0	1.5	2.5	2.5	2.5
28	6.0	5.0	5.5	5.0	3.5	4.0	1.5	1.0	1.0	2.5	2.5	2.5
29	5.0	4.5	4.5	4.0	3.5	3.5	1.5	1.0	1.0	2.5	2.5	2.5
30	4.5	4.0	4.5	4.0	3.5	3.5	1.5	1.0	1.0	2.5	2.5	2.5
31	6.5	4.5	5.5	---	---	---	1.0	1.0	1.0	2.5	2.5	2.5
MONTH	16.5	4.0	9.3	8.0	3.5	5.5	3.5	.5	1.7	2.5	1.0	1.8



## CHIPPEWA RIVER BASIN

05364850 DUNCAN CREEK TRIBUTARY NEAR TILDEN, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--May 1987 to September 1989 (discontinued).

GAGE.--Micrologger.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.65 in., Sept. 19, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.76 in., June 30.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	---	---	---	---	.01	.00	.65	.00	.47
2	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.01
3	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.00
4	.00	.21	.00	---	---	---	---	.28	.00	.00	.00	1.23
5	.00	.00	.00	---	---	---	---	.01	.00	.00	.00	.00
6	.00	.00	.00	---	---	---	---	.00	.03	.00	.00	.00
7	.00	.00	.00	---	---	---	---	.00	.27	.00	.00	.00
8	.00	.00	.01	---	---	---	---	.06	.00	.12	.00	.00
9	.00	.05	.00	---	---	---	---	.00	.00	.00	.00	.11
10	.00	.00	.00	---	---	---	---	.00	.00	.00	.00	.01
11	.00	.00	.00	---	---	---	---	.00	.00	.64	.00	.00
12	.00	.00	.00	---	---	---	---	.00	.15	.02	.68	.00
13	.00	.00	.00	---	---	---	---	.00	.17	.00	1.63	.00
14	.00	.00	.00	---	---	---	---	.06	.12	.00	.27	.00
15	.00	.54	.00	---	---	---	---	.00	.00	.00	.00	.00
16	.03	.02	.00	---	---	---	---	.00	.00	.00	.00	.00
17	.07	.00	.00	---	---	---	.00	.00	.00	.00	.00	.00
18	.25	.00	.00	---	---	---	.00	.08	.00	.72	.00	.00
19	.00	.00	.00	---	---	---	.00	.09	.00	.01	.21	.00
20	.21	.00	.27	---	---	---	.00	.01	.00	.00	.01	.00
21	.00	.00	.00	---	---	---	.00	.00	.00	.00	.07	.00
22	.00	.00	.00	---	---	---	.00	.00	.10	.00	1.08	.05
23	.03	.00	.00	---	---	---	.00	.07	.26	.00	.00	.00
24	.00	.00	.00	---	---	---	.00	1.56	.00	.00	.00	.00
25	.00	.00	.00	---	---	---	.01	.00	.20	.00	.00	.00
26	.00	.11	.00	---	---	---	.02	.00	.60	.00	.08	.00
27	.10	.15	.00	---	---	---	.16	.00	.00	.00	.01	.00
28	.00	.00	.00	---	---	---	.28	.00	.00	.00	.07	.00
29	.00	.02	.00	---	---	---	.18	1.73	.00	.91	.00	.00
30	.00	.00	.00	---	---	---	.00	.67	1.76	.01	.40	.00
31	.00	---	.00	---	---	---	---	.02	---	.00	.41	---
TOTAL	0.69	1.10	0.28	---	---	---	---	4.65	3.66	3.08	4.92	1.88



## CHIPPEWA RIVER BASIN

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## 05365500 CHIPPEWA RIVER AT CHIPPEWA FALLS, WI

LOCATION.--Lat 44°55'37", long 91°24'33", in Lot 1, sec.12, T.28 N., R.9 W., Chippewa County, Hydrologic Unit 07050005, on right bank at Chippewa Falls, 1.0 mi downstream from Duncan Creek.

DRAINAGE AREA.--5,650 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1888 to September 1983, October 1986 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 785: 1934(M). WSP 1508: 1897, 1905, 1918(M), 1924(M). WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 798.46 ft above National Geodetic Vertical Datum of 1929. Prior to January 1914, nonrecording gage, and January 1914 to June 19, 1932, water-stage recorder at site 1 mi upstream at different datum. June 19, 1932, to current year, water-stage recorder at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Considerable regulation by Moose Lake, Lake Chippewa, Rest Lake, Flambeau Flowage, and Lake Wissota Reservoirs. Diurnal fluctuation caused by hydroelectric plant 1.1 mi upstream.

AVERAGE DISCHARGE.--98 years (1889-1983, 1987-89), 5,073 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 102,000 ft<sup>3</sup>/s, Sept. 1, 1941, gage height, 24.8 ft; minimum 22 ft<sup>3</sup>/s, Apr. 2, 1934, gage height, 0.63 ft; minimum daily, 40 ft<sup>3</sup>/s, Feb. 4, 1917.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--A stage of 26.94 ft occurred Sept. 10, 1884, site and datum in use June 1932.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,600 ft<sup>3</sup>/s, Apr. 6, gage height, 10.41 ft; minimum daily, 244 ft<sup>3</sup>/s, Nov. 6.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).

1.2	223	4.0	2,800
1.5	325	6.0	6,400
2.0	585	8.0	11,200
3.0	1,440	10.0	17,200

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	721	1340	2920	1820	4770	2900	13800	9470	10200	6190	1950	3420
2	1240	1920	2630	1980	4630	3070	11200	7390	8180	6710	1680	2150
3	1930	2580	1700	3220	3920	2180	9720	6270	7830	6640	1520	1370
4	1840	1180	2670	1420	1180	516	9760	7540	4950	6290	2570	2370
5	1380	3140	3010	1530	1210	820	12900	5510	4990	3060	747	3910
6	1560	244	2660	3260	5450	2660	16600	4980	4690	4470	648	3310
7	857	2390	2350	1270	4830	3170	14700	5430	4400	4130	1430	3550
8	698	2040	2590	1820	4510	3340	13200	6320	3170	2510	560	2770
9	279	2250	1990	3050	4750	2770	12300	6570	4090	2100	929	1420
10	2260	2390	853	2560	3400	3690	10700	6280	3040	2870	1130	1560
11	1480	1330	1290	1760	2020	862	9550	5930	2680	1760	914	2270
12	1570	3140	2610	1990	2190	848	6960	5370	3570	2630	843	1680
13	1860	816	1800	2310	4150	2660	3360	3980	3680	2280	1530	1830
14	344	3300	879	1320	3790	3200	3750	2740	4350	2040	3900	1680
15	640	4090	1880	1660	3310	3420	3520	3650	5180	1530	4020	1510
16	541	2690	2570	2230	3290	2790	4900	4330	5630	1120	3410	842
17	2730	4150	1490	2510	2070	2720	5530	2680	4600	3270	2250	654
18	752	6010	1670	2040	743	1040	5530	2500	4770	2950	2060	1880
19	1510	6600	1680	2320	467	638	5830	3110	4220	2630	330	1610
20	1800	4870	2930	2300	2890	1940	5570	2600	3360	2140	950	2620
21	1520	3440	2550	2430	2870	1500	5270	2610	3270	3210	2690	1640
22	800	3890	2750	1490	2670	2860	4110	4390	3110	1690	3430	1190
23	935	2900	1750	3180	3050	2990	4150	3420	2780	1610	3010	433
24	2630	3290	1920	3380	2030	2460	4760	4460	2970	2160	3420	909
25	1230	2910	2500	2870	490	3580	4790	6130	6280	2360	3130	1000
26	1640	2740	2660	2250	598	3750	3520	9120	4960	2720	521	1290
27	1320	3990	3160	1230	2160	8330	3890	10100	4040	1370	738	776
28	2210	3190	2270	497	2880	11200	4100	5110	3930	687	1430	2310
29	718	2970	2330	805	---	13000	3940	5830	3770	2000	2870	904
30	819	2790	2220	4130	---	16600	5750	9660	3830	805	2140	486
31	2230	---	1020	3840	---	15600	---	12100	---	2660	1930	---
TOTAL	42044	88580	67302	68472	80318	127104	223660	175580	136520	88592	58680	53344
MEAN	1356	2953	2171	2209	2868	4100	7455	5664	4551	2858	1893	1778
MAX	2730	6600	3160	4130	5450	16600	16600	12100	10200	6710	4020	3910
MIN	279	244	853	497	467	516	3360	2500	2680	687	330	433

CAL YR 1988 TOTAL 916662 MEAN 2505 MAX 13900 MIN 244  
WTR YR 1989 TOTAL 1210196 MEAN 3316 MAX 16600 MIN 244

## CHIPPEWA RIVER BASIN

05365707 NORTH FORK EAU CLAIRE RIVER NEAR THORP, WI

LOCATION.--Lat 44°58'25", long 90°50'57", in NW 1/4 NE 1/4 sec.27, T.29 N., R.4 W., Clark County, Hydrologic Unit 07050006, on left bank 15 ft downstream from town road, 0.3 mi downstream from Goggle-Eye Creek, and 2.6 mi northwest of Thorp.

DRAINAGE AREA.--51.0 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,115 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: May 30 to June 5, June 14-15, and ice periods listed in rating table below. Records good except those for estimated daily discharges and those below 1.0 ft<sup>3</sup>/s, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,050 ft<sup>3</sup>/s, Sept. 22, 1986, gage height, 10.13 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s on basis of step-backwater measurement of peak flow; minimum, 0.02 ft<sup>3</sup>/s, July 30, 31, 1988, gage height, 1.11 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,760 ft<sup>3</sup>/s, Mar. 27, gage height, 7.18 ft; minimum discharge, 0.20 ft<sup>3</sup>/s, Aug. 8-12, gage height, 1.12 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Oct. 29 to Nov. 3, and Dec. 1 to Mar. 26.)

1.07	0.20	1.5	11	3.5	246
1.08	.30	1.8	27	4.0	380
1.10	.61	2.0	40	5.0	800
1.18	1.8	2.5	87	6.0	1,430
1.3	4.6	3.0	155	7.0	2,520

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	5.0	10	1.6	2.3	1.7	98	69	150	191	1.2	3.8
2	.87	4.7	7.6	1.6	2.2	1.7	85	48	100	100	1.1	4.6
3	.95	5.0	6.4	1.5	2.1	1.7	118	36	68	43	.93	3.9
4	1.2	5.7	5.6	1.4	2.0	1.7	146	28	45	22	.94	4.7
5	.87	7.2	5.0	1.4	1.9	1.7	139	28	29	14	.72	7.7
6	1.2	7.6	4.6	1.5	1.8	1.8	107	28	20	9.7	.40	5.9
7	.95	7.0	4.3	1.6	1.8	1.9	84	24	14	7.0	.30	5.0
8	.74	6.6	4.0	1.6	1.8	2.2	68	65	11	5.5	.21	4.0
9	.74	5.7	3.8	1.4	1.8	2.9	47	191	15	4.8	.24	3.4
10	.72	3.6	3.6	1.4	1.7	5.0	37	121	9.1	4.0	.20	2.9
11	.75	3.3	3.5	1.6	1.7	8.0	31	64	7.6	4.1	.20	2.4
12	1.1	3.6	3.6	1.6	1.7	7.0	25	41	6.7	5.4	.26	1.9
13	1.2	4.6	4.5	1.7	1.7	6.0	22	30	11	5.6	3.5	1.6
14	1.3	4.6	3.7	1.7	1.7	6.4	21	24	60	4.4	14	1.5
15	1.4	5.2	3.5	1.7	1.7	8.0	21	20	290	3.4	6.5	1.2
16	1.3	20	3.3	1.8	1.7	10	21	17	216	2.8	4.6	1.1
17	1.6	22	3.3	1.8	1.7	14	22	15	84	2.4	3.6	.99
18	2.0	18	3.8	1.9	1.7	19	21	13	42	3.2	2.5	.86
19	2.4	15	5.0	2.1	1.7	30	20	15	25	3.8	1.8	.74
20	2.3	13	6.0	1.9	1.7	42	19	18	17	3.0	1.6	.74
21	2.5	11	7.0	1.9	1.7	60	18	15	12	2.5	1.2	.74
22	2.2	9.3	5.8	1.9	1.7	72	18	12	9.5	2.4	3.4	.58
23	2.8	8.3	4.5	1.9	1.7	78	17	11	12	1.8	2.6	.30
24	3.5	7.7	3.4	2.0	1.8	90	15	136	12	1.4	2.1	.30
25	4.7	7.7	2.7	2.0	2.0	220	16	516	10	1.0	1.7	.30
26	5.0	9.6	2.3	2.1	1.9	700	19	231	10	.99	1.5	.31
27	5.6	16	2.2	2.1	1.9	1750	22	108	10	.99	1.5	.43
28	6.0	20	2.0	2.2	1.7	1370	28	50	7.9	.84	1.4	.44
29	5.2	23	1.8	2.3	---	624	61	126	6.5	.99	1.3	.39
30	4.8	14	1.7	2.3	---	302	88	320	14	1.4	1.0	.30
31	4.7	---	1.7	2.3	---	157	---	210	---	1.4	1.2	---
TOTAL	71.69	294.0	130.2	55.8	50.8	5595.7	1454	2630	1324.3	454.81	63.70	63.02
MEAN	2.31	9.80	4.20	1.80	1.81	181	48.5	84.8	44.1	14.7	2.05	2.10
MAX	6.0	23	10	2.3	2.3	1750	146	516	290	191	14	7.7
MIN	.72	3.3	1.7	1.4	1.7	1.7	15	11	6.5	.84	.20	.30
CFSM	.05	.19	.08	.04	.04	3.54	.95	1.66	.87	.29	.04	.04
IN.	.05	.21	.09	.04	.04	4.08	1.06	1.92	.97	.33	.05	.05

CAL YR 1988 TOTAL 7981.85 MEAN 21.8 MAX 1140 MIN .03 CFSM .43 IN. 5.82  
WTR YR 1989 TOTAL 12188.02 MEAN 33.4 MAX 1750 MIN .20 CFSM .65 IN. 8.89

## 05368000 HAY RIVER AT WHEELER, WI

LOCATION.--Lat 45°02'52", long 91°54'39", in SW 1/4 sec.25, T.30 N., R.13 W., Dunn County, Hydrologic Unit 07050007, on right bank 25 ft downstream from highway bridge in Wheeler, 1.8 mi upstream from Otter Creek, and 2.4 mi downstream from South Fork Hay River.

DRAINAGE AREA.--418 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1950 to current year.

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

GAGE.--Water-stage recorder. Datum of gage is 889.30 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 25, 1951, nonrecording gage.

REMARKS.--Estimated daily discharges: Ice period listed in rating tables below. Records good except those for ice-affected period, which is fair.

AVERAGE DISCHARGE.--39 years, 308 ft<sup>3</sup>/s, 10.01 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,600 ft<sup>3</sup>/s, Mar. 31, 1967, gage height, 15.04 ft, from rating curve extended above 9,000 ft<sup>3</sup>/s; minimum, 55 ft<sup>3</sup>/s, Mar. 13, 1954, gage height, 2.32 ft, result of freezeup.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Maximum stage since 1915, 16.6 ft April 1934, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	0700	*9,590	13.68	No other peak greater than base discharge.			
Minimum daily discharge, 150 ft <sup>3</sup> /s, Feb. 10-12 and Mar. 6, 7, result of freezeup.							

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected ice Nov. 30 to Mar. 20.)

Oct. 1 to Mar. 27				Mar. 28 to Sept. 30			
3.0	143	5.0	590	2.8	165	7.0	1,400
4.0	330	6.0	930	3.0	202	9.0	2,560
		8.0	1,920	4.0	410	11.0	4,480
				5.0	690	13.0	8,100

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	190	230	200	210	160	1050	431	473	356	197	310
2	215	190	230	200	200	160	811	364	371	332	188	461
3	207	187	220	200	190	160	857	332	330	249	182	340
4	203	188	220	200	180	160	1300	313	304	228	180	323
5	201	205	210	190	170	160	1250	318	284	215	180	371
6	200	212	210	190	170	150	893	312	276	207	182	329
7	199	205	200	190	160	150	714	295	268	201	177	298
8	197	200	200	190	160	160	593	283	260	199	176	286
9	197	203	200	190	160	160	504	292	251	199	172	269
10	196	210	200	180	150	160	443	298	240	195	169	250
11	192	207	190	180	150	170	411	279	234	198	166	236
12	191	211	190	180	150	170	388	267	231	200	165	225
13	191	214	200	180	160	180	368	259	234	193	182	216
14	191	220	200	190	160	180	355	255	273	188	247	210
15	191	225	210	190	160	180	346	251	307	185	278	205
16	189	360	200	190	160	180	337	247	269	184	226	201
17	188	427	200	190	160	180	332	241	257	182	204	197
18	189	318	200	190	160	180	322	236	248	192	193	192
19	193	282	210	190	160	180	311	240	244	206	187	187
20	193	271	210	190	170	190	305	239	238	197	188	185
21	197	251	210	190	170	188	294	232	230	188	186	183
22	197	247	210	200	160	191	287	231	228	183	302	181
23	194	245	210	200	160	204	286	231	233	182	546	176
24	194	240	210	200	160	205	283	236	230	181	325	175
25	193	239	210	200	160	227	282	339	229	178	261	175
26	192	246	210	200	160	437	283	339	265	176	235	177
27	192	261	210	200	160	1860	293	281	293	173	229	177
28	197	270	210	210	160	7640	306	256	243	171	219	177
29	197	248	210	210	---	5470	353	248	227	201	212	174
30	193	240	200	220	---	3600	461	604	227	260	204	172
31	191	---	200	220	---	1960	---	813	---	215	209	---
TOTAL	6085	7212	6420	6050	4630	25352	15018	9562	7997	6414	6767	7058
MEAN	196	240	207	195	165	818	501	308	267	207	218	235
MAX	225	427	230	220	210	7640	1300	813	473	356	546	461
MIN	188	187	190	180	150	150	282	231	227	171	165	172
CFSM	.47	.58	.50	.47	.40	1.96	1.20	.74	.64	.49	.52	.56
IN.	.54	.64	.57	.54	.41	2.26	1.34	.85	.71	.57	.60	.63
CAL YR 1988	TOTAL 83129	MEAN 227	MAX 1120	MIN 128	CFSM .54	IN. 7.40						
WTR YR 1989	TOTAL 108565	MEAN 297	MAX 7640	MIN 150	CFSM .71	IN. 9.66						

## CHIPPEWA RIVER BASIN

05369000 RED CEDAR RIVER AT MENOMONIE, WI

LOCATION.--Lat 44°53'02", long 91°55'57", in NW 1/4 sec.26, T.28 N., R.13 W., Dunn County, Hydrologic Unit 07050007, on right bank at Menomonie, 900 ft downstream from powerplant of Northern States Power Co., and 1,000 ft downstream from Wilson Creek.

DRAINAGE AREA.--1,770 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1907 to September 1908, May 1913 to current year. Monthly discharge only for some periods, published in WSP 1308.

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

GAGE.--Water-stage recorder. Datum of gage is 780 ft above National Geodetic Vertical Datum of 1929 (Northern States Power Co. bench mark). Prior to Sept. 3, 1908, nonrecording gage at site 1 mi downstream at different datum. May 9, 1913, to Sept. 30, 1923, water-stage recorder at same site at datum 0.42 ft lower than present datum.

REMARKS.--Estimated daily discharges: Oct. 20-28, and July 30 to Aug. 10. Records good except those for estimated daily discharges, which are fair. Flow regulated by powerplants at Menomonie and Cedar Falls.

AVERAGE DISCHARGE.--77 years, 1,275 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft<sup>3</sup>/s, Apr. 4, 1934, gage height, 16.0 ft, from floodmarks, from rating curve extended above 27,000 ft<sup>3</sup>/s on basis of computed flow over Cedar Falls Dam 6 mi upstream; minimum, less than 10 ft<sup>3</sup>/s, July 3, 1985, gage height, 0.46 ft, result of temporary powerplant shutdown at request of Dunn County Sheriff's Department.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,800 ft<sup>3</sup>/s, Mar. 28, gage height, 8.12 ft; minimum, 113 ft<sup>3</sup>/s, Aug. 19, gage height, 0.92 ft, but may have been less during periods of estimated daily discharges; minimum daily, 556 ft<sup>3</sup>/s, Dec. 12.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Mar. 28, 29.)

1.5	500	3.0	2,350
2.0	987	4.0	4,220
2.5	1,600	6.0	9,400
		8.0	15,900

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	924	874	1090	857	911	805	4640	1920	2560	2460	940	1450
2	889	922	969	883	825	807	3500	1530	1770	1550	820	1740
3	909	867	1150	886	601	914	3060	1530	1470	880	680	1990
4	894	1070	923	962	708	718	3060	1370	1420	1130	720	1700
5	879	1020	939	837	796	706	3580	1300	1280	890	740	1760
6	911	981	1240	837	891	815	3740	1630	1450	1020	700	1700
7	698	959	1030	919	921	819	3070	1510	1260	803	680	1610
8	762	992	845	853	855	793	2780	1510	1270	786	700	1400
9	755	1160	645	828	915	828	2620	1500	1190	815	680	1160
10	749	854	642	811	886	809	2360	1540	1260	837	660	1180
11	747	1060	594	896	857	937	2250	1340	1230	949	658	1140
12	807	1060	556	863	886	981	2140	1570	1200	921	676	1110
13	767	997	836	861	944	1030	1740	1490	1300	786	683	931
14	958	1060	906	900	790	1290	1480	1320	1360	851	1280	963
15	777	1360	918	833	826	853	1540	1390	1700	734	1720	1030
16	834	1280	920	897	832	939	1290	1150	1700	736	1680	1110
17	832	1750	828	888	816	986	1330	1080	1220	768	1290	1060
18	781	1620	945	864	823	833	1560	1220	1160	1130	1320	958
19	868	1460	948	883	823	752	950	999	1050	1060	1130	1020
20	620	1360	1160	858	813	950	871	1410	1030	1100	978	1160
21	720	1230	1080	900	835	850	625	1560	1100	626	1030	946
22	840	1310	1110	870	819	917	637	1250	937	841	1180	862
23	900	1250	997	897	828	1480	609	1140	1110	835	1800	738
24	880	1080	998	924	802	1420	1070	1290	1070	897	2180	846
25	860	1220	859	915	858	1620	1150	1220	814	798	1630	838
26	940	1250	930	896	823	2030	1300	1620	1200	761	1310	793
27	920	1170	838	912	799	4670	1230	1690	1390	741	1240	794
28	900	1430	911	894	838	14800	1360	1580	1010	619	1150	887
29	879	1190	812	881	---	15500	1440	1460	931	1160	1030	724
30	877	1250	738	918	---	12200	1820	2330	1330	900	1070	869
31	946	---	948	947	---	7490	---	2990	---	780	1190	---
TOTAL	26023	35086	28305	27370	23321	80542	58802	46439	38772	29164	33545	34469
MEAN	839	1170	913	883	833	2598	1960	1498	1292	941	1082	1149
MAX	958	1750	1240	962	944	15500	4640	2990	2560	2460	2180	1990
MIN	620	854	556	811	601	706	609	999	814	619	658	724

CAL YR 1988 TOTAL 356971 MEAN 975 MAX 3070 MIN 476  
WTR YR 1989 TOTAL 461838 MEAN 1265 MAX 15500 MIN 556

05369500 CHIPPEWA RIVER AT DURAND, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)  
(NATIONAL RADIOCHEMICAL SURVEILLANCE NETWORK STATION)

LOCATION.--Lat 44°37'40", long 91°58'10", in SW 1/4 sec.21, T.25 N., R.13 W., Pepin County, Hydrologic Unit 07050005, on left bank in Durand, 75 ft downstream from bridge on U.S. Highway 10, and 9.5 mi downstream from Red Cedar River.

DRAINAGE AREA.--9,010 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1928 to current year.

REVISED RECORDS.--WSP 785: 1930, 1934(M). WSP 875: 1930 (monthly and yearly runoff). WSP 925: 1938.  
WSP 1508: 1929(M), 1932. WDR WI-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 694.59 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 9, 1930, nonrecording gage at bridge 400 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair. Flow regulated by powerplants, Moose Lake, Lake Chippewa, Rest Lake, Flambeau Flowage, and Lake Wissota on Chippewa and Flambeau Rivers. Gage-height telemeter and data-collection platform at station.

AVERAGE DISCHARGE.--61 years, 7,622 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft<sup>3</sup>/s, Apr. 2, 1967, gage height, 16.93 ft; minimum observed, 1,020 ft<sup>3</sup>/s, Nov. 24, 1950, gage height, 0.12 ft.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--A stage of 18.4 ft, from flood marks (levels by U.S. Army Corps of Engineers) occurred Sept. 12, 1884, and has not been exceeded since.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38,500 ft<sup>3</sup>/s, Mar. 30, gage height, 11.14 ft; minimum, 2,050 ft<sup>3</sup>/s, Sept. 26, gage height, 0.63 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1-21; stage-discharge relation affected by ice Dec. 11 to Mar. 27.)

0.7	2,170	4.0	9,150
1.0	2,650	6.0	15,100
2.0	4,360	8.0	22,400
		11.0	37,500

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3370	3220	4550	3500	6000	4000	23000	9580	18900	8350	3920	4410
2	2930	3100	4630	2900	6600	5200	19500	11000	16800	8730	3510	5000
3	3210	3250	4270	3400	6200	5400	15500	9870	13600	8560	3290	4650
4	3710	3880	3610	4700	5000	4700	14700	8600	11000	7930	3070	4190
5	3770	3480	4250	4400	3800	3200	15100	9530	8040	7560	3760	4670
6	3280	4240	4610	3300	3300	2700	18400	7670	8030	5590	2620	5840
7	3260	2790	4330	4300	5800	2600	20500	7720	7520	6200	2250	5450
8	2710	3760	4040	3900	6800	5400	16900	7800	6330	4770	2220	5380
9	2450	3540	4090	3500	7200	5600	16400	8860	5700	4470	2240	4540
10	2420	3620	3360	3600	7000	5600	15300	8230	5970	3960	2400	3550
11	3760	3790	3200	4500	6400	5400	13000	8880	5370	4620	2420	3420
12	3380	3300	2600	4300	5000	4000	12500	7860	5110	3790	2450	3750
13	3230	4420	2400	3500	4700	2900	8470	7730	5550	4050	2310	3310
14	2580	3150	3500	3700	5400	3600	6730	6560	5980	3990	3260	3360
15	2420	4140	3100	3900	6000	5800	6480	5370	7300	3690	5290	3250
16	2420	5720	2700	3200	6000	6200	6890	5850	7980	3100	5880	3160
17	2450	5170	3300	3300	5600	6000	6650	6080	8690	2670	5440	2610
18	3750	6200	3700	4000	4700	5400	8610	4970	8110	4650	4060	2520
19	2660	7520	3400	4200	3300	4400	7520	4900	7110	4510	3740	3130
20	3080	8020	3000	3900	2900	3300	6990	5300	6010	4630	2870	3080
21	3440	6340	3700	4100	3200	2900	6850	5090	5470	3530	2560	3280
22	3040	5650	4400	4200	3500	3300	6680	4820	5500	4720	4210	3270
23	2610	5510	4600	3900	3800	4500	5900	6030	5290	3010	5110	2420
24	2720	4420	4300	3500	4300	5800	5650	5360	4810	3570	5520	2170
25	3910	4910	3600	5000	4200	6600	6670	7410	5560	3370	5250	2330
26	3100	4660	3700	5200	3400	8400	6270	9590	7530	3730	5180	2170
27	3320	4930	4200	4600	2500	19000	5850	13400	6980	3930	3270	2420
28	3070	5380	4600	3800	3000	35200	6270	12500	5640	2990	2900	2480
29	3560	5040	4900	2900	---	37000	6390	8530	5820	2850	3090	2980
30	2560	4690	4300	2600	---	37300	7210	10600	5370	3780	3560	2390
31	2530	---	3900	4800	---	31800	---	15300	---	2920	4140	---
TOTAL	94700	137840	118840	120600	135600	283200	322880	250990	227070	144220	111790	105180
MEAN	3055	4595	3834	3890	4843	9135	10760	8096	7569	4652	3606	3506
MAX	3910	8020	4900	5200	7200	37300	23000	15300	18900	8730	5880	5840
MIN	2420	2790	2400	2600	2500	2600	5650	4820	4810	2670	2220	2170

CAL YR 1988 TOTAL 1694540 MEAN 4630 MAX 16400 MIN 1700  
WTR YR 1989 TOTAL 2052910 MEAN 5624 MAX 37300 MIN 2170

## CHIPPEWA RIVER BASIN

05369500 CHIPPEWA RIVER AT DURAND, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)  
(NATIONAL RADIOCHEMICAL SURVEILLANCE NETWORK STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-65, 1967, 1973 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (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)	HARD- NESS TOTAL (MG/L AS CaCO3) (00900)
OCT 1988												
04...	1445	4470	164	8.20	11.0	2.8	11.6	776	103	88	150	69
DEC												
06...	1150	5100	172	7.90	1.0	2.4	14.0	760	99	K31	K24	67
FEB 1989												
23...	1400	4140	194	7.30	0.0	2.8	11.7	768	79	120	86	76
APR												
05...	1000	14800	134	7.30	1.5	1.5	12.4	769	88	K20	260	48
JUL												
19...	0930	5210	150	7.90	21.0	4.7	7.0	732	82	K840	K1600	56
AUG												
25...	0900	6090	152	7.70	20.5	4.0	9.3	771	102	240	490	64

DATE	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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD HCO3 CACO3 (00453)	ALKA- LITY 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)
OCT 1988												
04...	17	6.5	5.7	15	0.3	2.3	70	58	12	6.9	0.10	5.9
DEC												
06...	17	6.0	5.8	16	0.3	1.3	68	56	15	6.4	0.10	6.9
FEB 1989												
23...	19	6.8	6.1	15	0.3	1.3	71	58	16	6.7	0.10	14
APR												
05...	12	4.3	3.5	13	0.2	4.3	48	40	14	5.3	0.10	8.4
JUL												
19...	14	5.1	4.1	13	0.2	1.3	57	46	7.0	5.6	0.10	8.7
AUG												
25...	16	5.9	4.4	13	0.2	1.4	78	64	6.0	5.7	0.10	11

DATE	SOLIDS, RESIDUE AT 180 DEG C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1988											
04...	96	93	0.13	1160	0.410	<0.010	<0.010	0.60	0.040	0.040	0.050
DEC											
06...	109	95	0.15	1500	0.560	0.010	0.030	0.60	0.060	0.030	0.020
FEB 1989											
23...	108	109	0.15	1210	0.850	0.150	0.140	0.70	0.070	0.050	0.040
APR											
05...	86	80	0.12	3440	0.640	0.780	0.720	2.0	0.270	0.140	0.100
JUL											
19...	90	76	0.12	1270	0.420	0.040	0.090	0.80	0.150	0.050	0.050
AUG											
25...	101	90	0.14	1660	0.250	0.020	0.020	1.1	0.130	0.050	0.070

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

05369500 CHIPPEWA RIVER AT DURAND, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 1988											
04...	1445	4470	20	<1	17	<0.5	<1	<1	<3	2	34
FEB 1989											
23...	1400	4140	20	<1	18	<0.5	<1	<1	<3	2	250
APR											
05...	1000	14800	30	<1	21	<0.5	<1	<1	<3	2	290
AUG											
25...	0900	6090	<10	<1	12	<0.5	1	<1	<3	6	73

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 1988										
04...	<5	<4	5	<0.1	<10	<1	<1	36	<6	10
FEB 1989										
23...	<5	<4	34	<0.1	<10	<1	<1	37	<6	8
APR										
05...	<5	<4	57	0.1	<10	3	<1	27	<6	14
AUG										
25...	<1	<4	2	0.2	<10	<1	<1	36	<6	13

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER 0.062 MM (70331)
OCT 1988							
04...	1445	4470	164	11.0	16	193	72
DEC							
06...	1150	5100	172	1.0	8	110	23
FEB 1989							
23...	1400	4140	194	0.0	13	145	98
APR							
05...	1000	14800	134	1.5	59	2360	29
JUL							
19...	0930	5210	150	21.0	33	464	78
AUG							
25...	0900	6090	152	20.5	26	428	58

DATE	TIME	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)
OCT 1988									
04...	1445	4470	<0.4	<0.4	2.4	0.8	1.9	0.8	0.04
APR 1989									
05...	1000	14800	<0.4	0.9	4.9	1.1	4.2	1.1	0.10
JUL									
19...	0930	5210	<0.4	0.6	2.9	<0.4	2.3	<0.4	0.06

## CHIPPEWA RIVER BASIN

05369945 EAU GALLE RIVER AT LOW-WATER BRIDGE AT SPRING VALLEY, WI

LOCATION.--Lat 44°52'02", long 92°15'07", in SE 1/4 NW 1/4 sec.31, T.28 N., R.15 W., St. Croix County, Hydrologic Unit 07050005, on right bank 50 ft downstream from Low-Water Bridge on Coulee Road, approximately 550 ft upstream from French Creek and at Spring Valley.

DRAINAGE AREA.--47.9 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1981 to September 1983, May 1986 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 960 ft, from topographic map.

REMARKS.--Estimated daily discharges: Mar. 27-29. Records good below 300 ft<sup>3</sup>/s and poor above 300 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 6,000 ft<sup>3</sup>/s, Sept. 21, 1986, gage height, 8.80 ft, from rating curve extended above 140 ft<sup>3</sup>/s on basis of indirect measurement of peak flow but may have been exceeded on Mar. 27, 1989; maximum gage height, 13.80 ft, Mar. 27, 1989, backwater from reservoir; minimum discharge, 4.7 ft<sup>3</sup>/s, Feb. 1, 1989, gage height, 1.10 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,460 ft<sup>3</sup>/s, Mar. 27 (estimated); maximum gage height, 13.80 ft, Mar. 27, backwater from reservoir; minimum discharge, 4.7 ft<sup>3</sup>/s, Feb. 1, gage height, 1.10 ft.

## RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).

Oct. 1 to Mar. 27 (0009)

Mar. 27 (0010) to Sept. 30

1.2	5.9	2.5	79	1.2	6.7	2.9	148
1.4	10	2.9	148	1.4	11	3.5	311
1.8	22	3.5	311	1.8	26	4.0	510
2.1	39	4.0	510	2.1	43	5.0	1,110
		5.0	1,110	2.5	79	6.0	2,020
						7.0	3,290

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	7.0	8.1	7.4	7.0	7.1	32	21	19	355	9.3	185
2	8.7	7.0	8.0	7.4	6.9	7.1	31	16	14	26	9.0	39
3	8.5	7.0	8.0	7.5	6.7	8.0	107	14	12	14	8.9	16
4	8.5	7.0	7.8	7.4	6.9	9.7	103	13	12	11	9.3	12
5	8.3	7.8	7.8	7.5	7.3	9.0	43	13	11	10	9.3	11
6	8.3	7.3	7.8	7.6	7.6	7.9	32	12	11	10	9.2	11
7	8.3	7.2	7.8	7.6	7.8	7.7	24	12	11	9.8	9.1	10
8	8.3	7.2	7.5	7.4	7.5	7.5	20	12	11	10	8.9	9.8
9	8.1	7.2	7.5	7.4	7.6	7.3	16	16	11	9.8	8.9	9.4
10	8.0	7.0	7.4	7.4	7.8	7.2	14	17	10	9.3	8.9	9.2
11	7.8	7.0	7.3	7.6	7.7	7.4	14	13	10	9.2	8.9	9.1
12	7.8	7.3	7.7	7.8	7.6	7.4	13	12	10	9.0	9.0	8.9
13	7.8	7.4	7.9	7.6	7.6	7.3	13	12	10	8.7	9.5	8.9
14	7.9	7.4	7.9	7.8	7.4	7.8	13	12	11	8.7	13	8.6
15	8.0	13	7.2	8.0	7.2	7.9	13	12	10	8.8	14	8.4
16	8.1	164	7.4	8.0	7.1	7.4	13	12	9.7	8.7	12	8.3
17	7.9	23	7.7	7.7	7.2	7.3	13	11	9.5	8.7	9.8	8.4
18	8.0	13	7.8	7.6	7.4	7.2	13	12	9.6	10	9.4	8.2
19	7.7	10	7.8	7.4	7.5	7.2	13	12	9.7	10	9.5	8.2
20	7.7	9.1	8.2	7.4	7.6	7.2	13	12	9.7	8.9	9.7	8.2
21	7.7	8.5	7.5	7.3	7.7	7.0	12	11	9.7	8.7	9.7	8.2
22	7.5	8.5	7.4	7.4	7.4	7.0	12	11	9.9	8.5	25	8.3
23	7.4	8.4	7.6	7.4	7.4	7.0	12	11	10	8.6	19	8.4
24	7.4	8.3	7.5	7.2	7.6	7.5	12	13	9.8	8.6	11	8.5
25	7.4	8.2	7.1	7.2	7.6	8.8	12	94	10	8.4	9.7	8.7
26	7.4	8.5	7.3	7.2	7.1	168	12	28	13	8.5	9.6	8.5
27	7.5	8.7	7.5	7.2	7.2	2460	12	15	11	8.6	9.1	8.4
28	7.3	8.5	7.2	7.2	7.4	1430	14	12	11	8.5	8.9	8.4
29	7.2	8.5	7.3	6.8	---	236	36	12	9.9	14	8.7	8.4
30	7.1	8.4	7.5	7.2	---	139	52	134	65	19	8.7	8.6
31	7.1	---	7.5	7.3	---	46	---	43	---	11	12	---
TOTAL	243.6	417.4	236.0	230.9	206.8	4668.9	739	650	380.5	668.0	327.0	482.0
MEAN	7.86	13.9	7.61	7.45	7.39	151	24.6	21.0	12.7	21.5	10.5	16.1
MAX	8.9	164	8.2	8.0	7.8	2460	107	134	65	355	25	185
MIN	7.1	7.0	7.1	6.8	6.7	7.0	12	11	9.5	8.4	8.7	8.2
CFSM	.16	.29	.16	.16	.15	3.14	.51	.44	.26	.45	.22	.34
IN.	.19	.32	.18	.18	.16	3.63	.57	.50	.30	.52	.25	.37

CAL YR 1988 TOTAL 5183.9 MEAN 14.2 MAX 262 MIN 7.0 CFSM .30 IN. 4.03  
WTR YR 1989 TOTAL 9250.1 MEAN 25.3 MAX 2460 MIN 6.7 CFSM .53 IN. 7.18



05369945 EAU GALLE RIVER AT LOW-WATER BRIDGE AT SPRING VALLEY, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1987 to current year.

INSTRUMENTATION.--Water-quality monitor since March 24, 1987.

REMARKS.--Record was rated good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum temperature, 27.5°C June 19, 20, 1988; minimum, 0.0°C for several days in 1988 and 1989 water years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum temperature, 23.5°C, July 10; minimum, 0.0°C for several days in December, January, and February.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	13.0	12.5	13.0	5.0	4.5	4.5	3.5	3.5	3.5	.5	.0	.5
2	12.5	10.5	11.0	4.5	4.0	4.5	4.0	3.5	3.5	.5	.5	.5
3	10.5	9.0	9.5	5.5	4.5	5.0	4.0	3.5	3.5	.5	.5	.5
4	9.0	8.0	8.5	5.5	5.0	5.5	3.5	3.5	3.5	.5	.5	.5
5	8.0	7.0	7.5	5.5	4.0	4.5	4.0	2.5	3.5	.5	.5	.5
6	8.5	7.0	7.5	4.0	3.5	4.0	3.0	2.0	2.5	.5	.5	.5
7	9.0	7.5	8.0	4.5	4.0	4.0	2.5	1.0	2.0	.5	.5	.5
8	9.0	8.0	8.5	5.0	4.5	5.0	1.5	.5	1.0	1.0	.5	.5
9	9.5	8.5	9.0	5.5	5.0	5.0	1.0	.5	.5	1.0	.5	.5
10	9.5	9.0	9.5	5.5	4.5	5.0	1.0	.5	.5	.5	.5	.5
11	9.0	8.0	8.5	4.5	4.0	4.5	1.0	.5	.5	.5	.5	.5
12	8.0	7.0	7.5	4.5	4.0	4.0	.5	.5	.5	.5	.5	.5
13	7.5	6.5	7.0	4.5	4.0	4.5	.5	.5	.5	.5	.5	.5
14	8.5	7.0	8.0	4.5	4.0	4.0	1.0	.5	1.0	.5	.5	.5
15	9.0	8.0	8.5	5.0	4.0	4.5	1.0	.5	.5	.5	.5	.5
16	10.0	9.0	9.5	4.5	3.0	3.5	1.0	.5	.5	.5	.5	.5
17	9.0	8.0	8.5	4.0	2.5	2.5	.5	.5	.5	.5	.5	.5
18	8.0	7.0	7.5	4.0	2.5	3.0	.5	.5	.5	.5	.5	.5
19	7.5	6.5	7.0	5.0	4.0	4.5	.5	.5	.5	1.0	.5	.5
20	7.0	6.5	6.5	4.5	4.5	4.5	1.0	.5	.5	1.0	.5	.5
21	7.5	6.5	7.0	4.5	4.0	4.5	1.0	.5	.5	.5	.5	.5
22	7.0	6.0	6.5	4.5	4.5	4.5	1.0	1.0	1.0	1.0	.0	.5
23	7.0	6.0	6.5	5.0	4.5	4.5	1.5	1.0	1.5	1.5	.5	1.0
24	6.0	5.0	5.5	5.0	4.5	5.0	1.0	.5	1.0	2.0	1.0	1.5
25	5.0	4.5	5.0	5.0	4.5	5.0	.5	.5	.5	1.5	1.0	1.5
26	5.5	4.5	5.0	5.0	4.5	4.5	.5	.5	.5	1.0	.5	.5
27	6.0	5.5	5.5	4.5	4.0	4.5	.5	.5	.5	1.0	.5	.5
28	5.5	4.5	4.5	4.0	3.0	3.5	.5	.0	.5	1.5	1.0	1.0
29	4.0	3.5	4.0	3.5	3.5	3.5	---	---	---	1.5	.5	1.0
30	4.0	3.5	3.5	3.5	3.5	3.5	---	---	---	2.0	1.0	1.5
31	5.0	4.0	4.5	---	---	---	---	---	---	3.0	1.5	2.0
MONTH	13.0	3.5	7.4	5.5	2.5	4.3	---	---	---	3.0	.0	.7

## CHIPPEWA RIVER BASIN

05369945 EAU GALLE RIVER AT LOW-WATER BRIDGE AT SPRING VALLEY, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	2.0	.0	1.0	---	---	---	---	---	---	8.0	5.5	7.0
2	.5	.0	.5	---	---	---	---	---	---	10.5	6.5	8.0
3	.5	.0	.5	---	---	---	---	---	---	13.5	7.5	10.5
4	.5	.5	.5	---	---	---	---	---	---	11.5	9.5	10.5
5	.5	.5	.5	---	---	---	---	---	---	10.0	8.0	9.0
6	.5	.5	.5	---	---	---	---	---	---	7.5	5.0	6.0
7	.5	.5	.5	---	---	---	---	---	---	11.5	5.5	8.5
8	.5	.5	.5	---	---	---	---	---	---	10.5	8.5	9.0
9	.5	.0	.0	---	---	---	---	---	---	13.5	7.0	10.0
10	---	---	---	---	---	---	---	---	---	16.0	10.0	12.5
11	.5	.5	.5	---	---	---	---	---	---	16.0	10.5	13.0
12	.5	.5	.5	---	---	---	---	---	---	16.0	11.0	13.5
13	---	---	---	---	---	---	---	---	---	16.0	11.5	14.0
14	---	---	---	---	---	---	---	---	---	18.0	13.5	15.5
15	---	---	---	---	---	---	---	---	---	18.5	13.5	16.0
16	---	---	---	---	---	---	---	---	---	19.0	14.5	16.5
17	---	---	---	---	---	---	---	---	---	18.5	15.5	17.0
18	---	---	---	---	---	---	---	---	---	17.5	14.5	16.0
19	---	---	---	---	---	---	---	---	---	16.5	14.0	15.0
20	---	---	---	---	---	---	11.5	8.0	9.5	18.0	14.5	16.0
21	---	---	---	---	---	---	13.0	8.5	11.0	18.0	13.5	15.5
22	---	---	---	---	---	---	12.0	9.5	11.0	18.5	15.0	16.5
23	---	---	---	---	---	---	12.5	9.5	11.0	19.5	16.0	17.5
24	---	---	---	---	---	---	12.5	10.0	11.0	18.5	16.0	17.0
25	---	---	---	---	---	---	12.5	11.0	11.5	19.0	14.5	17.0
26	---	---	---	---	---	---	11.5	10.0	11.0	17.0	14.0	15.0
27	---	---	---	---	---	---	12.0	10.0	11.0	17.0	11.5	14.0
28	---	---	---	---	---	---	11.5	8.5	10.0	16.5	12.5	14.5
29	---	---	---	---	---	---	8.5	6.5	7.5	15.5	13.5	14.5
30	---	---	---	---	---	---	8.0	5.0	6.5	13.5	12.5	13.0
31	---	---	---	---	---	---	---	---	---	14.0	12.0	13.0
MONTH	---	---	---	---	---	---	---	---	---	19.5	5.0	13.3
JUNE			JULY			AUGUST			SEPTEMBER			
1	16.5	13.0	14.5	22.5	18.0	20.5	21.0	18.0	19.5	18.5	16.5	17.5
2	16.0	13.0	14.5	23.0	19.0	21.0	21.5	18.5	20.0	18.0	15.5	17.0
3	16.5	14.0	15.5	23.0	19.5	21.5	22.5	20.0	21.0	17.5	15.5	16.5
4	16.0	13.0	15.0	22.5	18.5	20.5	22.0	20.5	21.0	17.0	15.5	16.0
5	15.5	13.0	14.5	22.5	18.5	20.5	21.0	19.0	20.0	17.0	14.5	15.5
6	17.5	14.0	16.0	22.5	19.0	21.0	19.5	17.0	18.5	17.0	15.0	16.0
7	17.0	15.5	16.5	22.0	19.5	20.5	18.0	15.5	16.5	17.5	16.0	17.0
8	16.5	13.0	14.5	20.5	17.5	19.0	18.5	16.0	17.0	17.0	16.0	16.5
9	12.5	11.5	12.0	22.0	18.5	20.0	18.5	16.0	17.5	16.5	15.0	16.0
10	15.5	11.0	13.0	23.5	20.5	22.0	19.0	16.5	17.5	14.5	13.0	14.0
11	15.0	13.0	14.0	22.0	19.5	20.5	19.0	17.0	18.0	14.0	13.0	13.5
12	15.0	14.5	14.5	21.0	18.5	19.5	18.0	17.5	17.5	12.5	11.5	12.0
13	14.5	13.5	14.0	21.0	18.0	19.5	19.5	16.5	18.0	13.0	11.5	12.5
14	14.0	12.0	13.0	20.0	17.5	18.5	19.0	17.5	18.0	13.0	11.0	12.0
15	14.0	10.5	12.0	20.5	17.5	19.0	17.5	16.0	17.0	13.5	11.0	12.0
16	15.0	12.5	13.5	20.5	17.5	19.0	18.0	15.0	16.5	13.5	11.5	12.5
17	16.0	13.0	14.5	21.5	19.0	20.0	18.0	15.5	16.5	14.5	12.0	13.5
18	16.0	14.5	15.5	20.0	18.5	19.0	18.0	15.5	17.0	16.0	13.5	14.5
19	18.0	14.0	16.0	20.0	17.0	18.0	17.0	16.5	16.5	16.5	15.0	15.5
20	19.0	16.0	17.0	20.5	17.0	18.5	18.0	16.0	16.5	16.5	15.0	16.0
21	18.0	16.5	17.0	21.0	18.0	19.0	18.5	15.5	17.0	16.0	15.0	15.5
22	17.0	16.0	16.5	21.0	18.0	19.5	20.0	16.5	18.0	15.5	12.5	14.5
23	18.0	15.5	16.5	21.0	18.5	20.0	19.5	18.0	18.5	12.0	10.0	10.5
24	17.5	16.0	17.0	21.5	19.0	20.5	18.5	16.0	17.5	11.0	9.0	10.0
25	17.5	16.0	16.5	22.0	19.5	20.5	17.5	15.5	16.5	11.5	10.0	10.5
26	17.0	15.5	16.0	22.0	20.0	21.0	17.5	16.5	17.0	10.5	9.0	10.0
27	18.5	15.0	16.5	22.5	20.0	21.0	18.0	16.0	17.0	11.0	9.0	10.0
28	18.5	16.0	17.0	21.0	19.0	20.0	17.5	17.0	17.0	12.5	10.5	11.5
29	19.0	16.5	18.0	19.5	17.0	18.0	18.0	16.0	17.0	12.5	11.0	11.5
30	18.5	17.0	18.0	19.5	17.0	18.0	16.5	15.0	15.5	12.5	10.5	11.5
31	---	---	---	20.0	17.5	19.0	16.5	14.5	15.5	---	---	---
MONTH	19.0	10.5	15.3	23.5	17.0	19.8	22.5	14.5	17.6	18.5	9.0	13.7

## 05370000 EAU GALLE RIVER AT SPRING VALLEY, WI

LOCATION.--Lat 44°51'10", long 92°14'17", in SE 1/4 NE 1/4 sec.6, T.27 N., R.15 W., Pierce County, Hydrologic Unit 07050005, on right bank 770 ft downstream from flood control dam, 1,500 ft upstream from Mines Creek, at Spring Valley.

DRAINAGE AREA.--64.1 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR WI-67-1: 1966. WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder and v-notch sharp-crested weir. Datum of gage is 900.00 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to July 31, 1957, nonrecording gage at site 850 ft downstream at datum of 912.45 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1957, to June 6, 1966, nonrecording gage at downstream site at datum of 910.45 ft above National Geodetic Vertical Datum of 1929. June 7, 1966, to Oct. 31, 1968, nonrecording gage at downstream site at datum of 909.45 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Low flow slightly regulated and high flow completely regulated by flood-control dam 770 ft upstream.

AVERAGE DISCHARGE.--21 years (1969-89), 33.5 ft<sup>3</sup>/s, since operation of flood-control reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft<sup>3</sup>/s, Apr. 15, 1954, gage height, 12.50 ft, datum then in use; no flow Aug. 11-15, 1971, flow shut off at flood-control dam upstream due to request by Wisconsin Department of Natural Resources for eradication of rough fish to improve sport fishing; minimum observed prior to dam construction period, 5.8 ft<sup>3</sup>/s, Sept. 25, 27, 28, 30, 1949.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Maximum stage since at least 1894, that of Sept. 18, 1942, 19.98 ft, with datum at 909.45 ft above National Geodetic Vertical Datum of 1929, from floodmarks, discharge, 33,000 ft<sup>3</sup>/s estimated by U.S. Army Corps of Engineers on basis of slope-area measurement by Geological Survey of peak discharge of 39,000 ft<sup>3</sup>/s at Elmwood, drainage area, 91.9 mi<sup>2</sup>.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,570 ft<sup>3</sup>/s, Mar. 27, gage height, 19.05 ft; minimum discharge, 7.9 ft<sup>3</sup>/s, Sept. 26-28, gage height, 13.09 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1-3, 6-12, 27, Nov. 5-7, Mar. 27, 28, and June 18-20.)

13.1	7.4	14.1	40	15.4	394
13.3	10	14.3	62	16.0	660
13.5	13	14.6	120	17.0	1,150
13.7	18	15.0	240	19.0	2,400
13.9	27				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	11	16	14	13	14	58	48	40	270	19	143
2	17	12	16	14	14	14	50	35	30	78	17	95
3	17	12	15	14	13	17	89	28	24	37	16	43
4	15	12	15	14	13	17	160	25	20	27	15	31
5	16	14	15	14	13	15	88	27	17	22	16	29
6	16	15	15	14	13	14	60	22	17	19	15	26
7	15	15	15	14	14	14	46	20	19	18	14	20
8	15	16	14	14	14	14	37	21	19	19	14	20
9	15	15	14	14	14	14	32	23	17	19	14	19
10	15	16	14	14	14	15	28	25	16	17	14	18
11	15	15	14	13	14	16	26	23	16	16	14	17
12	15	16	14	13	14	16	24	21	16	16	14	17
13	15	16	15	14	15	16	24	19	16	15	15	16
14	16	16	14	14	14	18	22	19	16	14	23	16
15	16	19	14	13	14	19	22	18	16	14	22	17
16	16	125	14	13	14	16	22	18	15	14	22	16
17	15	65	14	13	14	16	21	17	16	14	18	16
18	15	32	14	13	15	15	20	18	16	15	16	16
19	56	23	14	13	15	15	19	18	15	22	15	16
20	44	20	16	13	15	14	19	20	15	18	16	16
21	12	18	15	14	14	14	19	19	15	15	16	16
22	12	17	15	14	14	14	19	18	15	14	34	16
23	12	17	15	14	13	14	19	18	15	14	36	16
24	12	17	14	13	14	15	19	23	15	14	26	16
25	12	16	14	13	14	18	19	65	15	13	21	16
26	12	18	14	14	14	98	19	65	21	13	19	14
27	13	18	16	14	14	1620	20	36	22	14	20	7.9
28	12	17	14	14	15	2190	21	27	19	13	22	8.8
29	11	17	14	14	---	473	31	25	17	22	23	12
30	11	16	14	14	---	219	62	73	24	33	20	13
31	11	---	14	14	---	93	---	86	---	24	29	---
TOTAL	511	656	451	424	391	5077	1115	920	554	873	595	742.7
MEAN	16.5	21.9	14.5	13.7	14.0	164	37.2	29.7	18.5	28.2	19.2	24.8
MAX	56	125	16	14	15	2190	160	86	40	270	36	143
MIN	11	11	14	13	13	14	19	17	15	13	14	7.9

CAL YR 1988 TOTAL 7534 MEAN 20.6 MAX 203 MIN 11  
WTR YR 1989 TOTAL 12309.7 MEAN 33.7 MAX 2190 MIN 7.9

## CHIPPEWA RIVER BASIN

05370000 EAU GALLE RIVER AT SPRING VALLEY, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1978 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1978 to current year.

WATER TEMPERATURES: June 1978 to current year.

INSTRUMENTATION.--Water-quality monitor since June 20, 1978.

REMARKS.--The water-quality monitor is located 170 ft downstream from dam. The monitor was located 100 ft downstream from dam for July 2 to Oct. 30, 1986 period. Prior to July 2, 1986, the monitor was located 770 ft downstream from dam, but poor water circulation due to aquatic macrophytes, and ground-water seepage from the streambed, caused local water temperature and specific conductance differences. Records are poor.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURES: Maximum, 27.5°C Aug. 11, 1982, July 3, 1989, but may have been higher during period of missing record in 1989 water year; minimum, 0.0°C Mar. 30, 31, 1982, and many days during February and March 1984, and Nov. 20, 21, 1985.

SPECIFIC CONDUCTANCE: Maximum, 837 microsiemens/cm Oct. 27, 1985; minimum, 138 microsiemens/cm Sept. 22, 1986, but may have been lower during period Jan. 16 to June 30, 1986, when there were relatively large differences between recorded values and field measurements.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURES: Maximum, 27.5°C July 3, but may have been higher during period of missing record; minimum, 1.0°C Nov. 20, but may have been lower during period of missing record.

SPECIFIC CONDUCTANCE: Maximum observed, 537 microsiemens/cm Feb. 4, but may have been higher during period of missing record; minimum, 242 microsiemens/cm July 1, but may have been higher during period of missing record.

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	14.5	14.0	14.0	4.5	4.0	4.0	3.0	2.5	3.0	3.0	3.0	3.0
2	14.5	13.5	14.0	4.5	4.0	4.0	3.0	3.0	3.0	3.5	3.0	3.0
3	13.5	13.0	13.5	4.0	4.0	4.0	3.5	3.0	3.0	3.0	3.0	3.0
4	12.5	12.0	12.0	4.5	4.0	4.0	3.5	3.0	3.0	3.5	2.5	3.0
5	12.5	11.5	12.0	4.0	3.0	3.5	3.5	3.0	3.5	3.0	2.5	3.0
6	12.5	11.0	11.5	3.5	2.5	3.0	3.5	3.5	3.5	3.0	2.5	2.5
7	12.0	10.5	11.0	3.5	3.0	3.5	3.5	3.5	3.5	3.0	2.5	2.5
8	12.0	11.0	11.5	4.0	3.5	3.5	3.5	3.5	3.5	3.0	2.5	2.5
9	12.5	11.0	11.5	4.0	3.5	4.0	3.5	3.5	3.5	5.5	2.5	3.0
10	12.0	11.0	11.5	4.0	3.5	4.0	3.5	3.5	3.5	4.5	2.5	3.0
11	11.5	10.5	11.0	4.0	3.5	3.5	4.0	3.5	4.0	3.0	2.5	2.5
12	10.5	10.0	10.5	3.5	3.5	3.5	4.0	3.5	4.0	3.0	2.5	2.5
13	10.0	9.5	9.5	3.5	3.0	3.5	4.0	3.5	4.0	3.5	2.5	3.0
14	10.5	9.5	10.0	3.5	3.0	3.5	4.0	3.5	4.0	2.5	2.5	2.5
15	10.5	9.5	10.0	3.5	3.5	3.5	3.5	3.5	3.5	3.0	2.5	2.5
16	11.5	10.0	11.0	3.5	2.5	3.5	4.0	3.5	3.5	2.5	2.5	2.5
17	10.5	10.0	10.5	2.5	2.0	2.5	3.5	3.5	3.5	2.5	2.5	2.5
18	10.0	9.5	10.0	2.5	2.0	2.0	3.5	3.5	3.5	3.0	2.5	2.5
19	10.0	9.0	9.5	2.5	2.0	2.5	3.5	3.5	3.5	3.5	2.5	3.0
20	9.5	8.5	9.0	1.5	1.0	1.5	3.5	3.5	3.5	3.0	2.5	2.5
21	9.5	9.0	9.0	2.0	1.5	2.0	3.5	3.5	3.5	3.0	2.5	3.0
22	9.0	8.5	8.5	2.0	2.0	2.0	3.5	3.5	3.5	3.0	2.5	3.0
23	9.0	8.0	8.5	2.5	2.0	2.5	3.5	3.5	3.5	3.0	2.5	3.0
24	8.0	7.5	7.5	3.0	2.5	2.5	3.5	3.5	3.5	3.5	3.0	3.0
25	7.0	6.0	6.5	3.0	2.5	3.0	3.5	3.5	3.5	3.0	3.0	3.0
26	6.5	5.5	6.0	3.0	3.0	3.0	3.5	3.5	3.5	3.0	2.5	3.0
27	6.0	5.5	6.0	3.5	3.0	3.0	3.5	3.5	3.5	3.5	3.0	3.0
28	5.5	4.5	5.0	3.0	2.0	2.5	3.5	3.5	3.5	3.5	2.5	3.0
29	4.5	4.0	4.5	3.0	2.5	2.5	4.5	3.5	4.0	3.0	2.5	3.0
30	4.0	4.0	4.0	3.0	2.5	2.5	3.5	3.0	3.5	3.0	3.0	3.0
31	4.5	4.0	4.5	---	---	---	3.5	3.0	3.5	3.0	3.0	3.0
MONTH	14.5	4.0	9.5	4.5	1.0	3.1	4.5	2.5	3.5	5.5	2.5	2.8

## CHIPPEWA RIVER BASIN

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05370000 EAU GALLE RIVER AT SPRING VALLEY, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3.0	2.0	2.5	2.5	1.5	2.0	---	---	---	---	---	---
2	2.5	2.0	2.0	2.0	1.5	1.5	---	---	---	---	---	---
3	3.5	2.0	2.5	1.5	1.5	1.5	---	---	---	---	---	---
4	4.0	2.5	3.0	1.5	1.5	1.5	---	---	---	---	---	---
5	3.5	2.5	2.5	2.5	1.5	1.5	---	---	---	---	---	---
6	2.5	2.5	2.5	2.5	1.5	2.0	---	---	---	8.5	7.5	8.0
7	2.5	2.0	2.5	2.5	1.5	2.0	---	---	---	12.0	8.0	9.5
8	2.5	2.0	2.5	2.5	1.5	2.0	---	---	---	10.5	8.0	9.0
9	3.0	2.0	2.5	2.5	1.5	2.0	---	---	---	11.0	8.5	9.5
10	2.5	2.0	2.5	2.5	1.5	2.0	---	---	---	10.5	9.5	10.0
11	3.0	2.0	2.5	2.5	1.5	2.0	---	---	---	13.5	8.0	11.5
12	2.5	2.0	2.5	2.5	1.5	2.0	---	---	---	12.5	11.5	12.0
13	2.5	2.0	2.5	---	---	---	---	---	---	12.0	11.5	12.0
14	2.5	1.5	2.0	---	---	---	---	---	---	14.0	12.0	12.5
15	2.5	1.5	2.0	---	---	---	---	---	---	13.5	12.5	13.0
16	2.5	1.5	2.0	---	---	---	---	---	---	13.5	13.0	13.5
17	2.0	1.5	2.0	---	---	---	---	---	---	---	---	---
18	2.0	1.5	2.0	---	---	---	---	---	---	---	---	---
19	2.0	1.5	1.5	---	---	---	---	---	---	---	---	---
20	2.0	1.5	2.0	---	---	---	---	---	---	---	---	---
21	2.5	1.5	2.0	---	---	---	---	---	---	---	---	---
22	2.0	1.5	2.0	---	---	---	---	---	---	---	---	---
23	2.0	1.5	2.0	---	---	---	---	---	---	---	---	---
24	2.5	1.5	2.0	---	---	---	---	---	---	---	---	---
25	2.5	2.0	2.0	---	---	---	---	---	---	---	---	---
26	2.0	1.5	1.5	---	---	---	---	---	---	---	---	---
27	2.0	1.5	1.5	---	---	---	---	---	---	---	---	---
28	2.5	1.5	1.5	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	4.0	1.5	2.2	---	---	---	---	---	---	---	---	---
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	24.0	20.5	22.5	---	---	---	21.5	20.5	21.0
2	---	---	---	25.5	22.5	24.0	---	---	---	23.0	19.5	20.5
3	---	---	---	27.5	24.0	25.5	---	---	---	20.5	18.0	19.0
4	---	---	---	26.0	22.5	24.5	---	---	---	19.5	18.5	19.0
5	---	---	---	24.0	21.5	23.0	---	---	---	21.0	18.0	19.0
6	---	---	---	24.5	22.0	23.0	---	---	---	19.0	17.5	18.5
7	---	---	---	24.0	21.0	22.5	---	---	---	19.5	18.0	19.0
8	---	---	---	22.0	20.5	21.5	---	---	---	20.0	18.5	19.0
9	---	---	---	23.0	21.0	21.5	---	---	---	19.5	18.5	19.0
10	---	---	---	23.0	20.5	22.0	---	---	---	19.0	18.5	19.0
11	---	---	---	22.0	20.0	21.0	---	---	---	19.0	18.0	18.5
12	---	---	---	22.0	20.0	21.0	---	---	---	18.5	18.0	18.5
13	---	---	---	21.0	19.0	20.0	---	---	---	18.5	17.5	18.0
14	---	---	---	22.0	19.0	20.0	---	---	---	18.5	17.5	18.0
15	---	---	---	21.0	19.0	20.0	---	---	---	18.5	17.0	17.5
16	---	---	---	21.5	19.0	20.5	---	---	---	18.5	17.5	18.0
17	---	---	---	21.0	19.5	20.0	---	---	---	18.5	17.5	18.0
18	---	---	---	21.0	19.5	20.5	---	---	---	18.5	17.5	18.0
19	---	---	---	23.5	20.0	21.5	---	---	---	19.0	18.0	18.5
20	---	---	---	22.5	20.0	21.5	---	---	---	19.0	18.5	18.5
21	---	---	---	21.0	19.5	20.5	---	---	---	19.5	18.5	19.0
22	---	---	---	21.0	19.0	20.0	---	---	---	22.5	19.0	20.0
23	---	---	---	20.5	19.0	20.0	---	---	---	20.5	19.0	19.5
24	---	---	---	21.5	19.5	20.5	---	---	---	19.0	18.5	18.5
25	---	---	---	22.0	19.5	20.5	---	---	---	20.0	18.5	19.0
26	---	---	---	---	---	---	---	---	---	18.5	17.5	18.0
27	---	---	---	---	---	---	---	---	---	17.5	17.0	17.5
28	---	---	---	---	---	---	---	---	---	19.0	17.5	18.0
29	---	---	---	---	---	---	21.0	19.0	20.0	19.0	17.5	18.5
30	---	---	---	---	---	---	19.5	18.5	19.0	19.0	18.0	18.5
31	---	---	---	---	---	---	20.5	19.0	19.5	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	23.0	17.0	18.7

05370000 EAU GALLE RIVER AT SPRING VALLEY, WI--CONTINUED

## SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	348	340	344	390	384	387	412	401	407	468	458	460
2	350	337	343	392	387	390	411	404	409	479	462	472
3	351	345	348	390	387	389	409	404	407	477	462	470
4	350	346	349	392	387	391	418	405	413	487	460	475
5	355	347	351	392	387	390	421	412	417	480	463	473
6	358	352	355	393	387	390	421	413	418	471	462	467
7	356	349	353	395	388	392	421	415	417	465	462	464
8	361	354	356	399	392	395	430	416	424	485	466	480
9	365	358	360	404	398	400	439	421	431	503	478	488
10	365	357	360	410	401	406	439	426	433	506	472	490
11	366	359	362	409	403	405	448	430	439	489	472	478
12	365	353	358	405	403	404	449	430	439	492	471	482
13	372	358	364	405	400	403	436	430	432	500	470	483
14	365	357	362	408	402	405	432	428	430	478	467	472
15	368	360	364	410	401	406	448	430	438	481	465	471
16	370	363	366	405	396	401	451	440	447	484	468	475
17	372	361	367	395	382	387	445	439	442	483	471	476
18	365	361	363	387	381	384	447	440	444	483	475	477
19	364	354	360	381	377	379	451	434	443	478	467	476
20	367	346	354	388	379	384	444	436	439	480	475	477
21	361	353	358	389	381	386	453	441	446	481	475	479
22	368	356	361	387	383	386	445	439	443	482	477	479
23	368	363	366	389	386	387	445	441	443	484	479	480
24	370	366	367	393	388	391	453	445	449	484	479	481
25	373	369	371	393	390	392	460	449	455	482	480	481
26	377	372	374	397	393	395	457	451	455	484	480	482
27	383	376	380	398	396	397	461	450	455	487	480	483
28	382	378	380	404	395	397	472	457	465	489	481	484
29	386	380	383	405	397	401	486	463	473	484	481	483
30	390	381	385	401	398	400	471	451	463	487	481	484
31	387	384	385	---	---	---	476	454	466	486	483	484
MONTH	390	337	363	410	377	394	486	401	438	506	458	478
	FEBRUARY			MARCH			APRIL			MAY		
1	492	484	488	493	479	487	---	---	---	---	---	---
2	502	492	495	494	483	488	---	---	---	---	---	---
3	532	499	512	488	482	485	---	---	---	---	---	---
4	537	488	512	486	481	483	---	---	---	---	---	---
5	529	493	505	493	475	484	---	---	---	---	---	---
6	504	483	494	492	471	481	---	---	---	299	294	297
7	494	485	488	482	474	477	---	---	---	299	294	297
8	501	486	494	478	471	474	---	---	---	300	294	298
9	506	485	493	476	470	473	---	---	---	301	295	299
10	498	484	489	473	469	472	---	---	---	302	297	300
11	490	484	486	471	468	469	---	---	---	302	295	298
12	493	484	488	471	468	469	---	---	---	296	290	294
13	488	485	486	---	---	---	---	---	---	297	293	295
14	499	484	489	---	---	---	---	---	---	297	293	295
15	495	485	489	---	---	---	---	---	---	297	293	294
16	501	484	493	---	---	---	---	---	---	298	294	296
17	496	485	491	---	---	---	---	---	---	---	---	---
18	496	485	491	---	---	---	---	---	---	---	---	---
19	502	484	494	---	---	---	---	---	---	---	---	---
20	504	481	492	---	---	---	---	---	---	---	---	---
21	489	481	485	---	---	---	---	---	---	---	---	---
22	499	483	490	---	---	---	---	---	---	---	---	---
23	513	481	494	---	---	---	---	---	---	---	---	---
24	487	481	483	---	---	---	---	---	---	---	---	---
25	481	478	480	---	---	---	---	---	---	---	---	---
26	487	478	483	---	---	---	---	---	---	---	---	---
27	494	479	485	---	---	---	---	---	---	---	---	---
28	488	478	482	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	537	478	491	---	---	---	---	---	---	---	---	---

## CHIPPEWA RIVER BASIN

173

05370000 EAU GALLE RIVER AT SPRING VALLEY, WI--CONTINUED

SPECIFIC CONDUCTANCE, US/CM AT 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	293	242	265	---	---	---	326	298	312
2	---	---	---	262	246	255	---	---	---	313	303	309
3	---	---	---	272	262	267	---	---	---	307	292	303
4	---	---	---	273	270	271	---	---	---	307	300	304
5	---	---	---	281	272	276	---	---	---	321	303	309
6	---	---	---	284	274	280	---	---	---	330	311	321
7	---	---	---	286	278	282	---	---	---	335	322	330
8	---	---	---	290	279	284	---	---	---	343	330	337
9	---	---	---	295	280	287	---	---	---	348	338	344
10	---	---	---	297	283	290	---	---	---	355	341	351
11	---	---	---	297	286	292	---	---	---	369	355	362
12	---	---	---	297	287	292	---	---	---	375	354	366
13	---	---	---	299	286	293	---	---	---	373	360	369
14	---	---	---	299	288	293	---	---	---	377	362	369
15	---	---	---	298	286	292	---	---	---	387	360	373
16	---	---	---	296	288	293	---	---	---	388	367	377
17	---	---	---	298	289	294	---	---	---	391	369	381
18	---	---	---	303	290	296	---	---	---	391	376	383
19	---	---	---	295	280	288	---	---	---	395	372	385
20	---	---	---	297	288	292	---	---	---	391	378	386
21	---	---	---	305	295	298	---	---	---	399	383	391
22	---	---	---	306	299	302	---	---	---	399	333	376
23	---	---	---	308	303	306	---	---	---	397	339	373
24	---	---	---	311	305	308	---	---	---	398	369	386
25	---	---	---	312	307	310	---	---	---	380	347	359
26	---	---	---	---	---	---	---	---	---	390	353	373
27	---	---	---	---	---	---	---	---	---	412	380	393
28	---	---	---	---	---	---	---	---	---	378	364	371
29	---	---	---	---	---	---	349	338	343	379	366	370
30	---	---	---	---	---	---	352	344	349	377	367	372
31	---	---	---	---	---	---	352	329	345	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	412	292	358





BUFFALO RIVER BASIN

175

443311091231000 CRYSTAL LAKE AT STRUM, WI

LAKE-STAGE RECORDS

LOCATION.--Lat 44°33'11", long 91°23'10", in SW 1/4 sec.17, T.24 N., R.8 W., Trempealeau County, Hydrologic Unit 07040003, at Strum.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by LaVerne Anderson. Elevation of gage is 870.56 ft, revised, National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 15.3 ft, Aug. 15, 1986; minimum observed, 13.3 ft, June 14, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 14.76 ft, July 14; minimum observed, 14.08 ft, Aug. 12.

GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
MAY 16	14.10	JUNE 30	14.22	JULY 22	14.36	AUG. 19	14.10	SEPT. 9	14.18
JUNE 15	14.18	JULY 7	14.22	JULY 28	14.12	26	14.12	16	14.16
23	14.22	14	14.76	AUG. 12	14.08	SEPT. 2	14.16	23	14.10

WATER-QUALITY RECORDS

LOCATION.--Lat 44°33'16", long 91°23'09", in SW 1/4 sec.17, T.24 N., R.8 W., Trempealeau County, Hydrologic Unit 07040003, near center of lake, at Strum.

PERIOD OF RECORD.--April 1985 to current year.

REMARKS.--Secchi disc readings made by LaVerne Anderson.

SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
JUN 1989			AUG 1989		
15...	1930	1.00	12...	1230	0.90
23...	1830	1.10	19...	1230	0.90
30...	1630	0.90	26...	1230	0.80
JUL			SEP		
07...	1900	0.90	02...	1530	0.90
14...	1100	1.00	09...	1530	1.00
22...	1930	1.00	16...	1530	0.90
28...	1630	0.90	23...	1600	0.90

## MISSISSIPPI RIVER MAIN STEM

## 05378500 MISSISSIPPI RIVER AT WINONA, MN

LOCATION.--Lat 44°03'21", long 91°38'16", in sec.23, T.107 N., R.7 W., Winona County, Hydrologic Unit 07040003, on right bank at Winona pumping station in Winona, 9.5 mi upstream from Trempealeau River, and at mile 725.7 upstream from the Ohio River.

DRAINAGE AREA.--59,200 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--June 1928 to current year. Gage-height records collected in this vicinity since 1878 are contained in reports of Mississippi River Commission.

GAGE.--Water-stage recorder. Datum of gage is 639.64 ft above National Geodetic Vertical Datum of 1929. June 10, 1928, to Apr. 15, 1931, nonrecording gage at site 800 ft upstream. Prior to Oct. 1, 1929, at datum 0.20 ft higher and Oct. 1, 1929, to Apr. 15, 1931, at datum 0.12 ft lower. Apr. 16, 1931, to Nov. 12, 1934, nonrecording gage at present site and datum. Since Mar. 31, 1937, auxiliary water-stage recorder 2.7 mi upstream at tailwater of navigation dam 5A.

REMARKS.--No estimated daily discharges. Records good. Some regulation by reservoirs, navigation dams, and powerplants at low and medium stages. Flood flow not materially affected by artificial storage.

AVERAGE DISCHARGE.--61 years, 27,710 ft<sup>3</sup>/s, 6.36 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 268,000 ft<sup>3</sup>/s, Apr. 19, 1965, gage height, 20.77 ft, from floodmark; minimum, 1,940 ft<sup>3</sup>/s, Dec. 12, 1980, gage height, 3.96 ft, result of ice jam; minimum gage height, -3.38 ft, Aug. 31, 1934 (prior to dam construction in 1936); minimum gage height since 1938, after completion of dam, 1.95 ft, Jan. 27, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 18, 1880, reached an elevation of 657.14 ft, discharge, 172,000 ft<sup>3</sup>/s, from information by U.S. Army Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 79,400 ft<sup>3</sup>/s, Mar. 31, gage height, 9.86 ft; minimum daily discharge, 5,950 ft<sup>3</sup>/s, Aug. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17300	13100	18300	13100	13500	13000	77800	40200	44100	22000	9800	13000
2	17600	12700	17100	12100	13200	12900	75300	39800	45800	20200	11200	13600
3	16100	13000	16300	12300	12800	12900	69100	41100	47400	20600	12500	15100
4	11900	12900	15500	11700	12900	11800	64900	42500	46200	21600	12500	16500
5	11500	14000	15100	11200	12400	11900	60000	43400	41700	22200	12200	17900
6	10700	14200	15300	11200	12200	12000	57800	43900	35000	22000	12100	19800
7	13200	14300	13800	11200	12300	12000	58200	43000	32100	17200	11400	21200
8	15100	12800	13800	11300	12300	12000	59100	41500	30500	15800	9900	21300
9	14700	13900	13800	11400	12300	12000	62000	40700	29000	19400	8600	20200
10	13200	12300	12300	11400	12300	12000	64700	39800	27000	18300	7500	19700
11	12200	13800	9500	11400	13200	11900	64200	38800	24700	13800	6670	16900
12	11800	13000	8500	11500	14100	15900	64100	38700	21100	15100	6400	15200
13	11800	12900	8900	11500	14800	28500	63500	39200	19100	15200	5950	14200
14	11200	14300	10100	11500	14700	29300	61700	39600	19000	13500	6700	14200
15	11200	15500	10700	11500	14400	27500	59600	38700	20500	12700	8420	13100
16	11500	16400	11000	12000	14400	25500	55600	37000	21500	11900	10800	12700
17	12900	17400	11000	12000	14400	22600	52900	35100	21800	11800	12900	12700
18	12600	17200	10900	12000	14400	20400	52800	32900	22100	10800	13500	12000
19	13200	17400	10900	12000	14400	18600	51700	31000	24000	9720	13200	11900
20	14000	20500	11000	12000	14200	16500	50500	30300	25000	12400	13100	11200
21	13300	21400	13100	12000	14100	14700	49700	30000	24200	14400	13100	11300
22	14100	21400	13000	11900	14000	12600	49100	28200	20200	15900	11700	11300
23	13300	20900	13200	12000	13700	12600	47500	26500	19100	15100	11600	12800
24	13000	19600	14700	12200	12500	13900	45000	26300	18500	15600	11600	12600
25	12200	18400	15200	12200	11600	26000	44700	27400	17900	13600	11700	11800
26	11600	18100	15000	12400	12500	45100	42800	28400	17500	10900	12200	11900
27	10600	17400	14000	12600	13600	51600	39800	29300	18100	11300	12400	11800
28	8820	17400	14000	13100	12900	60900	39700	32100	19400	10100	12300	11800
29	10600	17000	13700	13100	---	73900	40000	37200	21900	9760	11900	11800
30	13300	17600	13200	13100	---	78400	40700	41200	22200	12500	11900	12100
31	12800	---	13100	13000	---	78800	---	42400	---	12600	11600	---
TOTAL	397320	480800	404900	371900	374100	807700	1664500	1126200	796600	467980	337340	431600
MEAN	12820	16030	13060	12000	13360	26050	55480	36330	26550	15100	10880	14390
MAX	17600	21400	18300	13100	11600	78800	77800	43900	47400	22200	13500	21300
MIN	8820	12300	8500	11200	11300	11800	39700	26300	17500	9720	5950	11200
CFSM	.22	.27	.22	.20	.23	.44	.94	.61	.45	.26	.18	.24
IN.	.25	.30	.25	.23	.24	.51	1.05	.71	.50	.29	.21	.27
CAL YR 1988	TOTAL 5883270	MEAN 16070	MAX 46400	MIN 5500	CFSM .27	IN. 3.70						
WTR YR 1989	TOTAL 7662040	MEAN 20990	MAX 78800	MIN 5950	CFSM .35	IN. 4.81						

## TREMPEALEAU RIVER BASIN

177

442129091251100 BUGLE LAKE AT INDEPENDENCE, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 44°21'29", long 91°25'11", in NW 1/4 sec.25, T.22 N., R.9 W., Trempealeau County, Hydrologic Unit 07040005, at dam at Independence.

PERIOD OF RECORD.--October 1984 to July 1987, April to September 1989.

GAGE.--Staff gage read by Ralph Wiersgalla through July 1989, and Jim Bisek thereafter. Elevation of gage is 779 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 1.90 ft, Sept. 9, 30, 1985; minimum observed, 1.60 ft, many days in July and August 1985, Apr. 15, 1986, and many days in 1987 and 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 1.80 ft, Apr. 27, Sept. 6; minimum observed, 1.60 ft, May 15, June 14, and July 19, 28.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
APR. 27	1.8	JULY 19	1.6
MAY 15	1.6	28	1.6
JUNE 14	1.6	SEPT. 6	1.8

## WATER-QUALITY RECORDS

LOCATION.--Lat 44°21'39", long 91°25'20", in NW 1/4 sec.25, T.22 N., R.9 W., Trempealeau County, Hydrologic Unit 07040005, near center of lake, at Independence.

PERIOD OF RECORD.--July 1985 to July 1987, April to September 1989.

REMARKS.--Secchi disc readings made by Ralph Wiersgalla through July 1989, and Jim Bisek thereafter.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
MAY 1989			JUL 1989		
15...	1045	1.20	19...	0900	0.90
JUN			28...	0900	1.20
14...	0900	1.10	SEP		
			06...	0900	0.90

## TREMPEALEAU RIVER BASIN

05379500 TREMPEALEAU RIVER AT DODGE, WI

LOCATION.--Lat 44°07'55", long 91°33'14", in SE 1/4 sec.10, T.19 N., R.10 W., Trempealeau County, Hydrologic Unit 07040005, near left bank on downstream side of highway bridge in Dodge, 9.0 mi upstream from mouth.

DRAINAGE AREA.--643 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1913 to September 1919, April 1934 to current year.

REVISED RECORDS.--WSP 1238: Drainage area. WSP 1388: 1919(M). WSP 1438: 1914, 1915-18(M), 1934-44(M), 1946-49(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 661.42 ft above National Geodetic Vertical Datum of 1929. Prior to July 14, 1977, nonrecording gage at same site and datum. Prior to Oct. 1, 1966, datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Nov. 21-30 and ice period listed in rating table below. Records good except those for estimated daily discharges, which are fair. Gage-height telemeter and data-collection platform at station.

AVERAGE DISCHARGE.--60 years (1915-19, 1935-89), 431 ft<sup>3</sup>/s, 9.10 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,400 ft<sup>3</sup>/s, Apr. 4, 1956, gage height, 10.35 ft; minimum daily, 98 ft<sup>3</sup>/s, Jan. 10, 1938.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 16	----	1,600	ice jam	June 1	1500	1,680	7.37
Mar. 28	1100	*7,110	*10.81				

Minimum discharge, 234 ft<sup>3</sup>/s, Aug. 12, 13, gage height, 3.11 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used June 5 to Sept. 30; stage-discharge relation affected by ice Dec. 2 to Mar. 23.)

3.2	218	9.0	2,750
4.0	377	10.0	4,200
5.0	648	10.5	5,600
7.0	1,480	11.0	8,200

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	297	305	342	260	420	260	1340	570	1610	292	386	333
2	294	308	340	260	360	260	964	500	1430	290	321	382
3	294	307	330	250	310	260	873	451	961	284	295	367
4	288	319	320	250	260	260	885	430	687	278	284	343
5	283	359	310	260	260	260	810	439	582	269	288	337
6	281	362	310	260	260	280	721	450	508	262	271	326
7	281	360	300	270	260	290	664	420	455	264	262	308
8	281	344	290	270	250	310	620	399	449	250	254	306
9	280	338	290	260	250	330	579	420	448	251	249	325
10	277	349	280	250	250	350	550	414	441	248	244	304
11	273	335	280	250	250	420	526	386	415	271	239	287
12	270	345	290	250	260	540	512	366	399	303	235	277
13	269	369	290	250	260	660	496	353	392	303	245	271
14	270	388	300	250	260	800	479	347	394	292	280	264
15	269	400	290	250	250	1400	459	350	406	272	295	259
16	269	500	280	250	250	1600	457	333	415	262	273	255
17	277	501	280	250	250	1100	451	327	398	255	255	251
18	317	436	290	260	250	840	452	323	369	289	246	247
19	319	391	300	260	250	620	447	325	354	321	242	243
20	319	366	330	270	250	560	437	325	339	305	243	239
21	332	350	360	270	250	520	426	319	329	298	243	238
22	329	350	330	270	260	480	423	310	323	275	270	243
23	337	350	300	290	240	700	424	301	349	260	294	249
24	338	340	290	310	250	1180	419	320	340	251	288	247
25	325	340	270	310	260	1960	509	429	326	253	269	247
26	320	350	270	310	260	4390	547	639	332	248	261	244
27	318	360	270	300	270	5410	535	614	334	245	259	242
28	310	370	270	300	260	6550	560	478	320	239	266	244
29	308	370	250	300	---	5560	594	385	306	272	270	243
30	305	370	260	320	---	3730	610	657	297	498	259	241
31	307	---	260	360	---	2270	---	1310	---	466	274	---
TOTAL	9237	10932	9172	8470	7460	44150	17769	13690	14708	8866	8360	8362
MEAN	298	364	296	273	266	1424	592	442	490	286	270	279
MAX	338	501	360	360	420	6550	1340	1310	1610	498	386	382
MIN	269	305	250	250	240	260	419	301	297	239	235	238
CFSM	.46	.57	.46	.42	.41	2.21	.92	.69	.76	.44	.42	.43
IN.	.53	.63	.53	.49	.43	2.55	1.03	.79	.85	.51	.48	.48

CAL YR 1988 TOTAL 142151 MEAN 388 MAX 1860 MIN 219 CFSM .60 IN. 8.22  
WTR YR 1989 TOTAL 161176 MEAN 442 MAX 6550 MIN 235 CFSM .69 IN. 9.32

## BLACK RIVER BASIN

179

## 05381000 BLACK RIVER AT NEILLSVILLE, WI

LOCATION.--Lat 44°33'34", long 90°36'52", in sec.15, T.24 N., R.2 W., Clark County, Hydrologic Unit 07040007, on right bank at downstream side of bridge on U.S. Highway 10 in Neillsville, 1.0 mi downstream from O'Neill Creek, and 2.6 mi upstream from Cunningham Creek.

DRAINAGE AREA.--749 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1905 to March 1909, October 1913 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1914. WSP 1438: 1905, 1906-8(M), 1914-17(M), 1918-19, 1920-25(M), 1926-27, 1928-29(M), 1930, 1931(M), 1932, 1933(M), 1934, 1935(M), 1936. WSP 1508: 1950. WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 962.34 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 24, 1934, nonrecording gage; Oct. 24, 1934, to June 16, 1977, water-stage recorder; June 17, 1977, to Nov. 19, 1977, nonrecording gage at site 150 ft downstream at datum 1.58 ft lower.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

AVERAGE DISCHARGE.--79 years (1906-8, 1914-89), 595 ft<sup>3</sup>/s, 10.79 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,800 ft<sup>3</sup>/s, Sept. 10, 1938, gage height, 23.8 ft; minimum, 0.6 ft<sup>3</sup>/s, Aug. 15, 1936, gage height, 1.84 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 27	2230	*15,300	*14.40	May 30	1400	8,340	11.22

Minimum, 29 ft<sup>3</sup>/s, Aug. 8, 9, Sept. 30, gage height, 2.49 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Nov. 22-24, and Nov. 29 to Mar. 27.)

2.4	20	6.0	1,500
2.6	41	7.0	2,370
3.0	104	9.0	4,740
3.5	224	11.0	7,940
4.0	392	13.0	12,000
5.0	850	14.0	14,300

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	88	240	56	58	66	2030	1000	3250	109	45	134
2	61	88	200	56	52	64	1540	905	1740	196	45	133
3	53	88	180	54	47	64	1660	746	1140	257	40	113
4	51	90	180	52	45	64	1960	599	813	240	39	116
5	50	98	180	52	44	62	2090	544	568	209	38	119
6	45	106	160	52	44	62	1960	538	425	168	34	117
7	44	108	160	52	43	60	1680	549	331	137	32	118
8	44	113	150	54	43	62	1420	526	280	113	29	125
9	42	124	140	52	43	64	1160	1000	235	97	38	127
10	42	130	130	49	42	66	917	1020	204	86	54	112
11	41	127	120	49	44	72	725	719	183	111	45	99
12	41	119	100	52	45	92	594	536	174	99	38	94
13	41	121	88	50	46	130	512	426	169	86	72	93
14	40	126	80	50	45	160	453	358	400	79	87	88
15	39	136	72	50	44	240	423	311	1420	73	111	81
16	40	414	66	50	44	200	419	270	1670	72	104	74
17	48	476	60	52	44	180	434	241	1100	68	192	68
18	60	545	58	52	42	160	454	216	688	71	183	62
19	59	496	60	52	43	140	475	204	458	72	146	58
20	60	420	66	54	43	110	465	215	335	65	121	54
21	75	356	74	54	45	96	434	206	258	59	101	51
22	76	270	96	52	44	84	401	191	209	54	108	51
23	76	240	130	54	44	70	372	175	198	72	118	44
24	84	230	150	56	42	170	349	192	164	79	111	41
25	83	225	140	54	46	960	331	1920	147	68	88	39
26	87	218	120	52	52	2300	344	3560	160	61	93	36
27	100	259	94	52	60	10000	395	2040	171	54	97	34
28	102	317	76	52	66	13300	461	1260	155	45	88	32
29	93	300	66	54	---	9450	569	939	135	45	80	31
30	89	270	62	54	---	5960	851	6430	118	48	74	30
31	87	---	58	56	---	3240	---	6170	---	46	91	---
TOTAL	1917	6698	3556	1630	1300	47748	25878	34006	17298	3039	2542	2374
MEAN	61.8	223	115	52.6	46.4	1540	863	1097	577	98.0	82.0	79.1
MAX	102	545	240	56	66	13300	2090	6430	3250	257	192	134
MIN	39	88	58	49	42	60	331	175	118	45	29	30
CFSM	.08	.30	.15	.07	.06	2.06	1.15	1.46	.77	.13	.11	.11
IN.	.10	.33	.18	.08	.06	2.37	1.29	1.69	.86	.15	.13	.12

CAL YR 1988 TOTAL 118626 MEAN 324 MAX 6920 MIN 11 CFSM .43 IN. 5.89  
WTR YR 1989 TOTAL 147986 MEAN 405 MAX 13300 MIN 29 CFSM .54 IN. 7.35

## BLACK RIVER BASIN

05382000 BLACK RIVER NEAR GALESVILLE, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

LOCATION.--Lat 44°04'22", long 91°17'41", in SW 1/4 sec.1, T.18 N., R.8 W., LaCrosse County, Hydrologic Unit 07040007, on left bank 1,000 ft upstream from bridge on U.S. Highway 53, 4.5 mi southeast of Galesville, and 4.8 mi downstream from Fleming Creek.

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

## WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1438: 1932-34, 1935-36(M). WDR WI-81-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 658.43 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 2, 1941, nonrecording gage on bridge 1,000 ft downstream at same datum. Apr. 3, 1941, to Oct. 1, 1971, water-stage recorder at site 1,100 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Ice-affected period, Dec. 9 to Mar. 25. Records good except for ice-affected period, which is fair. Flow partly regulated by Hatfield Dam Powerplant where drainage area is 1,290 mi<sup>2</sup> and storage capacity is 272,000,000 ft<sup>3</sup>. Water diverted periodically from basin into Lemonweir River basin for cranberry culture. Gage-height telemeter at station.

AVERAGE DISCHARGE.--57 years, 1,741 ft<sup>3</sup>/s, 11.37 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,500 ft<sup>3</sup>/s, Apr. 1, 1967, gage height, 14.63 ft; maximum gage height, 15.46 ft, Sept. 23, 1980; minimum observed, 180 ft<sup>3</sup>/s, Dec. 20, 1931.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 12,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 30	0600	*23,000	*13.59	June 1	2300	20,700	13.35

Minimum discharge, 369 ft<sup>3</sup>/s, Sept. 30, gage height, 1.62 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	820	507	1470	520	580	480	12600	1500	15100	862	618	501
2	780	514	1420	500	540	480	8200	1930	19300	812	545	591
3	766	515	1330	500	480	480	5160	2110	15200	771	522	680
4	724	526	1210	500	440	490	4420	1740	10400	751	525	660
5	693	571	1200	490	460	500	4270	1690	6790	778	544	632
6	640	597	1140	490	470	520	4330	1520	4600	785	489	624
7	522	612	1100	490	470	560	4270	1180	3190	754	471	598
8	505	639	1030	480	470	580	3880	1340	2480	728	451	574
9	500	672	960	460	480	600	3460	1440	2050	688	446	552
10	502	678	860	450	480	620	3050	1420	1850	661	437	564
11	484	700	820	460	480	660	2600	1690	1660	660	432	566
12	467	733	800	460	490	740	2090	1710	1450	675	423	535
13	476	748	820	470	500	920	2000	1460	1400	697	428	528
14	454	773	880	470	500	1400	1880	1290	1390	630	452	486
15	460	835	820	470	490	1700	1780	1180	2240	612	458	471
16	469	921	720	470	490	1500	1720	1100	3760	590	459	460
17	463	1180	640	470	480	1400	1610	1030	4010	561	452	453
18	476	1650	660	470	480	1300	1390	897	3280	606	426	441
19	482	1700	660	480	480	1300	1490	833	2400	662	437	430
20	495	1650	680	490	480	1400	1430	864	1840	716	491	422
21	511	1570	640	500	480	1400	1450	825	1470	673	512	418
22	504	1460	640	500	480	1500	1380	827	1380	628	547	412
23	521	1350	660	500	470	1700	1340	817	1250	591	550	426
24	520	1250	660	500	440	2000	1310	887	1190	552	540	415
25	520	1160	600	520	460	2400	1330	1860	1020	542	514	401
26	528	1150	580	520	480	3130	1170	2550	1040	506	500	410
27	520	1150	600	520	490	4850	1110	4510	1030	520	498	412
28	525	1220	560	520	490	7800	1190	5800	978	493	488	385
29	519	1380	540	520	---	18200	1270	5320	937	559	497	395
30	513	1490	500	540	---	21900	1330	4050	905	660	473	386
31	514	---	520	560	---	17800	---	5680	---	681	472	---
TOTAL	16873	29901	25720	15290	13530	100310	84510	61050	115590	20404	15097	14828
MEAN	544	997	830	493	483	3236	2817	1969	3853	658	487	494
MAX	820	1700	1470	560	580	21900	12600	5800	19300	862	618	680
MIN	454	507	500	450	440	480	1110	817	905	493	423	385
CFSM	.26	.48	.40	.24	.23	1.56	1.35	.95	1.85	.32	.23	.24
IN.	.30	.53	.46	.27	.24	1.79	1.51	1.09	2.07	.36	.27	.27

CAL YR 1988 TOTAL 386890 MEAN 1057 MAX 10400 MIN 332 CFSM .51 IN. 6.92  
WTR YR 1989 TOTAL 513103 MEAN 1406 MAX 21900 MIN 385 CFSM .68 IN. 9.18

## BLACK RIVER BASIN

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05382000 BLACK RIVER NEAR GALESVILLE, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1954 to current year. National Stream-Quality Accounting Network data collection began in March 1979.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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 (STAND-ARD UNITS) (00400)	TEMPER-A-TURE 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-TOCOC-CI FECAL, KF AGAR (COLS. PER 100 ML) (31673)
OCT 1988												
05...	1600	--	687	154	7.70	10.0	3.3	11.6	780	100	330	170
DEC 06...	1600	--	1170	163	7.60	1.0	3.5	15.0	760	106	43	28
MAR 1989												
15...	1015	1700	--	166	7.20	0.0	30	11.9	768	81	>600	>1000
APR 26...	0950	--	1170	125	7.50	12.5	3.6	10.4	768	97	130	350
JUN 21...	1220	--	1460	100	7.70	20.5	2.8	7.8	768	86	310	210
AUG 01...	1200	--	627	127	7.80	23.0	5.5	10.2	777	116	K880	140

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)	SODIUM PERCENT (00932)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	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)
OCT 1988												
05...	62	14	6.6	4.5	13	0.2	1.3	61	50	13	6.6	0.10
DEC 06...	59	14	5.8	4.2	13	0.2	2.4	46	38	18	6.9	0.10
MAR 1989												
15...	48	11	4.9	3.7	12	0.2	8.5	46	38	20	8.7	0.10
APR 26...	52	12	5.3	3.0	11	0.2	2.4	45	36	12	5.2	0.10
JUN 21...	46	11	4.5	2.8	11	0.2	1.8	38	32	8.0	4.5	0.10
AUG 01...	58	14	5.6	3.4	11	0.2	2.3	53	44	9.0	11	0.10

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)
OCT 1988												
05...	7.0	93	87	0.13	173	0.690	0.050	0.020	0.60	0.060	0.060	0.070
DEC 06...	11	106	88	0.14	335	0.710	0.020	0.030	0.50	0.090	0.040	0.030
MAR 1989												
15...	8.0	111	95	0.15	509	1.00	1.50	1.50	3.4	0.530	0.340	0.270
APR 26...	8.7	84	74	0.11	265	0.470	0.010	0.010	0.90	0.130	0.050	0.030
JUN 21...	8.5	85	62	0.12	335	0.440	0.030	0.040	0.70	0.080	0.050	0.050
AUG 01...	8.4	79	82	0.11	134	0.330	<0.010	<0.010	0.80	0.160	0.070	0.050

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

## BLACK RIVER BASIN

05382000 BLACK RIVER NEAR GALESVILLE, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT 1988 05...	1600	--	687	<10	<1	21	<0.5	<1	<1	<3	2
MAR 1989 15...	1015	1700	--	90	1	28	<0.5	<1	<1	<3	3
APR 26...	0950	--	1170	30	<1	24	<0.5	<1	<1	<3	5
AUG 01...	1200	--	627	20	<1	18	<0.5	<1	<1	<3	2

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 1988 05...	190	<5	<4	45	<0.1	<10	1	<1	37	<6	5
MAR 1989 15...	400	<5	<4	120	1.0	<10	4	<1	26	<6	9
APR 26...	350	<5	<4	43	<0.1	<10	2	<1	31	<6	8
AUG 01...	140	<1	<4	20	0.2	<10	2	<1	35	<6	6

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)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988 05...	1600	--	687	154	10.0	11	20	74
DEC 06...	1600	--	1170	163	1.0	311	982	3
MAR 1989 15...	1015	1700	--	166	0.0	105	482	100
APR 26...	0950	--	1170	125	12.5	70	221	23
JUN 21...	1220	--	1460	100	20.5	23	91	93
AUG 01...	1200	--	627	127	23.0	108	183	24



## 05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in SE 1/4 SE 1/4 sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi upstream from Wisconsin River, 4.3 mi downstream from Yellow River, and at mile 633.4 upstream from Ohio River.

DRAINAGE AREA.--67,500 mi<sup>2</sup>, approximately.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 604.84 ft above National Geodetic Vertical Datum. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi upstream in tailwater of dam 9, at datum 5.30 ft lower.

REMARKS.--Estimated daily discharges: Dec. 11 to Jan. 30, and Feb. 2 to Mar. 22. Records good except those for estimated daily discharges and for discharges less than 10,000 ft<sup>3</sup>/s, which are fair. Stage-discharge relation affected by backwater from Wisconsin River and Lock and Dam No. 10. Minor flow regulation caused by navigation dams. U.S. Army Corps of Engineers data collection platform at station.

AVERAGE DISCHARGE.--53 years, 35,300 ft<sup>3</sup>/s, 7.10 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 276,000 ft<sup>3</sup>/s, Apr. 24, 1965; maximum gage height, 25.38 ft, Apr. 24, 1965; minimum daily discharge, 6,200 ft<sup>3</sup>/s, Dec. 9, 1936; minimum gage height, -0.86 ft, Aug. 18, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 103,000 ft<sup>3</sup>/s, Apr. 2; maximum gage height, 13.85 ft, Apr. 3, 4; minimum daily discharge, 9,310 ft<sup>3</sup>/s, Aug. 15; minimum gage height, 5.90 ft, Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19900	14400	19500	17100	16900	14500	98700	42800	50200	27700	12800	16600
2	21400	16100	18900	16000	16500	14600	103000	42600	51500	27300	14400	18800
3	23200	15700	18900	15100	15700	14900	102000	42700	53500	25800	16400	18500
4	23600	16400	19500	14800	16000	15000	98700	43100	59600	24300	16400	17200
5	20600	18100	20700	14900	16300	14900	93200	46100	65700	23900	17600	18900
6	16300	20000	21600	14100	16500	14800	86600	46800	66700	24100	18200	23200
7	16100	19900	20900	14200	16500	14600	80500	47100	59800	24000	18100	26800
8	17000	18800	20000	13900	16400	14500	76300	46700	48900	23100	15800	28400
9	17300	17800	19100	13300	16200	14400	71900	46300	39900	21800	11900	29600
10	17800	17200	18100	13400	15900	14300	67000	45300	35200	21100	11000	29300
11	18200	17400	14700	13500	15800	15400	68200	44000	30500	20500	9740	26900
12	17000	16300	13000	13400	17000	18800	70200	43200	26200	19500	9620	23900
13	15900	16100	11100	13400	16900	27800	71100	42700	22000	18100	9650	20100
14	16100	16200	10500	13400	16800	35200	72000	42300	18800	16900	9340	16700
15	15000	16900	10700	13500	16800	46500	71200	41200	16900	16400	9310	14100
16	15200	19700	10500	13800	16900	45700	68900	40400	17700	15300	10700	12700
17	14700	20600	10900	14000	17300	44200	65700	39500	20900	14600	13000	12600
18	14800	22800	11800	14100	17300	36500	61300	37900	28300	13500	14900	13800
19	14300	23700	13000	14200	17200	30000	56100	36300	33000	14000	15500	13700
20	14900	24500	14500	14400	17200	24900	51800	35700	34200	14100	16000	14300
21	15800	25400	16700	14300	17200	20000	50400	34700	34100	15500	17000	15300
22	17000	26500	17000	14300	17200	16000	50700	31900	31200	16400	18400	15700
23	16700	27200	16800	14400	17200	17600	51500	29500	26200	16600	18600	16600
24	16500	27400	17100	14700	16400	18300	51300	28300	22500	17100	18100	17200
25	16300	26200	17100	14700	15700	26300	50900	28000	20300	17400	17100	16100
26	15700	25200	17200	14900	15100	40200	49300	30500	18800	17000	16300	15500
27	15400	24500	17700	14900	14400	56200	46800	33200	19300	15600	15600	16300
28	14500	21700	19000	15500	14400	68200	45800	35100	21800	14200	16600	16400
29	14500	19900	18500	15900	---	77400	45400	38100	24400	13700	17000	15600
30	14900	19700	18100	16400	---	82400	44500	40900	26000	12400	16200	16200
31	14700	---	17900	18300	---	90800	---	47000	---	12000	15800	---
TOTAL	521300	612300	511000	452800	459700	984900	2021000	1229900	1024100	573900	457060	557000
MEAN	16820	20410	16480	14610	16420	31770	67370	39670	34140	18510	14740	18570
MAX	23600	27400	21600	18300	17300	90800	103000	47100	66700	27700	18600	29600
MIN	14300	14400	10500	13300	14400	14300	44500	28000	16900	12000	9310	12600
CFSM	.25	.30	.24	.22	.24	.47	1.00	.59	.51	.27	.22	.28
IN.	.29	.34	.28	.25	.25	.54	1.11	.68	.56	.32	.25	.31

CAL YR 1988 TOTAL 7571670 MEAN 20690 MAX 57200 MIN 8990 CFSM .31 IN. 4.17  
WTR YR 1989 TOTAL 9404960 MEAN 25770 MAX 103000 MIN 9310 CFSM .38 IN. 5.18

## MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

## WATER-QUALITY RECORDS

LOCATION.--Samples collected by boat 1.5 mi downstream from discharge station. Prior to April 1981, at bridge on U.S. Highway 18, 1.2 mi upstream from gage.

PERIOD OF RECORD.--Water years 1975 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1975 to current year.

WATER TEMPERATURES: July 1975 to current year.

SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2350 mg/L, Mar. 19, 1986; minimum daily mean, 1 mg/L, Dec. 23-25, 1976, Dec. 20, 28, 1977, Feb. 13-17, 23, Mar. 5-9, 1986, Dec. 2, 6, 8-11, 1987, Dec. 26, 1988 to Jan. 4, 1989, Jan. 9-11, and Feb. 20, 21, 1989.

SEDIMENT LOADS: Maximum daily, 363,000 tons, Mar. 19, 1986; minimum daily, 31 tons, Dec. 25, 1976.

## EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 193 mg/L, May 17; minimum daily mean, 1 mg/L, Dec. 26 to Jan. 4, Jan. 9-11, and Feb. 20, 21.

SEDIMENT LOADS: Maximum daily, 20,600 tons, May 17; minimum daily, 36 tons Jan. 9-11.

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	385	---	---	385	---	---	---	---	---	---	---
2	360	---	350	405	---	---	---	---	---	---	360	---
3	---	---	---	---	415	450	310	---	---	345	---	---
4	---	380	---	---	---	---	---	355	315	---	370	---
5	---	---	355	395	---	---	---	---	305	---	---	---
6	395	---	---	---	405	480	320	---	---	---	---	345
7	---	---	---	---	---	---	---	340	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	385	370	415	---	---	---	---	---	340	360	350
10	410	---	---	---	430	460	---	335	---	335	---	---
11	---	---	---	---	---	425	---	---	320	---	365	360
12	---	405	390	---	---	---	330	---	---	---	---	365
13	---	---	---	420	450	380	---	---	---	330	---	350
14	405	---	---	---	---	---	---	---	---	---	340	---
15	---	405	---	---	---	395	315	330	---	---	---	365
16	---	---	---	---	---	---	---	---	325	---	---	---
17	---	400	380	---	440	405	345	---	---	340	350	---
18	395	---	---	---	---	---	---	325	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	365
20	---	---	380	---	425	380	355	345	---	340	---	---
21	420	390	---	---	---	---	---	---	320	---	---	---
22	---	---	---	---	---	---	---	---	---	---	360	---
23	---	---	---	425	---	---	---	---	---	---	---	---
24	---	---	390	---	410	410	340	345	320	325	---	370
25	400	380	---	---	---	---	---	---	320	---	365	---
26	380	---	395	---	---	---	---	---	---	---	---	---
27	---	---	---	430	430	375	340	---	---	---	345	---
28	---	380	---	---	---	---	---	---	295	---	---	---
29	---	---	405	---	---	---	---	330	310	345	---	385
30	---	---	---	410	---	---	355	---	---	---	---	---
31	---	---	---	---	---	320	---	---	---	370	350	---

## MISSISSIPPI RIVER MAIN STEM

185

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

## WATER-QUALITY RECORDS

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	6.0	---	---	---	---	---	---	---	---	---	---
2	---	---	1.0	.0	---	---	---	---	---	---	---	---
3	---	---	---	---	---	.0	5.0	---	---	29.0	---	---
4	---	5.0	---	---	---	---	---	14.0	20.0	---	26.0	---
5	---	---	1.0	---	---	---	---	---	20.0	---	---	---
6	9.0	---	---	.0	---	.0	7.0	---	---	---	---	22.0
7	---	---	---	---	---	---	---	15.0	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	5.0	.0	---	---	---	---	---	---	29.0	27.0	25.0
10	11.0	---	---	---	.0	1.0	---	15.0	---	27.0	---	---
11	---	---	---	---	---	2.0	---	---	20.0	---	25.5	20.0
12	---	4.5	.0	---	---	---	10.0	---	---	---	---	20.0
13	---	---	---	---	.0	1.0	---	---	---	29.0	---	---
14	11.0	---	---	---	---	---	---	---	---	---	24.0	---
15	---	4.0	---	---	---	1.0	10.0	15.0	---	---	---	17.0
16	---	---	.0	---	---	---	---	---	20.0	---	---	---
17	---	4.0	---	---	.0	.0	11.0	---	---	28.0	26.0	---
18	9.0	---	---	---	---	---	---	18.0	---	---	---	---
19	---	---	.0	---	---	---	---	---	---	---	---	23.0
20	---	---	---	---	.0	.0	11.0	18.0	---	28.0	---	---
21	9.0	4.0	---	---	---	---	---	---	21.0	---	---	---
22	---	---	---	---	---	---	---	---	---	---	25.0	---
23	---	---	1.0	---	---	---	---	---	---	---	---	---
24	---	---	---	---	.0	4.0	12.0	19.0	24.0	29.0	---	14.0
25	8.0	3.0	---	---	---	---	---	---	25.0	---	26.0	---
26	8.0	---	.0	---	---	---	---	---	---	---	---	---
27	---	---	---	---	.0	4.0	15.0	---	---	---	24.0	---
28	---	3.0	---	---	---	---	---	---	---	---	---	---
29	---	---	.0	---	---	---	---	20.0	24.0	29.0	---	14.0
30	---	---	1.0	---	---	---	14.0	---	---	---	---	---
31	---	---	---	---	---	6.0	---	---	---	26.0	24.0	---

SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	22	1180	42	1630	7	369	1	46	42	1920	3	117
2	22	1270	39	1700	7	357	1	43	25	1110	3	118
3	21	1320	43	1820	6	306	1	41	4	170	2	80
4	18	1150	31	1370	5	263	1	40	3	130	2	81
5	17	946	29	1420	5	279	2	80	3	132	2	80
6	15	660	27	1460	4	233	3	114	4	178	3	120
7	13	565	25	1340	4	226	2	77	4	178	3	118
8	18	826	24	1220	4	216	2	75	4	177	3	117
9	22	1030	23	1110	3	155	1	36	4	175	4	156
10	20	961	22	1020	3	147	1	36	4	172	12	463
11	21	1030	21	987	3	119	1	36	3	128	51	2120
12	21	964	40	1760	4	140	2	72	3	138	78	3960
13	22	944	35	1520	4	120	2	72	2	91	97	7280
14	38	1650	25	1090	3	85	2	72	2	91	135	12800
15	35	1420	18	821	3	87	2	73	2	91	152	19100
16	29	1190	18	957	2	57	3	112	2	91	105	13000
17	23	913	18	1000	2	59	4	151	2	93	30	3580
18	18	719	17	1050	2	64	4	152	2	93	27	2660
19	15	579	16	1020	2	70	4	153	2	93	29	2350
20	14	563	15	992	2	78	4	156	1	46	29	1950
21	14	597	13	892	2	90	4	154	1	46	29	1570
22	43	1970	13	930	2	92	4	154	2	93	28	1210
23	54	2430	14	1030	2	91	4	156	2	93	27	1280
24	47	2090	15	1110	2	92	4	159	2	89	25	1240
25	28	1230	15	1060	2	92	3	119	2	85	30	2130
26	22	933	12	816	1	46	3	121	2	82	37	4020
27	29	1210	10	661	1	48	2	80	2	78	43	6520
28	24	940	8	469	1	51	2	84	3	117	42	7730
29	23	900	7	376	1	50	2	86	---	---	40	8360
30	22	885	7	372	1	49	2	89	---	---	39	8680
31	33	1310	---	---	1	48	4	198	---	---	36	8830
TOTAL	---	34375	---	33003	---	4179	---	3037	---	5980	---	121820

## MISSISSIPPI RIVER MAIN STEM

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

## WATER-QUALITY RECORDS

SEDIMENT, SUSPENDED CONCENTRATION (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

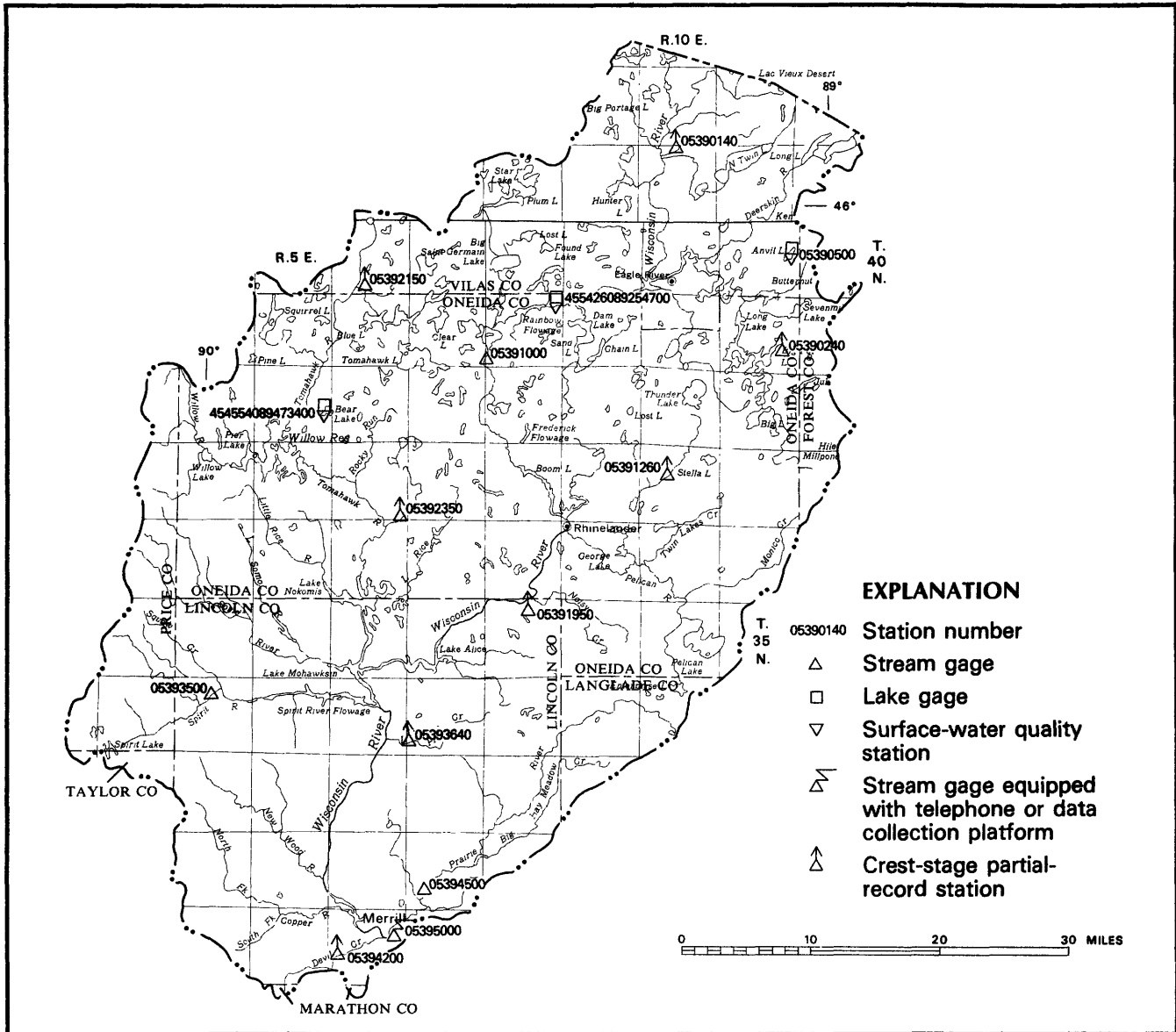
DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	30	7990	32	3700	41	5560	36	2690	28	968	25	1120
2	24	6670	28	3220	56	7790	44	3240	34	1320	20	1020
3	18	4960	32	3690	28	4040	38	2650	38	1680	26	1300
4	18	4800	43	5000	20	3220	35	2300	42	1860	33	1530
5	18	4530	52	6470	15	2660	34	2190	59	2800	23	1170
6	22	5140	42	5310	15	2700	31	2020	74	3640	32	2000
7	34	7390	29	3690	28	4520	29	1880	73	3570	55	3980
8	38	7830	29	3660	72	9510	34	2120	55	2350	39	2990
9	38	7380	31	3880	112	12100	47	2770	35	1120	32	2560
10	37	6690	32	3910	65	6180	44	2510	30	891	33	2610
11	37	6810	42	4990	31	2550	37	2050	41	1080	34	2470
12	37	7010	28	3270	30	2120	44	2320	49	1270	37	2390
13	33	6340	92	10600	30	1780	42	2050	43	1120	40	2170
14	29	5640	123	14000	29	1470	35	1600	30	757	40	1800
15	26	5000	153	17000	28	1280	34	1510	25	628	35	1330
16	25	4650	180	19600	27	1290	43	1780	20	578	25	857
17	28	4970	193	20600	26	1470	82	3230	24	842	24	816
18	31	5130	138	14100	25	1910	150	5470	33	1330	32	1190
19	32	4850	63	6170	25	2230	144	5440	41	1720	49	1810
20	34	4760	29	2800	25	2310	86	3270	50	2160	62	2390
21	33	4490	22	2060	25	2300	72	3010	55	2520	68	2810
22	33	4520	20	1720	25	2110	53	2350	46	2290	73	3090
23	33	4590	22	1750	25	1770	40	1790	43	2160	65	2910
24	33	4570	25	1910	25	1520	27	1250	42	2050	52	2410
25	32	4400	25	1890	23	1260	28	1320	39	1800	50	2170
26	36	4790	24	1980	22	1120	27	1240	34	1500	77	3220
27	48	6070	24	2150	20	1040	26	1100	32	1350	111	4890
28	44	5440	23	2180	30	1770	28	1070	45	2020	142	6290
29	46	5640	23	2370	40	2640	46	1700	60	2750	157	6610
30	35	4210	22	2430	40	2810	43	1440	64	2800	133	5820
31	---	---	18	2280	---	---	25	810	41	1750	---	---
TOTAL YEAR	---	167260 845631	---	178380	---	95030	---	70170	---	54674	---	77723

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	TEMPER- ATURE WATER (DEG C) (00010)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SED- IMENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988						
13...	1205	13.0	25900	21	1470	88
APR 1989						
07...	1305	8.0	76900	38	7890	96
MAY						
11...	1135	17.0	46800	42	5310	98
JUN						
28...	1130	27.5	19600	30	1590	94
AUG						
02...	1100	27.0	12900	33	1150	97
SEP						
13...	1200	21.0	18700	43	2170	99

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	NUMBER OF SAM- PLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT 1988											
13...	1150	6	7	10	28	77	87	92	97	100	--
APR 1989											
07...	1340	3	1	3	19	85	98	99	100	--	--
MAY											
11...	1225	2	--	0	10	76	97	99	100	--	--
JUN											
28...	1130	1	1	1	11	64	88	95	99	100	--
AUG											
02...	1100	2	1	3	42	97	100	98	99	100	--
SEP											
13...	1200	5	5	11	38	82	93	96	98	99	100



## UPPER WISCONSIN RIVER BASIN

## WISCONSIN RIVER BASIN

05390500 ANVIL LAKE NEAR EAGLE RIVER, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 45°57'07", long 89°03'26", in NW 1/4 NE 1/4 sec.13, T.40 N., R.11 E., Vilas County, Hydrologic Unit 07070001, 9.6 mi east of Eagle River.

DRAINAGE AREA.--4.11 mi<sup>2</sup>. Area of Anvil Lake, 380 acres.

PERIOD OF RECORD.--August 1936 to September 1981 (fragmentary), June 1985 to current year.

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

GAGE.--Nonrecording gage. Datum of gage is 90.00 ft above datum assumed by Wisconsin Department of Natural Resources: gage readings have been reduced to elevations above this datum. Prior to Aug. 13, 1950, staff gage 0.3 mi southeast at same datum; Aug. 14 to Sept. 30, 1981, staff gage 0.2 mi east at same datum. Gage read by James Sachse through October 1988, and Albert Korecky thereafter.

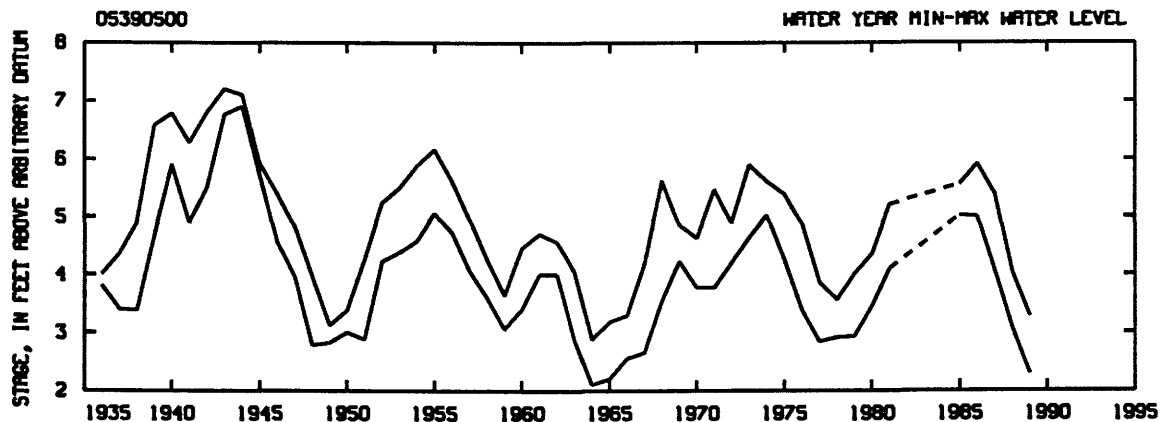
REMARKS.--Add 90 ft to obtain elevation above datum assumed for this lake by Wisconsin Department of Natural Resources. Lake has no surface outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 7.20 ft, May 3, 7, 17, 21, 24, 28, June 20 and 24, 1943; minimum observed, 2.10 ft July 31, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 3.28 ft, June 15; minimum observed, less than 2.29 ft, Sept. 29.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
OCT. 22	2.97	JULY 6	3.04	JULY 27	2.85	AUG. 24	2.47	SEPT. 14	2.38
JUNE 15	3.28	13	2.89	AUG. 3	2.71	31	2.47	21	2.29
22	3.20	17	2.90	10	2.59	SEPT. 8	2.47	29	<2.29
29	3.12	20	2.85	17	2.57				



## WATER-QUALITY RECORDS

LOCATION.--Lat 45°56'39", long 89°03'44", in NE 1/4 SW 1/4 sec.13, T.40 N., R.11 E., Vilas County, Hydrologic Unit 07070001, near center of lake, and 9.2 mi east of Eagle River.

PERIOD OF RECORD.--June 1985 to current year.

REMARKS.--Secchi disc readings made by Albert Korecky.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			AUG 1989		
22...	1545	4.88	03...	1046	4.00
JUN 1989			10...	1047	3.80
15...	1300	5.00	17...	1003	3.60
22...	1014	4.60	24...	0946	3.20
29...	1002	4.30	31...	1518	3.00
JUL			SEP		
06...	1000	4.70	08...	1014	3.40
13...	1005	5.30	14...	0950	3.20
20...	0930	5.10	21...	1012	3.30
27...	1021	5.80	29...	0956	2.40

## WISCONSIN RIVER BASIN

189

455426089254700 ALMA LAKE NEAR ST. GERMAIN, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 45°54'26", long 89°25'47", in NE 1/4 sec.36, T.40 N., R.8 E., Vilas County, Hydrologic Unit 07070001, 3 mi east of St. Germain.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by John P. Seibel. Elevation of gage is 1,617 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 12.35 ft, Apr. 11, 12, 1986; minimum observed, 9.14 ft, Sept. 30, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 9.89 ft, Apr. 29 to May 6, May 25-27, June 7-8, 14-15; minimum observed, 9.14 ft, Sept. 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	9.89	9.85	9.72	9.38	---
2	---	---	---	---	---	---	---	9.89	9.83	9.71	9.36	---
3	---	---	---	---	---	---	---	9.89	9.82	9.71	9.36	---
4	---	---	---	---	---	---	---	9.89	9.82	9.70	9.36	---
5	---	---	---	---	---	---	---	9.89	9.81	9.69	9.34	---
6	---	---	---	---	---	---	---	9.89	9.81	9.69	9.32	---
7	---	---	---	---	---	---	---	9.88	9.89	9.68	9.30	---
8	---	---	---	---	---	---	---	9.87	9.89	9.67	9.28	---
9	---	---	---	---	---	---	---	9.87	9.88	9.65	9.26	---
10	---	---	---	---	---	---	---	9.86	9.88	9.63	9.24	---
11	---	---	---	---	---	---	---	9.86	9.87	9.61	9.26	---
12	---	---	---	---	---	---	---	9.85	9.85	9.59	9.28	---
13	---	---	---	---	---	---	---	9.85	9.87	9.57	9.30	---
14	---	---	---	---	---	---	---	9.84	9.89	9.55	9.44	---
15	---	---	---	---	---	---	---	9.83	9.89	9.53	9.42	---
16	---	---	---	---	---	---	---	9.82	9.87	9.55	9.40	---
17	---	---	---	---	---	---	---	9.81	9.86	9.55	9.40	---
18	---	---	---	---	---	---	---	9.80	9.85	9.55	9.38	---
19	---	---	---	---	---	---	---	9.79	9.83	9.55	9.38	---
20	---	---	---	---	---	---	---	9.79	9.81	9.54	9.38	---
21	---	---	---	---	---	---	---	9.79	9.79	---	9.38	---
22	---	---	---	---	---	---	---	9.81	9.81	---	9.38	---
23	---	---	---	---	---	---	---	9.82	9.80	---	9.38	---
24	---	---	---	---	---	---	---	9.83	9.79	---	9.36	---
25	---	---	---	---	---	---	---	9.89	9.79	---	9.35	---
26	---	---	---	---	---	---	9.87	9.89	9.78	---	9.34	9.18
27	---	---	---	---	---	---	9.87	9.89	9.77	9.44	9.32	9.18
28	---	---	---	---	---	---	9.88	9.87	9.75	9.42	9.31	9.17
29	---	---	---	---	---	---	9.89	9.86	9.74	9.40	9.30	9.16
30	---	---	---	---	---	---	9.89	9.85	9.73	9.40	9.29	9.14
31	---	---	---	---	---	---	---	9.83	---	9.38	9.28	---
MAX	---	---	---	---	---	---	9.89	9.89	9.89	9.72	9.44	9.18
MIN	---	---	---	---	---	---	9.87	9.79	9.73	9.38	9.24	9.14

## WATER-QUALITY RECORDS

LOCATION.--Lat 45°54'36", long 89°25'43", in NE 1/4 sec.36, T.40 N., R.8 E., Vilas County, Hydrologic Unit 07070001, near center of lake and 3 mi east of St. Germain.

PERIOD OF RECORD.--May 1985 to current year.

REMARKS.--Secchi disc readings made by John P. Seibel.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
JUL 1989			AUG 1989		
25...	1330	3.80	25...	1300	2.90
AUG			SEP		
04...	1230	3.40	01...	1100	2.70
11...	1130	3.40	20...	1000	3.00
19...	1030	3.20	28...	1100	3.40

## WISCONSIN RIVER BASIN

05391000 WISCONSIN RIVER AT RAINBOW LAKE, NEAR LAKE TOMAHAWK, WI

LOCATION.--Lat 45°49'50", long 89°33'08", in NE 1/4 NE 1/4 sec.36, T.39 N., R.7 E., Oneida County, Hydrologic Unit 07070001, on right bank 500 ft downstream from Gilmore Creek, 0.4 mi downstream from Rainbow Lake, and 2.3 mi northeast of Lake Tomahawk.

DRAINAGE AREA.--757 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1936 to current year. Prior to October 1955, published as "at Rainbow Reservoir, near Lake Tomahawk."

REVISED RECORDS.--WSP 895: 1937(M). WSP 1508: 1944. WDR WI-83-1: Drainage area. WDR WI-80-1: Datum.

GAGE.--Water-stage recorder. Datum of gage is 1,569.05 ft above National Geodetic Vertical Datum of 1929 (levels by Wisconsin Valley Improvement Co.).

REMARKS.--No estimated daily discharges. Record good. Flow regulated by Rainbow Lake and 12 smaller reservoirs upstream from station.

AVERAGE DISCHARGE.--53 years, 693 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,570 ft<sup>3</sup>/s, Sept. 5, 1941, gage height, 7.59 ft; minimum, 17 ft<sup>3</sup>/s, Oct. 10-12, 1940; minimum daily, 35 ft<sup>3</sup>/s, Apr. 6, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 819 ft<sup>3</sup>/s, Jan. 19-21, gage height, 2.83 ft; minimum daily, 195 ft<sup>3</sup>/s, Apr. 28.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used July 22 to Sept. 30.)

0.6	176	2.0	515
1.0	261	3.0	889

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	345	364	718	702	775	660	318	214	241	483	385	358
2	343	367	715	694	775	650	327	224	283	449	384	361
3	343	367	711	687	777	639	336	244	317	459	381	353
4	337	370	712	690	773	628	312	258	316	419	382	348
5	349	302	715	691	769	618	236	259	315	414	382	342
6	352	253	651	736	765	610	240	258	361	426	376	340
7	352	348	593	787	761	633	243	261	404	423	375	342
8	351	409	592	787	752	649	241	264	409	422	373	327
9	350	433	590	791	741	636	243	263	414	428	373	336
10	346	444	588	789	760	625	245	239	414	427	371	351
11	342	446	587	787	784	616	247	220	410	427	368	341
12	350	453	586	782	779	610	246	218	409	425	370	326
13	350	457	640	778	778	602	249	218	430	422	375	315
14	350	459	688	776	771	593	219	219	441	422	324	313
15	351	388	687	770	766	589	202	249	371	422	338	311
16	350	342	694	766	767	626	203	296	315	424	376	308
17	351	327	695	758	760	666	202	310	319	427	395	306
18	316	498	697	758	753	649	205	308	373	425	409	303
19	289	610	695	789	747	646	205	287	430	420	400	300
20	350	601	696	817	740	615	205	274	446	420	390	299
21	349	597	695	816	732	624	206	272	446	420	374	301
22	349	536	695	812	720	612	205	280	441	417	364	296
23	350	490	692	810	715	565	205	286	442	416	353	295
24	350	487	690	804	707	549	206	288	438	416	348	309
25	298	629	688	801	696	534	204	295	436	415	345	309
26	271	722	687	801	684	529	201	284	442	411	338	296
27	334	728	688	798	679	488	196	248	430	408	336	297
28	366	726	699	797	668	329	195	275	435	399	337	299
29	367	728	715	796	---	235	204	307	458	392	334	298
30	368	724	708	792	---	235	215	277	456	389	329	300
31	371	---	703	784	---	281	---	238	---	385	342	---
TOTAL	10640	14605	20910	23946	20894	17541	6961	8133	11842	13052	11327	9580
MEAN	343	487	675	772	746	566	232	262	395	421	365	319
MAX	371	728	718	817	784	666	336	310	458	483	409	361
MIN	271	253	586	687	668	235	195	214	241	385	324	295

CAL YR 1988 TOTAL 156639 MEAN 428 MAX 728 MIN 191  
WTR YR 1989 TOTAL 169431 MEAN 464 MAX 817 MIN 195



## WISCONSIN RIVER BASIN

191

454554089473400 BEAR LAKE NEAR HAZELHURST, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 45°45'54", long 89°47'34", in SW 1/4 sec. 19, T.38 N., R.6 E., Oneida County, Hydrologic Unit 07070001, 4.5 mi southwest of Hazelhurst.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Ruth Van Prooien. Elevation of gage is 1562 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 8.67 ft, Oct. 7 and 9, 1986; minimum observed, 7.50 ft, May 17, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 8.28 ft, June 23; minimum observed, 7.75 ft, Nov. 3.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	HEIGHT	DATE	HEIGHT	DATE	HEIGHT	DATE	HEIGHT
NOV. 3	7.75	JUNE 1	8.20	JULY 27	8.00	AUG. 31	8.06
6	7.84	23	8.28	AUG. 10	7.84	SEPT. 5	8.08
18	7.96	JULY 8	8.19	14	8.00	8	8.12
MAY 23	8.16	18	8.09	30	7.94	20	7.98
						29	7.96

## WATER-QUALITY RECORDS

LOCATION.--Lat 45°45'56", long 89°48'04", in SE 1/4 sec. 24, T.38 N., R.5 E., Oneida County, Hydrologic Unit 07070001, near center of lake, and 4.8 mi southwest of Hazelhurst.

PERIOD OF RECORD.--April 1985 to current year.

REMARKS.--Secchi disc readings made by Dale Jalinski.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUL 1989		
16...	1120	4.19	08...	0930	3.40
29...	1400	3.81	23...	1400	2.70
APR 1989			AUG		
23...	1400	3.60	04...	1845	2.40
MAY			20...	1330	2.40
06...	1500	3.00	27...	1030	2.40
24...	0830	4.30	SEP		
JUN			10...	1500	2.80
06...	0900	4.30	24...	1345	4.00
16...	1500	3.50			

## WISCONSIN RIVER BASIN

## 05393500 SPIRIT RIVER AT SPIRIT FALLS, WI

LOCATION.--Lat 45°26'58", long 89°58'47", in NW 1/4 sec.10, T.34 N., R.4 E., Lincoln County, Hydrologic Unit 07070001, on right bank 40 ft downstream of bridge 0.2 mi south of Spirit Falls, 0.6 mi upstream from Squaw Creek, and 2.0 mi downstream from Richie Creek.

DRAINAGE AREA.--81.6 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1308: 1943(M), 1948-50(M). WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,461.63 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 4, 1982, nonrecording gage 40 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Mar. 31 to Apr. 14, Aug. 26 to Sept. 30, and ice periods listed in rating tables below. Records good except those for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--47 years, 85.6 ft<sup>3</sup>/s, 14.25 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,180 ft<sup>3</sup>/s, Sept. 18, 1942, gage height, 10.00 ft, from rating curve extended above 2,500 ft<sup>3</sup>/s; minimum observed, 1.0 ft<sup>3</sup>/s, Aug. 11, 1964, gage height, 0.85 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 800 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	----	1,000	ice jam	May 25	1400	*1,660	*6.11

Minimum daily discharge, 4.8 ft<sup>3</sup>/s, Sept. 30, occurred during a period of backwater from beaver dam.

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 8-21; stage-discharge relation affected by ice Nov. 22, 23, Nov. 29 to Mar. 30, and by backwater from beaver dam Aug. 26 to Sept. 30.)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

2.0	58	4.0	480
2.5	122	5.0	870
3.0	215	6.0	1,400

Note.--Same as following table below 2.0 ft.

1.1	4.8	2.5	126
1.2	7.0	3.0	225
1.4	14.0	4.0	531
1.7	31.0	5.0	980
2.0	58.0	6.0	1,580

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	18	48	16	16	11	470	216	239	58	10	14
2	12	19	43	15	16	11	580	162	197	55	9.6	15
3	10	17	38	15	15	12	680	133	141	40	9.6	15
4	9.6	19	34	15	15	12	640	114	105	30	15	16
5	9.6	34	32	14	14	12	540	130	78	26	16	23
6	9.9	39	30	14	13	13	480	131	60	21	12	22
7	9.1	33	28	14	13	13	390	111	50	18	11	21
8	8.6	29	27	14	12	14	310	97	45	16	9.5	25
9	7.8	29	25	14	12	15	270	86	42	15	9.1	20
10	7.1	32	24	14	12	16	240	74	36	14	8.9	17
11	6.7	32	23	13	12	18	200	64	31	14	9.6	15
12	6.4	31	22	13	11	20	170	56	28	14	9.4	13
13	6.4	33	21	13	11	21	160	49	31	12	13	12
14	6.5	34	21	13	11	20	150	44	51	11	30	12
15	6.2	41	20	13	11	19	151	40	123	9.2	27	11
16	6.0	249	19	13	11	18	156	36	95	9.0	23	10
17	6.7	247	18	13	11	18	177	33	65	7.7	19	9.0
18	8.5	141	17	13	11	18	165	29	48	15	15	8.6
19	9.1	113	18	13	11	18	142	32	39	38	14	8.0
20	9.3	98	19	13	11	18	125	35	32	31	16	8.4
21	10	80	24	14	11	18	115	35	26	23	17	9.0
22	13	68	23	14	11	21	115	31	30	17	25	7.6
23	13	58	25	15	11	28	97	26	147	14	31	6.8
24	20	55	23	14	11	60	90	61	108	13	25	6.0
25	20	53	21	14	12	130	87	1270	69	11	21	5.6
26	18	59	20	13	11	280	98	759	56	9.8	17	5.4
27	19	75	19	13	11	700	98	375	52	8.8	15	5.6
28	24	86	18	14	11	1000	105	220	40	7.4	13	5.2
29	22	74	17	14	---	740	184	130	33	7.4	12	4.9
30	17	56	17	15	---	600	256	236	28	9.7	12	4.8
31	17	---	16	15	---	500	---	260	---	11	13	---
TOTAL	361.5	1952	750	430	338	4394	7441	5075	2125	586.0	487.7	355.9
MEAN	11.7	65.1	24.2	13.9	12.1	142	248	164	70.8	18.9	15.7	11.9
MAX	24	249	48	16	16	1000	680	1270	239	58	31	25
MIN	6.0	17	16	13	11	11	87	26	26	7.4	8.9	4.8
CFSM	.14	.80	.30	.17	.15	1.74	3.04	2.01	.87	.23	.19	.15
IN.	.16	.89	.34	.20	.15	2.00	3.39	2.31	.97	.27	.22	.16
CAL YR 1988	TOTAL 15582.5	MEAN 42.6	MAX 629	MIN 2.8	CFSM .52	IN. 7.10						
WTR YR 1989	TOTAL 24296.1	MEAN 66.6	MAX 1270	MIN 4.8	CFSM .82	IN. 11.08						

## 05394500 PRAIRIE RIVER NEAR MERRILL, WI

LOCATION.--Lat 45°14'09", long 89°38'59", on line between secs.20 and 29, T.32 N., R.7 E., Lincoln County, Hydrologic Unit 07070002, on left bank 40 ft upstream from bridge on County Trunk Highway C, 1.5 mi upstream from Meadow Creek, 4.5 mi northeast of Merrill, and 8.0 mi upstream from mouth.

DRAINAGE AREA.--184 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1914 to September 1931, August 1939 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915-17(M), 1919-21(M), 1923-31(M), 1942-43(M), 1945(M), 1948-50(M). WDR WI-77-1: Drainage area. WDR WI-79-1: 1972.

GAGE.--Water-stage recorder. Datum of gage is 1,297.22 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 9, 1968, nonrecording gage 40 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Ice period listed in table below. Records good except those for ice-affected period, which is fair.

AVERAGE DISCHARGE.--67 years (1914-31, 1939-89), 179 ft<sup>3</sup>/s, 13.21 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,800 ft<sup>3</sup>/s, Aug. 31, 1941, gage height, 9.45 ft, from flood marks, based on rating curve extended above 2,200 ft<sup>3</sup>/s; minimum observed, 34 ft<sup>3</sup>/s, Oct. 26, 1947, gage height, 1.39 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 710 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	1545	*1,030	*4.89	No other peak greater than base discharge.			
Minimum daily, 57 ft <sup>3</sup> /s, July 26, Sept. 23.							

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Nov. 30 to Mar. 26.)

1.8	54	3.0	296
2.0	81	4.0	626
2.5	171	5.0	1,080

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	117	120	84	78	76	373	239	310	77	68	73
2	87	118	130	82	68	74	361	210	250	74	66	70
3	86	108	130	82	64	78	426	192	201	71	67	69
4	93	119	120	82	62	78	478	179	163	68	92	71
5	85	208	120	84	64	84	557	181	138	66	82	77
6	83	281	110	80	66	84	517	189	121	64	72	71
7	81	245	110	82	68	86	481	176	109	63	68	71
8	80	214	100	76	66	84	455	164	108	62	66	76
9	78	199	100	74	68	82	377	160	109	83	65	72
10	78	178	98	78	70	92	301	141	118	76	65	66
11	78	169	98	80	72	88	270	132	111	70	62	64
12	76	157	100	82	74	86	234	121	117	71	65	64
13	77	155	110	80	78	84	213	116	130	70	74	63
14	76	152	100	82	76	80	230	113	169	66	78	68
15	76	156	98	82	72	76	254	116	234	65	75	70
16	78	358	94	82	72	72	269	111	203	71	71	64
17	80	426	98	84	74	74	301	122	166	67	70	64
18	84	363	96	84	74	78	303	115	137	70	65	62
19	85	301	98	84	72	78	279	117	118	75	62	60
20	88	255	100	84	74	76	257	124	98	72	63	61
21	92	213	100	86	74	78	230	131	84	73	62	61
22	90	178	100	90	74	76	210	126	82	65	75	59
23	99	162	100	90	72	76	205	121	87	62	76	57
24	132	150	94	86	76	84	193	113	83	62	71	60
25	138	140	86	84	78	110	190	183	81	60	70	62
26	127	155	84	80	78	150	210	218	82	57	69	59
27	128	192	90	78	76	406	219	191	80	62	65	59
28	155	214	82	82	78	970	221	158	74	64	63	59
29	150	179	80	82	---	794	240	153	71	66	63	60
30	131	150	84	78	---	620	259	285	74	74	61	60
31	126	---	84	82	---	482	---	317	---	71	64	---
TOTAL	3008	6012	3114	2546	2018	5456	9113	5014	3908	2117	2135	1952
MEAN	97.0	200	100	82.1	72.1	176	304	162	130	68.3	68.9	65.1
MAX	155	426	130	90	78	970	557	317	310	83	92	77
MIN	76	108	80	74	62	72	190	111	71	57	61	57
CFSM	.53	1.09	.55	.45	.39	.96	1.65	.88	.71	.37	.37	.35
IN.	.61	1.22	.63	.51	.41	1.10	1.84	1.01	.79	.43	.43	.39

CAL YR 1988	TOTAL 45576	MEAN 125	MAX 675	MIN 60	CFSM .68	IN. 9.21
WTR YR 1989	TOTAL 46393	MEAN 127	MAX 970	MIN 57	CFSM .69	IN. 9.38

## WISCONSIN RIVER BASIN

## 05395000 WISCONSIN RIVER AT MERRILL, WI

LOCATION.--Lat 45°10'41", long 89°40'52", on line between secs.12 and 13, T.31 N., R.6 E., Lincoln County.  
Hydrologic Unit 07070002, on left bank 300 ft downstream from U.S. Highway 51 bridge at east end of Merrill,  
and 0.5 mi downstream from Prairie River.

DRAINAGE AREA.--2,760 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1902 to current year.

REVISED RECORDS.--WSP 1308: 1904-7, 1909-11, 1913. WSP 1508: 1908, 1915-16(M), 1917, 1920-21(M), 1925(M),  
1930, 1935-36. WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,228.85 ft above National Geodetic Vertical Datum of 1929.  
Prior to June 18, 1903, nonrecording gage at different datum. June 18, 1903, to Sept. 10, 1914, non-  
recording gage at present datum.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good. Flow regulated  
by 20 reservoirs and 9 powerplants upstream from station. Gage-height telemeter at station.

AVERAGE DISCHARGE.--86 years, 2,662 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,400 ft<sup>3</sup>/s, Aug. 31, 1941, gage height, 18.26 ft from  
rating curve extended above 20,000 ft<sup>3</sup>/s; minimum, about 90 ft<sup>3</sup>/s, Sept. 26, 1908, gage height, 2.45 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,160 ft<sup>3</sup>/s, Mar. 28, gage height, 8.21 ft; minimum daily,  
715 ft<sup>3</sup>/s, Sept. 25.

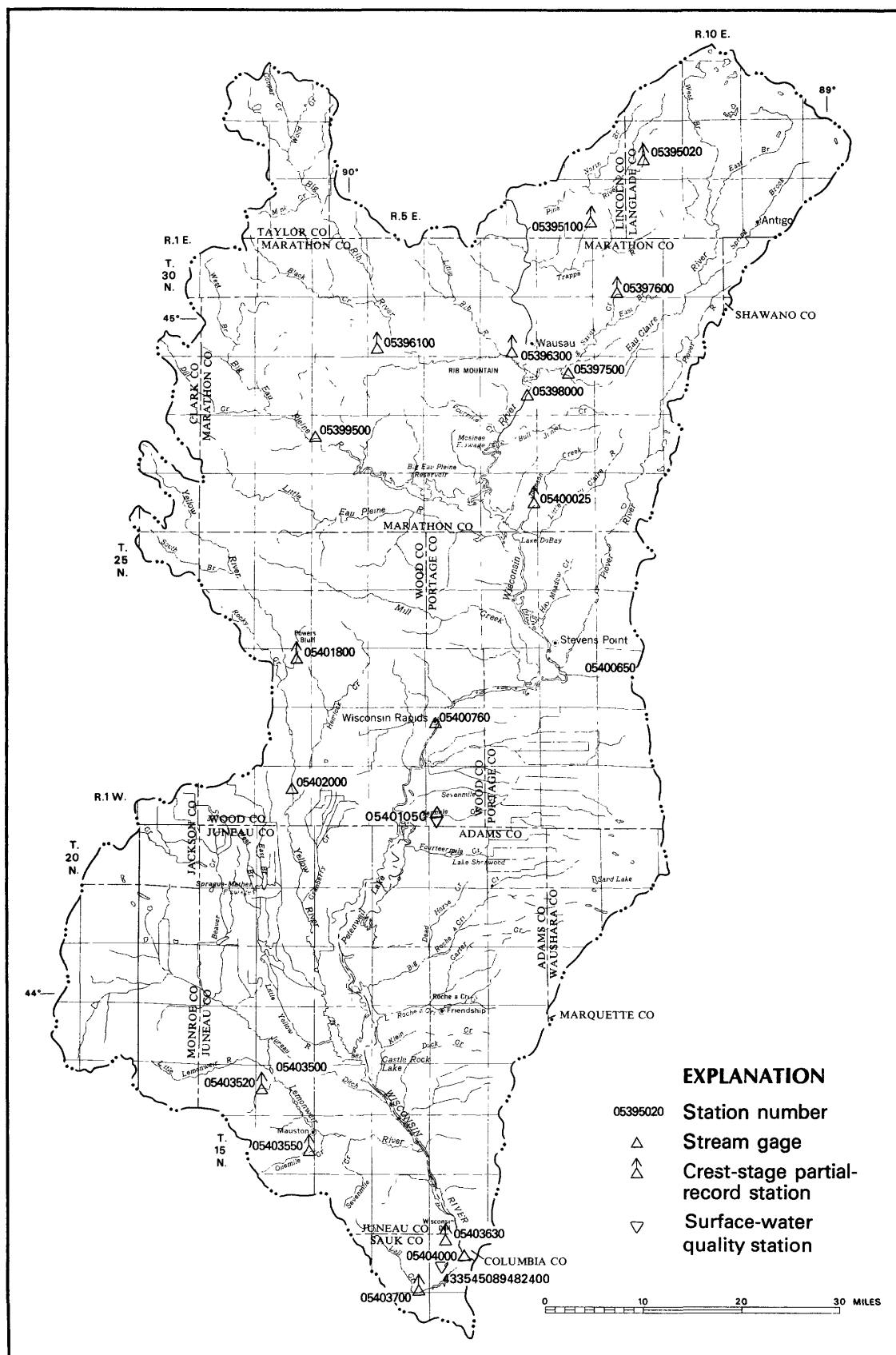
RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 10 to Mar. 26.)

3.6	680	6.0	3,640
4.0	1,040	8.0	7,640
5.0	2,120		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1270	1470	1790	1800	1900	1600	3190	2800	2660	1460	1100	1250
2	1040	1190	1910	1700	1800	1600	3280	2200	2240	1330	1070	938
3	745	1100	1840	1700	1800	1800	3350	2190	2160	1310	798	914
4	1050	1140	1820	1900	1700	1900	4840	1860	1950	1140	1220	968
5	919	1760	1970	1800	1600	1400	5950	1980	1470	1100	1600	1070
6	850	2040	1830	1800	1800	1400	5860	1700	1510	1430	938	1110
7	875	1700	2270	1700	1600	1600	4650	1640	1370	1220	900	1130
8	991	1650	1940	1600	1700	1500	4420	1600	1580	1110	1010	1150
9	1050	1510	1600	1700	1800	1500	3950	1710	1650	1360	918	902
10	970	1740	1600	1900	1800	1700	3120	1590	1610	1010	1040	864
11	1160	1480	1700	1900	1700	1600	2030	1430	1360	1360	1020	763
12	1010	1430	1500	1800	1700	1400	2570	1610	1430	1110	1060	875
13	923	1240	1800	1800	1900	1600	2000	1280	1750	1190	1190	1040
14	914	1540	1800	1800	1800	1800	2210	1110	1950	1150	1340	988
15	863	1860	1800	1800	1800	1800	2110	931	2150	993	1000	813
16	810	3050	1900	1800	1600	1700	1870	1550	1560	1070	1340	795
17	851	3340	1800	1800	1800	1800	2380	1120	1520	1210	1080	875
18	1400	3330	1800	1700	1800	1600	2360	1150	1340	1220	827	927
19	879	2660	1800	1800	1600	1500	2100	1660	1410	1300	925	926
20	888	2340	2200	1900	1700	1700	1890	1410	1260	1190	967	877
21	1010	1960	2000	1800	1700	1700	1990	1370	1440	960	1200	806
22	1090	2240	1900	1900	1700	1600	1860	1330	1270	1070	1150	901
23	1260	2290	2000	2000	1600	1600	1680	1400	2170	1230	1210	732
24	1250	1540	1800	1800	1800	1700	1470	1210	1490	1120	1030	729
25	1150	1950	1800	1800	1800	1800	1670	2380	1420	989	846	715
26	1140	1930	1800	1800	1500	1800	1940	4460	1280	973	873	1000
27	1090	2260	1800	1700	1600	4080	2040	2880	1530	1230	964	849
28	1100	2480	1800	1700	1700	7150	1840	2050	1520	1010	896	830
29	1170	1900	1700	1800	---	5940	2590	1700	1400	1030	915	799
30	1060	2380	1700	1800	---	5370	2410	2680	1620	1010	1010	794
31	979	---	1800	1800	---	4550	---	3120	---	965	872	---
TOTAL	31757	58500	56770	55600	48300	69790	83620	57101	49070	35850	32309	27330
MEAN	1024	1950	1831	1794	1725	2251	2787	1842	1636	1156	1042	911
MAX	1400	3340	2270	2000	1900	7150	5950	4460	2660	1460	1600	1250
MIN	745	1100	1500	1600	1500	1400	1470	931	1260	960	798	715

CAL YR 1988 TOTAL 574019 MEAN 1568 MAX 6570 MIN 576  
WTR YR 1989 TOTAL 605997 MEAN 1660 MAX 7150 MIN 715



Base from U.S. Geological Survey  
State base map, 1968

## CENTRAL WISCONSIN RIVER BASIN

## WISCONSIN RIVER BASIN

## 05397500 EAU CLAIRE RIVER AT KELLY, WI

LOCATION.--Lat 44°55'06", long 89°33'00", on line between secs.9 and 10, T.28 N., R.8 E., Marathon County, Hydrologic Unit 07070002, on right bank 50 ft downstream from County Highway SS bridge, 0.7 mi northeast of Kelly, 1.3 mi upstream from Big Sandy Creek, 4.5 mi upstream from mouth, and 5.0 mi southeast of Wausau.

DRAINAGE AREA.--375 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1914 to November 1926, August 1939 to current year.

REVISED RECORDS.--WSP 1508: 1915, 1916-17(M), 1919-26(M), 1940(M), 1945(M), 1950(M). WDR WI-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,177.88 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 17, 1953, nonrecording gage at same site at datum 1.00 ft higher.

REMARKS.--Estimated daily discharges: July 13 to Aug. 9 and ice periods listed in tables below. Records good except for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--62 years, 251 ft<sup>3</sup>/s, 9.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,300 ft<sup>3</sup>/s, Aug. 21, 1926, gage height, 8.4 ft from graph based on gage readings, from rating curve extended above 6,000 ft<sup>3</sup>/s; maximum gage height, 9.49 ft Mar. 29, 1988, ice jam; minimum observed, 8.0 ft<sup>3</sup>/s, July 17, 1944, gage height, 0.17 ft, probably result of temporary regulation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	0100	(a)*3,500	(a)*8.27	May 31	1300	1,610	4.22
(a) Ice jam.							

Minimum daily discharge, 38 ft<sup>3</sup>/s, Sept. 25, 26.

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Oct. 29-31, and Nov. 9 to Apr. 3.)

Oct. 1 to Mar. 27

0.9	58	3.0	797
1.2	116	4.0	1,340
1.5	196	5.0	2,050
2.0	371		

Mar. 28 to Sept. 30

0.7	33	3.0	880
0.9	63	5.0	2,150
1.2	127	7.0	3,770
2.0	404		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	115	230	80	86	64	1700	296	959	70	e54	56
2	72	96	200	78	78	64	1200	270	659	67	e50	51
3	75	95	220	76	72	62	1000	245	468	64	e58	52
4	70	99	200	76	70	64	1010	225	378	63	e72	52
5	66	139	180	76	68	64	1110	251	292	59	e80	50
6	65	259	170	78	66	66	1030	280	228	57	e66	50
7	64	303	150	78	66	68	878	261	185	54	e58	52
8	63	256	140	80	66	70	778	233	179	54	e50	62
9	62	226	130	74	64	72	650	212	300	59	e45	63
10	63	209	120	74	64	78	482	194	341	61	41	67
11	67	201	120	78	64	76	428	178	264	62	41	61
12	67	191	110	76	66	74	374	160	226	63	50	62
13	68	178	130	74	68	72	338	146	243	e62	52	59
14	78	170	120	72	70	70	323	139	293	e60	67	49
15	62	177	100	72	66	70	334	132	693	e56	97	48
16	65	295	100	72	66	70	346	129	715	e54	97	46
17	67	474	100	72	64	70	372	124	510	e58	80	45
18	70	516	110	72	62	70	360	118	336	e72	66	45
19	73	392	110	74	62	70	347	112	244	e110	56	44
20	74	317	110	74	62	70	315	115	189	e120	51	43
21	74	273	110	74	62	74	293	125	152	e100	47	42
22	72	230	110	76	62	78	279	121	129	e84	54	42
23	80	198	120	78	62	90	256	113	116	e70	55	40
24	99	179	110	80	66	130	237	110	109	e62	53	39
25	115	163	100	78	68	220	225	232	103	e56	52	38
26	118	168	90	78	66	500	234	288	98	e50	49	38
27	112	226	94	76	66	1400	229	266	95	e45	48	39
28	108	324	88	76	64	3500	236	203	86	e45	49	39
29	100	300	82	80	---	3300	269	171	79	e50	50	41
30	96	260	78	82	---	2800	304	412	75	e56	48	39
31	110	---	80	86	---	2200	---	1360	---	e60	50	---
TOTAL	2445	7029	3912	2370	1866	15676	15937	7221	8744	2003	1786	1454
MEAN	78.9	234	126	76.5	66.6	506	531	233	291	64.6	57.6	48.5
MAX	118	516	230	86	86	3500	1700	1360	959	120	97	67
MIN	62	95	78	72	62	62	225	110	75	45	41	38
CFSM	.21	.62	.34	.20	.18	1.35	1.42	.62	.78	.17	.15	.13
IN.	.24	.70	.39	.24	.19	1.56	1.58	.72	.87	.20	.18	.14

CAL YR 1988 TOTAL 56156 MEAN 153 MAX 1200 MIN 34 CFSM .41 IN. 5.57  
WTR YR 1989 TOTAL 70443 MEAN 193 MAX 3500 MIN 38 CFSM .51 IN. 6.99

## WISCONSIN RIVER BASIN

197

05398000 WISCONSIN RIVER AT ROTHSCHILD, WI

LOCATION.--Lat 44°53'09", long 89°38'05", in sec.26, T.28 N., R.7 E., Marathon County, Hydrologic Unit 07070002, on left bank at Rothschild, 0.5 mi downstream from Rothschild Dam, 1.7 mi north of bridge on U.S. Highway 51, 2.0 mi downstream from Eau Claire River, and 5.0 mi upstream from Black Creek.

DRAINAGE AREA.--4,020 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,125.86 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1975, at datum 10.00 ft higher. Auxiliary water-stage recorder in Mosinee Pond 8 mi downstream. Prior to July 23, 1964, nonrecording auxiliary gage at same site and datum, read hourly.

REMARKS.--Estimated daily discharges: Aug. 21-29, Sept. 10-30, and ice-affected periods, Dec. 8, 9, 12, 17-27, 29, Dec. 31 to Jan. 2, Jan. 5-24, 26-29, Feb. 2-19, Feb. 21 to Mar. 5, Mar. 7-12, 14-18, 20-22. Records good except for estimated daily discharges, which are fair. Flow regulated by 20 reservoirs and 12 powerplants upstream from station.

AVERAGE DISCHARGE.--45 years, 3,507 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,200 ft<sup>3</sup>/s, Apr. 12, 1965, Mar. 31, 1967, gage height, 18.46 ft, datum then in use; minimum daily, 575 ft<sup>3</sup>/s, June 16, 1988.

EXTREMES OUTSIDE THE PERIOD OF RECORD.--Flood of Sept. 1, 1941, reached stage of 22.3 ft, datum then in use, from tailwater data at Rothschild dam, discharge, 75,000 ft<sup>3</sup>/s from rating curve extended above 45,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 29,700 ft<sup>3</sup>/s, Mar. 28, gage height, 24.17 ft; minimum daily, 750 ft<sup>3</sup>/s, Oct. 4, but may have been less during Sept. 10-30 period.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	1490	2690	2100	1930	1600	7860	4680	7090	1910	1180	1170
2	1220	1470	2520	2100	2100	1700	7170	4120	5030	1550	1230	1250
3	1030	1340	2470	1650	2000	1700	7620	3380	4050	1590	1180	885
4	750	1360	2480	2100	2100	2000	9350	3280	3710	1860	1490	1140
5	1280	2170	2560	2200	1900	1500	10900	2950	2940	1380	1300	1330
6	1000	2910	2610	1900	1800	1300	10200	3230	2440	1240	1350	1190
7	1030	2610	2690	2000	1900	1600	8800	3070	2290	1390	1050	1370
8	1070	2610	2100	2000	1800	1600	7840	2630	2320	1320	989	1350
9	1190	2250	1500	2100	2100	1600	6930	2550	2590	1720	1170	1130
10	978	2120	1160	2100	2000	1700	5610	2430	2720	1080	1100	960
11	1120	2170	1470	2100	2100	1600	4480	2420	2140	1570	1240	920
12	1260	2070	1500	2000	2000	1600	4050	1880	2220	1360	1070	900
13	1100	1820	1490	2000	2000	1590	3630	2110	2310	1250	1390	1000
14	1050	1630	2020	2100	2100	2000	3570	1610	2920	1340	1410	1100
15	1150	2620	1610	2100	2000	2000	3800	1390	4700	1190	1550	900
16	1010	4540	1920	1900	1900	1800	3450	1670	4170	969	1430	800
17	1110	6010	1900	2100	1900	1900	3680	1680	3040	1170	1570	980
18	1360	5390	1900	2000	1900	2000	4160	1370	2680	1720	1100	920
19	1220	4520	2100	2000	1800	1560	3660	1800	2080	1530	942	1000
20	1040	3910	2100	2200	1720	1700	3080	1910	1860	1560	1080	960
21	1110	3080	2400	2200	1900	1800	3210	1690	1970	1400	1400	960
22	1180	3100	2300	2100	1800	1700	2920	1730	1670	1060	1400	840
23	1450	3380	2400	2200	1900	1760	2810	1730	2240	1350	1300	840
24	1410	2490	2200	2200	1800	2030	2210	1600	2210	1310	1200	760
25	1370	2580	2000	1960	1900	2450	2240	3000	1970	1180	1000	780
26	1380	2580	2100	2300	1600	4220	2800	6870	1460	1230	940	1000
27	1270	3300	2200	2100	1400	11900	2770	5070	1830	1180	1100	1000
28	1310	4040	1990	2100	1600	25500	3060	3600	1700	1130	1100	840
29	1380	3750	1900	2200	---	21100	3880	2680	1440	1040	960	820
30	1280	2760	1910	1990	---	14800	4360	4660	1570	1280	995	900
31	1280	---	2100	2040	---	11700	---	8870	---	1160	1200	---
TOTAL	36668	86070	64290	64140	52950	133010	150100	91660	81360	42019	37416	29995
MEAN	1183	2869	2074	2069	1891	4291	5003	2957	2712	1355	1207	1000
MAX	1450	6010	2690	2300	2100	25500	10900	8870	7090	1910	1570	1370
MIN	750	1340	1160	1650	1400	1300	2210	1370	1440	969	940	760

CAL YR 1988 TOTAL 782413 MEAN 2138 MAX 13700 MIN 575  
WTR YR 1989 TOTAL 869678 MEAN 2383 MAX 25500 MIN 750

## WISCONSIN RIVER BASIN

05399500 BIG EAU PLEINE RIVER NEAR STRATFORD, WI

LOCATION.--Lat 44°49'19", long 90°04'46", on line between sec.13, T.27 N., R.3 E., and sec.18, T.27 N., R.4 E., Marathon County, Hydrologic Unit 07070002, on left bank 15 ft upstream from bridge on State Highway 97, 1.0 mi north of Stratford, and 1.4 mi downstream from small tributary.

DRAINAGE AREA.--224 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1914 to December 1925, April 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1920-22, 1926, 1946, 1948, 1950. WSP 1508: 1915-25(M), 1937, 1946(M), 1948(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,154.24 ft above National Geodetic Vertical Datum of 1929. July 24, 1914, to Dec. 31, 1925, nonrecording gage at site 0.5 mi upstream at different datum. Apr. 30, 1937, to Sept. 15, 1938, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Ice period listed in rating table below. Records good except those for ice-affected period, which is fair.

AVERAGE DISCHARGE.--63 years (water years 1915-25, 1938-89), 175 ft<sup>3</sup>/s, 10.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,000 ft<sup>3</sup>/s, Sept. 9, 1938, gage height, 24.5 ft, from flood-marks, based on rating curve extended above 24,000 ft<sup>3</sup>/s; no flow Aug. 17, 1947, Jan. 22 to Feb. 5, 1961.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Flood of June 5, 1914, reached a stage of 20.7 ft, from floodmarks; discharge, 40,000 ft<sup>3</sup>/s, former site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 27	2230	*11,600	*17.10	May 30	2315	4,020	11.28

Minimum discharge, 1.3 ft<sup>3</sup>/s, Sept. 30.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Rate of change of stage used as factor Mar. 30, 31, Apr. 3, May 26, May 29 to June 1, and June 14; stage-discharge relation affected by ice Nov. 30 to Mar. 27.)

2.1	1.1	2.8	30	6.0	670
2.2	2.6	3.0	48	8.0	1,540
2.3	5.0	3.5	104	10.0	2,850
2.4	8.0	4.0	175	12.0	4,630
2.6	17	5.0	375	15.0	8,280

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MEAN VALUES											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	6.6	38	8.0	8.2	6.0	355	162	542	17	4.3	8.6
2	5.9	6.2	31	7.8	7.8	6.0	313	120	296	14	3.6	27
3	5.3	6.7	26	7.6	7.4	6.2	687	93	251	21	3.4	45
4	5.3	7.7	24	7.2	7.2	6.4	982	78	201	26	4.8	26
5	4.7	10	21	7.0	6.8	6.8	724	89	125	18	2.4	20
6	5.0	12	19	7.2	6.6	7.0	490	107	87	13	2.8	16
7	4.7	12	18	7.4	6.4	6.8	356	94	67	11	2.5	16
8	4.8	13	17	7.0	6.2	7.4	273	82	60	9.0	2.3	15
9	4.7	11	16	6.8	6.0	8.4	199	136	53	9.1	2.0	12
10	5.6	11	15	6.6	6.0	9.6	143	132	44	7.8	1.9	9.3
11	4.3	11	14	6.8	6.0	11	114	90	36	8.9	2.1	7.7
12	3.9	11	13	6.8	5.8	13	97	67	33	9.8	2.4	7.0
13	3.9	11	13	6.4	5.8	15	84	53	38	9.3	8.2	6.6
14	4.3	13	12	6.6	6.0	16	80	50	148	8.5	13	6.0
15	4.0	16	12	6.4	6.0	15	81	58	496	7.6	17	5.4
16	5.1	164	11	6.2	6.0	15	80	55	256	6.2	16	4.8
17	5.1	172	11	6.2	5.8	14	86	43	149	5.2	11	4.4
18	5.7	93	11	6.2	5.8	13	87	28	100	6.3	9.6	4.1
19	6.3	59	10	6.2	6.0	13	78	26	70	7.2	7.7	3.9
20	6.2	48	13	6.4	6.0	13	72	27	47	7.1	6.4	3.6
21	6.4	40	13	6.4	6.0	13	67	25	38	6.6	5.1	3.2
22	7.7	34	14	6.8	6.0	14	59	22	31	6.7	7.9	3.2
23	8.4	28	14	7.0	6.2	15	55	21	62	5.9	9.2	2.9
24	9.9	25	13	6.6	6.4	20	51	159	84	5.1	13	2.6
25	11	23	12	6.8	6.2	50	48	1480	68	4.7	11	2.8
26	11	28	11	7.0	6.0	700	46	564	44	4.4	8.4	2.3
27	8.4	60	11	7.2	6.0	5600	51	274	32	4.1	7.4	2.0
28	7.6	84	10	7.6	6.0	7850	67	161	27	3.5	6.5	1.8
29	7.5	72	9.4	8.0	---	2780	110	180	26	3.9	5.8	1.9
30	7.4	54	8.8	8.6	---	1050	160	2980	21	4.7	4.9	1.5
31	6.6	---	8.4	8.8	---	559	---	1990	---	4.5	5.5	---
TOTAL	192.2	1142.2	469.6	217.6	176.6	18859.6	6095	9446	3532	276.1	208.1	272.6
MEAN	6.20	38.1	15.1	7.02	6.31	608	203	305	118	8.91	6.71	9.09
MAX	11	172	38	8.8	8.2	7850	982	2980	542	26	17	45
MIN	3.9	6.2	8.4	6.2	5.8	6.0	46	21	21	3.5	1.9	1.5
CFSM	.03	.17	.07	.03	.03	2.72	.91	1.36	.53	.04	.03	.04
IN.	.03	.19	.08	.04	.03	3.13	1.01	1.57	.59	.05	.03	.05
CAL YR 1988	TOTAL 24578.3	MEAN 67.2	MAX 1600	MIN 1.2	CFSM .30	IN. 4.08						
WTR YR 1989	TOTAL 40887.6	MEAN 112	MAX 7850	MIN 1.5	CFSM .50	IN. 6.79						



## 05400760 WISCONSIN RIVER AT WISCONSIN RAPIDS, WI

LOCATION.--Lat 44°23'41", long 89°49'31", in SW 1/4 sec.8, T.22 N., R.6 E., Wood County, Hydrologic Unit 07070003, at Consolidated Water Power Company, 0.2 mi upstream from U.S. Highway 13 bridge in Wisconsin Rapids.

DRAINAGE AREA.--5,420 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1914 to March 1950 (published as "near Nekoosa"), October 1957 to current year.

REVISED RECORDS.--WSP 1308: 1915(M).

GAGE.--Water-stage recorders on headwater and tailwater. Elevation of powerplant pond is 1,010 ft and datum of powerplant gages is 0.00 ft above National Geodetic Vertical Datum of 1929 (levels by Wisconsin Valley Improvement Co.). May 1914 to March 1950, at site 9.6 mi downstream at different datum. March 1950 to Sept. 30, 1981, at Centralia Powerplant at Nekoosa Papers, Inc., 2.6 mi downstream. March 1950 to Dec. 31, 1973, datum was 887.83 ft above National Geodetic Vertical Datum. Jan. 1, 1974, changed to present datum.

REMARKS.--No estimated daily discharges. Records good for discharges greater than 2,500 ft<sup>3</sup>/s, and fair to poor for discharges less than 2,500 ft<sup>3</sup>/s. Discharge computed from powerplant records on basis of load-discharge rating of hydroelectric units as developed by manufacturer and tainter-gate ratings based on theoretical formulas. Flow regulated by 20 reservoirs and many powerplants upstream from station. Water diverted periodically from pond of Wisconsin Rapids powerplant into Cranberry Creek, a tributary of Yellow River, for cranberry culture. These diversions, in cubic feet per second, for water year October 1988 to September 1989, were as follows:

Nov. 15	1	July 12	73	Sept. 5	56	Sept. 22	53
Nov. 16-27	100	July 13-Aug. 9	100	Sept. 6-20	100	Sept. 23-30	50
Nov. 28	10	Aug. 10	3	Sept. 21	38		

COOPERATION.--Figures of daily discharges were provided by Consolidated Water Power Company and Wisconsin River Improvement Company. Records were reviewed by the Geological Survey.

AVERAGE DISCHARGE.--67 years (1915-49, 1958-89), 4,946 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,400 ft<sup>3</sup>/s, Sept. 12, 1938, gage height, 19.10 ft, from rating curve extended above 58,000 ft<sup>3</sup>/s; minimum, 26 ft<sup>3</sup>/s, Sept. 7, 1942; minimum daily, 165 ft<sup>3</sup>/s, Aug. 12, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,700 ft<sup>3</sup>/s, Mar. 28; minimum daily, 939 ft<sup>3</sup>/s, Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	1790	2790	2550	2290	2320	15100	5040	16400	2240	1340	1740
2	1380	1940	2710	2380	1870	2220	10100	4500	11200	2180	1340	1490
3	1470	1870	3340	2440	2250	2290	9860	4640	11500	1600	1380	1400
4	1360	1910	2870	2340	2330	2450	10900	3670	8620	1470	2030	1570
5	1280	2300	2920	2300	2450	2290	13200	3980	5720	1270	1970	1550
6	1480	2680	2860	2320	2350	2350	15400	4170	4340	1190	1970	1520
7	1580	2680	2900	2320	2250	2310	13400	3660	2910	1350	1450	1550
8	1590	2850	3020	2320	2200	2260	11600	3250	4440	1900	1390	2200
9	1470	2850	2960	2350	2270	2180	7770	3160	4420	1640	1400	2100
10	1830	2730	2460	2370	2310	2230	5930	3100	4120	1670	1470	1770
11	1640	2770	1830	2740	2280	2280	5000	2630	3220	1840	1520	1360
12	1400	2040	1760	2750	2360	2270	4360	2600	3390	2130	1610	1390
13	1750	2690	1760	2490	2480	2260	4180	2720	3790	2050	1740	1480
14	1710	2620	1940	2470	2610	2350	3480	2850	3270	1770	1600	1410
15	1340	2760	2060	2300	2550	2220	3500	2580	4650	1770	1610	1270
16	1310	3920	2090	2250	2510	2740	3730	2190	6170	1430	1650	1180
17	1190	6080	2070	2400	2670	2730	4140	2100	4190	1240	1710	1070
18	1430	5530	2050	2370	2660	2560	4100	2240	3370	1860	1750	1000
19	1470	4690	2010	2370	2480	2520	4120	2340	2510	2260	1730	1190
20	1540	4220	2590	2410	2450	2510	4110	2870	2840	2010	1490	1010
21	1530	3460	2760	2610	2450	2500	3590	2570	2440	1920	1510	1380
22	1530	2970	2990	2390	2390	2580	3600	2020	2280	1780	1680	1200
23	1560	2800	3150	2370	2390	2780	3010	2160	2020	1580	1570	1200
24	1820	3060	2610	2330	2390	2940	3190	2820	2090	1530	1500	939
25	1580	2790	2260	2550	2380	4620	3160	9710	2110	1460	1440	960
26	1440	2540	2000	2550	2390	6530	3040	9250	2200	1320	1710	960
27	1800	3130	2200	2720	2400	16800	3030	7750	2250	1040	1760	1180
28	1380	3940	2530	2450	2360	29000	3130	5280	2500	1140	1520	1110
29	1620	4460	2980	2540	---	30500	4060	5080	2760	1620	1580	1060
30	1660	3710	2880	2490	---	24400	4600	14600	2720	1440	1720	1000
31	1700	---	2860	2500	---	19700	---	22900	---	1320	1730	---
TOTAL	47340	93780	78210	75740	66770	189690	188390	148430	134440	51020	49870	40239
MEAN	1527	3126	2523	2443	2385	6119	6280	4788	4481	1646	1609	1341
MAX	1830	6080	3340	2750	2670	30500	15400	22900	16400	2260	2030	2200
MIN	1190	1790	1760	2250	1870	2180	3010	2020	2020	1040	1340	939

CAL YR 1988	TOTAL	988721	MEAN	2701	MAX	14300	MIN	673
WTR YR 1989	TOTAL	1163919	MEAN	3189	MAX	30500	MIN	939

## WISCONSIN RIVER BASIN

05401050 TENMILE CREEK NEAR NEKOOSA, WI

LOCATION.--Lat 44°15'44", long 89°48'38", in NE 1/4 sec.32, T.21 N., R.6 E., Wood County, Hydrologic Unit 07070003, on left bank upstream from bridge on State Highway 13, 5.8 mi southeast of Nekoosa.

DRAINAGE AREA.--73.3 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1962-63. October 1963 to September 1979, October 1987 to current year.

REVISED RECORDS.--WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 967.39 ft above National Geodetic Vertical Datum of 1929. Prior to May 13, 1964, and June 2, 1988 to May 2, 1989, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: May 7 to June 21 and ice periods listed in rating tables below. Records good except those for Oct. 1 to May 2, which are fair; and those for period of estimated record, which are poor. Approximately 40 mi of drainage ditches and 22 check dams are used to control the water table in the basin. Sprinkler irrigation from ground-water sources affects natural flow of creek.

AVERAGE DISCHARGE.--18 years, (1964-79, 1988-89) 58.4 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 456 ft<sup>3</sup>/s, Mar. 31, 1979, gage height, 6.62 ft; minimum, 9.5 ft<sup>3</sup>/s, Dec. 16, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed, 176 ft<sup>3</sup>/s, Mar. 27, but may have been higher during a period of no gage-height record, May 7 to June 21, gage height, 5.77 ft; minimum daily, 12 ft<sup>3</sup>/s, Mar. 1, 2.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8-10 and Feb. 3-11.)

4.14	12	5.0	78
4.2	16	6.0	212
4.5	36		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	30	38	27	23	12	93	58	140	55	35	30
2	26	30	36	24	20	12	90	56	130	54	33	27
3	26	28	39	27	18	14	92	55	120	52	32	26
4	26	29	38	23	18	19	88	53	110	51	33	26
5	26	28	38	25	18	19	84	57	110	49	34	26
6	27	27	41	25	18	18	81	56	100	48	33	25
7	27	27	40	25	18	15	79	54	94	46	33	25
8	27	27	40	21	18	16	81	60	88	45	32	26
9	27	29	39	25	18	16	77	58	84	44	32	27
10	26	30	38	23	19	16	73	54	80	44	31	25
11	26	30	36	23	20	16	71	52	78	46	31	25
12	27	29	33	22	21	16	71	50	80	44	32	24
13	25	30	35	19	22	15	67	48	76	43	31	24
14	25	31	34	21	22	17	67	46	80	42	30	24
15	25	32	33	21	21	29	67	45	78	40	30	24
16	26	33	33	20	16	31	65	43	76	39	30	24
17	26	33	33	21	19	30	65	41	74	39	29	24
18	27	32	32	20	18	25	64	42	72	40	29	23
19	25	32	31	20	20	25	64	42	72	40	28	23
20	25	34	30	21	20	32	59	42	70	40	28	23
21	25	34	31	18	21	16	62	41	70	40	27	23
22	25	34	32	19	20	18	61	40	68	39	30	23
23	26	34	32	20	21	31	60	40	66	38	27	22
24	27	36	32	19	21	35	58	68	64	37	26	23
25	28	36	32	20	19	68	59	52	63	36	26	22
26	28	38	31	20	18	138	58	46	63	37	26	23
27	27	37	31	20	17	174	56	43	63	36	26	23
28	27	37	32	21	18	164	56	40	61	34	26	23
29	26	39	31	21	---	125	58	170	59	36	25	22
30	25	42	29	21	---	108	59	150	56	36	25	22
31	27	---	30	23	---	100	---	160	---	35	26	---
TOTAL	813	968	1060	675	542	1370	2085	1862	2445	1305	916	727
MEAN	26.2	32.3	34.2	21.8	19.4	44.2	69.5	60.1	81.5	42.1	29.5	24.2
MAX	28	42	41	27	23	174	93	170	140	55	35	30
MIN	25	27	29	18	16	12	56	40	56	34	25	22

CAL YR 1988 TOTAL 14614 MEAN 39.9 MAX 101 MIN 17  
WTR YR 1989 TOTAL 14768 MEAN 40.5 MAX 174 MIN 12

05401050 TENMILE CREEK NEAR NEKOOSA, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

## WATER-QUALITY RECORDS

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

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	PH (STAND- ARD UNITS) (000400)	TEMPER- ATURE WATER (DEG C) (000010)	TUR- BID- ITY (NTU) (000076)	OXYGEN, DIS- SOLVED (MG/L) (000300)	BARO- METRIC PRES- SURE (MM OF HG) (000025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (000301)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (000900)
OCT 1988												
19...	1245	26	220	8.00	7.5	3.0	10.8	759	90	K16	24	130
DEC												
07...	1030	40	332	8.10	0.5	5.1	13.0	763	90	K2	K26	150
FEB 1989												
28...	1430	18	221	6.50	4.5	7.9	13.4	--	--	K2	K2	110
APR												
26...	1650	57	330	8.20	11.5	1.5	10.6	760	98	120	29	170
JUN												
22...	1110	69	323	8.10	16.5	5.4	8.6	760	88	K750	590	170
AUG												
02...	0940	32	265	8.00	16.0	3.4	8.0	764	81	140	240	140

DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (000915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (000925)	SODIUM, DIS- SOLVED (MG/L AS NA) (000930)	SODIUM PERCENT (000932)	SODIUM AD- SORP- TION RATIO (000931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (000935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (000453)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (000945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (000940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (000950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (000955)
OCT 1988												
19...	30	14	2.1	3	0.1	1.1	123	100	16	6.4	0.10	11
DEC												
07...	35	16	2.5	3	0.1	1.0	136	112	19	8.4	0.10	10
FEB 1989												
28...	27	11	2.1	4	0.1	0.60	113	92	14	3.6	0.10	12
APR												
26...	39	17	2.3	3	0.1	1.1	146	120	20	8.4	0.10	6.5
JUN												
22...	40	18	2.4	3	0.1	0.90	152	124	20	8.6	0.10	10
AUG												
02...	32	14	2.4	4	0.1	0.80	136	112	14	13	0.10	12

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (000631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (000610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (000608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (000625)	PHOS- PHOROUS TOTAL (MG/L AS P) (000665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (000666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (000671)
OCT 1988											
19...	144	149	0.20	9.95	1.50	0.010	0.010	0.40	0.010	0.010	<0.010
DEC											
07...	181	173	0.25	19.6	3.10	<0.010	0.010	0.60	0.020	0.010	<0.010
FEB 1989											
28...	123	131	0.17	5.98	0.850	0.040	0.050	0.30	0.040	<0.010	0.010
APR											
26...	184	178	0.25	28.4	2.60	0.020	0.020	1.1	0.020	0.010	<0.010
JUN											
22...	202	186	0.27	37.6	2.60	0.030	0.040	0.60	0.020	<0.010	<0.010
AUG											
02...	152	160	0.21	13.2	0.920	<0.010	0.010	0.30	0.030	0.020	<0.010

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

## WISCONSIN RIVER BASIN

05401050 TENMILE CREEK NEAR NEKOOSA, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
OCT 1988											
19...	1245	26	<10	<1	16	<0.5	<1	<1	<3	4	610
FEB 1989											
28...	1430	18	<10	<1	15	<0.5	<1	<1	5	<1	610
APR											
26...	1650	57	<10	<1	17	<0.5	<1	<1	<3	1	230
AUG											
02...	0940	32	<10	<1	16	<0.5	<1	<1	<3	3	290

DATE	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 1988										
19...	<5	<4	73	<0.1	<10	1	<1	34	<6	6
FEB 1989										
28...	<5	8	110	<0.1	<10	<1	<1	35	<6	5
APR										
26...	<5	<4	33	0.6	<10	2	<1	41	<6	7
AUG										
02...	<1	<4	63	0.3	<10	1	<1	38	<6	20

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988							
19...	1245	26		220	7.5	2	0.14
DEC							
07...	1030	40		332	0.5	10	1.1
FEB 1989							
28...	1430	18		221	4.5	3	0.15
APR							
26...	1650	57		330	11.5	7	1.1
JUN							
22...	1110	69		323	16.5	18	3.4
AUG							
02...	0940	32		265	16.0	5	0.43

## 05402000 YELLOW RIVER AT BABCOCK, WI

LOCATION.--Lat 44°18'05", long 90°07'15", in NW 1/4 sec.14, T.21 N., R.3 E., Wood County, Hydrologic Unit 07070003, on right bank at downstream side of bridge on State Highway 80 at Babcock, 1.9 mi upstream from Hemlock Creek.

DRAINAGE AREA.--215 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1308: 1944(M), 1946-47(M), 1949(M). WDR WI-77-1: Drainage area. WDR WI-82-1: 1981 (P).

GAGE.--Water-stage recorder. Datum of gage is 954.75 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 28, 1948, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Ice-affected period, Oct. 28-31, and Dec. 8 to Mar. 27. Records fair. There is a large recreation dam about 5.0 mi upstream.

AVERAGE DISCHARGE.--45 years, 157 ft<sup>3</sup>/s, 9.92 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft<sup>3</sup>/s, Apr. 2, 1952, gage height, 17.38 ft; minimum observed, 0.94 ft<sup>3</sup>/s, Aug. 11, 1985, gage height, 1.84 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 28	1215	*6,110	*14.45	May 31	1900	5,110	13.78
May 26	0030	1,530	9.31				

Minimum daily discharge, 3.9 ft<sup>3</sup>/s, Aug. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	13	50	11	8.6	6.2	677	95	3470	19	7.3	11
2	12	16	65	10	7.2	5.8	418	99	1680	18	6.5	12
3	13	15	35	10	6.6	5.4	303	91	978	17	5.9	11
4	12	15	36	10	6.2	4.8	332	80	613	16	6.2	11
5	13	17	40	10	6.2	5.8	442	79	430	15	8.0	11
6	11	24	34	10	6.2	6.8	427	86	250	14	7.8	12
7	9.3	20	35	11	6.2	6.6	345	91	162	13	9.7	14
8	9.8	11	32	10	6.2	7.0	262	84	115	12	8.4	15
9	8.8	8.2	28	10	6.4	7.4	200	88	88	11	7.0	18
10	8.5	9.1	23	9.8	6.4	7.8	150	192	70	11	6.3	19
11	7.7	16	21	9.6	6.4	8.4	121	216	59	13	5.2	17
12	8.7	16	20	9.6	6.6	9.2	100	158	55	18	4.8	15
13	7.9	17	20	9.4	6.6	11	89	116	52	18	4.9	14
14	6.2	18	20	9.4	6.4	9.8	79	92	48	16	5.2	11
15	6.2	22	17	9.4	6.2	8.6	72	76	48	13	5.1	10
16	5.0	28	16	9.2	6.0	8.2	68	65	46	11	4.9	10
17	5.1	41	15	9.2	5.6	8.2	67	56	48	10	4.4	9.9
18	5.9	43	15	9.0	5.6	8.2	65	49	54	9.7	4.1	8.9
19	5.6	25	15	9.0	5.6	8.2	68	46	56	10	3.9	9.2
20	6.9	16	16	9.0	5.4	9.0	67	43	49	12	4.6	10
21	8.4	11	16	9.0	5.6	13	63	39	41	11	4.6	9.4
22	11	9.8	16	9.2	5.6	22	64	31	35	9.6	6.0	9.7
23	11	9.2	17	9.2	5.6	36	60	29	32	9.1	6.3	13
24	15	9.2	17	9.0	5.8	62	56	29	29	8.4	6.1	19
25	18	9.4	16	8.8	6.8	98	54	522	27	7.9	5.4	15
26	16	11	15	8.6	7.8	800	54	1160	28	7.0	5.1	11
27	15	16	14	8.6	7.2	3500	53	744	28	6.7	5.3	7.9
28	14	31	13	8.8	6.4	5640	54	428	26	6.4	5.7	6.7
29	14	52	12	9.0	---	3500	63	247	22	7.8	5.8	6.4
30	13	52	11	9.2	---	1670	76	1010	20	8.4	5.5	7.2
31	13	---	11	9.6	---	1030	---	3700	---	7.7	6.2	---
TOTAL	324.0	600.9	711	293.6	177.4	16523.4	4949	9841	8659	366.7	182.2	354.3
MEAN	10.5	20.0	22.9	9.47	6.34	533	165	317	289	11.8	5.88	11.8
MAX	18	52	65	11	8.6	5640	677	3700	3470	19	9.7	19
MIN	5.0	8.2	11	8.6	5.4	4.8	53	29	20	6.4	3.9	6.4
CFSM	.05	.09	.11	.04	.03	2.48	.77	1.48	1.34	.06	.03	.05
IN.	.06	.10	.12	.05	.03	2.86	.86	1.70	1.50	.06	.03	.06

CAL YR 1988 TOTAL 26617.5 MEAN 72.7 MAX 2300 MIN 2.8 CFSM .34 IN. 4.61  
WTR YR 1989 TOTAL 42982.5 MEAN 118 MAX 5640 MIN 3.9 CFSM .55 IN. 7.44

## WISCONSIN RIVER BASIN

433545089482400 Lake Blass at Lake Delton, WI

LOCATION.--Lat 43°35'45", long 89°48'24", in NE 1/4 NE 1/4 sec.20, T.13 N., R.6 E., Sauk County, Hydrologic Unit 07070003, at Lake Delton.

DRAINAGE AREA.--5.88 mi<sup>2</sup>.

PERIOD OF RECORD.--March to August 1989.

REMARKS.--Lake sampled near dam outlet at lake depth of about 14 ft. Lake ice-covered during March 6 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, MARCH 6 TO AUGUST 24, 1989  
(Milligrams per liter unless otherwise indicated)

	Mar. 06		Apr. 18		June 14		July 18		Aug. 24	
Depth of sample (ft)	2.00	10.5	1.50	12.0	1.50	12.0	1.50	12.0	1.50	12.0
Lake stage (ft)	---	---	7.80	---	7.78	---	7.07	---	6.83	---
Specific conductance (μS/cm)	302	309	227	226	257	260	268	294	274	288
pH (units)	7.00	6.50	7.70	7.20	8.00	6.80	7.30	6.70	7.00	6.30
Water temperature (°C)	2.0	4.5	10.5	9.5	20.5	18.0	25.0	20.5	23.0	21.5
Color (Pt-Co. scale)	---	---	40	40	---	---	---	---	---	---
Turbidity (NTU)	---	---	2.5	2.7	---	---	---	---	---	---
Secchi-disc (meters)	---	2.70	---	1.30	---	1.60	---	1.30	---	1.00
Dissolved oxygen	5.1	4.0	13.8	9.0	9.6	1.1	5.0	0	6.0	0
Hardness, as CaCO <sub>3</sub>	---	---	52	55	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	11	12	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	6.0	6.0	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	16	17	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	3.5	3.8	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	---	---	35	35	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	---	---	17	18	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.0	0.0	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	31	31	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	---	---	1.8	2.1	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	122	130	---	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, ammonia, diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.90	0.70	---	---	---	---	---	---
Total phosphorus (as P)	---	---	0.036	0.034	0.042	0.061	0.061	0.650	0.060	0.100
Phosphorus, ortho, diss (as P)	---	---	0.005	0.006	---	0.016	---	0.430	---	0.009
Iron, dissolved (Fe) μg/L	---	---	130	100	---	---	---	---	---	---
Manganese, dissolved (Mn) μg/L	---	---	45	42	---	---	---	---	---	---
Chlorophyll a, phyto. (μg/L)	---	---	28.0	---	41.0	---	35.0	---	69.0	---

3-6-89

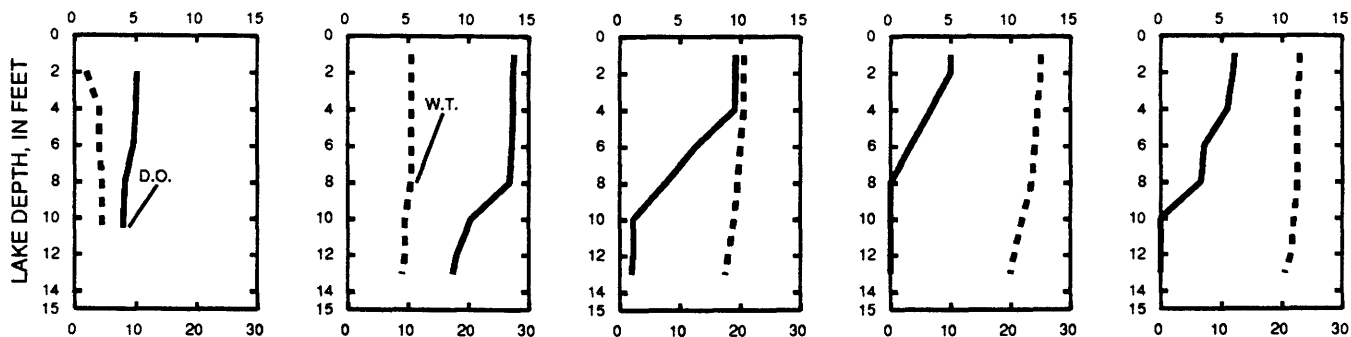
4-18-89

6-14-89

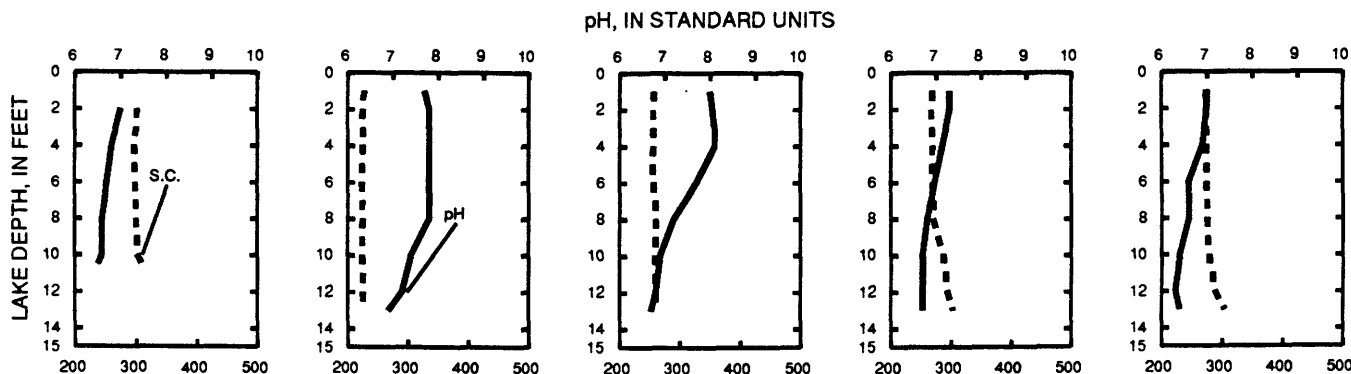
7-18-89

8-24-89

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



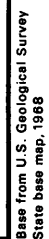
## WATER TEMPERATURE (W.T.), IN DEGREES CELSIUS



## SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER

## 205

CAL YR 1988	TOTAL 1410270	MEAN 3853	MAX 13200	MIN 1100
WTR YR 1989	TOTAL 1643230	MEAN 4502	MAX 25500	MIN 1190



# LOWER WISCONSIN RIVER BASIN



## 05404116 SOUTH BRANCH BARABOO RIVER AT HILLSBORO, WI

LOCATION.--Lat 43°39'10", long 90°20'09", in NE 1/4 NE 1/4 sec.35, T.14 N., R.1 E., Vernon County, Hydrologic Unit 07070004, on left bank 220 ft upstream from County Highway FF at Hillsboro, and 6.3 mi upstream from mouth.

DRAINAGE AREA.--39.1 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 927.28 ft above National Geodetic Vertical Datum of 1929 (levels by Mid-State Associates, Baraboo, WI).

REMARKS.--Estimated daily discharges: Oct. 19-28, 1988, and ice period listed in rating table below. Records are fair.

EXTREMES FOR CURRENT PERIOD.--July to September 1988: Maximum discharge, 117 ft<sup>3</sup>/s, Sept. 22, gage height, 6.92 ft; minimum daily, 5.2 ft<sup>3</sup>/s, Aug. 3.  
Water year 1989: Maximum discharge, 563 ft<sup>3</sup>/s, Mar. 14, gage height, 11.14 ft; minimum daily, 3.6 ft<sup>3</sup>/s, July 7.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Aug. 23, Sept. 16-18, 21, and 24, 1988, Oct. 1, 17, 18, 21, Nov. 16, 26, 27, Mar. 15, 25-27, and June 14 to Sept. 30, 1989;  
stage-discharge relation affected by ice Feb. 6 to Mar. 10.)

4.2	3.6	5.5	38
4.3	4.2	6.0	61
4.5	7.5	7.0	122
4.7	12	8.0	202
5.0	20	9.0	299

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	8.9	5.7	6.6
2	---	---	---	---	---	---	---	---	---	8.6	5.3	6.8
3	---	---	---	---	---	---	---	---	---	8.2	5.2	7.2
4	---	---	---	---	---	---	---	---	---	8.1	6.0	7.8
5	---	---	---	---	---	---	---	---	---	8.1	8.1	7.5
6	---	---	---	---	---	---	---	---	---	7.8	6.3	7.6
7	---	---	---	---	---	---	---	---	---	7.6	5.8	7.6
8	---	---	---	---	---	---	---	---	---	7.3	9.1	7.7
9	---	---	---	---	---	---	---	---	---	7.4	7.6	7.9
10	---	---	---	---	---	---	---	---	---	12	6.4	7.9
11	---	---	---	---	---	---	---	---	---	9.6	6.3	8.3
12	---	---	---	---	---	---	---	---	---	8.2	6.1	8.3
13	---	---	---	---	---	---	---	---	---	8.3	6.0	8.4
14	---	---	---	---	---	---	---	---	---	7.9	6.3	8.3
15	---	---	---	---	---	---	---	---	---	7.7	6.4	8.5
16	---	---	---	---	---	---	---	---	---	9.3	6.2	9.3
17	---	---	---	---	---	---	---	---	---	8.5	5.5	9.5
18	---	---	---	---	---	---	---	---	---	7.8	6.1	11
19	---	---	---	---	---	---	---	---	---	7.5	7.0	25
20	---	---	---	---	---	---	---	---	---	7.8	6.2	22
21	---	---	---	---	---	---	---	---	---	10	6.1	11
22	---	---	---	---	---	---	---	---	---	8.1	8.3	61
23	---	---	---	---	---	---	---	---	---	7.4	14	42
24	---	---	---	---	---	---	---	---	---	8.2	6.8	9.5
25	---	---	---	---	---	---	---	---	---	8.6	6.3	8.4
26	---	---	---	---	---	---	---	---	---	7.2	6.1	8.3
27	---	---	---	---	---	---	---	---	---	6.9	6.6	8.3
28	---	---	---	---	---	---	---	---	---	6.3	6.6	8.4
29	---	---	---	---	---	---	---	---	---	6.0	6.2	8.9
30	---	---	---	---	---	---	---	---	---	5.7	6.3	8.9
31	---	---	---	---	---	---	---	---	---	5.8	6.5	---
TOTAL	---	---	---	---	---	---	---	---	---	246.8	207.4	367.9
MEAN	---	---	---	---	---	---	---	---	---	7.96	6.69	12.3
MAX	---	---	---	---	---	---	---	---	---	12	14	61
MIN	---	---	---	---	---	---	---	---	---	5.7	5.2	6.6
CFSM	---	---	---	---	---	---	---	---	---	.20	.17	.31
IN.	---	---	---	---	---	---	---	---	---	.23	.20	.35

## WISCONSIN RIVER BASIN

05404116 SOUTH BRANCH BARABOO RIVER AT HILLSBORO, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	9.2	11	9.1	38	4.4	9.3	9.0	11	4.1	6.0	160
2	8.7	9.5	11	9.0	8.4	4.4	9.1	8.6	9.9	4.1	5.7	12
3	8.5	9.8	11	8.8	7.9	4.5	9.6	8.3	9.6	4.1	5.5	7.2
4	8.3	11	10	9.0	7.3	4.5	9.9	8.6	9.4	3.8	7.0	6.6
5	8.2	12	11	9.0	7.0	4.5	9.2	11	8.2	3.8	14	6.3
6	8.3	12	11	9.2	6.1	4.6	8.2	8.2	8.2	3.8	6.7	5.9
7	8.4	12	11	10	5.8	4.8	7.9	8.0	8.2	3.6	5.7	5.7
8	8.3	12	9.0	9.6	5.6	5.2	8.7	7.7	7.5	4.0	5.4	7.0
9	8.4	12	8.9	8.4	5.5	5.9	7.3	8.5	7.6	7.6	5.4	7.9
10	8.5	12	8.2	8.5	5.6	7.4	7.0	7.6	7.5	4.2	5.5	6.9
11	8.2	11	7.3	8.7	5.8	134	7.4	7.1	6.8	4.1	5.4	5.7
12	7.9	13	7.1	9.0	5.9	182	7.4	6.9	8.2	4.3	5.6	4.9
13	7.9	14	8.0	9.0	6.0	65	7.2	7.0	8.0	4.1	5.8	4.9
14	8.1	15	9.7	8.6	5.8	234	7.8	7.0	26	4.0	6.6	4.9
15	8.1	14	9.3	8.7	5.6	101	7.3	7.2	16	4.0	6.0	4.8
16	8.4	28	8.4	8.7	5.5	15	7.5	6.9	9.1	3.9	5.7	4.6
17	8.7	13	9.1	8.4	5.4	9.0	8.2	6.5	7.8	3.9	5.3	4.5
18	9.2	12	9.4	8.7	5.4	8.6	7.8	6.8	7.1	6.5	5.3	4.4
19	8.7	12	9.6	12	5.3	8.0	7.2	7.6	6.6	26	5.3	4.5
20	8.1	12	16	17	5.2	8.3	7.2	7.2	5.9	8.3	6.0	4.3
21	10	11	12	9.3	5.1	7.8	7.5	6.3	5.5	5.3	5.3	4.3
22	8.9	11	10	10	5.0	15	7.2	6.3	5.4	4.9	7.9	4.5
23	8.7	11	13	16	5.0	169	7.4	6.4	5.4	5.0	6.6	4.3
24	8.3	11	12	16	5.0	231	7.2	30	4.8	4.7	5.7	4.3
25	8.1	11	9.5	10	5.2	135	12	135	8.3	4.7	5.5	4.3
26	7.7	18	10	10	5.4	86	9.6	14	12	4.8	5.8	4.1
27	7.5	16	12	11	5.0	50	9.1	10	7.3	4.6	6.0	4.2
28	7.4	13	11	17	4.7	26	14	9.1	5.3	4.3	14	4.2
29	8.0	12	9.0	16	---	17	15	9.6	4.5	10	10	4.1
30	8.4	11	9.7	25	---	13	11	15	4.3	13	5.8	4.1
31	9.0	---	9.5	76	---	11	---	13	---	7.3	18	---
TOTAL	259.9	380.5	313.7	405.7	193.5	1575.9	261.2	410.4	251.4	180.8	214.5	315.4
MEAN	8.38	12.7	10.1	13.1	6.91	50.8	8.71	13.2	8.38	5.83	6.92	10.5
MAX	10	28	16	76	38	234	15	135	26	26	18	160
MIN	7.4	9.2	7.1	8.4	4.7	4.4	7.0	6.3	4.3	3.6	5.3	4.1
CFSM	.21	.32	.26	.33	.18	1.30	.22	.34	.21	.15	.18	.27
IN.	.25	.36	.30	.39	.18	1.50	.25	.39	.24	.17	.20	.30

WTR YR 1989 TOTAL 4762.9 MEAN 13.0 MAX 234 MIN 3.6 CFSM .33 IN. 4.53

## WISCONSIN RIVER BASIN

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433606090060000 REDSTONE LAKE NEAR LA VALLE, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 43°36'06", long 90°06'00", in SE 1/4 sec.14, T.13 N., R.3 E., Sauk County, Hydrologic Unit 07070004, 1.8 mi northeast of LaValle.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Tom Meronek. Elevation of gage is 916 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 8.49 ft, Sept. 7, 1985; minimum observed, 7.00 ft, June 18 and 26, 1988, and Aug. 19-21, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 7.50 ft, Sept. 1; minimum observed, 7.00 ft, Aug. 19-21.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	7.16	---	7.50
2	7.22	---	---	---	---	---	---	---	---	7.14	---	7.48
3	---	---	---	---	---	---	---	---	---	7.12	7.12	7.40
4	---	---	---	---	---	---	7.40	---	---	7.12	7.12	7.40
5	---	---	---	---	---	---	---	---	---	7.10	7.20	7.30
6	---	7.22	---	---	---	---	---	---	---	7.10	7.20	7.28
7	---	---	---	---	---	---	---	---	---	7.08	7.14	7.26
8	---	---	---	---	---	---	---	---	7.34	7.08	7.12	7.24
9	---	---	---	---	---	---	---	7.20	---	7.10	7.10	7.22
10	---	---	---	---	---	---	---	---	7.30	7.10	7.10	7.30
11	---	---	---	---	---	---	---	---	---	7.10	7.08	7.24
12	---	---	---	---	---	---	---	---	7.22	7.10	7.08	7.20
13	---	7.24	---	---	---	---	---	7.14	---	7.08	7.08	7.22
14	---	---	---	---	---	---	7.28	---	---	7.08	7.06	7.20
15	---	---	---	---	---	---	---	---	---	7.08	7.06	7.18
16	7.14	---	---	---	---	---	---	---	7.26	7.08	7.06	7.14
17	---	---	---	---	---	---	---	---	7.22	7.06	7.04	7.12
18	---	---	---	---	---	---	---	---	7.22	7.06	7.02	7.10
19	---	---	---	---	---	---	---	---	7.20	7.10	7.00	7.10
20	---	---	---	---	---	---	---	---	7.20	7.12	7.00	7.08
21	---	---	---	---	---	---	---	7.12	7.18	7.10	7.00	7.06
22	---	---	---	---	---	---	7.20	---	7.18	7.10	7.10	7.04
23	---	---	---	---	---	---	---	---	7.14	7.08	7.10	7.02
24	---	7.20	---	---	---	---	---	---	7.14	7.08	7.08	7.02
25	---	---	---	---	---	---	7.22	---	7.12	7.08	7.08	---
26	---	---	---	---	---	---	---	---	7.18	7.06	7.08	---
27	---	---	---	---	---	---	---	---	7.24	7.06	7.08	---
28	---	---	---	---	---	---	---	7.38	7.20	7.04	7.08	---
29	---	---	---	---	---	---	7.22	---	7.20	7.04	7.28	---
30	---	---	---	---	---	---	---	7.40	7.18	7.24	7.24	7.02
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	7.22	7.24	---	---	---	---	7.40	7.40	7.34	7.24	7.28	7.50
MIN	7.14	7.20	---	---	---	---	7.20	7.12	7.12	7.04	7.00	7.02

## WATER-QUALITY RECORDS

LOCATION.--Lat 43°36'27", long 90°05'25", in NE 1/4 sec.14, T.13 N., R.3 E., Sauk County, Hydrologic Unit 07070004, near center of lake, and 2.3 mi northeast of LaValle.

PERIOD OF RECORD.--April 1985 to current year.

REMARKS.--Secchi disc readings made by Tom Meronek.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			MAY 1989		
02...	0330	0.84	28...	1600	3.00
16...	0100	1.22	JUN		
NOV			10...	1600	2.20
06...	0100	0.18	19...	1600	1.20
13...	1200	0.18	JUL		
24...	1130	2.10	02...	1300	0.80
APR 1989			15...	1500	0.70
04...	1200	0.90	30...	1200	0.70
14...	1200	1.10	AUG		
22...	1200	1.40	06...	1500	0.80
29...	1200	1.10	26...	1300	0.80
MAY			SEP		
09...	1400	1.80	10...	1300	0.90
13...	1600	3.70	16...	1600	0.80
21...	1600	4.80	24...	1300	0.80

## WISCONSIN RIVER BASIN

05404500 DEVILS LAKE NEAR BARABOO, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 43°25'18", long 89°43'38", in NW 1/4 NE 1/4 sec.24, T.11 N., R.6 E., Sauk County, Hydrologic Unit 07070004, in Devils Lake State Park, 3.5 mi south of Baraboo.

DRAINAGE AREA.--4.79 mi<sup>2</sup>. Area of Devils Lake, 361 acres.

PERIOD OF RECORD.--June 1922 to August 1930, June to August 1932, June 1934 to September 1981 (fragmentary). October 1981 to September 1984, data unpublished in district files. October 1984 to current year.

REVISED RECORDS.--WDR WI-78-1: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is 955.00 ft, National Geodetic Vertical Datum of 1929.

REMARKS.--Lake has no surface outlet.

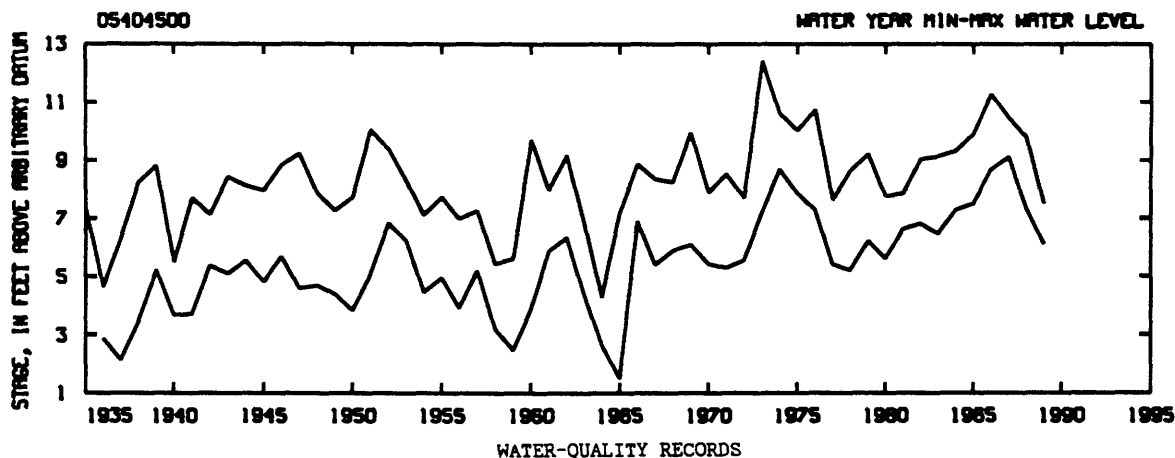
COOPERATION.--Gage readings furnished by Kenneth Lange of Devils Lake State Park October through November 1988 and Sept. 21, 1989; other readings furnished by P. S. Druckenmil.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 12.40 ft, May 31, June 1, 1973; minimum observed, 1.49 ft Feb. 8, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 7.51 ft, Oct. 2; minimum observed, 6.11 ft, Sept. 21.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
OCT. 2	7.51	APR. 25	7.03	JULY 27	6.17	AUG. 29	6.21
6	7.41	JUNE 29	6.55	AUG. 8	6.27	SEPT. 9	6.23
21	7.23	JULY 9	6.41	13	6.19	21	6.11
NOV. 17	7.13						



## WATER-QUALITY RECORDS

LOCATION.--43°25'00", long 89°44'00", in NW 1/4 sec.24, T.11 N., R.6 E., Sauk County, Hydrologic Unit 07070004, near center of lake, and 3.6 mi south of Baraboo.

PERIOD OF RECORD.--July 1982 to current year; July 1982 to September 1984 data at Devils Lake State Park office files.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	SECCHI DISC (M) (00078)	DATE	SECCHI DISC (M) (00078)
OCT 1988		JUN 1989	
13...	2.00	28...	7.90
27...	2.00	JUL ...	
NOV ...		02...	6.60
10...	4.90	12...	6.80
MAY 1989		26...	7.40
01...	4.70	AUG ...	
17...	7.40	10...	5.00
JUN ...		23...	4.90
01...	9.40	SEP ...	
14...	8.90	07...	3.20
		20...	2.50

## WISCONSIN RIVER BASIN

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## 05405000 BARABOO RIVER NEAR BARABOO, WI

LOCATION.--Lat 43°28'51", long 89°38'09", in NW 1/4 sec.35, T.12 N., R.7 E., Sauk County, Hydrologic Unit 07070004, on left bank 50 ft downstream from highway bridge, 0.3 mi downstream from Rowley Creek and 5.3 mi east of Baraboo.

DRAINAGE AREA.--609 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1913 to March 1922. September 1942 to current year.

REVISED RECORDS.--WSP 455: 1915. WSP 505: 1917(M). WSP 1438: 1914-15(M), 1916-17, 1918-20(M), 1944(M), 1949(M). WSP 1914: 1948, 1950, 1956. WDR WI-75-1: 1968. WDR WI-77-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 788.21 ft above National Geodetic Vertical Datum of 1929. Dec. 18, 1913, to Mar. 31, 1922, nonrecording gage at bridge 2.3 mi upstream at datum 7.6 ft higher. Sept. 24, 1942, to June 10, 1963, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating tables below. Records good except those for ice-affected periods, which are fair. Apparent occasional regulation at low flow by dams upstream.

AVERAGE DISCHARGE.--54 (water years 1915-21, 1943-89), 379 ft<sup>3</sup>/s, 8.45 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,900 ft<sup>3</sup>/s, Mar. 26, 1917, gage height, 17.5 ft, estimated, site and datum then in use, from rating curve extended above 6,000 ft<sup>3</sup>/s; minimum observed, 9.0 ft<sup>3</sup>/s, Feb. 17, 1944, gage height, 5.08 ft; minimum daily, 26 ft<sup>3</sup>/s, Oct. 6, 1950.

EXTREMES OUTSIDE THE PERIOD OF RECORD.--Flood of Aug. 6, 1935, reached a stage of 15.8 ft from floodmarks, site and datum in use in 1922, discharge, 5,100 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,250 ft<sup>3</sup>/s, Mar. 14, gage height, 14.99 ft; minimum daily discharge, 115 ft<sup>3</sup>/s, July 8.

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Nov. 11-26; stage-discharge relation affected by ice Dec. 10-18, Dec. 25 to Jan. 15, and Feb. 4 to Mar. 11.)

Oct. 1 to Mar. 14 (2300)

Mar. 14 (2400) to Sept. 30

6.6	128	10.0	922
7.0	205	14.0	1,950

6.4	103	10.0	933
7.0	235	15.0	2,260

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	189	325	190	577	140	749	363	307	168	239	468
2	204	187	287	180	690	140	483	342	364	158	240	579
3	203	190	270	170	694	130	385	294	323	140	201	689
4	189	195	250	170	620	150	356	262	270	133	200	623
5	178	203	263	170	500	140	345	269	237	128	297	408
6	169	211	259	160	350	140	338	267	219	122	269	254
7	169	225	251	160	250	140	328	266	204	137	229	207
8	170	243	239	150	220	140	317	257	182	115	227	196
9	169	246	186	160	200	140	296	241	175	163	224	197
10	172	245	170	160	190	150	274	227	188	145	180	220
11	175	237	160	160	180	250	259	217	187	173	152	240
12	199	243	150	160	180	891	249	214	190	171	123	232
13	223	259	160	160	180	1410	238	206	181	147	126	213
14	181	260	160	160	170	1740	234	200	188	156	125	195
15	151	275	150	160	170	2000	230	182	199	151	125	190
16	135	318	150	167	170	1970	232	188	196	144	124	196
17	180	310	160	171	170	1940	232	191	221	128	125	203
18	203	355	170	169	170	1800	232	194	221	140	124	162
19	214	380	180	182	170	1480	241	190	197	135	122	161
20	225	319	180	196	170	1030	241	188	158	149	130	146
21	239	256	186	196	170	585	234	186	159	174	132	147
22	229	232	204	206	170	387	229	185	152	227	145	152
23	265	223	226	221	160	481	227	179	145	211	139	138
24	263	212	232	236	150	907	223	172	135	152	150	148
25	262	205	230	248	150	1290	234	219	143	149	144	134
26	249	244	220	259	150	1330	242	235	175	132	145	143
27	234	295	200	261	150	1460	258	470	187	142	141	126
28	224	363	220	248	140	1600	296	638	235	119	145	154
29	210	398	280	272	---	1630	324	592	249	151	180	130
30	203	381	260	332	---	1490	355	372	211	170	257	146
31	185	---	220	416	---	1180	---	271	---	183	250	---
TOTAL	6272	7899	6598	6250	7261	28261	8881	8277	6198	4713	5410	7197
MEAN	202	263	213	202	259	912	296	267	207	152	175	240
MAX	265	398	325	416	694	2000	749	638	364	227	297	689
MIN	135	187	150	150	140	130	223	172	135	115	122	126
CFSM	.33	.43	.35	.33	.43	1.50	.49	.44	.34	.25	.29	.39
IN.	.38	.48	.40	.38	.44	1.73	.54	.51	.38	.29	.33	.44

CAL YR 1988 TOTAL 104606 MEAN 286 MAX 1140 MIN 121 CFSM .47 IN. 6.39  
WTR YR 1989 TOTAL 103217 MEAN 283 MAX 2000 MIN 115 CFSM .46 IN. 6.30

05406050 FISH LAKE NEAR SAUK CITY, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 43°17'02", long 89°39'15", in NE 1/4 SW 1/4 sec.3, T.9 N., R.7 E., Dane County, Hydrologic Unit 07070005, on south side of lake near Ganzer's Tavern and Dance Hall, 0.4 mi southwest of Crystal Lake, and 3.1 mi east of Sauk City.

DRAINAGE AREA.--8.97 mi<sup>2</sup>, includes 7.11 mi<sup>2</sup> without surface drainage. Area of Fish Lake, 252 acres.

PERIOD OF RECORD.--November 1966 to September 1981 (fragmentary), April 1985 to September 1987, April to September 1989.

REVISED RECORDS.--WDR WI-77-1: Drainage area. WDR WI-87-1: All published readings in the 1987 water year are invalid because the observer read the wrong staff gage. In the 1987 water year only one reading by the USGS is valid: May 7, 1987, water surface 10.52 ft. In the 1988 water year only one reading by the USGS is valid: May 16, 1988, water surface 10.83 ft.

GAGE.--Nonrecording gage in lake bed. Datum of gage is 848.07 ft above National Geodetic Vertical Datum of 1919. Staff gage read by James Vennie.

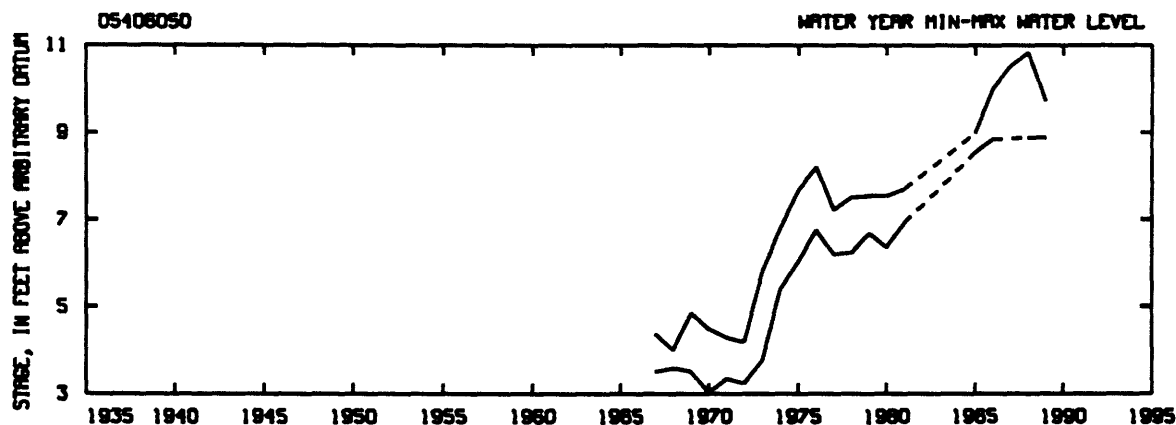
REMARKS.--Lake has no surface outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 10.83 ft, May 16, 1988; minimum observed, 3.02 ft, Aug. 29, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 9.72 ft, Apr. 30; minimum observed, 8.88 ft, July 28.

## GAGE HEIGHT (FEET ABOVE DATUM), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT	DATE	GAGE HEIGHT
APR. 25	9.71	MAY 21	9.55	JULY 9	9.10	AUG. 20	8.94
30	9.72	28	9.47	15	8.97	27	8.92
MAY 7	9.66	JUNE 18	9.36	28	8.88	SEPT. 3	9.22
14	9.60	JULY 1	9.23				



## WATER-QUALITY RECORDS

LOCATION.--Lat 43°17'14", long 89°39'08", in NW 1/4 sec.3, T.9 N., R.7 E., Dane County, Hydrologic Unit 07070005, near center of lake, and 3.6 mi east of Sauk City.

PERIOD OF RECORD.--May 1985 to current year.

REMARKS.--Secchi disc readings made by James Vennie.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
APR 1989			JUL 1989		
17...	1540	2.70	01...	1200	2.00
25...	1200	3.00	09...	1155	1.90
30...	1200	3.30	15...	1600	1.90
MAY			28...	1540	2.70
07...	1200	3.10	AUG		
14...	1200	4.00	27...	1530	2.70
21...	1200	4.30	SEP		
28...	1200	3.20	03...	1600	2.30
JUN					
18...	1200	2.50			

## 05406500 BLACK EARTH CREEK AT BLACK EARTH, WI

LOCATION.--Lat 43°08'03", long 89°43'56", in SW 1/4 sec.25, T.8 N., R.6 E., Dane County, Hydrologic Unit 07070005, on right bank, 0.8 mi east of Black Earth and 2.1 mi upstream from Vermont Creek.

DRAINAGE AREA.--45.6 mi<sup>2</sup>, of which 2.8 mi<sup>2</sup> probably is noncontributing.

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

REVISED RECORDS.--WDR WI-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 812.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

AVERAGE DISCHARGE.--35 years, 33.5 ft<sup>3</sup>/s, 10.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,750 ft<sup>3</sup>/s, July 3, 1954, gage height, 6.58 ft; minimum, 4.8 ft<sup>3</sup>/s, Nov. 29, 1958, gage height, 1.39 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 12	0045	*433	*4.79	No other peak greater than base discharge.			

Minimum daily discharge, 20 ft<sup>3</sup>/s, June 17-25, July 1, Aug. 18, 19, and Sept. 14-17.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second.  
(Shifting-control method used June 16 to Sept. 30; stage-discharge relation  
affected by ice Dec. 16, Jan. 9, Feb. 4-9, and Feb. 23.)

1.6	17	2.5	126
1.7	25	3.0	190
2.0	63	3.5	255

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	26	31	26	50	26	38	31	30	20	23	55
2	27	24	30	26	31	25	37	31	27	21	23	31
3	26	25	31	26	30	28	37	29	27	21	23	23
4	26	25	30	26	29	25	37	30	26	22	24	22
5	26	25	30	26	28	24	36	31	26	22	29	21
6	27	26	30	25	27	24	34	28	25	22	22	21
7	27	26	29	27	26	24	34	27	24	22	22	21
8	26	28	28	28	26	24	34	28	25	22	22	24
9	26	29	28	26	25	25	33	29	25	32	22	27
10	27	33	28	26	25	37	33	28	23	26	21	24
11	26	29	28	27	24	171	32	28	21	26	21	22
12	26	30	26	45	25	194	32	26	27	26	21	22
13	26	33	27	27	26	86	32	26	24	26	21	22
14	26	31	28	25	25	90	31	26	22	25	24	20
15	26	30	27	25	25	83	31	26	22	24	22	20
16	27	38	26	25	24	49	31	26	22	24	22	20
17	30	32	26	25	24	44	32	25	20	24	21	20
18	31	30	26	25	25	37	31	25	20	28	20	21
19	34	29	27	34	26	36	30	26	20	34	20	21
20	31	30	28	39	26	35	30	27	20	28	22	21
21	31	28	26	26	26	34	28	25	20	27	21	21
22	27	28	26	28	25	43	28	24	20	27	28	22
23	34	30	29	37	25	71	27	23	20	25	24	21
24	31	29	27	41	25	73	27	22	20	25	22	21
25	29	29	25	29	25	64	39	34	20	26	22	22
26	28	36	26	36	26	51	32	24	22	25	23	22
27	28	39	50	32	25	49	29	23	22	25	23	21
28	27	34	40	37	25	48	40	22	22	24	61	22
29	26	33	30	45	---	47	36	23	21	28	34	21
30	25	32	28	64	---	43	33	31	21	27	23	22
31	26	---	27	66	---	40	---	32	---	24	21	---
TOTAL	860	897	898	1000	749	1650	984	836	684	778	747	693
MEAN	27.7	29.9	29.0	32.3	26.7	53.2	32.8	27.0	22.8	25.1	24.1	23.1
MAX	34	39	50	66	50	194	40	34	30	34	61	55
MIN	25	24	25	25	24	24	27	22	20	20	20	20
CFSM	.65	.70	.68	.75	.62	1.24	.77	.63	.53	.59	.56	.54
IN.	.75	.78	.78	.87	.65	1.43	.86	.73	.59	.68	.65	.60

CAL YR 1988 TOTAL 12593 MEAN 34.4 MAX 129 MIN 24 CFSM .80 IN. 10.95  
WTR YR 1989 TOTAL 10776 MEAN 29.5 MAX 194 MIN 20 CFSM .69 IN. 9.37

## WISCONSIN RIVER BASIN

05407000 WISCONSIN RIVER AT MUSCODA, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

LOCATION.--Lat 43°11'54", long 90°26'26", in NW 1/4 sec.1, T.8 N., R.1 W., Grant County, Hydrologic Unit 07070005, on left bank at bridge on State Highway 80, 0.5 mi upstream from Eagle Mill Creek and 1.0 mi north of Muscoda.

DRAINAGE AREA.--10,400 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1902 to December 1903, October 1913 to current year. Monthly discharge only for October and November 1913, published in WSP 1308. Gage-height records collected at same site November 1908 to December 1912 are contained in reports of U. S. Weather Bureau.

REVISED RECORDS.--WSP 785: 1921(M). WSP 875: 1921. WSP 1308: 1915(M), 1917-18(M), 1920-21(M), 1924(M).  
WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 666.77 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 22, 1929, nonrecording gage on bridge 200 ft upstream at same datum. Nov. 22, 1929, to Mar. 15, 1930, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Aug. 4-8 and ice period listed in rating tables below. Records good except those for estimated daily discharges, which are fair. Flow regulated by 23 reservoirs and many power-plants upstream from station. In 1938 when the maximum of record occurred, there were 21 reservoirs upstream from station, the two large reservoirs, Petenwell and Castle Rock were not yet in existence. Usually less than 20 ft<sup>3</sup>/s was diverted out of basin through Portage Canal to Fox River throughout the year. Gage-height telemeter and data-collection platform at station.

AVERAGE DISCHARGE.--76 years (1914-89), 8,681 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 80,800 ft<sup>3</sup>/s, Sept. 16, 1938, gage height, 11.48 ft; minimum daily, 2,000 ft<sup>3</sup>/s, Feb. 11, 1918.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,200 ft<sup>3</sup>/s, June 4, gage height, 5.74 ft; minimum discharge, 2,050 ft<sup>3</sup>/s Sept. 30, gage height, 0.03 ft.

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8 to Mar. 27.)

Oct. 1 to Apr. 1				Apr. 2 to Sept. 30			
0.4	2,320	4.0	15,300	0.0	2,000	2.0	7,260
1.0	4,120	6.0	25,800	0.5	2,940	4.0	15,300
2.0	7,260			1.0	4,180	6.0	25,800

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3910	3710	7380	6400	5800	4600	20500	6090	13400	4890	3610	3490
2	3750	3860	7740	6200	6800	5200	21600	6070	19300	4960	2910	4230
3	3620	3870	7520	5600	7400	4600	21600	6130	22900	4820	2870	4830
4	3610	3590	7090	5400	5400	4300	18200	6870	24000	4460	3000	4850
5	3490	3740	5590	5400	4300	3600	15300	6680	23200	4120	3200	5050
6	3220	3900	5520	5800	4200	3500	13500	5930	22100	3830	3400	4950
7	2870	3900	5980	6600	5200	5600	13800	5580	17800	3830	3900	4580
8	2480	5160	6000	6400	5800	5400	14800	6360	15300	3720	4300	3940
9	2680	5140	5400	6600	6200	4800	17000	6910	13000	3020	4100	3970
10	2800	5340	5000	6400	5800	5200	18200	6450	10300	2770	4060	4330
11	2700	5350	4100	5600	5200	5600	15900	7320	11000	3390	3620	4200
12	2770	5840	3500	6800	6400	6000	14300	7450	11100	3930	3290	3910
13	2940	6070	3300	7000	6400	7400	10800	6410	10500	3560	3070	4040
14	2960	5670	3700	6800	6000	8200	8210	6880	10700	3270	2870	4130
15	2910	5480	4800	6600	5200	8000	7510	6880	11200	3580	2760	3920
16	3760	5790	4900	6600	5600	9000	7750	6080	10600	3820	2700	3050
17	3560	5640	3800	6000	6200	8600	7000	5970	10400	3830	2650	3270
18	3560	6040	3700	5800	6200	8800	6790	5980	8710	3890	2590	3320
19	3850	7190	4500	6000	6400	7600	6700	5900	8520	3970	2590	3060
20	3880	8420	4500	6200	6400	8600	6630	5820	8180	4100	2750	2990
21	4020	8580	5200	6000	6200	9200	6540	5210	7620	3650	3250	2900
22	3970	7840	5400	5400	5800	8400	6290	5260	7510	3780	3320	2680
23	3740	7070	6000	5200	5400	8400	6330	4990	6160	4040	3040	2640
24	3710	6550	6200	6000	6000	8800	6410	4900	5700	4020	3130	2630
25	3920	6080	6600	6200	6600	8200	6050	5990	6410	3900	3400	2570
26	4140	5900	6400	6600	6800	11000	5960	5220	6440	3220	3510	2350
27	3770	6390	5600	6800	7400	12000	5920	6080	6320	2860	3320	2400
28	4040	6060	5600	7000	6800	12900	5860	8510	6060	2660	3570	2120
29	3690	6350	4800	6400	---	12600	5930	11700	5750	2880	4210	2090
30	4120	6710	4600	6000	---	14100	6180	12100	5230	3020	3580	2070
31	3810	---	5400	5600	---	18600	---	10700	---	3750	3530	---
TOTAL	108250	171230	165820	191400	167900	248800	327560	208420	345410	115540	102100	104560
MEAN	3492	5708	5349	6174	5996	8026	10920	6723	11510	3727	3294	3485
MAX	4140	8580	7740	7000	7400	18600	21600	12100	24000	4960	4300	5050
MIN	2480	3590	3300	5200	4200	3500	5860	4900	5230	2660	2590	2070

CAL YR 1988 TOTAL 2058090 MEAN 5623 MAX 13100 MIN 1460  
WTR YR 1989 TOTAL 2256990 MEAN 6184 MAX 24000 MIN 2070



## WISCONSIN RIVER BASIN

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05407000 WISCONSIN RIVER AT MUSCODA, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-67, 1971, 1975 to current year. National Stream-Quality Accounting  
Network data collection began in October 1974.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (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 FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	
OCT 1988													
18...	1200	3580	300	8.20	11.0	4.5	11.0	751	101	300	220	140	
DEC													
07...	0915	5410	315	8.20	1.5	2.5	13.3	751	96	K11	59	120	
MAR 1989													
31...	1130	18700	230	8.20	4.0	10	11.9	747	93	K6	29	91	
MAY													
24...	1045	4710	210	8.10	20.0	2.6	7.7	734	88	20	K17	100	
JUN													
22...	1100	7510	210	8.40	23.5	5.0	10.0	750	120	25	23	81	
AUG													
23...	1100	3130	270	8.60	24.0	5.0	7.6	747	92	73	22	120	
DATE		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)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	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 1988													
18...	31	16	10	13	0.4	2.3	137	--	112	19	14	0.10	
DEC													
07...	28	13	14	19	0.5	2.5	123	--	101	25	18	0.10	
MAR 1989													
31...	22	8.7	13	23	0.6	3.5	92	--	75	21	16	0.10	
MAY													
24...	23	11	7.4	13	0.3	3.0	101	--	83	14	10	0.10	
JUN													
22...	19	8.1	7.6	16	0.4	3.0	77	1	65	16	11	0.10	
AUG													
23...	27	13	7.6	12	0.3	2.4	126	2	103	13	10	0.10	
DATE		SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS- SOLVED (TONS PER DAY) (70302)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
OCT 1988													
18...	1.9	176	164	0.24	1700	0.400	0.020	0.020	0.50	0.040	0.020	<0.010	
DEC													
07...	2.9	182	167	0.25	2660	0.690	0.050	0.070	0.90	0.040	0.020	0.020	
MAR 1989													
31...	9.0	151	143	0.21	7620	0.820	0.450	0.420	1.2	0.110	0.070	0.040	
MAY													
24...	2.1	122	123	0.17	1550	0.540	0.090	0.090	0.70	0.080	0.030	0.020	
JUN													
22...	3.6	120	110	0.16	2430	0.310	0.040	0.030	1.1	0.060	<0.010	0.020	
AUG													
23...	4.8	148	145	0.20	1250	0.130	0.020	0.030	1.4	0.090	0.010	0.020	

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

## WISCONSIN RIVER BASIN

05407000 WISCONSIN RIVER AT MUSCODA, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	ARSENIC, DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYLLIUM, DIS-SOLVED (UG/L AS BE) (01010)	CADMIUM, DIS-SOLVED (UG/L AS CD) (01025)	CHROMIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)
OCT 1988 18...	1200	3580	<10	<1	29	<0.5	<1	<1	<3	<1	14
MAR 1989 31...	1130	18700	30	<1	29	<0.5	<1	<1	<3	11	310
MAY 24...	1045	4710	<10	<1	24	<0.5	<1	<1	<3	3	63
AUG 23...	1100	3130	10	<1	22	<0.5	<1	<1	<3	1	20

DATE	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM, DIS-SOLVED (UG/L AS LI) (01130)	MANGANESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY, DIS-SOLVED (UG/L AS HG) (71890)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELENIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRONTIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANADIUM, DIS-SOLVED (UG/L AS V) (01085)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
OCT 1988 18...	<5	<4	6	<0.1	<10	<1	<1	45	<6	7
MAR 1989 31...	<5	<4	42	<0.1	<10	6	<1	36	<6	5
MAY 24...	1	<4	11	<0.1	<10	1	<1	40	<6	22
AUG 23...	<1	<4	4	<0.1	<10	1	<1	44	<6	21

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DIS-CHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988 18...	1200	3580	300	11.0	9	87	90
DEC 07...	0915	5410	315	1.5	15	219	28
MAR 1989 31...	1130	18700	230	4.0	71	3580	47
MAY 24...	1045	4710	210	20.0	8	102	85
JUN 22...	1100	7510	210	23.5	24	487	48
AUG 23...	1100	3130	270	24.0	19	161	82

## 05408000 KICKAPOO RIVER AT LA FARGE, WI

LOCATION.--Lat 43°34'27", long 90°38'35", on east-west quarter section line in W 1/2 sec.29, T.13 N., R.2 W., Vernon County, Hydrologic Unit 07070006, on left bank 10 ft upstream from bridge on State Highway 82, in La Farge, 0.3 mi upstream from Otter Creek, and 1.3 mi downstream from powerplant.

DRAINAGE AREA.--266 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 1388: 1951(M), 1954(M). WSP 1438: 1944-45(M), 1946, 1948, 1950(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 781.54 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 4, 1939, nonrecording gage on highway bridge at same datum.

REMARKS.--Estimated daily discharge: Ice period listed in rating table below. Records good except those for ice-affected period, which is poor. Gage-height telemeter at station.

AVERAGE DISCHARGE.--51 years, 177 ft<sup>3</sup>/s, 9.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft<sup>3</sup>/s, July 1, 1978, gage height, 14.92 ft; minimum, 1.8 ft<sup>3</sup>/s, Mar. 24, 1951; minimum daily, 36 ft<sup>3</sup>/s, Nov. 3, 1939.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 12	1915	ice jam	*9.58	No other peak greater than base discharge.			
Mar. 24	0815	*1,740	9.11				

Minimum daily discharge, 76 ft<sup>3</sup>/s, July 17, 28 and Sept. 21.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Sept. 2-30; stage-discharge relation affected by ice Dec. 7 to Mar. 23.)

2.0	66	4.0	359
3.0	188	6.0	813
		8.0	1,380

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	102	124	110	170	100	161	132	153	88	94	520
2	100	102	135	110	130	100	156	126	136	87	87	173
3	97	102	151	110	110	100	155	124	126	86	83	114
4	96	105	142	110	100	100	159	121	128	84	86	102
5	95	122	126	110	96	100	154	133	117	81	399	102
6	95	125	138	110	96	100	149	127	112	80	174	96
7	94	119	130	110	96	100	146	121	115	79	127	93
8	94	118	120	110	100	100	144	118	107	80	116	102
9	94	121	120	110	100	100	140	120	106	94	112	113
10	94	121	110	110	100	110	133	119	107	94	108	107
11	95	115	100	110	100	280	132	111	103	82	104	98
12	94	113	100	100	100	1100	131	109	103	92	102	91
13	94	129	110	100	100	700	129	108	108	87	101	87
14	94	132	110	100	100	600	131	107	115	81	102	86
15	96	126	110	110	100	1000	130	107	157	79	100	84
16	98	222	110	110	100	240	128	108	120	77	99	83
17	100	186	110	110	100	180	128	105	110	76	94	83
18	106	142	110	110	100	140	126	104	103	83	90	81
19	106	134	120	110	100	130	123	108	100	147	87	79
20	102	129	120	110	100	130	121	109	95	120	100	78
21	110	122	120	110	100	140	122	102	92	95	105	76
22	112	117	120	110	100	150	121	100	92	87	106	78
23	109	115	120	110	100	320	120	100	92	86	112	82
24	109	115	110	110	100	1330	117	106	90	83	99	81
25	107	115	110	110	100	1110	126	787	97	81	98	80
26	105	124	110	110	100	645	131	234	146	78	98	81
27	104	152	110	110	100	608	126	158	127	77	103	79
28	102	140	110	110	100	338	138	137	104	76	119	79
29	99	130	110	110	---	233	167	129	95	81	133	79
30	96	129	110	120	---	194	147	158	90	156	107	79
31	98	---	110	140	---	175	---	201	---	109	101	---
TOTAL	3097	3824	3636	3420	2898	10753	4091	4529	3346	2786	3546	3166
MEAN	99.9	127	117	110	103	347	136	146	112	89.9	114	106
MAX	112	222	151	140	170	1330	167	787	157	156	399	520
MIN	94	102	100	100	96	100	117	100	90	76	83	76
CFSM	.38	.48	.44	.41	.39	1.30	.51	.55	.42	.34	.43	.40
IN.	.43	.53	.51	.48	.41	1.50	.57	.63	.47	.39	.50	.44

CAL YR 1988 TOTAL 49622 MEAN 136 MAX 800 MIN 73 CFSM .51 IN. 6.94  
WTR YR 1989 TOTAL 49092 MEAN 134 MAX 1330 MIN 76 CFSM .51 IN. 6.87

## WISCONSIN RIVER BASIN

05410490 KICKAPOO RIVER AT STEUBEN, WI

LOCATION.--Lat 43°10'58", long 90°51'30", in NE 1/4 SW 1/4 sec.9, T.8 N., R.4 W., Crawford County, Hydrologic Unit 07070006, on right bank at upstream corner of town road bridge at Steuben and 18.6 mi upstream from mouth.

DRAINAGE AREA.--687 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1933 to current year.

REVISED RECORDS.--WSP 855: Drainage area. WSP 1438: 1933-38. WDR WI-79-1: 1978(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 657.00 ft above National Geodetic Vertical Datum of 1929. May 1933 to Oct. 19, 1938, nonrecording gage at same site at datum 1.7 ft higher. Oct. 20, 1938 to September 1982, recording gage at site 1.2 mi downstream at datum 0.36 ft higher.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair. Data-collection platform and gage-height telemeter at station.

AVERAGE DISCHARGE.--56 years, 483 ft<sup>3</sup>/s, 9.55 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft<sup>3</sup>/s, July 3, 1978, gage height, 14.81 ft; minimum observed, 161 ft<sup>3</sup>/s, Aug. 9, 1936, gage height, 0.76 ft site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,900 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 16	1400	*1,920	*11.88	No other peak greater than base discharge.			

Minimum discharge, 229 ft<sup>3</sup>/s, July 18, gage height, 5.31 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 4 to Dec. 2; stage-discharge relation affected by ice Dec. 3 to Mar. 13, and Mar. 19 and 20.)

5.3	228	9.0	882
6.0	333	10.0	1,120
7.0	486	11.0	1,430
8.0	676	12.0	2,000

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	326	304	363	300	480	310	541	427	421	263	331	287
2	319	308	342	300	450	310	506	400	404	257	280	411
3	310	313	310	300	410	310	482	380	358	253	263	554
4	303	316	310	300	390	310	472	371	338	251	257	350
5	300	324	300	300	370	310	465	375	329	246	275	308
6	297	334	300	300	350	310	453	374	323	242	329	295
7	297	345	300	300	350	310	439	372	309	238	461	286
8	298	345	290	300	340	310	430	359	304	234	310	286
9	300	340	280	300	330	310	420	353	302	238	274	320
10	302	340	270	300	330	320	410	347	295	256	262	326
11	299	340	270	300	330	500	401	347	292	258	254	315
12	296	338	270	310	320	800	395	335	294	253	248	296
13	292	345	280	310	320	1300	390	328	297	255	248	282
14	292	350	280	300	320	1760	388	323	298	252	244	274
15	295	362	280	290	320	1840	386	320	300	240	246	267
16	301	398	280	290	320	1900	383	317	322	234	248	263
17	303	441	280	290	320	1780	381	313	322	232	244	259
18	313	488	280	290	320	844	378	308	297	247	240	255
19	317	418	290	290	320	509	373	307	287	372	234	252
20	317	380	300	290	310	470	370	309	279	388	238	249
21	322	365	300	290	310	440	368	306	270	354	246	245
22	323	355	300	290	310	428	365	299	264	297	257	245
23	334	346	300	290	310	518	367	292	264	271	267	244
24	331	342	300	300	310	1050	363	295	263	261	273	245
25	325	341	290	300	310	1310	383	340	264	256	261	248
26	320	349	290	300	310	1420	380	553	285	251	262	246
27	316	363	290	300	310	1530	384	724	331	247	262	244
28	313	384	300	310	310	1590	394	440	335	242	334	243
29	308	389	300	330	---	1160	426	378	298	242	439	242
30	305	374	300	350	---	747	445	362	274	264	350	242
31	303	---	300	400	---	608	---	378	---	306	304	---
TOTAL	9577	10737	9145	9420	9480	25614	12338	11332	9219	8200	8741	8579
MEAN	309	358	295	304	339	826	411	366	307	265	282	286
MAX	334	488	363	400	480	1900	541	724	421	388	461	554
MIN	292	304	270	290	310	310	363	292	263	232	234	242
CFSM	.45	.52	.43	.44	.49	1.20	.60	.53	.45	.39	.41	.42
IN.	.52	.58	.50	.51	.51	1.39	.67	.61	.50	.44	.47	.46

CAL YR 1988 TOTAL 136326 MEAN 372 MAX 1150 MIN 246 CFSM .54 IN. 7.38  
WTR YR 1989 TOTAL 132382 MEAN 363 MAX 1900 MIN 232 CFSM .53 IN. 7.17

## RESERVOIRS IN WISCONSIN RIVER BASIN

The 24 reservoirs listed below are used to stabilize the flow of the Wisconsin and Tomahawk Rivers for power generation and are also used for recreational purposes. The first 21 reservoirs are owned and operated by the Wisconsin Valley Improvement Co., which furnishes the gage heights and capacity tables. Revised capacity tables for all 21 reservoirs were received from the Company in April 1957 and were used to compute month-end usable contents beginning Sept. 30, 1955. Another revised capacity table for Burnt Rollways Reservoir was used to compute month-end usable contents beginning Sept. 30, 1964. Lake Dubay is owned by the Consolidated Water Power Co. Petenwell and Castle Rock are owned and operated by the Wisconsin River Power Co., which furnished the gage heights and capacity tables for those two reservoirs. Month-end contents are computed by the U.S. Geological Survey. The usable capacity of these reservoirs is usually less in summer than in winter because the allowable summer drawdown is limited by the Department of Natural Resources in the interest of riparian property owners. There are occasionally formal or informal changes in capacity and in minimum drawdown levels. Usable capacity figures listed below are for winter regulation.

- 05390100 Lac Vieux Desert on Wisconsin River, lat 46°07'18", long 89°09'07", in SE 1/4 NW 1/4 sec.17, T.42 N., R.11 E., Vilas County, 4.8 mi northwest of Phelps, used as a reservoir since 1908, has a usable capacity of 652,000,000 ft<sup>3</sup>. Drainage area, 34.4 mi<sup>2</sup>.
- 05390150 Twin Lakes on Twin River, lat 46°01'20", long 89°10'05", in SW 1/4 NE 1/4 sec.19, T.41 N., R.11 E., Vilas County, 5.0 mi southwest of Phelps, used as a reservoir since 1908, has a usable capacity of 313,000,000 ft<sup>3</sup>. Drainage area, 26 mi<sup>2</sup>.
- 05390200 Buckatabon Lakes on Buckatabon Creek, lat 46°01'18", long 89°18'40", in SE 1/4 NE 1/4 sec.24, T.41 N., R.9 E., Vilas County, 3.3 mi southwest of Conover, used as a reservoir since 1908, has a usable capacity of 130,000,000 ft<sup>3</sup>. Drainage area, 16.9 mi<sup>2</sup>.
- 05390250 Sevenmile Lake on Sevenmile Creek, lat 45°52'30", long 89°04'07", in SE 1/4 NE 1/4 sec.11, T.39 N., R.11 E., Oneida County, 9.1 mi southeast of town of Eagle River, used as a reservoir since 1908, has a usable capacity of 93,000,000 ft<sup>3</sup>. Drainage area, 12.1 mi<sup>2</sup>.
- 05390300 Lower Ninemile Lake on Ninemile Creek, lat 45°53'37", long 89°07'15", in NE 1/4 NW 1/4 sec.4, T.39 N., R.11 E., Oneida County, 6.6 mi southeast of town of Eagle River, used as a reservoir since 1908, has a usable capacity of 121,000,000 ft<sup>3</sup>. Drainage area, 28.8 mi<sup>2</sup>.
- 05390350 Burnt Rollways Reservoir on Eagle River, lat 45°53'40", long 89°08'28", in NE 1/4 NW 1/4 sec.5, T.39 N., R.11 E., Oneida County, 5.3 mi southeast of town of Eagle River, used as a reservoir since 1908, has a usable capacity of 779,000,000 ft<sup>3</sup>. This reservoir includes 18 lakes controlled by the same dam. Drainage area, 142 mi<sup>2</sup>.
- 05390400 Long Lake on Deerskin River, lat 46°02'37", long 89°02'44", in NW 1/4 SE 1/4 sec.7, T.41 N., R.12 E., Vilas County, 2.5 mi southeast of Phelps, used as a reservoir since 1908, has a usable capacity of 400,000,000 ft<sup>3</sup>. Drainage area, 22.9 mi<sup>2</sup>.
- 05390600 Deerskin Lake on Little Deerskin River, lat 45°59'07", long 89°09'40", in SE 1/4 sec.31, T.41 N., R.11 E., Vilas County, 6.3 mi northeast of town of Eagle River, used as a reservoir since 1908, has a usable capacity of 22,000,000 ft<sup>3</sup>. Drainage area, 2.47 mi<sup>2</sup>.
- 05390650 Sugar Camp Reservoir on Sugar Camp Creek, lat 45°52'19", long 89°23'40", in NE 1/4 sec.17, T.39 N., R.9 E., Oneida County, 7.6 mi southwest of town of Eagle River, used as a reservoir since 1908, has a usable capacity of 471,000,000 ft<sup>3</sup>. Drainage area, 48.4 mi<sup>2</sup>.
- 05390700 Little St. Germain Lake on Little St. Germain Creek, lat 45°53'57", long 89°27'08", in SE 1/4 sec.35, T.40 N., R.8 E., Vilas County, 9.6 mi west of town of Eagle River, used as a reservoir since 1908, has a usable capacity of 79,000,000 ft<sup>3</sup>. Drainage area, 19 mi<sup>2</sup>.
- 05390750 Big St. Germain Lake on St. Germain River, lat 45°55'06", long 89°31'55", in SE 1/4 sec.30, T.40 N., R.8 E., Vilas County, 5.0 mi south of Sayner, used as a reservoir since 1908, has a usable capacity of 202,000,000 ft<sup>3</sup>. Drainage area, 73.1 mi<sup>2</sup>.
- 05390800 Pickerel Lake on St. Germain River, lat 45°52'22", long 89°31'47", in NE 1/4 sec.18, T.39 N., R.8 E., Oneida County, 5.0 mi northeast of town of Lake Tomahawk, used as a reservoir since 1935, has a usable capacity of 338,000,000 ft<sup>3</sup>. Drainage area, 86.2 mi<sup>2</sup>.
- 05390900 Rainbow Lake on Wisconsin River, lat 45°50'02", long 89°32'42", in SW 1/4 sec.30, T.39 N., R.8 E., Oneida County, 800 ft upstream from U.S. Geological Survey river gaging station, 2.7 mi northeast of town of Lake Tomahawk, used as a reservoir since 1935, has a usable capacity of 2,181,000,000 ft<sup>3</sup>. Drainage area, 744 mi<sup>2</sup>.
- 05391100 South Pelican Lake on Pelican River, lat 45°31'37", long 89°12'24", in S 1/2 sec.11, T.35 N., R.10 E., Oneida County, 2.8 mi northwest of town of Pelican Lake, used as a reservoir since 1909, has a usable capacity of 305,000,000 ft<sup>3</sup>. Drainage area, 19.8 mi<sup>2</sup>.
- 05391300 North Pelican Lake (includes Moen Lakes) on North Branch Pelican River, lat 45°38'05", long 89°14'38", in SE 1/4 sec.4, T.36 N., R.10 E., Oneida County, 0.2 mi below Twin Lakes Creek and 8.0 mi east of Rhinelander city limits, used as a reservoir since 1908, has a usable capacity of 218,000,000 ft<sup>3</sup>. Drainage area, 95 mi<sup>2</sup>.
- 05392100 Minocqua Lake on Tomahawk River, lat 45°52'35", long 89°43'38", on line between secs.10 and 15, T.39 N., R.6 E., Oneida County, 1.0 mi west of Minocqua, used as a reservoir since 1910, has a usable capacity of 628,000,000 ft<sup>3</sup>. Drainage area, 72.5 mi<sup>2</sup>.
- 05392200 Squirrel Lake on Squirrel River, lat 45°50'37", long 89°54'13", in NE 1/4 sec.30, T.39 N., R.5 E., Oneida County, 9.4 mi west of Minocqua, used as a reservoir since 1908, has a usable capacity of 182,000,000 ft<sup>3</sup>. Drainage area, 15.2 mi<sup>2</sup>.
- 05392300 Willow Reservoir on Tomahawk River, lat 45°42'45", long 89°50'38", in NE 1/4 sec.10, T.37 N., R.5 E., Oneida County, 8.8 mi southwest of Hazelhurst, used as a reservoir since 1927, has a usable capacity of 3,302,000,000 ft<sup>3</sup>. Drainage area, 310 mi<sup>2</sup>.
- 05392500 Lake Nokomis on Tomahawk River, lat 45°32'20", long 89°44'48", in NW 1/4 sec.9, T.35 N., R.6 E., Lincoln County, at U.S. Geological Survey river gaging station, 0.5 mi east of Bradley, used as a reservoir since 1912, has a usable capacity of 1,808,000,000 ft<sup>3</sup>. Drainage area, 544 mi<sup>2</sup>.
- 05393600 Spirit River Flowage on Spirit River, lat 45°26'18", long 89°44'30", in NE 1/4 sec.16, T.34 N., R.6 E., Lincoln County, 2.0 mi south of Tomahawk, used as a reservoir since 1923, has a usable capacity of 756,000,000 ft<sup>3</sup>. Drainage area, 158 mi<sup>2</sup>.

## WISCONSIN RIVER BASIN

## RESERVOIRS IN WISCONSIN RIVER BASIN--CONTINUED

- 05399600 Big Eau Pleine Reservoir on Big Eau Pleine River, lat 44°43'52", long 89°45'35", in SW 1/4 sec.14, T.26 N., R.6 E., Marathon County, 3.0 mi northeast of Dancy, used as a reservoir since 1937, has a capacity of 4,457,000,000 ft<sup>3</sup>. Drainage area, 363 mi<sup>2</sup>.
- 05400295 Lake Dubay on Wisconsin River, lat 44°39'54", long 89°39'03", in sec.10, T.25 N., R.7 E., Wood County, 1.5 mi downstream of Little Eau Pleine River and 10.5 mi northwest of Stevens Point, has a usable capacity of 2,117,000,000 ft<sup>3</sup>. Drainage area, 4,900 mi<sup>2</sup>.
- 05401400 Petenwell Flowage on Wisconsin River, lat 44°03'26", long 90°01'18", in SE 1/4 sec.4, T.18 N., R.4 E., Adams County, 5.2 mi upstream from Roche a Cri Creek, 2.4 mi west of Strongs Prairie, and 3.5 mi northeast of Necedah, used as a reservoir since 1950, has a total capacity of 19,880,000,000 ft<sup>3</sup>. Drainage area, 5,970 mi<sup>2</sup>.
- 05403200 Castle Rock Flowage on Wisconsin River, lat 43°51'48", long 89°57'38", in sec.13, T.16 N., R.4 E., Adams County, 4.5 mi upstream from Duck Creek, and 2.0 mi south of Germantown, and 7.0 mi northeast of Mauston, used as a reservoir since 1950, has a total capacity of 7,630,000,000 ft<sup>3</sup>. Drainage area, 7,056 mi<sup>2</sup>.

## MONTH-END CONTENTS, IN MILLIONS OF CUBIC FEET, WATER YEAR OCTOBER 1988 to SEPTEMBER 1989

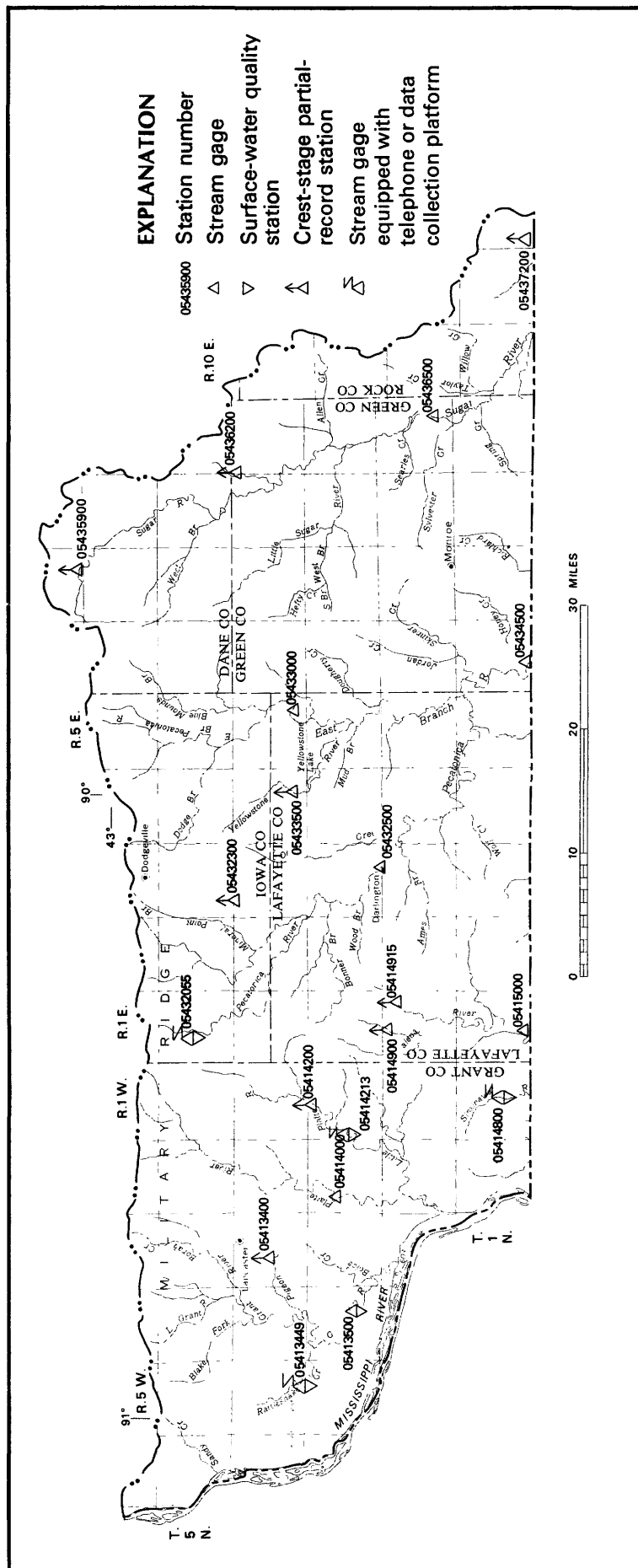
	LAC VIEUX DESERT	TWIN LAKES	BUCKATABON LAKE	SEVENMILE LAKE	LOWER NINEMILE LAKE	BURNT ROLLWAYS RESERVOIR	LONG LAKE	DEERSKIN LAKE
SEPT. 30.....	123	126	114	65	103	562	229	16
OCT. 31.....	131	119	110	63	97	524	206	15
NOV. 30.....	163	186	106	42	80	508	185	11
DEC. 31.....	111	165	81	25	40	217	153	10
JAN. 31.....	69	106	52	11	15	0	73	6
FEB. 28.....	54	67	22	1	24	0	13	5
MAR. 31.....	102	78	30	12	84	122	58	6
APR. 30.....	195	126	74	23	101	484	228	10
MAY 31.....	238	154	109	30	97	565	255	12
JUNE 30.....	238	164	114	46	96	530	242	15
JULY 31.....	167	144	108	44	95	420	209	13
AUG. 31.....	171	111	116	50	96	426	196	15
SEPT. 30.....	123	98	110	48	100	371	178	16

	SUGAR CAMP RESERVOIR	LITTLE ST. GERMAIN LAKE	BIG ST. GERMAIN LAKE	PICKEREL LAKE	RAINBOW LAKE	SOUTH PELICAN LAKE	NORTH PELICAN LAKE	MINOCQUA LAKE
SEPT. 30.....	321	50	158	272	1,178	266	137	255
OCT. 31.....	327	50	144	267	1,232	269	106	247
NOV. 30.....	363	49	101	250	2,136	284	111	381
DEC. 31.....	331	32	82	236	2,008	185	45	321
JAN. 31.....	228	21	19	165	1,744	109	22	182
FEB. 28.....	115	13	9	147	863	94	14	136
MAR. 31.....	202	30	17	184	452	136	61	169
APR. 30.....	356	38	127	265	1,117	79	144	261
MAY 31.....	420	38	160	268	1,615	264	138	335
JUNE 30.....	410	57	158	269	1,783	269	136	400
JULY 31.....	367	39	155	259	1,010	219	99	293
AUG. 31.....	370	46	162	274	643	224	112	329
SEPT. 30.....	352	36	151	249	465	172	89	277

	SQUIRREL LAKE	WILLOW RESERVOIR	LAKE NOKOMIS	SPIRIT RIVER FLOWAGE	BIG EAU PLEINE RESERVOIR	LAKE DUBAY	PETENWELL FLOWAGE	CASTLE ROCK FLOWAGE
SEPT. 30.....	79	1,310	999	268	2,190	4,166	17,676	5,857
OCT. 31.....	78	1,277	937	255	1,970	4,220	17,580	5,850
NOV. 30.....	97	1,799	1,566	563	2,129	4,239	17,720	5,942
DEC. 31.....	60	1,897	1,149	553	1,991	4,002	17,527	5,786
JAN. 31.....	19	1,503	992	406	1,690	3,870	15,394	5,332
FEB. 28.....	25	1,117	749	227	1,370	3,431	15,285	2,876
MAR. 31.....	61	1,128	634	346	3,834	3,693	15,990	4,992
APR. 30.....	102	1,844	1,385	695	4,226	4,382	17,958	6,008
MAY 31.....	135	2,102	1,659	704	4,382	4,465	18,442	6,035
JUNE 30.....	158	2,192	1,466	680	4,316	4,107	17,527	5,824
JULY 31.....	131	1,806	1,173	428	3,625	4,239	17,659	5,824
AUG. 31.....	150	1,566	1,016	232	2,910	4,217	17,808	5,903
SEPT. 30.....	126	1,346	696	126	2,274	4,113	17,474	5,780



# PECATONICA-SUGAR RIVER BASIN

LOCATION.--Lat 42°46'49", long 90°56'32", in SE 1/4 NE 1/4 sec.34, T.4 N., R.5 W., Grant County, Hydrologic Unit 07060003, on right bank 100 ft upstream of Atkinson Road, 2.7 mi southeast of North Andover.

### WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Elevation of gage is 800 ft. from topographic map.

REMARKS.--Estimated daily discharges: June 30 to July 14, and ice periods, Dec. 8 to Jan. 27, Feb. 2 to Mar. 10, and Mar. 17-21. Records good except for estimated daily discharges, which are fair.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 825 ft<sup>3</sup>/s, Mar. 11, gage height, 5.50 ft; maximum gage height, 6.18 ft, Mar. 10, backwater from ice; minimum daily, 5.6 ft<sup>3</sup>/s, July 17.

REVISIONS.--Revised figures of discharge for the water years 1987 and 1988, superseding those published in the report for 1988, are given below.

REMARKS FOR 1987 WATER YEAR.--Records good.

EXTREMES FOR 1987 WATER YEAR.--June 5 to September 1987: Maximum discharge, 1,130 ft<sup>3</sup>/s, July 30, gage height, 6.20 ft; minimum daily, 12 ft<sup>3</sup>/s, July 2, 4, 21-23.

REMARKS FOR 1988 WATER YEAR.--Estimated daily discharges: May 28 to July 4, and ice periods, Dec. 16-19, and Dec. 27 to Feb. 28. Records good except those for estimated daily discharges, which are fair.

EXTREMES FOR 1988 WATER YEAR.--Maximum discharge, 445 ft<sup>3</sup>/s, Feb. 28, gage height, 4.49 ft; minimum daily, 8.8 ft<sup>3</sup>/s, Aug. 17 and Sept. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	14	11	9.4	27	9.4	12	12	13	7.0	6.4	80
2	12	13	12	9.4	14	9.4	13	12	12	7.0	6.2	19
3	11	14	13	9.4	12	11	12	11	18	7.0	6.1	11
4	11	16	12	9.6	11	10	12	12	14	7.0	7.3	9.2
5	10	16	12	10	11	9.6	12	14	11	7.0	28	9.0
6	10	15	12	13	10	9.4	11	11	12	7.0	10	8.6
7	11	14	12	12	10	9.4	11	11	11	7.0	7.0	8.6
8	11	15	11	11	9.8	9.4	12	10	11	7.0	6.1	11
9	12	14	11	10	9.8	30	11	14	12	7.0	6.2	16
10	12	15	11	10	9.6	300	10	11	11	7.0	5.8	12
11	11	14	11	10	9.6	248	11	9.9	11	8.0	5.7	10
12	11	16	10	10	10	48	11	10	14	6.8	5.7	8.7
13	11	19	10	10	10	32	10	9.7	15	6.2	5.9	9.0
14	11	16	10	9.8	10	132	11	9.8	12	6.0	8.0	8.8
15	11	16	10	9.8	9.8	35	11	9.6	11	5.8	13	8.2
16	12	23	10	9.6	9.8	20	11	9.4	11	5.8	7.8	7.8
17	13	16	10	9.6	9.8	17	11	9.1	11	5.6	6.2	7.7
18	14	14	10	9.6	9.8	15	11	9.7	11	12	6.2	7.8
19	13	14	10	14	9.8	13	10	11	11	12	6.9	7.8
20	12	12	11	25	9.6	12	11	12	10	9.3	9.0	7.8
21	15	12	12	17	9.6	15	12	9.4	10	7.7	7.3	7.5
22	13	12	10	40	9.6	18	11	8.9	10	7.6	11	7.7
23	16	12	10	60	9.6	21	21	9.2	9.5	6.9	14	7.6
24	15	13	10	20	9.4	19	15	9.5	9.0	7.0	9.6	7.5
25	13	13	10	15	9.4	17	14	12	9.1	6.5	8.2	7.8
26	12	16	11	17	9.4	17	13	10	12	6.3	24	7.5
27	12	15	12	25	9.4	18	12	9.0	10	6.2	13	7.3
28	13	13	13	53	9.4	19	22	9.4	8.2	5.8	9.9	7.6
29	13	12	11	116	---	17	16	11	7.5	6.3	9.0	7.3
30	13	13	10	105	---	14	13	12	7.2	7.6	8.1	7.1
31	14	---	9.4	90	---	12	---	14	---	7.1	8.6	---
TOTAL	380	437	337.4	779.2	298.2	1166.6	373	332.6	334.5	222.5	286.2	342.9
MEAN	12.3	14.6	10.9	25.1	10.6	37.6	12.4	10.7	11.1	7.18	9.23	11.4
MAX	16	23	13	116	27	300	22	14	18	12	28	80
MIN	10	12	9.4	9.4	9.4	9.4	10	8.9	7.2	5.6	5.7	7.1
CAL YR 1988	TOTAL	6605.0	MEAN	18.0	MAX	180	MIN	8.8				
WTR YR 1989	TOTAL	5290.1	MEAN	14.5	MAX	300	MIN	5.6				



## 05413449 RATTLESNAKE CREEK NEAR NORTH ANDOVER, WI--CONTINUED

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	13	15	16
2	---	---	---	---	---	---	---	---	---	12	14	16
3	---	---	---	---	---	---	---	---	---	13	15	16
4	---	---	---	---	---	---	---	---	---	12	14	16
5	---	---	---	---	---	---	---	---	15	13	13	16
6	---	---	---	---	---	---	---	---	15	13	13	17
7	---	---	---	---	---	---	---	---	15	14	13	16
8	---	---	---	---	---	---	---	---	14	13	97	17
9	---	---	---	---	---	---	---	---	14	14	39	16
10	---	---	---	---	---	---	---	---	14	14	22	15
11	---	---	---	---	---	---	---	---	16	13	18	15
12	---	---	---	---	---	---	---	---	17	14	17	15
13	---	---	---	---	---	---	---	---	15	13	19	17
14	---	---	---	---	---	---	---	---	15	61	27	17
15	---	---	---	---	---	---	---	---	14	60	21	18
16	---	---	---	---	---	---	---	---	13	18	18	18
17	---	---	---	---	---	---	---	---	13	14	17	54
18	---	---	---	---	---	---	---	---	14	13	25	26
19	---	---	---	---	---	---	---	---	14	14	22	20
20	---	---	---	---	---	---	---	---	17	13	18	21
21	---	---	---	---	---	---	---	---	25	12	24	20
22	---	---	---	---	---	---	---	---	18	12	21	19
23	---	---	---	---	---	---	---	---	15	12	17	18
24	---	---	---	---	---	---	---	---	14	26	16	17
25	---	---	---	---	---	---	---	---	14	19	18	16
26	---	---	---	---	---	---	---	---	13	13	29	16
27	---	---	---	---	---	---	---	---	13	22	27	16
28	---	---	---	---	---	---	---	---	13	23	21	16
29	---	---	---	---	---	---	---	---	14	16	19	16
30	---	---	---	---	---	---	---	---	13	109	18	16
31	---	---	---	---	---	---	---	---	---	20	17	---
TOTAL	---	---	---	---	---	---	---	---	---	648	684	552
MEAN	---	---	---	---	---	---	---	---	---	20.9	22.1	18.4
MAX	---	---	---	---	---	---	---	---	---	109	97	54
MIN	---	---	---	---	---	---	---	---	---	12	13	15

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	18	23	20	90	83	24	13	13	12	9.7	9.1
2	15	16	21	20	60	57	26	13	13	12	9.4	9.1
3	15	15	21	20	50	35	27	12	13	12	9.5	11
4	16	15	19	19	42	31	26	12	13	12	20	15
5	16	14	19	19	36	29	25	11	13	13	34	11
6	16	13	19	18	34	35	24	11	13	13	14	9.4
7	15	14	20	18	32	36	23	11	13	12	11	9.2
8	15	16	22	18	31	41	22	17	13	12	13	9.3
9	15	14	32	18	30	33	21	22	13	12	13	9.0
10	14	13	24	18	29	28	19	15	13	15	11	8.9
11	14	13	24	18	29	28	19	12	13	13	11	8.9
12	15	14	22	18	28	30	19	12	13	13	10	9.2
13	14	14	21	18	28	24	19	11	13	12	9.7	8.8
14	15	14	20	17	27	24	18	11	13	13	9.8	9.7
15	15	14	18	17	26	25	18	12	13	11	9.4	9.7
16	16	17	19	17	25	24	17	11	13	12	9.3	10
17	18	43	19	18	25	23	17	12	13	12	8.8	11
18	16	22	20	18	24	23	16	11	13	11	8.9	11
19	15	18	21	20	23	23	16	11	12	11	9.8	37
20	14	17	28	26	22	23	17	12	12	10	9.5	30
21	13	17	40	24	21	21	16	13	12	11	9.4	15
22	14	17	23	23	21	20	16	13	12	10	11	45
23	13	18	22	21	21	21	18	13	12	10	15	28
24	13	17	23	21	23	24	16	13	12	10	12	15
25	13	18	23	21	25	39	15	13	12	11	10	13
26	14	17	22	20	45	25	16	13	12	10	9.3	12
27	15	17	22	19	110	23	20	13	12	10	9.7	12
28	14	34	22	20	180	32	16	13	12	10	9.8	11
29	13	33	22	21	154	32	14	13	12	9.8	9.2	12
30	13	25	21	50	---	26	14	13	12	9.9	9.3	12
31	14	---	21	125	---	24	---	13	---	9.5	9.6	---
TOTAL	453	547	693	740	1291	942	574	395	378	354.2	355.1	421.3
MEAN	14.6	18.2	22.4	23.9	44.5	30.4	19.1	12.7	12.6	11.4	11.5	14.0
MAX	18	43	40	125	180	83	27	22	13	15	34	45
MIN	13	13	18	17	21	20	14	11	12	9.5	8.8	8.8

WTR YR 1988 TOTAL 7143.6 MEAN 19.5 MAX 180 MIN 8.8

## GRANT RIVER BASIN

05413449 RATTLESNAKE CREEK NEAR NORTH ANDOVER, WI--CONTINUED

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1987 to current year.

DISSOLVED OXYGEN: July 1987 to current year.

INSTRUMENTATION.--Continuous water temperature and dissolved oxygen recorder since July 17, 1987.

REMARKS.--Water-quality analyses by the Wisconsin State Laboratory of Hygiene.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 32.0°C July 10, 1989; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 18.3 mg/L Apr. 29, 1988, May 7, 1989; minimum observed, 0.0 mg/L Sept. 17, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 32.0°C July 10; minimum observed, 0.0°C Oct. 30, Dec. 1-2, 4, 8-12, 14-15, Jan. 20, 22, 26-30, and Feb. 1-19.

DISSOLVED OXYGEN: Maximum observed, 18.3 mg/L May 7; minimum observed, 1.5 mg/L Sept. 1.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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 (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)
OCT 1988							
04...	1130	85543	--	11	--	8.20	9.0
04...	1230	1028	--	10	780	--	9.0
NOV							
29...	1045	85543	--	12	740	8.15	1.0
JAN 1989							
22...	1730	85543	40	--	--	--	0.5
22...	1900	85543	40	--	--	--	0.5
22...	1930	85543	40	--	--	--	0.5
23...	0115	85543	60	--	--	--	0.5
23...	0615	85543	60	--	--	--	0.5
23...	1525	85543	60	--	--	--	0.5
23...	1526	85543	60	--	--	--	0.5
27...	1915	85543	25	--	--	--	0.0
27...	1945	85543	25	--	--	--	0.0
28...	0115	85543	--	92	--	--	0.0
29...	1230	85543	--	83	--	--	0.5
29...	1500	85543	--	160	--	--	0.5
29...	1745	85543	--	258	--	--	0.0
30...	0130	85543	--	98	--	--	0.5
30...	1600	85543	--	134	--	--	0.5
30...	1800	85543	--	258	--	--	0.5
31...	0130	85543	--	94	--	--	0.5
31...	1345	85543	--	101	--	--	1.5
31...	1515	85543	--	155	--	--	1.5
31...	2115	85543	--	92	--	--	2.5
FEB							
22...	0825	85543	--	9.6	710	--	0.0
MAR							
11...	1500	85543	--	557	--	--	1.0
11...	1600	85543	--	805	--	--	1.0
11...	2045	85543	--	310	--	--	1.0
APR							
13...	1145	85543	--	10	610	--	7.0
20...	1020	85543	--	10	--	--	13.0
MAY							
18...	1100	85543	--	9.8	640	--	--
JUN							
28...	0830	85543	--	8.4	690	--	20.0
DATE	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988							
04...	2.6	11.7	2.2	10	4.00	0.020	0.240
04...	--	--	--	--	--	--	--
NOV							
29...	3.8	13.6	3.7	12	4.70	0.100	0.170
JAN 1989							
22...	69	--	--	328	--	2.60	--
22...	100	--	--	544	--	2.80	--
22...	120	--	<63	672	--	3.50	--
23...	100	--	--	280	--	4.50	--
23...	66	--	--	116	--	4.60	--

## GRANT RIVER BASIN

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05413449 RATTLESNAKE CREEK NEAR NORTH ANDOVER, WI--CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	
JAN 1989								
23...	39	--	63	92	--	3.90	--	
23...	35	--	--	72	--	3.90	--	
27...	120	--	--	476	--	3.00	--	
27...	150	--	--	690	--	3.00	--	
28...	100	--	--	304	--	4.60	--	
29...	68	--	--	228	--	4.20	--	
29...	140	--	--	704	--	4.20	--	
29...	310	--	--	1760	--	5.20	--	
30...	160	--	--	412	--	5.10	--	
30...	150	--	--	760	--	4.10	--	
30...	360	--	--	2210	--	4.30	--	
31...	290	--	--	1160	--	4.80	--	
31...	64	--	--	208	--	3.70	--	
31...	210	--	--	1170	--	3.10	--	
31...	110	--	--	452	--	3.40	--	
FEB								
22...	--	--	--	--	--	--	--	
MAR								
11...	300	--	--	3580	--	4.70	--	
11...	440	--	--	4800	--	4.30	--	
11...	380	--	--	1940	--	4.10	--	
APR								
13...	--	--	--	--	--	--	--	
20...	1.7	13.5	--	5	2.80	<0.020	0.060	
MAY								
18...	--	--	--	--	--	--	--	
JUN								
28...	--	--	--	--	--	--	--	
DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	
JUL 1989								
14...	1340	85543	6.1	645	23.5	--	--	
20...	0820	85543	5.8	600	21.5	--	--	
AUG								
14...	2300	85543	29	--	22.0	43	7.4	
22...	2215	85543	28	--	24.0	17	5.9	
26...	1130	85543	32	--	19.5	6.4	7.8	
26...	1430	85543	49	--	20.0	70	6.6	
SEP								
01...	0100	85543	229	--	19.5	240	5.8	
01...	0115	85543	221	--	19.5	560	1.5	
01...	0530	85543	143	--	19.0	480	4.2	
01...	0830	85543	84	--	18.5	280	5.2	
01...	1500	85543	39	--	20.0	120	6.1	
02...	1015	85543	19	--	17.0	84	7.5	
02...	1016	85543	19	--	17.0	42	7.5	
08...	1250	85543	10	690	20.5	--	--	
DATE		OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	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,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
JUL 1989								
14...	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	
AUG								
14...	6.1	138	--	1.92	0.066	1.3	--	
22...	4.9	65	11	1.86	0.070	1.2	--	
26...	<4.6	39	7	2.00	0.070	1.0	--	
26...	<14	432	64	2.00	0.350	5.0	--	
SEP								
01...	--	624	80	1.96	0.090	2.8	1.13	
01...	--	2860	300	2.05	0.340	12	4.03	
01...	--	1220	164	1.55	1.60	11	3.83	
01...	--	592	104	2.00	1.20	7.8	2.90	
01...	--	220	46	2.50	0.970	5.6	2.25	
02...	--	308	46	2.20	0.480	4.4	1.69	
02...	--	54	18	2.20	0.480	3.1	1.37	
08...	--	--	--	--	--	--	--	

## GRANT RIVER BASIN

05413449 RATTLESNAKE CREEK NEAR NORTH ANDOVER, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	18.5	17.0	17.5	5.5	3.0	4.5	1.0	.00	.50	.50	.50	.50
2	17.0	13.5	15.5	4.5	2.0	3.5	1.5	.00	1.0	.50	.50	.50
3	13.5	10.5	12.5	7.0	4.0	5.5	2.0	.50	1.0	.50	.50	.50
4	11.5	9.0	10.0	8.0	6.5	7.5	1.5	.00	1.0	.50	.50	.50
5	10.5	7.0	8.5	7.5	4.0	6.0	2.0	.50	1.5	.50	.50	.50
6	10.5	6.5	8.5	4.0	2.5	3.5	2.5	.50	1.5	.50	.50	.50
7	10.5	6.0	8.5	4.0	2.0	3.0	2.5	.50	1.5	1.0	.50	.50
8	11.5	7.5	9.5	5.5	3.0	4.5	1.0	.00	.50	.50	.50	.50
9	13.0	9.5	11.0	7.0	5.0	6.0	.50	.00	.50	.50	.50	.50
10	13.5	10.5	12.0	7.0	4.5	6.0	.50	.00	.00	.50	.50	.50
11	11.0	8.5	9.5	4.5	3.0	4.0	.50	.00	.50	.50	.50	.50
12	9.0	5.5	7.5	4.0	3.0	3.5	.50	.00	.50	.50	.50	.50
13	8.5	4.5	6.5	6.0	3.5	4.5	.50	.50	.50	.50	.50	.50
14	11.5	6.5	9.0	6.5	4.5	5.5	1.0	.00	.50	.50	.50	.50
15	13.5	9.0	11.5	10.5	6.0	8.0	.50	.00	.50	1.0	.50	.50
16	15.0	12.5	13.5	10.5	3.5	7.5	.50	.50	.50	1.0	.50	.50
17	13.0	11.0	12.0	3.5	1.5	2.5	.50	.50	.50	1.0	.50	.50
18	11.0	9.0	10.0	4.5	2.0	3.5	.50	.50	.50	1.0	.50	.50
19	9.5	7.5	8.5	6.0	4.5	5.0	1.0	.50	.50	1.5	.50	.50
20	8.0	7.0	8.0	4.5	2.0	3.5	1.0	.50	.50	.50	.00	.50
21	9.5	7.5	8.5	2.0	1.0	1.5	1.0	.50	.50	1.0	.50	.50
22	8.0	5.5	7.0	2.0	.50	1.5	1.0	.50	1.0	1.5	.00	.50
23	8.5	6.0	7.5	3.5	1.5	2.5	1.5	1.0	1.0	.50	.50	.50
24	6.5	5.0	5.5	5.0	3.0	4.0	1.5	.50	.50	.50	.50	.50
25	5.5	3.5	4.5	5.5	4.0	5.0	.50	.50	.50	1.0	.50	.50
26	5.0	2.5	4.0	7.0	5.0	6.0	.50	.50	.50	1.0	.00	.50
27	7.0	4.5	5.5	6.5	3.0	5.0	.50	.50	.50	1.0	.00	.50
28	5.0	2.5	3.5	3.0	.50	1.5	.50	.50	.50	1.0	.00	.50
29	4.0	1.5	2.5	2.5	.50	1.5	.50	.50	.50	.50	.00	.50
30	3.0	.00	1.5	2.0	.50	1.5	.50	.50	.50	1.0	.00	.50
31	5.0	1.0	3.0	---	---	---	.50	.50	.50	2.5	.50	1.0
MONTH	18.5	.00	8.5	10.5	.50	4.2	2.5	.00	.66	2.5	.00	.52
FEBRUARY			MARCH			APRIL			MAY			
1	2.0	.00	1.5	1.0	.50	.50	5.0	3.0	4.5	12.0	9.5	10.5
2	.50	.00	.50	.50	.50	.50	11.0	4.0	7.0	12.5	7.0	9.5
3	.00	.00	.00	.50	.50	.50	11.5	8.0	9.5	16.0	8.0	12.0
4	.00	.00	.00	1.0	.50	.50	10.0	7.0	8.5	14.0	11.0	12.0
5	.00	.00	.00	1.0	.50	.50	11.5	6.0	8.0	14.5	9.5	11.5
6	.00	.00	.00	1.0	.50	.50	11.5	6.5	9.0	9.5	6.0	7.5
7	.00	.00	.00	1.0	.50	.50	11.5	6.0	9.0	14.0	5.5	9.5
8	.00	.00	.00	1.5	.50	.50	12.0	8.0	9.5	12.0	9.5	11.0
9	.00	.00	.00	1.5	.50	1.0	8.0	4.0	6.0	---	---	---
10	.00	.00	.00	1.0	.50	.50	9.5	3.5	6.0	---	---	---
11	.50	.00	.00	1.5	.50	1.0	11.0	5.0	8.0	---	---	---
12	.50	.00	.00	2.0	1.0	1.5	13.0	6.0	9.5	---	---	---
13	.00	.00	.00	4.0	1.5	2.5	11.5	6.5	9.0	---	---	---
14	.50	.00	.00	3.0	1.0	2.0	14.5	9.0	11.5	---	---	---
15	.50	.00	.00	3.0	.50	1.5	15.0	8.5	11.5	---	---	---
16	.50	.00	.00	4.0	1.0	2.0	13.0	9.5	11.0	23.0	16.0	19.5
17	.50	.00	.00	2.0	.50	1.0	14.0	10.0	11.5	23.0	16.5	19.5
18	.50	.00	.00	2.0	.50	1.0	15.0	9.0	11.5	20.5	17.0	18.5
19	.50	.00	.00	2.0	.50	1.0	15.5	8.0	11.5	20.0	17.0	18.5
20	1.0	.50	.50	2.5	.50	1.5	13.0	10.5	11.5	22.5	17.0	19.5
21	1.0	.50	.50	3.0	.50	1.5	17.0	9.5	13.0	22.5	15.0	18.5
22	1.0	.50	.50	6.0	.50	3.0	14.5	10.5	12.0	22.5	16.0	19.0
23	1.0	.50	.50	8.0	2.5	5.0	15.0	9.0	11.5	22.5	16.5	19.5
24	1.0	.50	.50	9.0	5.0	7.0	16.5	11.0	13.5	23.5	19.0	21.5
25	1.0	.50	.50	11.0	6.0	8.5	20.5	14.0	17.0	23.5	19.0	21.0
26	1.0	.50	.50	14.0	7.5	10.5	20.0	15.0	17.5	20.5	16.5	18.5
27	1.0	.50	.50	18.5	12.0	15.0	19.0	14.5	16.5	22.0	14.0	17.5
28	1.0	.50	.50	16.5	13.0	15.0	16.5	10.0	12.5	20.0	15.0	17.5
29	---	---	---	13.0	10.5	12.0	11.5	9.5	10.0	22.0	17.0	19.0
30	---	---	---	11.0	8.0	10.0	15.0	7.5	11.0	22.0	19.0	20.5
31	---	---	---	8.0	5.0	6.5	---	---	---	21.5	20.0	20.5
MONTH	2.0	.00	.23	18.5	.50	3.7	20.5	3.0	10.6	---	---	---

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WATER TEMPERATURE. DEGREES CELSIUS. WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## GRANT RIVER BASIN

05413449 RATTLESNAKE CREEK NEAR NORTH ANDOVER, WI--CONTINUED

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	---	---	---	15.7	12.3	14.2	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	16.5	9.4	12.3
6	---	---	---	---	---	---	---	---	---	16.9	9.9	13.0
7	---	---	---	---	---	---	---	---	---	18.3	9.6	13.6
8	---	---	---	---	---	---	---	---	---	15.8	8.8	11.6
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	10.9	5.2	7.7
17	---	---	---	---	---	---	---	---	---	10.8	5.0	7.5
18	---	---	---	---	---	---	17.9	9.7	14.3	10.3	4.9	7.2
19	---	---	---	---	---	---	17.4	9.1	12.3	10.2	6.0	7.5
20	---	---	---	---	---	---	15.5	8.2	11.1	11.1	5.9	8.2
21	---	---	---	---	---	---	17.0	8.6	12.0	11.1	5.4	8.1
22	---	---	---	---	---	---	12.5	7.9	9.8	9.0	5.3	7.0
23	---	---	---	---	---	---	13.8	7.4	10.5	10.6	5.5	7.5
24	---	---	---	---	---	---	13.4	6.8	9.6	10.0	5.4	7.3
25	---	---	---	---	---	---	14.0	6.3	9.6	10.9	5.3	7.7
26	---	---	---	---	---	---	14.6	6.2	9.1	11.5	6.1	8.7
27	---	---	---	10.1	7.7	9.4	---	---	---	12.2	6.9	9.3
28	---	---	---	9.5	7.7	8.5	---	---	---	12.4	6.7	9.2
29	---	---	---	11.1	8.4	9.8	---	---	---	11.9	6.8	8.6
30	---	---	---	12.7	9.3	11.2	---	---	---	10.9	6.1	7.8
31	---	---	---	14.3	10.8	12.7	---	---	---	9.8	6.1	7.4
MONTH	---	---	---	---	---	---	---	---	---	---	---	---
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.7	6.4	8.5	12.9	5.5	8.7	---	---	---	7.3	1.5	5.4
2	10.8	5.3	8.0	12.9	5.0	8.2	---	---	---	8.9	5.2	7.1
3	7.2	5.0	5.8	13.2	4.7	8.4	---	---	---	10.5	6.5	8.2
4	8.9	5.5	7.0	12.6	4.7	8.1	---	---	---	11.0	7.1	8.4
5	10.9	8.1	9.7	12.0	4.6	7.9	---	---	---	11.4	7.1	8.7
6	9.0	8.0	8.5	12.1	4.4	7.7	---	---	---	11.7	6.7	8.5
7	8.4	6.7	7.9	---	---	---	---	---	---	11.5	6.3	8.0
8	10.5	6.8	8.1	---	---	---	---	---	---	11.9	6.6	8.4
9	11.7	6.4	8.7	---	---	---	---	---	---	8.3	5.8	7.1
10	11.7	6.5	9.0	---	---	---	---	---	---	11.8	6.8	8.9
11	12.2	6.2	9.0	10.8	2.9	6.1	---	---	---	12.3	7.4	9.3
12	11.9	6.8	9.0	9.6	3.8	6.1	---	---	---	12.8	8.1	10.1
13	11.8	6.0	8.3	8.5	3.7	5.8	---	---	---	14.0	8.9	10.7
14	11.5	5.4	8.4	8.8	4.0	6.0	---	---	---	13.1	8.6	10.4
15	13.4	7.1	9.9	8.5	4.1	5.6	9.6	6.6	7.5	13.3	8.6	10.4
16	14.0	7.9	10.7	8.1	4.5	6.0	13.4	6.7	9.4	14.2	8.3	10.4
17	14.0	7.0	10.2	7.9	4.2	5.8	14.2	6.5	9.7	13.6	8.1	10.3
18	13.3	6.0	9.2	6.5	4.0	5.0	14.7	6.6	9.9	13.9	7.8	10.3
19	13.4	6.2	9.3	6.4	3.9	4.8	14.5	6.6	9.4	14.0	7.4	10.0
20	12.9	5.7	8.9	8.1	4.6	6.0	13.7	6.1	9.3	14.0	7.3	9.9
21	12.6	5.4	8.6	8.2	4.7	6.3	13.7	5.7	8.9	14.3	7.2	9.9
22	11.5	5.3	7.9	9.5	5.6	7.2	12.8	4.8	8.0	13.4	7.1	9.2
23	11.9	4.3	8.0	9.5	5.3	6.9	6.8	1.8	5.2	13.3	8.2	10.4
24	12.1	5.1	8.1	8.7	5.1	6.7	12.2	5.4	8.1	13.8	9.2	10.9
25	11.2	4.9	7.4	9.2	4.9	6.5	12.7	5.9	8.5	13.7	9.1	10.8
26	10.6	5.1	7.2	8.9	4.6	7.0	7.8	2.6	5.8	13.9	8.8	10.8
27	10.7	4.6	7.3	---	---	---	9.0	4.1	6.4	14.0	9.2	11.1
28	12.0	4.8	8.0	10.1	6.5	9.2	10.5	5.0	7.1	14.4	8.8	10.9
29	12.2	4.9	8.2	8.3	5.6	6.9	11.0	5.4	7.7	13.4	8.3	10.3
30	12.8	5.2	8.6	---	---	---	12.1	6.0	8.4	13.8	8.1	10.3
31	---	---	---	---	---	---	10.7	6.0	7.8	---	---	---
MONTH	14.0	4.3	8.4	---	---	---	---	---	---	14.4	1.5	9.5

## GRANT RIVER BASIN

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05413449 RATTLESNAKE CREEK NEAR NORTH ANDOVER, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--July 1987 to current year (during non-freezing periods).

GAGE.--Micrologger.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.96 in., Aug. 8, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.85 in., July 18.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	.00	---	---	---	---	.00	.04	.00	.00	.00	.55
2	.00	.00	---	---	---	---	.00	.00	.42	.00	.00	.00
3	.00	.00	---	---	---	---	.00	.00	.13	.00	.00	.00
4	.00	.08	---	---	---	---	.00	.27	.00	.00	1.36	.07
5	.00	.00	---	---	---	---	.00	.05	.00	.00	.27	.00
6	.00	.00	---	---	---	---	.00	.00	.00	.00	.00	.00
7	.00	.05	---	---	---	---	.00	.00	.00	.00	.00	.01
8	.00	.00	---	---	---	---	.00	.19	.04	.00	.00	.65
9	.00	.19	---	---	---	---	.00	.16	.00	.00	.00	.70
10	.00	.00	---	---	---	---	.00	.00	.00	.00	.00	.00
11	.00	.00	---	---	---	---	.00	.00	.07	.48	.00	.00
12	.00	.44	---	---	---	---	.00	.00	.99	.00	.00	.02
13	.00	.00	---	---	---	---	.00	.00	.00	.00	.15	.15
14	.00	.00	---	---	---	---	.00	.00	.00	.00	.73	.00
15	.00	.40	---	---	---	---	.00	.00	.00	.00	.00	.00
16	.09	.00	---	---	---	---	.00	.00	.00	.00	.00	.00
17	.39	.00	---	---	---	---	.00	.00	.00	.00	.00	.00
18	.03	.00	---	---	---	---	.00	.14	.00	1.85	.00	.00
19	.00	.00	---	---	---	---	.00	.12	.00	.43	.44	.00
20	.28	.00	---	---	---	---	.00	.00	.00	.01	.00	.00
21	.00	.00	---	---	---	---	.00	.00	.00	.02	.00	.00
22	.20	.00	---	---	---	---	.00	.00	.00	.01	.78	.09
23	.15	.00	---	---	---	---	.25	.00	.00	.02	.02	.00
24	.00	.00	---	---	---	---	.00	.29	.00	.00	.00	.00
25	.00	.00	---	---	---	---	.00	.00	.52	.00	.00	.00
26	.00	.40	---	---	---	---	.11	.00	.40	.00	1.22	.00
27	.01	.00	---	---	---	.00	.09	.00	.00	.00	.01	.00
28	.01	.04	---	---	---	.00	.51	.00	.00	.00	.06	.00
29	.00	.00	---	---	---	.00	.00	.32	.00	.00	.00	.00
30	.00	.00	---	---	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	---	---	---	.00	---	.16	---	.00	1.25	---
TOTAL	1.22	1.60	---	---	---	---	0.96	1.74	2.57	2.82	6.29	2.24

## GRANT RIVER BASIN

05413500 GRANT RIVER AT BURTON, WI  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

LOCATION.--Lat 42°43'13", long 90°49'09", in NW 1/4 sec.23, T.3 N., R.4 W., Grant County, Hydrologic Unit 07060003, on right bank at downstream side of highway bridge at Burton, 5.9 mi northwest of Potosi and 9.5 mi upstream from mouth.

DRAINAGE AREA.--269 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1934 to current year. Published as "near Burton" October 1934 to September 1947. Records published for both sites March to September 1947. October 1934, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1935-37(M), 1941(M), 1945-46(M), 1949(M). WSP 1728: 1942(M). WDR WI-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 606.43 ft above National Geodetic Vertical Datum of 1929. Oct. 17, 1934, to Sept. 30, 1947, nonrecording gage at site 6 mi upstream at datum 33.18 ft higher. Mar. 18, 1947, to July 27, 1949, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Mar. 23 and ice periods listed in rating table below. Records good except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--55 years, 167 ft<sup>3</sup>/s, 8.43 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,000 ft<sup>3</sup>/s, July 16, 1950, gage height, 24.82 ft, from rating curve extended above 18,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 21 ft<sup>3</sup>/s, Mar. 4, 1954, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,400 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 12	----	Unknown	(a)*21.63	Mar. 14	----	*2,800	Unknown
(a) Ice jam.							

Minimum daily discharge, 58 ft<sup>3</sup>/s, Sept. 26-29.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8 to Mar. 14 and Mar. 18-21.)

4.3	54	10	721
5.0	120	13	1,220
7.0	329	16	1,930

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	92	90	80	700	98	99	90	84	63	63	292
2	92	91	89	78	210	98	100	91	78	63	61	154
3	89	92	94	78	170	98	98	88	92	63	60	88
4	88	95	91	78	130	100	97	86	86	63	61	78
5	87	98	90	78	120	110	93	94	77	62	132	75
6	87	95	90	80	120	100	90	87	75	61	95	73
7	88	94	91	82	110	98	88	84	74	61	70	70
8	89	94	82	82	110	98	89	83	72	60	65	71
9	90	93	88	82	110	98	87	91	73	60	64	90
10	90	97	94	82	110	460	84	88	73	60	62	94
11	88	95	88	84	110	1800	84	82	71	60	61	78
12	87	95	84	88	110	1400	85	81	79	65	60	71
13	87	110	82	94	110	620	84	80	95	63	62	69
14	89	104	80	92	110	700	83	80	78	60	64	69
15	90	99	76	90	110	933	83	80	74	59	91	68
16	92	118	76	88	110	176	83	80	73	59	78	65
17	93	110	76	88	100	161	85	78	73	59	66	64
18	101	97	76	88	100	100	83	77	71	73	62	63
19	97	95	78	90	100	94	81	82	70	92	62	62
20	92	94	84	200	100	92	81	89	68	87	71	61
21	98	91	82	170	98	94	86	83	67	71	68	61
22	97	90	80	140	98	123	84	77	67	66	65	60
23	100	91	84	250	94	217	96	76	67	66	104	60
24	101	92	80	260	96	273	97	76	66	67	86	59
25	94	92	80	160	98	182	94	80	66	64	69	59
26	91	100	90	120	98	143	98	82	71	63	85	58
27	92	109	100	120	98	129	89	74	76	62	135	58
28	91	99	88	310	98	126	114	72	71	61	88	58
29	89	93	84	320	---	127	123	75	65	60	77	58
30	89	94	82	620	---	111	98	81	64	64	71	59
31	89	---	80	680	---	103	---	84	---	65	72	---
TOTAL	2839	2909	2629	4952	3728	9062	2736	2551	2216	2002	2330	2345
MEAN	91.6	97.0	84.8	160	133	292	91.2	82.3	73.9	64.6	75.2	78.2
MAX	101	118	100	680	700	1800	123	94	95	92	135	292
MIN	87	90	76	78	94	92	81	72	64	59	60	58
CFSM	.34	.36	.32	.59	.49	1.09	.34	.31	.27	.24	.28	.29
IN.	.39	.40	.36	.68	.52	1.25	.38	.35	.31	.28	.32	.32
CAL YR 1988	TOTAL 47872	MEAN 131	MAX 740	MIN 76	CFSM .49	IN. 6.62						
WTR YR 1989	TOTAL 40299	MEAN 110	MAX 1800	MIN 58	CFSM .41	IN. 5.57						



## GRANT RIVER BASIN

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05413500 GRANT RIVER AT BURTON, WI--CONTINUED  
(NATIONAL STREAM-QUALITY ACCOUNTING NETWORK STATION)

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1964-67, 1977 to current year. National Stream-Quality Accounting Network data collection began in October 1986.

## PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: Water years 1977-82, October 1983 to current year.

REMARKS.--Sediment records for periods of no ice cover during considerable discharge (greater than 300 ft<sup>3</sup>/s) are good because sampling and analysis effort were concentrated on high-discharge periods. Records for most remaining periods are fair because of infrequent (about twice per week) sampling. Records for high-flow periods during ice cover (Mar. 10-14 and 23) are poor. Monthly load values are good.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,450 mg/L, June 17, 1978; minimum daily mean, 7 mg/L, on many days. Maximum observed, 13,600 mg/L, July 13, 1979; minimum observed, 7 mg/L, Mar. 2, 1978.  
SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 95,300 tons, June 17, 1978; minimum daily, 1.5 tons, Mar. 1, 2, 1978.

## EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,600 mg/L, Mar. 14, minimum daily mean, 8 mg/L, Nov. 28, 29. Maximum observed, 6,300 mg/L, Mar. 14; minimum observed, 8 mg/L, Nov. 29.  
SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 12,500 tons, Mar. 15; minimum daily, 2.0 tons, Nov. 29.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 1988				APR 1989			
03...	0850	88	73	24...	1420	95	45
06...	1600	88	30	27...	1525	90	51
11...	0945	88	44	MAY			
14...	0830	88	31	01...	1310	90	26
17...	0830	92	60	05...	1510	98	48
20...	0935	92	23	08...	1505	83	42
24...	0915	102	27	11...	1330	82	33
24...	1300	101	41	15...	1340	80	51
24...	1301	101	16	19...	1045	84	68
25...	1221	95	11	22...	1100	76	71
25...	1230	94	11	31...	0958	82	112
27...	0835	91	25	31...	1000	82	120
31...	1030	88	27	31...	1003	82	112
NOV				JUN			
03...	1620	93	21	01...	0800	84	145
07...	0855	94	43	05...	1500	76	77
10...	0925	95	21	07...	1426	75	85
14...	1005	104	18	07...	1518	75	115
17...	0905	113	16	28...	0929	71	96
21...	0958	91	112	28...	1000	71	109
21...	1015	91	9	28...	1024	71	80
25...	1400	92	11	JUL			
29...	0845	94	8	18...	1145	72	174
DEC				18...	1152	72	108
01...	1030	91	13	18...	1156	73	181
05...	0955	83	13	18...	1305	74	99
05...	1018	86	13	21...	0750	72	119
05...	1020	86	14	24...	0750	67	112
06...	1030	90	19	28...	0810	62	80
06...	1031	90	22	31...	1005	66	86
JAN 1989				AUG			
17...	1030	134	13	03...	0845	60	83
FEB				05...	0820	130	606
27...	1210	131	26	07...	0810	71	109
MAR				10...	0805	62	114
14...	1815	1380	6100	14...	1030	63	57
14...	1816	1380	6310	17...	0815	67	133
15...	1625	392	1160	21...	0910	68	126
15...	1742	344	976	23...	0935	85	128
15...	1747	341	998	24...	1040	84	54
15...	1753	338	952	24...	1115	84	58
21...	1410	93	37	24...	1116	84	50
23...	0946	286	426	24...	1130	83	47
23...	0949	286	392	27...	1005	166	335
23...	0952	286	386	28...	1240	85	125
23...	1000	286	392	28...	1251	85	137
24...	1510	220	437	28...	1254	85	106
28...	1515	128	74	30...	0825	71	134
31...	1445	102	44	SEP			
APR				01...	0805	222	647
03...	1630	97	66	04...	1530	77	108
06...	1350	89	43	07...	0920	70	166
11...	0940	84	36	09...	0915	90	205
12...	1245	86	42	11...	1000	78	158
12...	1300	86	28	14...	0930	69	112
13...	1000	85	21	18...	0905	64	76
17...	1410	85	18	21...	0925	61	94
20...	1450	80	21	25...	1000	58	59

## GRANT RIVER BASIN

05413500 GRANT RIVER AT BURTON, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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 (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)
OCT 1988										
24...	1300	--	101	629	8.40	6.5	4.2	12.2	740	102
DEC 06...	1030	--	90	675	8.30	0.5	2.1	13.5	746	96
MAR 1989										
23...	1000	217	--	558	8.20	4.0	57	12.4	743	97
MAY 31...	1000	--	82	586	8.30	19.0	15	7.4	745	82
JUN 28...	1000	--	71	620	8.40	22.0	23	7.2	758	83
AUG 24...	1115	--	84	575	8.30	20.5	15	7.2	752	81

DATE	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)	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)	SODIUM AD-SORP-TION RATIO (00932)	SODIUM POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)
OCT 1988									
24...	970	1100	350	79	38	8.4	5	0.2	310
DEC 06...	28	46	340	75	36	7.9	5	0.2	344
MAR 1989									
23...	140	3000	280	66	29	14	9	0.4	284
MAY 31...	150	210	330	74	35	8.9	6	0.2	342
JUN 28...	590	480	310	68	34	9.6	6	0.2	315
AUG 24...	1100	930	290	65	31	8.0	6	0.2	295

DATE	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)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L) (70300)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)
OCT 1988										
24...	14	278	28	17	0.10	9.4	374	379	0.51	102
DEC 06...	12	302	27	16	0.10	9.8	370	387	0.50	89.9
MAR 1989										
23...	--	233	30	23	0.20	12	338	336	0.46	198
MAY 31...	1	282	23	17	0.10	9.8	344	350	0.47	76.2
JUN 28...	12	278	23	17	0.10	11	343	352	0.47	65.8
AUG 24...	10	258	22	15	0.10	9.8	310	329	0.42	70.3

DATE	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS-PHOROUS TOTAL (MG/L AS P) (00665)	PHOS-PHOROUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHOROUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT 1988									
24...	3.20	0.020	0.020	0.50	0.130	0.120	0.100	16	68
DEC 06...	4.20	0.060	0.070	0.70	0.130	0.100	0.100	22	38
MAR 1989									
23...	3.50	0.570	0.640	2.3	0.370	0.330	0.310	392	95
MAY 31...	1.90	0.110	0.140	0.60	0.200	0.150	0.140	120	91
JUN 28...	1.50	0.030	0.040	0.30	0.230	0.220	0.190	109	87
AUG 24...	1.50	0.110	0.120	1.1	0.290	0.210	0.190	58	94

## GRANT RIVER BASIN

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05413500 GRANT RIVER AT BURTON, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
OCT 1988 24...	1300	--	101	<10	<1	65	<0.5	2	<1	<3	3
MAR 1989 23...	1000	217	--	20	1	66	<0.5	<1	<1	<3	3
MAY 31...	1000	--	82	20	1	78	<0.5	1	<1	<3	3
AUG 24...	1115	--	84	10	2	77	<0.5	<1	<1	<3	1

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	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)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
OCT 1988 24...	8	<5	8	28	<0.1	<10	<1	<1	77	<6	7
MAR 1989 23...	15	<5	5	100	<0.1	<10	4	<1	76	<6	12
MAY 31...	15	<1	6	76	<0.1	<10	2	<1	75	<6	12
AUG 24...	17	<1	4	29	<0.1	<10	1	<1	72	<6	15

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)
OCT 1988 24...	1300	--	101	629	6.5
25...	1220	--	97	650	6.0
DEC 05...	1020	--	87	610	0.5
06...	1030	--	90	675	0.5
JAN 1989 17...	1110	--	89	640	0.0
FEB 27...	1205	--	98	630	0.0
MAR 15...	1840	--	328	300	1.0
23...	1000	217	--	558	4.0
APR 12...	1145	--	90	530	7.0
MAY 31...	1000	--	82	586	19.0
JUN 07...	1518	--	72	505	22.5
28...	1000	--	71	620	22.0
JUL 18...	1140	--	72	530	22.5
AUG 24...	1115	--	84	575	20.5
28...	1240	--	89	560	21.5

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	78	20	25	6.2	13	3.1	22	4.7	17	32	27	7.1
2	75	19	23	5.7	35	9.2	21	4.4	17	9.9	27	7.2
3	69	17	22	5.4	65	17	20	4.3	18	8.1	28	7.3
4	54	13	25	6.3	28	6.8	20	4.2	18	6.3	28	7.6
5	41	9.7	30	7.9	15	3.7	19	4.0	18	5.9	28	8.4
6	32	7.6	36	9.3	20	4.9	19	4.0	19	6.0	29	7.8
7	32	7.6	40	10	21	5.2	18	4.0	19	5.6	29	7.7
8	35	8.3	33	8.3	20	4.5	18	3.9	19	5.7	29	7.8
9	38	9.1	26	6.5	183	43	17	3.8	20	5.8	30	7.9
10	41	9.9	21	5.5	150	38	17	3.7	20	5.9	182	226
11	43	10	20	5.1	70	17	16	3.6	20	6.0	1940	9450
12	39	9.1	19	5.0	39	8.9	16	3.7	21	6.1	2880	10900
13	34	8.1	19	5.5	38	8.5	15	3.8	21	6.2	598	1000
14	33	7.9	18	5.0	37	8.0	15	3.6	21	6.3	3600	6810
15	40	9.8	17	4.6	36	7.4	14	3.5	22	6.4	3040	12500
16	50	12	17	5.3	35	7.2	14	3.3	22	6.5	634	307
17	55	14	16	4.7	34	7.0	13	3.2	22	6.0	365	160
18	42	11	14	3.6	33	6.8	14	3.2	23	6.1	215	58
19	31	8.0	12	3.1	32	6.7	14	3.4	23	6.2	123	31
20	24	5.9	10	2.7	31	7.0	14	7.6	23	6.3	71	18
21	24	6.3	9	2.3	30	6.7	14	6.6	24	6.3	41	10
22	25	6.5	10	2.4	29	6.3	15	5.5	24	6.4	65	22
23	26	7.0	10	2.5	28	6.4	15	10	25	6.3	256	150
24	22	6.1	11	2.6	27	5.9	15	11	25	6.5	498	405
25	12	3.1	11	2.7	27	5.8	15	6.6	25	6.7	233	117
26	17	4.2	10	2.7	26	6.3	16	5.0	26	6.8	123	48
27	25	6.1	9	2.7	25	6.8	16	5.1	26	7.0	91	32
28	26	6.3	8	2.2	24	5.8	16	13	27	7.0	76	26
29	26	6.3	8	2.0	24	5.4	16	14	---	---	64	22
30	27	6.4	10	2.6	23	5.1	17	28	---	---	54	16
31	27	6.5	---	---	22	4.8	17	31	---	---	46	13
TOTAL	---	281.8	---	140.4	---	285.2	---	215.7	---	206.3	---	42389.8
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	50	13	28	6.8	134	30	90	15	85	14	759	643
2	57	15	30	7.3	104	22	94	16	84	14	327	146
3	64	17	34	8.2	111	28	98	17	83	13	167	40
4	59	15	40	9.3	92	21	102	17	82	14	118	25
5	50	13	46	12	80	17	106	18	406	148	124	25
6	44	11	46	1								

## PLATTE RIVER BASIN

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05414000 PLATTE RIVER NEAR ROCKVILLE, WI

LOCATION.--Lat 42°43'52", long 90°38'25", in SW 1/4 sec.17, T.3 N., R.2 W., Grant County, Hydrologic Unit 07060003, on right bank just downstream from bridge on County Trunk Highway B, 0.8 mi upstream from Blakely Branch, 2.2 mi east of Rockville, 4.5 mi northeast of Potosi, and 15.2 mi upstream from mouth.

DRAINAGE AREA.--142 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1934 to current year. Monthly discharge only for October and November 1934, published in WSP 1308.

REVISED RECORDS.--WSP 1438: 1935-36, 1937(M), 1939(M), 1941-43, 1946(M). WDR WI-76-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 642.50 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1941, nonrecording gage at site 1.3 mi upstream at datum 12.55 ft higher. Oct. 1, 1941, to June 29, 1949, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Mar. 29 to Apr. 12 and ice periods listed in rating table below. Records good except those for estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--55 years, 99.0 ft<sup>3</sup>/s, 9.47 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 43,500 ft<sup>3</sup>/s, July 16, 1950, gage height, 17.26 ft, from rating curve extended above 7,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow Nov. 24, 1950.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,100 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 11	2200	*3,210	*10.34	No other peak greater than base discharge.			

Minimum daily discharge, 27 ft<sup>3</sup>/s, July 1, 5-17.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8 to Jan. 31, Feb. 4-26, Mar. 1-11, 14, and 17-21.)

3.4	27	4.5	212
3.5	35	5.0	348
3.7	60	6.0	672
4.0	104	8.0	1,480

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	47	46	40	246	41	60	47	43	27	32	78
2	53	46	48	39	77	39	56	47	39	28	31	50
3	51	47	46	39	47	38	54	45	45	28	30	36
4	48	50	45	41	54	39	52	44	43	28	31	33
5	49	51	44	42	50	40	50	47	38	27	47	32
6	48	50	45	50	49	39	49	43	35	27	40	32
7	48	48	44	47	49	38	48	41	34	27	32	32
8	50	49	37	45	48	37	48	41	38	27	30	34
9	53	51	33	45	48	39	47	44	40	27	29	40
10	53	52	32	47	49	250	46	41	36	27	29	40
11	50	48	34	50	50	1100	44	39	33	27	29	36
12	49	51	35	62	50	478	43	39	39	27	28	32
13	48	60	36	54	50	252	42	40	43	27	29	32
14	49	56	36	49	49	350	42	38	37	27	30	32
15	49	54	35	47	47	272	42	40	35	27	31	32
16	51	58	34	47	47	100	42	40	34	27	31	31
17	51	56	34	47	47	80	43	38	33	27	29	31
18	53	51	36	47	46	64	42	39	32	35	28	30
19	51	50	34	70	46	68	41	41	32	41	28	30
20	50	49	37	100	46	72	41	57	31	40	31	29
21	53	47	36	60	45	74	43	45	31	34	31	29
22	53	47	36	72	43	114	43	40	31	32	29	29
23	54	48	37	120	45	227	44	38	30	32	31	28
24	54	49	36	100	48	192	42	38	29	33	30	28
25	50	48	36	62	52	146	58	38	30	32	29	29
26	47	58	37	54	49	115	54	39	31	32	35	29
27	48	59	70	72	46	97	46	35	33	31	49	29
28	46	52	48	130	43	89	63	34	31	30	38	29
29	45	48	42	200	---	82	61	38	28	31	35	29
30	45	47	41	260	---	72	51	43	28	33	32	29
31	46	---	40	400	---	64	---	42	---	33	37	---
TOTAL	1549	1527	1230	2538	1566	4708	1437	1281	1042	931	1001	1010
MEAN	50.0	50.9	39.7	81.9	55.9	152	47.9	41.3	34.7	30.0	32.3	33.7
MAX	54	60	70	400	246	1100	63	57	45	41	49	78
MIN	45	46	32	39	43	37	41	34	28	27	28	28
CFSM	.35	.36	.28	.58	.39	1.07	.34	.29	.24	.21	.23	.24
IN.	.41	.40	.32	.66	.41	1.23	.38	.34	.27	.24	.26	.26

CAL YR 1988 TOTAL 25883 MEAN 70.7 MAX 320 MIN 32 CFSM .50 IN. 6.78  
WTR YR 1989 TOTAL 19820 MEAN 54.3 MAX 1100 MIN 27 CFSM .38 IN. 5.19

## PLATTE RIVER BASIN

05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI

LOCATION.--Lat 42°43'23", long 90°31'41", in NE 1/4 NE 1/4 sec.19, T.3 N., R.1 W., Grant County, Hydrologic Unit 07060003, on left bank 150 ft upstream from Stumptown Road, 2.6 mi southwest of Post Office in Platteville.

DRAINAGE AREA.--79.7 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 11, 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 760 ft, from topographic map.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,970 ft<sup>3</sup>/s, Mar. 11, 1989, gage height, 11.55 ft; minimum daily, 6.8 ft<sup>3</sup>/s, Aug. 18, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,970 ft<sup>3</sup>/s, Mar. 11, gage height, 11.55 ft; minimum daily, 6.8 ft<sup>3</sup>/s, Aug. 18.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Jan. 23, Jan. 27-31, and Feb. 2 to Mar. 10.)

6.8	4.7	8.5	268
6.9	7.8	9.0	463
7.0	13	9.5	732
7.2	28	10.0	1,090
7.6	71	10.5	1,560
8.0	138		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	21	20	17	88	16	23	20	16	14	10	156
2	20	19	21	17	40	16	24	19	15	15	9.9	25
3	19	20	21	17	27	16	23	19	26	14	9.7	16
4	18	24	19	17	23	17	23	19	18	13	11	14
5	18	23	20	19	21	16	22	21	15	12	31	14
6	18	21	20	23	20	16	20	17	14	12	12	14
7	19	21	20	21	19	16	19	17	14	13	8.6	13
8	19	21	17	18	18	16	20	17	14	13	8.0	18
9	20	23	16	18	18	25	18	20	14	14	8.2	23
10	20	25	15	20	18	400	17	17	14	13	8.0	17
11	19	22	15	21	18	1170	17	15	13	17	7.8	15
12	18	27	15	25	18	194	17	16	21	13	7.7	13
13	19	32	16	22	18	92	16	16	20	12	7.3	14
14	20	25	16	21	18	131	17	15	16	11	8.0	13
15	19	25	16	21	17	102	16	18	14	11	10	13
16	21	30	16	20	17	42	16	16	16	11	8.0	13
17	23	23	16	20	17	35	17	15	15	11	7.2	13
18	23	21	16	19	17	37	16	17	14	28	6.8	13
19	21	22	17	22	17	37	16	18	15	23	7.9	13
20	20	20	18	50	17	33	17	22	15	15	12	12
21	26	19	17	30	17	28	18	16	16	11	8.0	12
22	21	19	17	45	16	43	17	14	17	11	12	12
23	26	20	18	80	16	75	17	14	17	11	12	11
24	23	20	17	58	17	60	16	14	17	12	8.5	11
25	21	20	17	33	17	47	27	14	16	11	7.8	11
26	21	33	17	36	16	39	22	13	19	11	13	11
27	21	28	40	50	16	36	20	12	18	11	10	11
28	21	23	25	90	16	38	40	12	15	10	17	11
29	20	22	19	150	---	33	26	14	14	14	13	12
30	19	23	18	190	---	28	22	15	13	12	10	11
31	20	---	17	220	---	25	---	16	---	11	13	---
TOTAL	633	692	572	1410	597	2879	599	508	481	410	323.4	555
MEAN	20.4	23.1	18.5	45.5	21.3	92.9	20.0	16.4	16.0	13.2	10.4	18.5
MAX	26	33	40	220	88	1170	40	22	26	28	31	156
MIN	18	19	15	17	16	16	16	12	13	10	6.8	11
CFSM	.26	.29	.23	.57	.27	1.17	.25	.21	.20	.17	.13	.23
IN.	.30	.32	.27	.66	.28	1.34	.28	.24	.22	.19	.15	.26

CAL YR 1988 TOTAL 12685 MEAN 34.7 MAX 193 MIN 15 CFSM .43 IN. 5.92  
WTR YR 1989 TOTAL 9659.4 MEAN 26.5 MAX 1170 MIN 6.8 CFSM .33 IN. 4.51

## PLATTE RIVER BASIN

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05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI--CONTINUED

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1987 to current year.

DISSOLVED OXYGEN: July 1987 to current year.

INSTRUMENTATION.--Continuous water temperature and dissolved oxygen recorder since July 1987.

REMARKS.--Water-quality analyses by the Wisconsin State Laboratory of Hygiene.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 32.0°C July 15, 1988, July 10, 1989; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 19.7 mg/L July 16, 1989; minimum observed, 0.5 mg/L Aug. 5, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 32.0°C July 10; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 19.7 mg/L July 16; minimum observed, 0.5 mg/L Aug. 5.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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 (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)
OCT 1988							
05...	1115	85543	--	18	775	8.40	9.0
NOV							
29...	1350	85543	--	21	750	--	2.0
29...	1400	85543	--	23	--	8.40	2.0
JAN 1989							
11...	1330	85543	--	22	750	--	0.0
22...	1845	85543	45	--	--	--	0.0
23...	0330	85543	80	--	--	--	0.0
23...	0430	85543	80	--	--	--	0.0
23...	1230	85543	80	--	--	--	0.5
23...	1231	85543	80	--	--	--	0.5
29...	0700	85543	150	--	--	--	0.5
29...	1545	85543	150	--	--	--	0.5
29...	1915	85543	150	--	--	--	0.0
30...	1000	85543	190	--	--	--	0.5
30...	1630	85543	190	--	--	--	1.0
30...	2345	85543	190	--	--	--	0.0
31...	0830	85543	220	--	--	--	0.0
31...	1100	85543	--	95	385	--	2.0
31...	1225	85543	220	--	--	--	1.5
31...	1226	85543	220	--	--	--	1.5
31...	1530	85543	220	--	--	--	2.0
31...	2015	85543	220	--	--	--	0.0
FEB							
01...	0215	85543	--	204	--	--	0.0
22...	1150	85543	--	24	770	--	0.0
MAR							
11...	1830	85543	--	2680	--	--	0.0
11...	2030	85543	--	2970	--	--	0.5
12...	0015	85543	--	1080	--	--	0.0
APR							
13...	1440	85543	--	18	750	--	10.0
20...	1300	85543	--	16	--	--	12.0
28...	0545	85543	--	112	--	--	12.5
28...	0615	85543	--	105	--	--	11.5
28...	0800	85543	--	50	--	--	11.5
JUN							
29...	1055	85543	--	11	750	--	21.0

## PLATTE RIVER BASIN

05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI--CONTINUED

## WATER-QUALITY RECORDS

DATE	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988							
05...	2.3	12.6	2.2	8	4.20	<0.020	0.390
NOV							
29...	--	--	--	--	--	--	--
29...	3.2	14.6	1.8	4	4.50	0.040	0.330
JAN 1989							
11...	--	--	--	--	--	--	--
22...	150	--	--	660	--	1.70	--
23...	78	--	--	328	--	2.60	--
23...	99	--	<23	416	--	3.10	--
23...	64	--	<23	244	--	2.20	--
23...	47	--	--	122	--	2.30	--
29...	85	--	--	372	--	2.70	--
29...	120	--	--	640	--	2.90	--
29...	320	--	--	1360	--	3.20	--
30...	250	--	--	788	--	3.00	--
30...	160	--	--	664	--	2.60	--
30...	450	--	--	2380	--	4.20	--
31...	370	--	--	1630	--	3.00	--
31...	--	--	--	--	--	--	--
31...	260	--	--	1120	--	2.70	--
31...	130	--	--	304	--	2.80	--
31...	220	--	--	990	--	2.40	--
31...	2400	--	--	15100	--	3.60	--
FEB							
01...	1200	--	--	7880	--	2.50	--
22...	--	--	--	--	--	--	--
MAR							
11...	820	--	--	6810	--	3.50	--
11...	660	--	--	5110	--	3.10	--
12...	400	--	--	1830	--	2.70	--
APR							
13...	--	--	--	--	--	--	--
20...	2.0	15.3	--	3	2.80	<0.020	0.390
28...	--	8.2	--	486	--	0.270	--
28...	--	8.7	--	1140	--	0.220	--
28...	--	8.6	--	456	--	0.090	--
JUN							
29...	--	--	--	--	--	--	--
DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)
JUL 1989							
14...	1130	85543	9.2	725	23.0	--	--
28...	1245	85543	11	715	26.0	--	--
AUG							
22...	2130	85543	57	--	24.0	22	6.1
SEP							
01...	0015	85543	500	--	20.0	290	--
01...	0030	85543	789	--	20.5	710	--
01...	0045	85543	906	--	20.5	600	--
01...	0230	85543	291	--	20.0	430	--
01...	0600	85543	198	--	20.0	370	--
01...	1815	85543	54	--	21.5	52	--
02...	0915	85543	25	--	17.0	65	--
02...	0916	85543	25	--	17.0	49	--
06...	1320	85543	14	680	23.0	--	--



05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI--CONTINUED

## WATER-QUALITY RECORDS

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	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, AM- MONIA + ORGANIC TOTAL (MG/L) AS N (00625)
JUL 1989						
14...	--	--	--	--	--	--
28...	--	--	--	--	--	--
AUG						
22...	9.8	346	44	3.00	0.060	2.3
SEP						
01...	--	1870	230	--	0.130	--
01...	--	5110	580	--	0.460	--
01...	--	3630	400	--	0.340	--
01...	--	1170	148	--	0.230	--
01...	--	980	136	--	0.420	--
01...	--	352	56	--	0.630	--
02...	--	206	30	--	0.330	--
02...	--	76	22	--	0.350	--
06...	--	--	--	--	--	--

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ATRA- ZINE, TOTAL (UG/L) (39630)	CARBO- FURAN WATER TOT.REC (UG/L) (82615)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)	CYAN- AZINE TOTAL (UG/L) (81757)	FONOFOS (DY- FONATE) WATER TOT.REC (UG/L) (82614)	METOLA- CHLOR IN WHOLE WATER (UG/L) (39356)	PHORATE OTAL (UG/L) (39023)	TERBU- FOS (UG/L) (82088)
APR 1989											
28...	0545	112	0.10	0.41	<2.0	<1.0	<0.90	<0.2	0.20	<0.20	<0.20
28...	0800	50	0.21	0.52	<2.0	<1.0	<0.90	<0.2	0.32	<0.20	<0.20

## PLATTE RIVER BASIN

05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	19.5	17.0	18.0	6.0	2.5	4.5	---	---	---	.00	.00	.00
2	18.0	14.5	16.5	6.0	1.5	4.0	---	---	---	.00	.00	.00
3	15.5	10.5	13.5	8.5	4.0	6.5	---	---	---	.00	.00	.00
4	13.0	9.5	11.0	9.0	7.0	8.0	---	---	---	.00	.00	.00
5	11.5	7.0	9.5	8.5	5.0	6.5	---	---	---	.00	.00	.00
6	11.5	6.5	9.0	4.5	3.0	4.0	3.0	.00	1.0	.00	.00	.00
7	12.0	6.0	9.0	5.0	2.5	4.0	2.0	.00	1.0	.00	.00	.00
8	12.5	7.5	10.5	6.5	3.0	5.0	.50	.00	.00	.00	.00	.00
9	14.0	9.5	12.0	7.5	5.5	6.5	.00	.00	.00	.00	.00	.00
10	14.5	10.5	12.5	7.5	4.5	6.0	.00	.00	.00	.00	.00	.00
11	12.0	8.0	10.0	5.5	3.5	4.5	.00	.00	.00	.00	.00	.00
12	10.0	5.5	8.0	4.5	3.5	4.0	.00	.00	.00	.00	.00	.00
13	9.5	4.5	7.5	6.5	3.5	5.0	.00	.00	.00	.00	.00	.00
14	13.0	7.0	10.0	6.5	4.0	5.5	.00	.00	.00	.00	.00	.00
15	15.0	9.0	12.0	11.5	6.0	8.0	.00	.00	.00	.00	.00	.00
16	16.0	13.0	14.5	11.0	4.0	7.5	.00	.00	.00	.00	.00	.00
17	13.0	11.5	12.0	4.5	2.0	3.5	.00	.00	.00	.00	.00	.00
18	12.5	9.5	11.0	5.0	2.5	4.0	.00	.00	.00	.00	.00	.00
19	11.0	7.5	9.5	6.5	5.0	5.5	.00	.00	.00	.50	.00	.00
20	9.0	7.0	8.0	5.0	2.5	4.0	.50	.00	.00	.00	.00	.00
21	10.0	8.0	9.0	2.5	1.5	2.0	.50	.00	.00	.00	.00	.00
22	9.5	5.0	7.5	3.0	.50	2.0	1.5	.00	.50	.50	.00	.00
23	10.5	7.0	8.5	4.5	1.5	3.0	2.0	1.0	1.0	.50	.00	.00
24	7.5	5.5	6.5	5.5	2.0	4.0	1.5	.00	1.0	.50	.00	.50
25	7.0	3.5	5.5	5.0	3.5	4.5	.00	.00	.00	1.0	.50	1.0
26	6.5	2.0	4.5	7.5	4.5	6.0	.00	.00	.00	2.0	.00	.50
27	7.0	5.0	6.0	6.5	2.5	4.5	.00	.00	.00	2.0	.00	.50
28	5.5	3.0	4.5	2.5	.50	2.0	.00	.00	.00	1.0	.00	.50
29	4.5	1.5	3.0	---	---	---	.00	.00	.00	1.0	.00	.50
30	4.0	.00	2.0	---	---	---	.00	.00	.00	1.5	.00	.50
31	5.5	.50	3.0	---	---	---	.00	.00	.00	2.0	.00	.50
MONTH	19.5	.00	9.2	---	---	---	---	---	---	2.0	.00	.15
FEBRUARY			MARCH			APRIL			MAY			
1	1.5	.00	.50	.00	.00	.00	5.0	2.0	3.5	13.0	9.5	11.0
2	.00	.00	.00	.00	.00	.00	11.5	3.5	7.5	13.5	7.5	10.5
3	.00	.00	.00	.00	.00	.00	10.0	7.0	8.5	17.5	7.5	12.5
4	.00	.00	.00	.00	.00	.00	9.5	5.5	8.0	14.5	11.0	12.0
5	.00	.00	.00	.00	.00	.00	10.0	6.0	7.5	16.0	9.5	12.5
6	.00	.00	.00	.50	.00	.00	11.0	4.5	8.0	10.5	7.0	8.5
7	.00	.00	.00	.50	.00	.00	11.5	4.5	8.5	15.0	5.0	10.0
8	.00	.00	.00	.50	.00	.00	11.0	7.0	8.5	12.5	9.0	11.0
9	.00	.00	.00	1.5	.00	.50	7.5	3.0	5.0	18.0	9.0	13.5
10	.00	.00	.00	1.5	.00	.50	7.5	2.0	4.5	19.0	10.0	14.5
11	.00	.00	.00	1.5	.00	.50	10.5	2.0	6.0	19.5	10.0	15.0
12	.00	.00	.00	1.5	.00	1.0	10.5	3.5	7.5	19.5	11.0	15.5
13	.00	.00	.00	3.5	.50	1.5	11.5	3.5	8.0	20.5	12.5	16.5
14	.00	.00	.00	2.0	1.5	2.0	14.5	8.0	11.0	20.0	14.0	17.0
15	.00	.00	.00	3.0	.00	1.5	14.5	6.5	11.0	22.5	14.5	18.5
16	.00	.00	.00	4.5	.00	2.0	12.0	8.0	10.0	23.5	15.5	19.5
17	.00	.00	.00	1.5	.00	.50	13.5	9.5	11.0	24.0	16.0	20.0
18	.00	.00	.00	1.0	.00	.50	14.5	9.0	11.5	20.5	17.5	18.5
19	.00	.00	.00	2.0	.00	1.0	15.5	6.5	11.5	21.0	17.5	19.0
20	.00	.00	.00	2.5	.50	1.0	13.0	9.0	11.0	24.0	17.5	20.5
21	.50	.00	.00	4.0	.00	1.5	18.0	9.5	13.5	23.0	15.0	19.5
22	.00	.00	.00	7.0	.00	3.0	14.5	10.0	11.0	22.5	16.0	19.5
23	.00	.00	.00	8.5	2.5	5.0	17.0	9.0	12.5	24.5	16.0	20.5
24	.00	.00	.00	9.5	4.0	6.5	17.0	10.5	14.0	25.5	18.5	22.0
25	.00	.00	.00	12.0	5.0	8.0	20.5	14.0	17.0	24.5	19.0	21.5
26	.50	.00	.00	14.5	6.5	10.5	21.5	14.0	17.5	21.5	16.0	19.0
27	.00	.00	.00	18.0	10.5	14.0	19.5	14.0	16.5	22.0	13.0	17.5
28	.50	.00	.00	14.5	12.0	13.5	16.0	11.0	12.5	19.5	14.0	17.0
29	---	---	---	12.0	8.5	10.5	13.5	10.0	11.5	21.0	16.0	18.5
30	---	---	---	10.0	6.5	8.0	16.5	9.0	12.5	21.5	18.5	20.0
31	---	---	---	6.5	4.0	5.5	---	---	---	21.0	19.0	20.0
MONTH	1.5	.00	.02	18.0	.00	3.2	21.5	2.0	10.2	25.5	5.0	16.5

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WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## PLATTE RIVER BASIN

05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI--CONTINUED

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	16.4	11.6	13.5	15.8	8.0	11.4
2	---	---	---	---	---	---	17.3	9.9	13.4	16.5	8.7	12.3
3	---	---	---	---	---	---	17.0	9.9	12.3	18.1	7.5	12.1
4	---	---	---	---	---	---	17.2	10.2	13.1	13.8	7.5	10.0
5	---	---	---	---	---	---	17.4	10.6	13.4	16.9	8.3	11.4
6	---	---	---	---	---	---	17.9	10.3	13.5	15.7	8.4	11.6
7	---	---	---	---	---	---	18.4	10.0	13.5	16.9	7.6	12.2
8	---	---	---	---	---	---	18.3	10.0	13.1	15.3	7.6	10.9
9	---	---	---	---	---	---	18.2	10.7	14.1	16.6	6.8	11.2
10	---	---	---	---	---	---	17.7	10.7	14.0	15.9	6.5	10.4
11	---	---	---	---	---	---	17.5	9.5	13.3	15.1	6.0	9.9
12	---	---	---	---	---	---	17.9	9.6	13.2	14.2	5.9	9.4
13	---	---	---	---	---	---	18.5	9.0	13.5	13.1	5.7	8.8
14	---	---	---	---	---	---	17.4	8.4	12.0	12.3	5.7	8.6
15	---	---	---	---	---	---	17.2	8.1	11.9	12.0	5.1	8.1
16	---	---	---	---	---	---	14.8	8.1	11.2	11.4	5.1	7.8
17	---	---	---	---	---	---	16.5	8.3	11.4	11.1	5.2	7.8
18	---	---	---	---	---	---	16.9	8.2	11.4	9.5	5.2	7.4
19	---	---	---	---	---	---	16.7	7.5	11.5	10.5	5.8	7.5
20	---	---	---	---	---	---	15.2	7.5	10.4	10.5	6.0	7.7
21	---	---	---	---	---	---	15.9	7.0	10.7	11.5	5.7	8.0
22	---	---	---	---	---	---	11.8	7.1	9.3	12.0	5.7	8.2
23	---	---	---	---	---	---	15.0	7.4	10.7	11.9	5.5	8.2
24	---	---	---	---	---	---	14.9	6.7	10.4	11.5	5.4	7.9
25	---	---	---	---	---	---	12.6	6.7	9.0	10.5	5.0	7.4
26	---	---	---	---	---	---	14.7	6.4	9.2	10.6	5.0	7.6
27	---	---	---	---	---	---	15.3	6.4	9.7	11.5	5.3	8.0
28	---	---	---	11.4	8.3	9.6	10.9	6.9	9.0	11.3	5.3	8.0
29	---	---	---	13.7	9.1	11.1	13.5	7.2	10.1	10.6	4.9	7.2
30	---	---	---	15.5	10.1	12.2	16.2	8.0	11.3	9.7	4.6	6.4
31	---	---	---	16.1	10.6	13.0	---	---	---	8.4	4.4	6.1
MONTH	---	---	---	---	---	---	18.5	6.4	11.8	18.1	4.4	9.0
		JUNE			JULY			AUGUST			SEPTEMBER	
1	10.4	4.8	7.1	17.9	3.6	9.4	15.6	2.1	7.6	---	---	---
2	---	---	---	18.0	3.0	9.4	16.5	2.1	8.4	---	---	---
3	---	---	---	17.9	3.1	9.3	15.9	3.1	7.8	8.9	6.2	7.4
4	---	---	---	16.9	2.7	8.3	15.5	3.7	7.4	9.6	6.1	7.7
5	---	---	---	16.5	3.0	8.2	6.0	.5	2.7	10.0	6.0	8.0
6	---	---	---	16.6	2.8	8.2	10.0	3.9	6.5	10.7	6.0	7.8
7	---	---	---	16.3	2.7	7.8	11.4	4.1	7.2	11.0	6.5	8.0
8	---	---	---	15.7	2.7	8.1	12.6	1.9	7.5	11.9	6.3	8.1
9	12.3	5.1	7.9	17.1	2.7	8.3	13.0	4.3	7.9	8.9	6.2	7.3
10	13.7	5.3	8.8	16.0	1.9	7.5	13.8	2.3	7.4	11.1	6.3	8.3
11	13.7	5.2	8.9	12.2	1.7	6.0	14.3	2.7	7.7	11.7	6.4	8.7
12	12.5	5.9	8.4	15.6	2.8	7.8	15.5	5.2	9.0	12.6	7.1	9.4
13	14.0	5.8	9.3	16.4	2.9	8.4	15.3	5.2	8.1	13.4	7.8	10.0
14	14.0	5.7	9.3	18.9	3.5	9.7	13.0	5.6	8.3	13.8	7.5	9.9
15	14.2	6.1	9.6	18.5	3.5	8.1	12.1	5.6	8.1	14.7	7.0	9.9
16	---	---	---	19.7	4.5	10.2	12.8	5.9	8.4	14.6	7.0	9.8
17	16.5	5.6	10.2	19.2	3.9	10.3	13.5	5.8	8.5	15.1	6.8	9.8
18	15.3	5.4	9.4	8.8	3.4	6.0	13.3	5.8	8.6	15.7	6.6	9.9
19	16.7	4.6	9.7	9.0	5.1	6.6	13.0	5.7	8.3	15.9	6.5	9.9
20	17.0	4.0	9.2	12.0	4.6	7.5	11.7	5.5	7.7	16.5	6.5	10.0
21	17.8	2.9	9.4	11.1	4.6	7.0	12.5	5.3	8.0	16.3	6.5	10.1
22	17.5	3.6	9.1	13.2	5.1	8.6	12.4	5.2	7.6	14.9	6.5	9.8
23	17.1	3.3	9.0	15.3	4.4	8.7	10.5	5.5	7.2	14.5	8.0	10.6
24	18.1	3.4	9.5	---	---	---	12.1	6.0	8.2	---	---	---
25	17.4	1.9	7.9	---	---	---	12.9	6.0	8.3	---	---	---
26	14.8	3.4	7.7	---	---	---	8.8	5.8	7.1	---	---	---
27	15.3	3.7	8.5	---	---	---	11.5	6.1	8.0	---	---	---
28	16.7	3.4	8.7	---	---	---	9.7	6.0	7.2	---	---	---
29	17.6	2.9	9.2	---	---	---	11.5	4.6	7.6	---	---	---
30	17.8	4.2	9.7	12.8	4.6	7.6	11.9	4.6	7.7	---	---	---
31	---	---	---	15.0	3.7	8.1	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

## PLATTE RIVER BASIN

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05414213 LITTLE PLATTE RIVER NEAR PLATTEVILLE, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--July 1987 to current year (during non-freezing periods).

GAGE.--Micrologger.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.74 in., Aug. 31, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 2.74 in., Aug. 31.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.00	---	---	---	---	.09	.10	.01	.00	.00	.26
2	.00	.00	---	---	---	---	.00	.02	.17	.00	.00	.00
3	.01	.00	---	---	---	---	.01	.00	.29	.00	.11	.00
4	.00	.27	---	---	---	---	.00	.21	.01	.00	.75	.01
5	.01	.02	---	---	---	---	.00	.02	.00	.00	.41	.01
6	.00	.03	---	---	---	---	.00	.00	.00	.00	.00	.03
7	.00	.10	---	---	---	---	.00	.00	.00	.00	.00	.00
8	.00	.00	---	---	---	---	.05	.09	.00	.00	.00	.33
9	.00	.26	---	---	---	---	.00	.19	.00	.00	.00	.43
10	.01	.01	---	---	---	---	.00	.00	.00	.00	.00	.01
11	.00	.00	---	---	---	---	.00	.00	.00	.65	.00	.00
12	.00	.60	---	---	---	---	.00	.00	.56	.00	.00	.03
13	.00	.00	---	---	---	---	.00	.00	.00	.00	.03	.13
14	.00	.00	---	---	---	---	.00	.00	.01	.00	.21	.00
15	.00	.25	---	---	---	---	.00	.18	.10	.03	.00	.00
16	.16	.00	---	---	---	---	.05	.00	.02	.00	.00	.00
17	.37	.01	---	---	---	---	.03	.00	.00	.00	.00	.00
18	.00	.00	---	---	---	---	.00	.29	.00	1.38	.00	.00
19	.00	.03	---	---	---	---	.00	.16	.00	.26	.60	.00
20	.28	.00	---	---	---	---	.17	.00	.00	.01	.00	.00
21	.02	.00	---	---	---	---	.00	.00	.00	.14	.00	.00
22	.08	.01	---	---	---	---	.09	.00	.00	.03	.25	.00
23	.27	.00	---	---	---	---	.13	.00	.00	.15	.04	.00
24	.01	.00	---	---	---	---	.00	.01	.00	.01	.00	.00
25	.00	.00	---	---	---	---	.28	.00	.00	.02	.00	.00
26	.00	.75	---	---	---	---	.16	.00	.20	.01	.80	.00
27	.02	.00	---	---	---	.00	.05	.00	.00	.01	.01	.00
28	.01	.03	---	---	---	.21	.93	.00	.00	.00	.34	.00
29	.00	.00	---	---	---	.00	.00	.35	.00	.35	.00	.00
30	.05	.00	---	---	---	.00	.01	.00	.00	.01	.00	.00
31	.03	---	---	---	---	.01	---	.17	---	.01	2.74	---
TOTAL	1.35	2.37	---	---	---	---	2.05	1.79	1.37	3.07	6.29	1.24

## SINSINAWA RIVER BASIN

05414800 SINSINAWA RIVER NEAR HAZEL GREEN, WI

LOCATION.--Lat 42°32'02", long 90°28'53", in NW 1/4 NW 1/4 sec.27, T.1 N., R.1 W., Grant County, Hydrologic Unit 07060005, on left bank 75 ft upstream from the Highway 11 bridge and 2.5 mi west of Hazel Green.

DRAINAGE AREA.--24.9 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 23, 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 790 ft, from topographic map.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,270 ft<sup>3</sup>/s, Mar. 10, 1989, gage height, 7.54 ft; minimum, 3.4 ft<sup>3</sup>/s, Dec. 25, 1988, gage height, 2.19 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,270 ft<sup>3</sup>/s, Mar. 10, gage height, 7.54 ft; minimum, 3.4 ft<sup>3</sup>/s, Dec. 25, gage height, 2.19 ft, result of freezeup.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Jan. 21, and Feb. 3 to Mar. 9.)

2.2	3.9	3.0	39
2.3	5.7	3.5	85
2.5	11	4.0	151
2.7	20	5.0	348

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	8.0	7.6	7.6	10	6.4	6.6	6.0	6.6	5.2	5.2	23
2	7.6	8.0	7.6	7.2	7.6	6.4	6.8	6.1	6.3	5.3	5.0	5.6
3	7.4	8.1	7.7	7.2	6.8	8.0	6.7	6.1	6.7	5.3	5.1	5.0
4	7.4	8.7	7.5	7.4	6.6	14	6.6	6.3	6.6	5.2	5.2	5.0
5	7.3	8.4	7.6	7.8	6.6	10	6.4	6.4	6.4	5.1	15	5.0
6	7.4	8.1	7.8	9.0	6.6	8.4	6.3	5.9	6.4	5.1	5.0	5.4
7	7.5	8.1	7.6	12	6.6	9.0	6.2	6.1	6.4	5.1	4.7	4.7
8	7.6	8.0	7.1	11	6.6	11	6.4	6.1	6.6	5.3	4.6	9.1
9	7.8	8.3	7.0	9.0	6.8	90	5.9	6.7	6.5	5.3	4.6	8.5
10	7.7	8.9	6.6	9.0	6.8	301	6.0	5.9	6.5	5.2	4.6	5.5
11	7.6	7.9	6.8	25	6.8	108	6.2	5.8	6.4	5.3	4.6	4.9
12	7.4	9.1	6.8	35	7.0	16	6.1	5.7	10	5.9	4.7	4.8
13	7.5	9.2	7.2	11	7.0	12	6.0	5.8	7.1	5.2	4.7	5.0
14	7.8	8.1	7.0	10	6.8	14	6.0	5.7	6.5	5.2	4.9	4.8
15	7.8	8.4	6.6	9.6	6.8	12	5.9	6.1	6.4	5.3	4.9	4.8
16	8.0	9.2	6.4	9.2	6.6	7.9	6.2	5.8	6.5	5.3	4.7	4.8
17	8.3	8.0	6.4	9.8	6.6	7.3	6.2	5.7	6.5	5.3	4.6	4.8
18	8.2	7.9	6.6	8.8	6.6	8.5	5.9	6.2	6.6	7.6	4.6	4.8
19	7.9	7.9	6.8	50	6.6	9.4	5.9	7.4	6.5	7.1	5.1	4.8
20	8.0	7.7	6.8	12	6.6	8.8	6.0	6.1	6.4	5.8	6.6	4.7
21	8.7	7.6	6.8	9.0	6.4	7.8	6.1	5.6	6.3	5.4	4.9	4.7
22	8.1	7.6	7.0	62	6.4	7.3	6.0	5.8	6.2	5.5	5.0	4.8
23	9.2	7.9	7.2	50	6.4	7.5	6.4	5.7	5.9	5.3	5.3	4.6
24	8.2	7.9	7.0	17	6.4	7.4	6.0	6.0	5.7	5.4	4.9	4.6
25	7.9	7.8	7.0	11	6.8	7.2	6.1	5.8	5.7	5.3	4.9	4.7
26	7.9	11	6.8	15	6.6	7.2	6.0	5.7	5.8	5.2	12	4.6
27	7.9	9.0	30	27	6.4	7.2	6.1	5.7	5.7	5.1	7.1	4.7
28	7.7	8.0	10	22	6.4	8.4	7.3	5.9	5.4	5.0	6.0	4.7
29	7.6	7.9	8.4	99	---	7.4	6.4	6.2	5.3	5.1	5.4	4.8
30	7.8	7.9	8.2	34	---	6.8	6.1	6.4	5.3	5.5	5.0	4.7
31	8.0	---	8.0	24	---	6.6	---	6.7	---	5.3	5.4	---
TOTAL	242.8	248.6	247.9	637.6	190.2	748.9	186.8	187.4	191.2	168.2	174.3	171.9
MEAN	7.83	8.29	8.00	20.6	6.79	24.2	6.23	6.05	6.37	5.43	5.62	5.73
MAX	9.2	11	30	99	10	301	7.3	7.4	10	7.6	15	23
MIN	7.3	7.6	6.4	7.2	6.4	6.4	5.9	5.6	5.3	5.0	4.6	4.6
CFSM	.31	.33	.32	.83	.27	.97	.25	.24	.26	.22	.23	.23
IN.	.36	.37	.37	.95	.28	1.12	.28	.28	.29	.25	.26	.26

CAL YR 1988 TOTAL 4043.6 MEAN 11.0 MAX 80 MIN 6.4 CFSM .44 IN. 6.04  
WTR YR 1989 TOTAL 3395.8 MEAN 9.30 MAX 301 MIN 4.6 CFSM .37 IN. 5.07

05414800 SINSINAWA RIVER NEAR HAZEL GREEN, WI--CONTINUED

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1987 to current year.

DISSOLVED OXYGEN: July 1987 to current year.

INSTRUMENTATION.--Continuous water temperature and dissolved oxygen recorder since July 1987.

REMARKS.--Water-quality analyses by the Wisconsin State Laboratory of Hygiene.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 32.0°C July 10, 1989; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 17.5 mg/L Apr. 29, 1988; minimum observed, 1.4 mg/L Aug. 23, 1988.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 32.0°C July 10; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 17.3 mg/L Mar. 30; minimum observed, 3.0 mg/L June 23.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	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 (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)
OCT 1988								
05...	0915	85543	--	7.1	795	8.10	6.0	6.2
NOV								
29...	1210	85543	--	7.9	750	--	3.0	--
29...	1230	85543	--	7.9	--	8.20	1.0	3.8
JAN 1989								
23...	1400	85543	--	18	--	--	--	53
23...	1401	85543	--	18	--	--	--	48
23...	1736	85543	--	155	--	--	--	180
23...	1737	85543	--	155	--	--	--	130
30...	1630	85543	34	--	--	--	--	52
30...	1745	85543	34	--	--	--	--	68
30...	1915	85543	34	--	--	--	--	82
30...	2359	85543	34	--	--	--	--	99
FEB								
22...	0955	85543	--	8.3	760	--	0.0	--
MAR								
11...	1430	85543	--	269	--	--	--	280
11...	1530	85543	--	386	--	--	--	360
11...	1930	85543	--	165	--	--	--	260
APR								
13...	1315	85543	--	5.9	690	--	10.0	--
20...	1140	85543	--	5.9	--	--	12.5	3.0
MAY								
19...	1200	85543	--	6.2	690	--	18.5	--
JUN								
28...	1405	85543	--	5.2	650	--	26.5	--
JUL								
17...	1020	85543	--	5.1	645	--	22.0	--
28...	1030	85543	--	4.9	610	--	24.5	--
AUG								
26...	1300	85543	--	16	--	--	--	31
SEP								
01...	0115	85543	--	23	--	--	--	100
01...	0300	85543	--	31	--	--	--	150
01...	0515	85543	--	49	--	--	--	160
06...	1110	85543	--	4.9	520	--	21.5	--

	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDED (00530)	RESIDUE VOLA- TILE, SUS- PENDED (00535)	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- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988							
05...	12.0	2.2	20	--	5.30	0.040	--
NOV							
29...	--	--	--	--	--	--	--
29...	13.6	1.8	10	--	5.80	0.090	--
JAN 1989							
23...	--	<68	184	--	--	3.40	--
23...	--	--	66	--	--	3.00	--
23...	--	<80	1250	--	--	3.90	--
23...	--	--	1020	--	--	3.90	--
30...	--	--	212	--	--	2.80	--
30...	--	--	208	--	--	3.20	--
30...	--	--	264	--	--	3.30	--
30...	--	--	224	--	--	3.60	--
FEB							
22...	--	--	--	--	--	--	--
MAR							
11...	--	--	1220	--	--	4.20	--
11...	--	--	2080	--	--	3.90	--
11...	--	--	1130	--	--	3.90	--
APR							
13...	--	--	--	--	--	--	--
20...	12.4	--	10	--	4.20	0.160	--
MAY							
19...	--	--	--	--	--	--	--
JUN							
28...	--	--	--	--	--	--	--
JUL							
17...	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--
AUG							
26...	--	<6.8	98	18	2.70	0.140	1.6
SEP							
01...	--	--	240	38	--	0.200	--
01...	--	--	364	64	--	0.330	--
01...	--	--	500	80	--	0.760	--
06...	--	--	--	--	--	--	--



## SINSINAWA RIVER BASIN

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05414800 SINSINAWA RIVER NEAR HAZEL GREEN, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.0	15.5	16.5	7.0	5.5	6.0	3.0	.50	2.0	.50	.00	.00
2	17.5	14.5	15.5	6.5	5.5	6.0	3.5	1.0	2.5	.50	.00	.00
3	15.5	12.0	13.5	8.5	6.0	7.5	3.0	1.5	2.0	.00	.00	.00
4	---	---	---	9.5	8.5	9.0	3.5	1.5	2.0	.00	.00	.00
5	---	---	---	9.5	6.0	7.5	3.0	1.5	2.0	.00	.00	.00
6	---	---	---	5.5	4.0	5.0	3.0	1.5	2.5	.00	.00	.00
7	11.0	7.5	9.5	6.0	4.5	5.5	2.5	1.0	2.0	.00	.00	.00
8	12.0	9.0	10.5	7.5	5.0	6.5	3.5	.50	2.0	.00	.00	.00
9	14.5	10.5	12.0	8.0	7.0	7.5	2.0	.50	1.0	.00	.00	.00
10	15.0	12.0	13.5	8.0	5.5	7.0	1.5	.00	.50	.00	.00	.00
11	14.0	12.0	13.0	6.5	5.0	5.5	2.5	.00	1.0	.00	.00	.00
12	12.0	10.0	11.0	6.0	5.0	5.0	.00	.00	.00	.00	.00	.00
13	10.0	8.5	9.5	7.5	5.0	6.0	.00	.00	.00	.00	.00	.00
14	13.0	9.0	10.5	7.5	6.0	6.5	.00	.00	.00	.00	.00	.00
15	15.0	10.5	12.5	11.0	7.5	8.5	1.5	.00	.50	.00	.00	.00
16	16.0	13.5	14.5	11.0	6.0	8.5	.00	.00	.00	.00	.00	.00
17	13.5	12.0	12.5	6.0	5.0	5.5	.00	.00	.00	.00	.00	.00
18	13.0	10.0	11.5	6.0	5.0	5.5	.00	.00	.00	.00	.00	.00
19	11.0	8.5	10.0	7.0	6.0	6.5	.00	.00	.00	.50	.00	.00
20	9.5	8.5	8.5	6.5	4.0	5.5	.50	.00	.50	.00	.00	.00
21	10.0	8.5	9.0	4.5	3.5	4.0	1.0	.00	.50	.00	.00	.00
22	9.5	7.0	8.5	4.0	3.5	4.0	1.5	.00	.50	.50	.00	.00
23	10.0	8.5	9.0	5.0	3.5	4.5	2.0	.50	1.0	1.0	.00	.50
24	8.0	6.5	7.0	6.0	4.0	5.0	2.0	.50	1.5	1.0	.00	.50
25	7.5	5.5	6.0	5.5	4.5	5.0	2.5	.00	.50	1.5	1.0	1.5
26	7.0	4.5	6.0	7.0	4.5	6.0	.00	.00	.00	2.0	.50	1.0
27	6.5	6.0	6.5	7.0	3.0	5.0	.00	.00	.00	2.0	.00	1.0
28	6.0	4.0	5.0	3.0	1.5	2.5	.00	.00	.00	2.0	.00	1.0
29	5.0	4.5	4.5	3.0	2.0	2.5	.00	.00	.00	2.0	.50	1.0
30	5.5	4.5	5.0	2.0	.00	1.0	.00	.00	.00	3.5	.50	1.5
31	6.0	4.5	5.0	---	---	---	.50	.00	.00	5.5	1.0	3.0
MONTH	---	---	---	11.0	.00	5.7	3.5	.00	.79	5.5	.00	.35
FEBRUARY			MARCH			APRIL			MAY			
1	3.0	.50	1.5	.50	.00	.00	4.5	2.5	4.0	13.0	9.5	11.0
2	.00	.00	.00	.00	.00	.00	11.0	3.5	7.5	13.0	7.5	10.5
3	.00	.00	.00	.00	.00	.00	10.5	8.0	9.0	17.5	8.0	12.5
4	.00	.00	.00	.00	.00	.00	9.0	6.0	8.0	14.5	10.5	12.0
5	.00	.00	.00	.00	.00	.00	9.5	5.5	7.5	15.5	9.5	12.0
6	.00	.00	.00	.00	.00	.00	10.0	5.0	7.5	10.5	6.0	7.5
7	.00	.00	.00	.50	.00	.00	11.5	5.0	8.5	14.5	4.0	9.0
8	.00	.00	.00	.50	.00	.00	11.5	6.0	8.5	12.5	9.5	11.0
9	.00	.00	.00	.50	.00	.00	6.5	2.5	4.5	17.5	8.5	13.0
10	.00	.00	.00	1.5	.00	.50	8.5	2.0	5.0	18.5	10.5	14.5
11	.00	.00	.00	2.5	.00	1.0	10.0	3.0	6.5	19.0	10.5	15.0
12	.00	.00	.00	2.0	.50	1.5	11.5	4.5	8.0	19.5	11.0	15.5
13	.00	.00	.00	3.5	1.5	2.5	10.0	4.0	7.5	20.5	13.0	16.5
14	.00	.00	.00	3.5	2.5	3.0	12.5	7.5	9.5	20.5	14.0	17.5
15	.00	.00	.00	3.0	1.0	2.0	13.5	7.5	10.5	22.5	14.5	18.0
16	.00	.00	.00	3.5	1.0	2.0	11.5	9.0	10.5	23.5	16.0	19.5
17	.00	.00	.00	2.0	.00	.50	13.5	10.0	11.0	23.0	16.5	20.0
18	.00	.00	.00	1.5	.00	.50	14.5	9.5	11.5	20.0	17.0	18.5
19	.00	.00	.00	2.0	.00	.50	15.5	7.0	11.5	20.5	17.0	18.5
20	.00	.00	.00	2.0	1.0	1.5	12.5	10.5	11.5	23.5	17.0	19.5
21	.00	.00	.00	3.5	.00	1.5	17.5	9.5	13.5	23.0	15.0	18.5
22	.00	.00	.00	6.0	1.0	3.5	14.5	9.5	11.5	22.0	16.0	19.0
23	.00	.00	.00	9.0	3.5	6.5	16.5	8.5	12.0	24.5	16.0	20.0
24	.00	.00	.00	10.5	5.5	8.0	17.0	11.0	14.0	25.0	19.0	22.0
25	.00	.00	.00	12.5	7.0	9.5	21.0	15.0	17.5	25.5	20.0	22.0
26	.50	.00	.00	14.5	8.0	11.5	22.0	15.0	18.0	23.0	17.5	20.0
27	.50	.00	.00	18.5	12.0	15.5	19.0	14.5	16.5	22.5	14.0	18.0
28	.50	.00	.00	16.0	12.5	14.5	15.5	11.0	12.5	19.5	15.0	17.5
29	---	---	---	12.5	8.5	10.5	14.5	10.0	12.0	22.5	16.5	19.0
30	---	---	---	10.0	7.0	8.5	17.0	9.0	12.5	23.0	19.0	21.0
31	---	---	---	7.0	4.5	5.5	---	---	---	21.5	19.5	20.5
MONTH	3.0	.00	.05	18.5	.00	3.6	22.0	2.0	10.3	25.5	4.0	16.4

## 05414800 SINSINAWA RIVER NEAR HAZEL GREEN, WI--CONTINUED

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22.5	18.0	20.0	28.0	20.5	24.0	27.0	21.0	24.0	22.0	19.0	20.5
2	24.0	16.0	20.0	27.5	22.5	25.0	28.0	22.0	24.5	23.5	18.0	20.0
3	21.0	18.0	19.5	29.0	22.5	25.5	29.5	23.5	25.5	21.0	18.0	19.5
4	23.0	16.0	19.5	30.0	23.0	26.0	30.0	24.5	26.5	21.5	18.0	19.5
5	24.5	17.0	20.5	29.5	21.5	25.0	26.0	22.0	24.0	22.5	18.0	20.0
6	24.5	19.0	21.5	29.5	22.0	25.5	23.5	19.0	21.5	23.0	20.0	21.5
7	25.0	18.0	21.5	31.0	24.0	27.0	24.0	17.0	19.5	22.0	20.5	21.0
8	21.5	18.0	20.0	28.0	23.5	25.5	22.5	17.5	19.5	21.5	19.5	20.5
9	18.0	15.5	17.0	31.0	24.0	27.0	24.5	18.0	21.0	20.5	17.5	19.0
10	23.0	14.5	18.5	32.0	25.0	28.0	25.5	19.5	21.5	20.0	15.5	17.5
11	20.0	17.5	18.5	28.5	24.5	26.5	26.0	19.0	22.0	21.0	17.0	18.5
12	19.5	17.0	18.0	28.5	22.5	25.0	25.5	20.0	22.5	17.5	15.0	16.5
13	23.5	16.5	20.0	28.5	23.0	25.0	24.5	20.5	22.0	16.0	14.0	15.0
14	23.0	18.5	20.0	27.0	20.5	23.5	22.5	19.5	21.0	19.0	13.0	15.5
15	18.5	15.5	17.0	24.5	21.5	22.5	23.5	19.5	20.5	19.5	13.5	16.0
16	22.0	14.0	18.0	26.5	19.0	22.5	23.0	18.0	20.0	19.5	14.5	16.0
17	24.0	16.0	20.0	25.5	20.0	22.5	24.0	17.5	20.5	20.5	14.5	17.0
18	23.5	19.0	21.0	24.5	20.5	22.5	24.0	18.0	20.5	21.5	15.5	17.5
19	27.0	19.0	22.5	22.5	19.0	20.5	22.5	18.5	20.0	21.5	16.0	18.0
20	27.5	20.0	23.5	24.5	18.0	20.5	25.0	20.0	22.0	21.5	16.0	18.0
21	27.5	21.5	24.0	20.5	18.5	19.5	25.0	20.5	22.5	21.0	16.0	18.0
22	28.0	22.5	25.0	24.0	18.5	21.0	26.5	22.0	24.0	18.5	13.0	16.5
23	27.5	23.5	25.0	26.5	20.5	23.0	23.5	21.0	22.5	16.0	9.5	12.5
24	28.0	21.0	24.5	28.5	22.0	25.0	24.5	20.0	21.5	15.5	9.0	11.5
25	26.0	22.5	24.0	27.5	23.5	25.0	24.0	20.0	21.5	17.0	10.0	12.5
26	25.0	21.5	23.0	29.5	23.0	25.5	21.5	20.0	20.5	17.5	11.0	13.0
27	27.0	21.5	24.0	31.0	23.5	27.0	22.5	19.0	20.5	16.5	10.0	12.5
28	27.5	20.5	24.0	29.0	23.5	26.0	22.5	20.5	21.5	17.5	10.5	13.0
29	27.0	20.0	23.5	23.5	21.0	21.5	25.5	21.0	22.5	19.5	12.5	15.0
30	27.0	20.0	23.0	24.5	20.5	22.0	24.0	20.0	21.5	19.0	12.5	15.0
31	---	---	---	26.5	21.5	23.5	20.5	19.5	20.5	---	---	---
MONTH	28.0	14.0	21.2	32.0	18.0	24.1	30.0	17.0	21.9	23.5	9.0	16.9

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## SINSINAWA RIVER BASIN

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05414800 SINSINAWA RIVER NEAR HAZEL GREEN, WI--CONTINUED

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	13.8	8.8	11.1	16.2	8.0	11.8
2	---	---	---	---	---	---	15.3	8.6	11.5	15.8	9.6	12.5
3	---	---	---	---	---	---	15.2	7.6	10.6	16.4	8.3	11.8
4	---	---	---	---	---	---	15.1	8.4	11.5	12.1	6.8	9.6
5	---	---	---	---	---	---	16.6	9.4	12.5	14.6	8.3	11.3
6	---	---	---	---	---	---	16.6	9.5	12.7	15.7	8.5	12.3
7	---	---	---	---	---	---	17.2	9.3	12.6	16.8	9.1	13.1
8	---	---	---	---	---	---	15.9	8.9	12.0	15.1	7.8	11.2
9	---	---	---	---	---	---	16.0	10.5	13.0	15.7	8.2	11.8
10	---	---	---	---	---	---	16.6	10.9	13.5	15.6	7.3	11.0
11	---	---	---	---	---	---	16.6	9.7	12.9	14.8	7.4	10.6
12	---	---	---	---	---	---	16.5	9.6	12.6	14.1	6.9	10.0
13	---	---	---	---	---	---	---	---	---	13.5	6.5	9.2
14	---	---	---	---	---	---	---	---	---	12.1	6.1	8.9
15	---	---	---	---	---	---	---	---	---	12.4	6.1	8.7
16	---	---	---	---	---	---	---	---	---	12.5	5.4	8.4
17	---	---	---	---	---	---	---	---	---	12.1	5.3	8.4
18	---	---	---	---	---	---	---	---	---	11.4	5.1	7.9
19	---	---	---	---	---	---	14.9	8.1	11.3	11.4	5.4	7.8
20	---	---	---	---	---	---	13.4	6.6	9.6	10.9	5.1	7.7
21	---	---	---	---	---	---	15.0	7.8	10.6	13.3	6.2	9.4
22	---	---	---	---	---	---	12.6	7.1	9.6	13.9	6.3	9.7
23	---	---	---	---	---	---	15.1	8.1	11.3	14.2	6.1	9.4
24	---	---	---	---	---	---	15.3	7.5	10.9	12.6	5.6	8.7
25	---	---	---	---	---	---	14.4	6.7	10.1	13.0	5.1	8.5
26	---	---	---	---	---	---	14.8	6.3	9.3	13.4	5.4	9.1
27	---	---	---	---	---	---	15.2	6.1	10.0	14.9	6.6	10.4
28	---	---	---	13.3	7.0	9.6	12.8	7.6	9.9	14.9	6.7	10.4
29	---	---	---	15.6	7.6	11.4	15.6	8.3	11.4	14.6	6.9	9.9
30	---	---	---	17.3	9.3	12.8	17.0	9.0	12.4	13.9	5.6	8.8
31	---	---	---	16.2	9.4	12.1	---	---	---	12.8	5.6	8.2
MONTH	---	---	---	---	---	---	---	---	---	16.8	5.1	9.9
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.4	6.6	10.3	12.4	4.2	7.9	13.1	5.1	8.7	7.3	4.1	5.2
2	15.5	6.5	10.6	11.8	3.9	7.5	13.5	4.8	8.6	8.1	4.4	6.2
3	14.8	5.7	9.4	12.5	3.8	7.5	11.7	4.6	7.5	9.7	5.7	7.6
4	16.5	6.7	11.1	12.8	3.5	7.6	10.7	4.4	6.9	10.3	6.6	7.9
5	16.1	5.5	10.2	12.8	3.8	7.8	6.7	3.8	5.1	10.6	6.7	8.2
6	15.8	4.8	9.6	12.5	3.9	7.7	8.2	3.7	5.9	9.7	6.0	7.5
7	15.6	4.9	9.7	12.6	3.5	7.4	10.5	5.9	8.0	9.9	5.7	7.2
8	12.4	4.3	8.2	11.4	3.6	7.0	11.0	6.4	8.5	8.1	5.4	6.9
9	14.8	5.9	9.8	11.5	3.7	7.2	11.2	6.7	8.7	6.1	5.3	5.7
10	16.0	6.4	10.8	11.3	3.5	6.8	11.4	6.0	8.0	9.0	6.1	7.2
11	13.7	4.9	8.7	10.6	3.2	6.3	11.7	6.2	8.6	9.9	6.2	7.7
12	10.6	5.8	7.8	11.3	4.1	7.1	11.8	5.8	8.5	10.8	7.0	8.7
13	14.3	5.6	9.3	11.4	4.1	7.4	11.1	5.7	7.7	11.0	8.1	9.4
14	14.6	4.7	8.9	12.1	4.8	8.0	10.5	6.0	7.9	12.1	8.2	9.8
15	14.6	5.7	9.3	11.2	4.8	7.5	11.3	6.2	8.4	13.2	7.9	9.7
16	---	---	---	12.7	5.6	8.8	11.7	6.7	8.8	12.3	7.5	9.3
17	15.7	5.6	10.1	12.9	5.3	8.8	12.1	6.7	9.0	13.1	7.3	9.3
18	15.1	4.7	8.5	10.1	5.2	7.0	12.0	6.5	8.9	13.3	6.9	9.2
19	15.2	4.4	9.2	7.9	4.7	6.2	11.2	6.4	8.2	13.5	6.6	9.1
20	14.5	4.1	8.6	11.8	5.7	8.3	11.3	5.4	7.8	13.9	6.5	9.1
21	13.6	3.5	7.9	10.3	5.4	7.3	11.1	5.3	7.6	13.5	6.3	9.0
22	12.7	3.3	7.5	12.4	6.2	8.7	10.3	4.8	7.0	12.2	6.3	8.5
23	12.6	3.0	7.4	13.1	5.7	8.8	9.0	4.7	6.6	13.6	7.9	10.0
24	13.6	3.7	8.0	13.8	5.3	8.9	10.9	5.8	7.9	13.2	8.6	10.2
25	12.4	3.5	7.3	13.3	4.8	8.2	11.2	5.7	7.9	13.8	8.1	10.0
26	12.1	3.9	7.1	14.6	5.0	8.7	7.3	5.2	6.3	14.6	7.8	10.1
27	12.9	4.5	8.0	15.2	4.4	8.6	7.5	4.6	5.8	14.7	8.2	10.5
28	13.2	4.5	8.2	15.7	4.2	8.8	8.1	4.3	5.9	15.6	7.7	10.5
29	13.2	4.5	8.5	10.0	5.0	7.3	9.8	5.3	7.1	16.6	7.0	10.2
30	12.6	4.6	8.2	12.6	5.8	8.5	10.2	5.6	7.5	17.2	7.1	10.6
31	---	---	---	13.1	5.3	8.6	8.2	5.9	6.9	---	---	---
MONTH	---	---	---	15.7	3.2	7.8	13.5	3.7	7.6	17.2	4.1	8.7

## SINSINAWA RIVER BASIN

05414800 SINSINAWA RIVER NEAR HAZEL GREEN, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--July 1987 to current year (during non-freezing periods).

GAGE.--Micrologger.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.37 in., Aug. 8, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.36 in., July 18.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.00	---	---	---	---	.12	.03	.01	.00	.00	.64
2	.00	.00	---	---	---	---	.00	.01	.00	.00	.00	.00
3	.00	.00	---	---	---	---	.00	.00	.23	.00	.02	.00
4	.00	.23	---	---	---	---	.00	.15	.01	.00	1.01	.00
5	.00	.01	---	---	---	---	.00	.04	.00	.00	.76	.00
6	.00	.00	---	---	---	---	.00	.00	.00	.00	.00	.04
7	.00	.07	---	---	---	---	.00	.00	.00	.00	.00	.02
8	.00	.01	---	---	---	---	.10	.01	.26	.00	.00	.00
9	.00	.38	---	---	---	---	.00	.38	.00	.00	.00	.64
10	.00	.01	---	---	---	---	.00	.00	.00	.00	.00	.00
11	.00	.00	---	---	---	---	.00	.00	.00	.52	.00	.00
12	.00	.47	---	---	---	---	.00	.00	1.28	.00	.00	.03
13	.00	.00	---	---	---	---	.00	.00	.01	.00	.02	.17
14	.00	.00	---	---	---	---	.00	.00	.00	.00	.12	.00
15	.00	.38	---	---	---	---	.00	.23	.05	.00	.00	.00
16	.10	.00	---	---	---	---	.06	.00	.00	.00	.00	.00
17	.36	.00	---	---	---	---	.02	.00	.00	.00	.00	.00
18	.02	.00	---	---	---	---	.00	.34	.00	1.36	.00	.00
19	.00	.04	---	---	---	---	.00	.31	.00	.37	.62	.00
20	.23	.00	---	---	---	---	.08	.00	.00	.00	.00	.00
21	.02	.00	---	---	---	---	.00	.00	.00	.13	.00	.00
22	.11	.00	---	---	---	---	.09	.00	.01	.03	.12	.00
23	.31	.00	---	---	---	---	.14	.00	.02	.14	.09	.00
24	.00	.00	---	---	---	---	.00	.05	.00	.00	.00	.00
25	.00	.00	---	---	---	---	.00	.01	.00	.01	.00	.00
26	.00	.71	---	---	---	---	.12	.00	.12	.03	.86	.00
27	.00	.00	---	---	---	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	---	---	---	.26	.61	.00	.00	.00	.16	.00
29	.00	.00	---	---	---	.00	.01	.00	.00	.12	.00	.00
30	.00	.00	---	---	---	.00	.00	.03	.00	.00	.00	.00
31	.00	---	---	---	---	.01	---	.30	---	.00	1.05	---
TOTAL	1.18	2.31	---	---	---	---	1.35	1.89	2.00	2.71	4.83	1.54

## GALENA RIVER BASIN

251

05415000 GALENA RIVER AT BUNCOMBE, WI

LOCATION.--Lat 42°30'49", long 90°22'40", in SW 1/4 sec.33, T.1 N., R.1 E., Lafayette County, Hydrologic Unit 07060005, on left bank at Buncombe, 0.6 mi upstream from Coon Branch, 1.5 mi upstream from Scrabble Branch, 2.0 mi upstream from Wisconsin-Illinois State line, and 3.5 mi southeast of Hazel Green.

DRAINAGE AREA.--125 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: 1942(P), 1943(M), 1944(P), 1945(M). WDR WI-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 682.31 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 1, 1939, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair. Gage-height telemeter at station.

AVERAGE DISCHARGE.--50 years, 78.9 ft<sup>3</sup>/s, 8.57 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,700 ft<sup>3</sup>/s, June 29, 1969, gage height, 19.57 ft from rating curve extended above 8,100 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights 15.68 ft and 19.57 ft; minimum discharge, 0.8 ft<sup>3</sup>/s, Mar. 3, 1954.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Flood of February 1937 reached a stage of about 17.1 ft, from information by local resident, discharge, 18,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 10	----	(a) *2,500	(a) *10.46				

(a) Backwater from ice.

Minimum daily discharge, 12 ft<sup>3</sup>/s, July 9, 10.

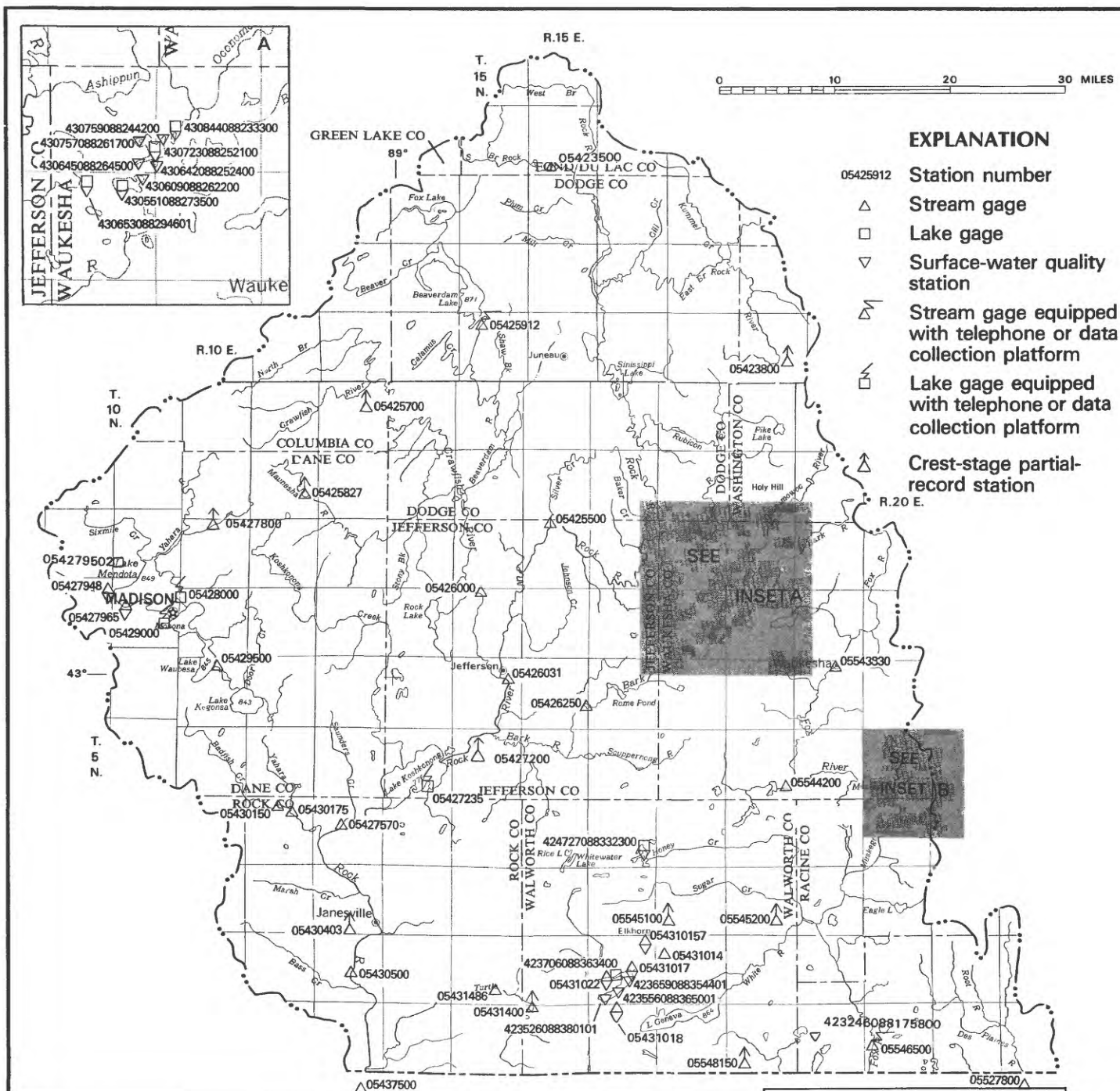
RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 8-19, Dec. 25 to Mar. 11, and Mar. 17-21.)

2.3	10	3.5	156
2.5	23	4.0	264
3.0	77	4.5	396

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

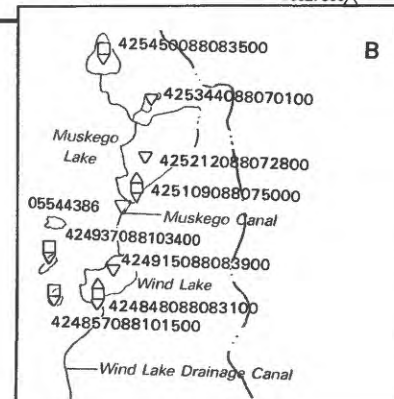
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	36	37	52	100	33	38	33	30	15	17	266
2	35	35	50	43	60	32	40	33	25	15	16	70
3	33	36	40	38	50	34	38	32	26	15	15	33
4	32	40	39	36	45	50	38	31	28	15	16	25
5	31	43	49	35	43	45	36	36	24	14	55	22
6	32	41	41	34	41	37	34	31	23	13	36	21
7	32	39	37	34	40	36	34	29	22	13	20	21
8	33	39	36	33	39	35	34	29	22	13	17	33
9	35	39	34	33	38	56	33	33	24	12	16	53
10	35	49	31	34	38	600	30	31	22	12	15	42
11	34	40	28	37	38	800	30	27	21	13	15	30
12	33	40	27	60	37	244	31	26	32	14	14	25
13	33	47	29	40	37	81	32	26	36	15	14	25
14	34	42	31	38	36	105	32	26	26	13	14	25
15	35	39	29	37	36	121	32	27	22	13	15	23
16	36	48	28	37	35	59	32	27	21	13	16	21
17	39	42	27	37	35	52	34	26	20	13	14	21
18	41	37	31	37	35	50	32	28	19	19	13	20
19	37	37	40	38	35	47	31	32	19	29	14	20
20	36	37	50	90	34	43	30	30	18	23	32	19
21	42	35	41	70	34	42	33	26	18	18	24	19
22	40	34	37	70	34	47	31	26	18	16	18	19
23	45	35	45	140	34	56	32	26	19	15	21	18
24	44	36	40	120	34	54	31	26	18	14	20	17
25	38	37	35	60	33	49	30	26	17	16	16	18
26	36	50	35	70	33	45	32	23	18	18	19	18
27	36	56	180	80	33	46	33	22	20	15	39	17
28	36	45	170	130	33	53	49	21	19	15	25	17
29	34	39	150	350	---	56	47	22	17	15	24	17
30	33	39	110	400	---	45	37	25	16	19	19	17
31	34	---	76	180	---	40	---	26	---	20	19	---
TOTAL	1109	1212	1633	2493	1120	3093	1026	862	660	483	628	992
MEAN	35.8	40.4	52.7	80.4	40.0	99.8	34.2	27.8	22.0	15.6	20.3	33.1
MAX	45	56	180	400	100	800	49	36	36	29	55	266
MIN	31	34	27	33	33	32	30	21	16	12	13	17
CFSM	.29	.32	.42	.64	.32	.80	.27	.22	.18	.12	.16	.26
IN.	.33	.36	.49	.74	.33	.92	.31	.26	.20	.14	.19	.30

CAL YR 1988 TOTAL 22138 MEAN 60.5 MAX 600 MIN 24 CFSM .48 IN. 6.59  
WTR YR 1989 TOTAL 15311 MEAN 41.9 MAX 800 MIN 12 CFSM .34 IN. 4.56



Base from U.S. Geological Survey  
State base map, 1968

## ROCK-FOX RIVER BASIN



## ROCK RIVER BASIN

253

430844088233300 NORTH LAKE NEAR NORTH LAKE, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 43°08'44", long 88°23'33", in NE 1/4 sec.20, T.8 N., R.18 E., Waukesha County, Hydrologic Unit 07090001, 1.4 mi southwest of North Lake.

PERIOD OF RECORD.--April 1985 to current year.

GAGE.--Staff gage read by Peter J. Mihelich. Elevation of gage is 896 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 13.16 ft, Oct. 5, 1986; minimum observed, 9.75 ft, July 11-14, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 10.71 ft, Apr. 1, June 3-4; minimum observed, 9.82 ft, July 8-16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.08	---	---	---	---	---	10.71	---	10.37	9.94	10.17	10.39
2	10.08	---	---	---	---	---	10.67	---	10.59	9.92	10.17	10.39
3	10.08	---	---	---	---	---	10.63	---	10.71	9.91	10.17	10.37
4	10.08	---	---	---	---	---	10.56	---	10.71	9.89	10.19	10.35
5	10.08	---	---	---	---	---	10.51	---	10.69	9.87	10.22	10.32
6	10.09	---	---	---	---	---	10.47	10.27	10.63	9.85	10.20	10.29
7	10.09	---	---	---	---	---	10.45	10.27	10.57	9.83	10.19	10.27
8	10.07	---	---	---	---	---	10.41	10.29	10.49	9.82	10.07	10.27
9	10.05	---	---	---	---	---	10.41	10.29	---	9.82	10.07	10.33
10	10.01	---	---	---	---	---	---	10.27	10.39	9.82	10.07	10.37
11	10.01	---	---	---	---	---	---	10.24	10.35	9.82	10.07	10.35
12	10.01	---	---	---	---	---	---	10.21	10.33	9.82	10.07	10.33
13	10.01	---	---	---	---	---	---	10.23	10.31	9.82	10.07	10.33
14	10.01	---	---	---	---	---	---	10.14	10.22	9.82	10.16	10.33
15	10.01	---	---	---	---	---	10.29	10.12	10.19	9.82	10.15	10.31
16	10.01	---	---	---	---	---	10.25	10.11	10.19	9.82	10.12	10.29
17	10.01	---	---	---	---	---	10.27	10.10	10.17	9.85	10.10	10.29
18	10.01	---	---	---	---	---	10.25	10.08	10.16	9.89	10.09	10.27
19	10.01	---	---	---	---	---	---	10.07	10.13	9.97	10.09	10.27
20	10.01	---	---	---	---	---	---	10.06	10.11	9.97	10.15	10.25
21	10.01	---	---	---	---	---	---	10.06	10.09	9.97	10.15	10.23
22	10.01	---	---	---	---	---	---	10.05	10.08	9.92	10.16	10.21
23	10.03	---	---	---	---	---	---	10.05	10.07	10.07	10.19	10.19
24	10.04	---	---	---	---	---	---	10.05	9.99	10.07	10.22	10.17
25	10.04	---	---	---	---	---	---	---	10.00	9.99	10.27	10.14
26	10.04	---	---	---	---	---	---	10.05	10.01	9.98	10.25	10.11
27	10.04	---	---	---	---	---	---	10.05	9.99	9.97	10.25	10.09
28	10.04	---	---	---	---	---	10.45	10.05	9.98	9.97	10.29	10.08
29	10.04	---	---	---	---	---	---	10.09	9.97	10.19	10.27	10.07
30	10.04	---	---	---	---	---	---	10.17	9.95	10.22	10.27	10.05
31	10.04	---	---	---	---	---	---	10.27	---	10.20	10.35	---
MAX	10.09	---	---	---	---	---	10.71	10.29	10.71	10.22	10.35	10.39
MIN	10.01	---	---	---	---	---	10.25	10.05	9.95	9.82	10.07	10.05

## WATER-QUALITY RECORDS

LOCATION.--Lat 43°08'50", long 88°23'17", in NE 1/4 sec.20, T.8 N., R.18 E., Waukesha County, Hydrologic Unit 07090001, near center of southwest lobe of lake, and 1.1 mi southwest of North Lake.

PERIOD OF RECORD.--May 1985 to September 1986, October 1988 to September 1989.

REMARKS.--Secchi disc readings made by David Bykowski.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
APR 1989			AUG 1989		
02...	1130	4.30	09...	1430	4.10
JUN			16...	1430	5.50
05...	1130	5.00	SEP		
JUL			05...	1445	4.90
03...	1345	1.20	17...	1130	3.90
26...	1145	3.20			

## ROCK RIVER BASIN

430723088252100 OKAUCHEE LAKE AT OKAUCHEE, WI

LOCATION.--Lat 43°07'23", long 88°25'21", in NE 1/4 NE 1/4, sec.36, T.8 N., R.17 E., Waukesha County, Hydrologic Unit 07090001, at Okauchee.

DRAINAGE AREA.--80.7 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--February to September 1984, March 1986 to current year.

GAGE.--Staff gage at outlet read by Tom Gukich. Datum of gage, 869.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Lake levels controlled at dam outlet by Town of Oconomowoc. The Oconomowoc River flows through the lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage-height observed, 5.54 ft, Sept. 22, 1986; minimum observed, 3.48 ft, Aug. 31, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height observed, 4.92 ft, May 30; minimum observed, 4.06 ft, Apr. 7.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	4.58	4.70	4.88	---	4.84	4.90
2	---	---	---	---	---	---	4.70	4.70	4.84	---	---	4.86
3	---	---	---	---	---	---	4.58	---	---	---	4.82	4.86
4	---	---	---	---	---	---	---	4.72	4.84	---	4.82	---
5	---	---	---	---	---	---	---	4.74	---	4.72	---	---
6	---	---	---	---	---	---	4.18	---	4.84	4.72	4.82	---
7	---	---	---	---	---	---	4.06	4.74	---	4.68	---	---
8	---	---	---	---	---	---	---	4.76	4.78	---	---	4.84
9	---	---	---	---	4.32	---	4.15	---	---	---	4.74	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	4.26	---	---	4.78	---	4.84
12	---	---	---	---	---	---	4.30	---	---	---	4.70	4.80
13	---	---	---	---	---	---	4.34	---	4.72	4.78	---	---
14	---	---	---	---	---	---	4.40	---	4.72	---	4.74	4.82
15	---	---	---	---	---	---	---	4.74	4.74	---	4.74	4.82
16	---	---	---	---	---	---	4.58	4.72	4.72	4.70	4.76	4.76
17	---	---	---	---	---	---	---	4.74	---	4.70	---	---
18	---	---	---	---	---	---	---	4.74	---	---	4.76	4.74
19	---	---	---	---	---	---	4.64	---	4.72	---	---	4.72
20	---	---	---	---	---	---	4.64	---	4.74	4.76	---	4.74
21	---	---	---	---	---	---	---	4.70	---	4.75	4.80	4.74
22	---	---	---	---	---	4.60	4.72	---	4.74	---	4.88	4.70
23	---	---	---	---	---	---	4.72	---	---	4.72	4.84	4.70
24	---	---	---	---	---	4.56	4.72	---	---	4.70	---	---
25	---	---	---	---	---	---	4.84	---	---	4.74	4.80	4.72
26	---	---	---	---	---	---	4.84	4.76	4.79	4.75	---	4.72
27	---	---	---	---	---	---	---	---	4.78	4.76	---	---
28	---	---	---	---	---	---	---	---	4.78	---	4.89	4.72
29	---	---	---	---	---	4.58	4.76	---	4.78	---	---	---
30	---	---	---	---	---	---	4.74	4.92	4.78	---	4.76	4.72
31	---	---	---	---	---	---	---	---	---	4.86	---	---
MAX	---	---	---	---	4.32	4.60	4.84	4.92	4.88	4.86	4.89	4.90
MIN	---	---	---	---	4.32	4.56	4.06	4.70	4.72	4.68	4.70	4.70



430723088252100 OKAUCHEE LAKE AT OKAUCHEE, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1984 to current year.

REMARKS.--A detailed water quality management plan has been developed for Okauchee Lake by Southeastern Wisconsin Regional Planning Commission; previous water-quality data are available in this report. Lake sampled near center at a lake depth of about 88 feet. Lake ice-covered during February 9 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 9 TO AUGUST 23, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 09		Apr. 13		June 19		July 25		Aug. 23	
Depth of sample (ft)	1.50	88.0	1.50	88.0	1.50	88.0	1.50	90.0	1.50	88.0
Lake stage (ft)	4.32		4.34		4.72		4.74		4.84	
Specific conductance (μS/cm)	528	513	516	505	510	507	486	512	478	518
pH (units)	8.00	8.30	8.20	8.20	8.40	7.50	8.30	7.40	8.30	7.30
Water temperature (°C)	1.0	2.5	4.0	4.0	21.5	6.0	24.5	6.0	24.0	6.0
Color (Pt-Co. scale)	---	---	15	15	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.60	0.70	---	---	---	---	---	---
Secchi-disc (meters)	4.30		4.00		2.30		2.30		1.70	
Dissolved oxygen	15.8	14.8	13.2	13.0	10.3	1.9	9.7	0	8.4	0
Hardness, as CaCO <sub>3</sub>	---	---	260	260	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	48	49	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	34	34	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	10	10	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	2.2	2.0	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	---	---	201	218	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	---	---	28	28	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	22	22	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	---	---	1.6	2.1	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	286	286	---	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss (as N)	---	---	0.220	0.220	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	0.040	0.040	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.50	0.50	---	---	---	---	---	---
Total phosphorus (as P)	---	---	0.013	0.008	0.013	0.011	0.009	0.030	0.009	<0.020
Phosphorus, ortho, diss (as P)	---	---	0.002	0.002	---	0.004	---	0.002	---	0.004
Iron, dissolved (Fe) μg/L	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) μg/L	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phyto. (μg/L)	---	---	4.00	---	5.00	---	E3.00	---	E4.00	---

E Estimated.

2-9-89

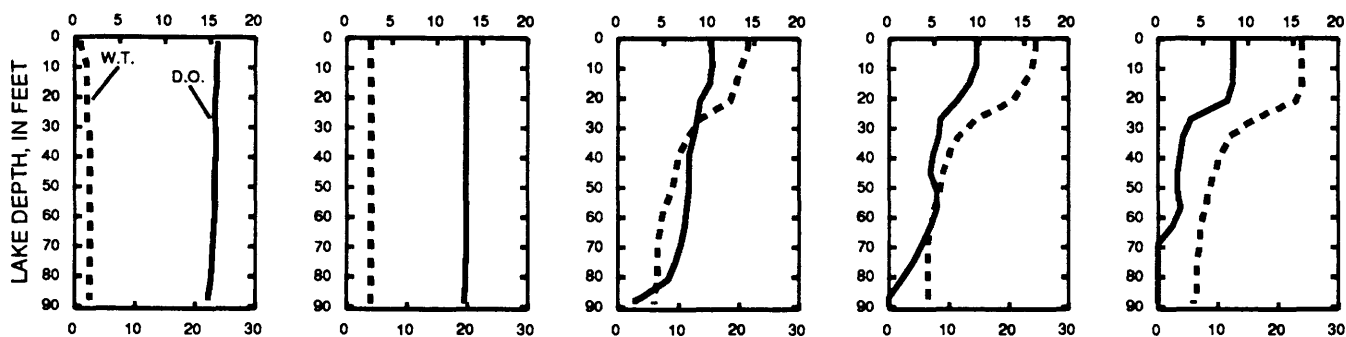
4-13-89

6-19-89

7-25-89

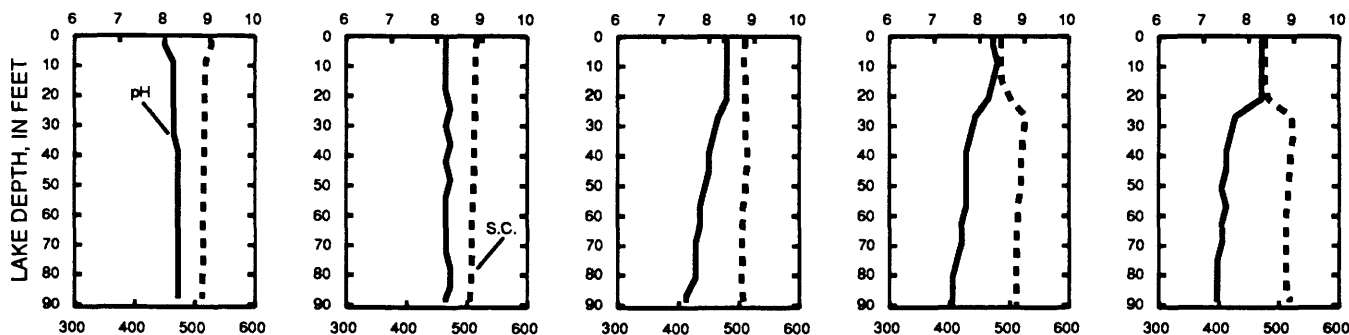
8-23-89

## 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

ROCK RIVER BASIN  
WATER-QUALITY RECORDS

430759088244200 OKAUCHEE LAKE, NO. 1, NEAR OKAUCHEE, WI

LOCATION.--Lat 43°07'59", long 88°24'42", in NE 1/4 NW 1/4 sec.30, T.8 N., R.18 E., Waukesha County, Hydrologic Unit 07090001, near Okauchee.

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

REMARKS.--Sampling site is located in Crane's Nest Bay, in the northeast part of the lake, at a depth of 10 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, APRIL 13 TO AUGUST 23, 1989  
(Milligrams per liter unless otherwise indicated)

	Apr. 13	June 19	July 25	Aug. 23
Depth of sample (ft)	1.50	1.50	1.50	1.50
Lake stage (ft)	4.34	4.72	4.74	4.84
Specific conductance (μS/cm)	514	517	487	492
pH (units)	8.10	8.50	8.40	8.30
Water temperature (°C)	3.5	23.0	24.5	24.0
Secchi-disc (meters)	3.80	2.00	1.90	2.10
Dissolved oxygen	13.7	10.9	10.1	9.0
Total phosphorus (as P)	0.009	0.013	0.010	0.010
Chlorophyll a, phyto. (μg/L)	4.00	5.00	E4.00	5.00

430645088264500 OKAUCHEE LAKE, NO. 2, AT OKAUCHEE, WI

LOCATION.--Lat 43°06'45", long 88°26'45", in NE 1/4 NE 1/4 sec.35, T.8 N., R.17 E., Waukesha County, Hydrologic Unit 07090001, at Okauchee.

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

REMARKS.--Sampling site is located in Lower Okauchee Lake, at a depth of 10 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, APRIL 13 TO AUGUST 23, 1989  
(Milligrams per liter unless otherwise indicated)

	Apr. 13	June 19	July 25	Aug. 23
Depth of sample (ft)	1.50	1.50	1.50	1.50
Lake stage (ft)	4.34	4.72	4.74	4.84
Specific conductance (μS/cm)	502	485	440	437
pH (units)	8.20	8.40	8.60	8.60
Water temperature (°C)	6.0	23.0	25.5	24.5
Secchi-disc (meters)	3.50	2.60	1.60	2.50
Dissolved oxygen	14.5	10.4	10.6	9.0
Total phosphorus (as P)	0.008	0.070	0.017	0.013
Chlorophyll a, phyto. (μg/L)	E3.00	3.00	6.00	E4.00

430642088252400 OKAUCHEE LAKE, NO. 3, AT OKAUCHEE, WI

LOCATION.--Lat 43°06'42", long 88°25'24", in NE 1/4 NE 1/4 sec.36, T.8 N., R.17 E., Waukesha County, Hydrologic Unit 07090001, at Okauchee.

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

REMARKS.--Sampling site is located in Ice House Bay, in the south bay of Okauchee Lake, at a depth of 10 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, APRIL 13 TO AUGUST 23, 1989  
(Milligrams per liter unless otherwise indicated)

	Apr. 13	June 19	July 25	Aug. 23
Depth of sample (ft)	1.50	1.50	1.50	1.50
Lake stage (ft)	4.34	4.72	4.74	4.84
Specific conductance (μS/cm)	499	479	468	464
pH (units)	7.40	8.40	8.30	8.40
Water temperature (°C)	5.5	22.5	25.0	24.0
Secchi-disc (meters)	3.20	3.00	1.70	1.60
Dissolved oxygen	14.3	11.1	10.3	8.9
Total phosphorus (as P)	0.008	0.013	0.015	0.013
Chlorophyll a, phyto. (μg/L)	5.00	E2.00	6.00	8.00

E Estimated.

ROCK RIVER BASIN  
WATER-QUALITY RECORDS

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430757088261700 OKAUCHEE LAKE, NO. 4, AT OKAUCHEE, WI

LOCATION.--Lat 43°07'57", long 88°26'17", in NW 1/4 NW 1/4 sec.25, T.8 N., R.17 E., Waukesha County, Hydrologic Unit 07090001, at Okauchee.

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

REMARKS.--Sampling site is located near Crazyman's Island, in the northwest bay of Okauchee Lake, at a depth of 10 ft. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, APRIL 13 TO AUGUST 23, 1989  
(Milligrams per liter unless otherwise indicated)

	Apr. 13	June 19	July 25	Aug. 23
Depth of sample (ft)	1.50	1.50	1.50	1.50
Lake stage (ft)	4.34	4.72	4.74	4.84
Specific conductance (μS/cm)	511	498	480	477
pH (units)	7.40	8.40	8.40	8.30
Water temperature (°C)	4.5	22.5	25.0	24.0
Secchi-disc (meters)	4.20	1.90	1.80	1.70
Dissolved oxygen	13.8	10.9	10.0	8.3
Total phosphorus (as P)	0.006	0.012	0.011	0.009
Chlorophyll a, phyto. (μg/L)	4.00	4.00	E4.00	4.00

E Estimated.

## ROCK RIVER BASIN

430551088273500 OCONOMOWOC LAKE NO. 1 (CENTER) AT OCONOMOWOC, WI

LOCATION.--Lat 43°05'51", long 88°27'35", in NW 1/4 SE 1/4 sec.2, T.7 N., R.17 E., Waukesha County, Hydrologic Unit 07090001, at Oconomowoc.

## LAKE-STAGE RECORDS

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

GAGE.--Staff gage at outlet read by Martha Ibach. Datum of gage is 854.08 ft above National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 9.28 ft, Oct. 5, 1986; minimum observed, 6.90 ft, Feb. 24, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height observed, 8.16 ft, May 28; minimum observed, 7.02 ft, Feb. 9.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	7.88	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	7.88	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	7.95	---	---	---	---
8	---	---	---	---	---	---	---	---	7.98	---	---	---
9	---	---	---	---	7.02	---	---	---	---	8.14	---	---
10	---	---	---	---	---	---	---	---	8.08	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	7.92	---	---
17	---	---	---	---	---	---	7.11	---	7.88	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	8.12	---	---	---	---
22	---	---	---	---	---	---	7.90	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	8.00	---	---	---
26	---	---	---	---	---	---	---	---	---	7.91	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	8.16	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	---	---	7.02	---	7.90	8.16	8.08	8.14	---	---
MIN	---	---	---	---	7.02	---	7.11	7.95	7.88	7.88	---	---

430551088273500 OCONOMOWOC LAKE NO. 1 (CENTER) AT OCONOMOWOC, WI--CONTINUED

## WATER-QUALITY RECORDS

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

REMARKS.--Lake sampled near center at a lake depth of about 60 ft. Lake ice-covered during February 9 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 9 TO AUGUST 22, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 09		Apr. 17		June 08		July 26		Aug. 22	
Depth of sample (ft)	1.50	55.5	1.50	64.0	1.50	63.0	1.50	63.0	1.50	63.0
Lake stage (ft)	7.02		7.11		7.98		7.91			
Specific conductance ( $\mu\text{S}/\text{cm}$ )	489	527	507	505	503	516	478	550	463	537
pH (units)	8.30	8.30	7.90	8.20	8.30	7.50	8.40	7.30	8.40	7.30
Water temperature ( $^{\circ}\text{C}$ )	0.5	1.5	6.0	5.5	21.5	7.5	25.5	7.5	24.5	8.0
Color (Pt-Co. scale)	---	---	15	10	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.50	0.50	---	---	---	---	---	---
Secchi-disc (meters)	6.50		4.50		2.70		3.00		1.50	
Dissolved oxygen	15.6	14.6	12.7	12.5	9.8	0.7	9.2	0	9.6	0
Hardness, as $\text{CaCO}_3$	---	---	250	250	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	44	44	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	34	34	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	12	11	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	2.0	2.0	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	215	216	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	26	26	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	25	25	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	4.4	4.4	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	306	304	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, ammonia, diss. (as N)	---	---	0.020	0.030	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.50	0.50	---	---	---	---	---	---
Total phosphorus (as P)	---	---	---	---	0.005	0.027	0.007	<0.020	0.006	0.020
Phosphorus, ortho, diss (as P)	---	---	0.003	0.002	---	---	---	0.003	---	0.002
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	---	---	E2.00	---	E2.00	---	E2.00	---	E2.00	---

E Estimated.

2-9-89

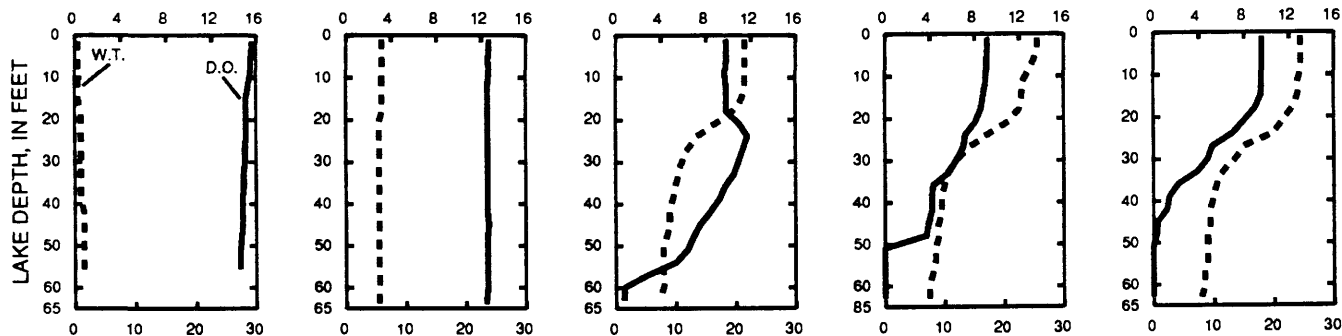
4-17-89

6-8-89

7-26-89

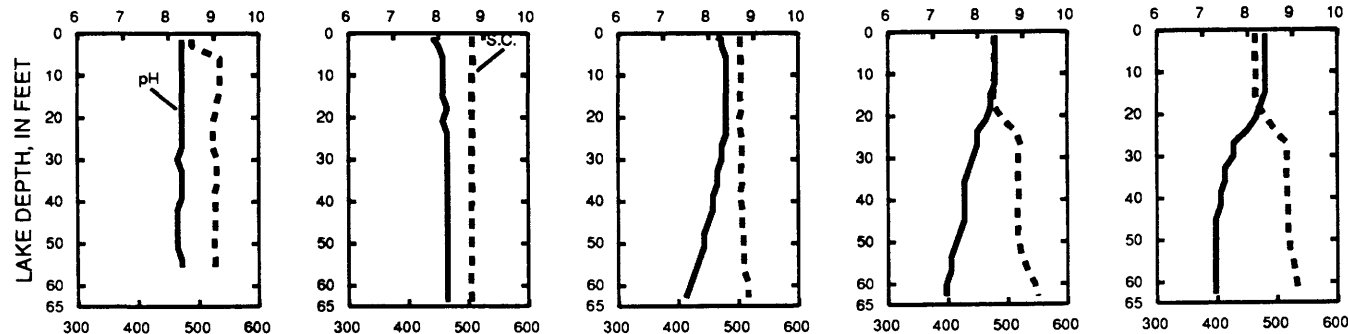
8-22-89

## 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

## ROCK RIVER BASIN

430609088262200 OCONOMOWOC LAKE NO. 2 (OFF HEWITT POINT) AT OCONOMOWOC, WI

## WATER-QUALITY RECORDS

LOCATION.--Lat 43°06'09", long 88°26'22", in NW 1/4 NW 1/4 sec.1, T.7 N., R.17 E., Waukesha County, Hydrologic Unit 07090001, at Oconomowoc.

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

REMARKS.--Sampling site is located in northeast bay near Hewitt Point at a lake depth of about 48 ft. Lake ice-covered during February 9 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 9 TO AUGUST 22, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 09		Apr. 17		June 08		July 26		Aug. 22	
Depth of sample (ft)	1.50	48.0	1.50	49.0	1.50	48.0	1.50	48.0	1.50	48.0
Lake stage (ft)	7.02		7.11		7.98		7.91		---	
Specific conductance (μS/cm)	527	625	543	541	524	547	502	586	490	594
pH (units)	8.10	7.40	8.20	8.10	8.30	7.50	8.30	7.30	8.30	7.10
Water temperature (°C)	2.5	4.0	7.0	6.0	22.5	8.0	25.5	8.0	24.5	8.5
Secchi-disc (meters)	4.70		3.50		2.80		2.90		2.40	
Dissolved oxygen	16.7	3.1	12.6	12.3	9.9	0.9	9.4	0	9.5	0
Total phosphorus (as P)	---	---	---	---	0.004	0.005	0.005	<0.020	<0.004	0.020
Phosphorus, ortho, diss (as P)	---	---	---	0.002	---	0.006	---	<0.002	---	0.002
Chlorophyll a, phyto. (μg/L)	---	---	6.00	---	E2.00	---	E1.00	---	E1.00	---

E Estimated.

2-9-89

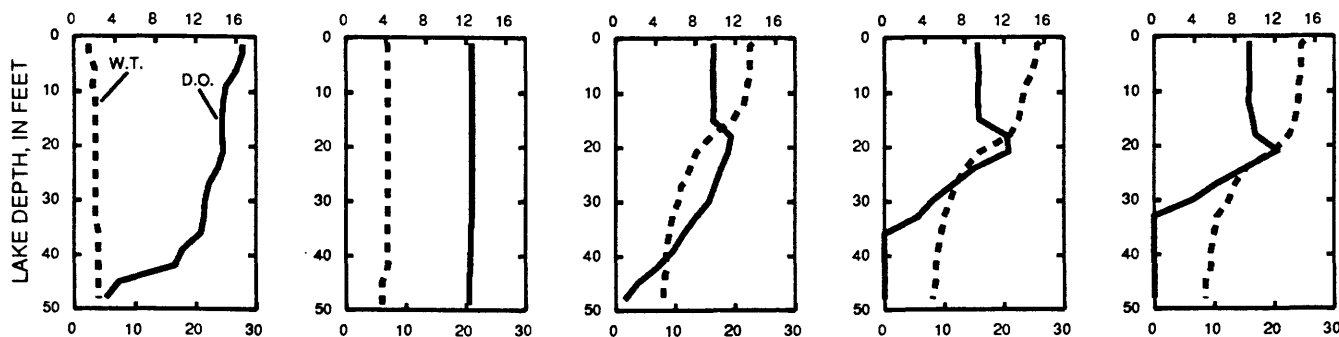
4-17-89

6-8-89

7-26-89

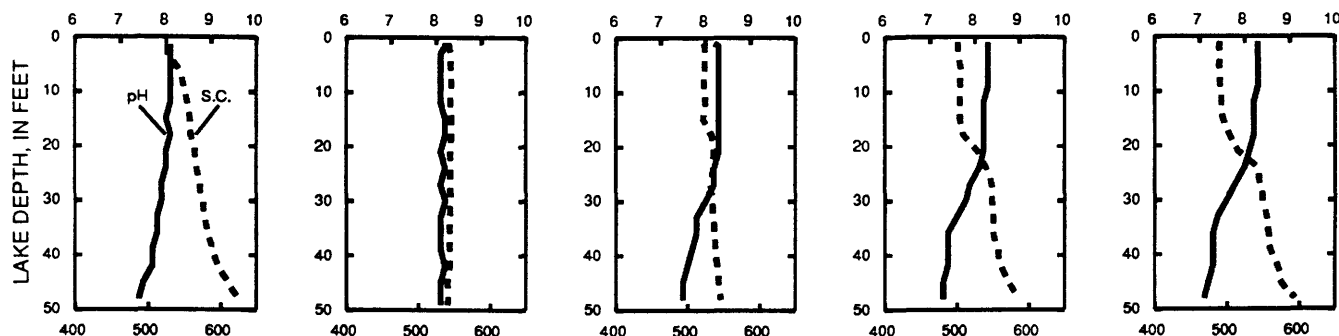
8-22-89

## 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

## ROCK RIVER BASIN

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430653088294601 CENTER OF FOWLER LAKE AT OCONOMOWOC, WI

LOCATION.--Lat 43°06'53", long 88°29'46", in SE 1/4 NW 1/4 sec.33, T.8 N., R.17 E., Waushara County,  
Hydrologic Unit 07120006, within City of Oconomowoc, at center of Fowler Lake.

DRAINAGE AREA.--87.8 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--January to December 1984, October 1986 to current year.

GAGE.--Staff gage at outlet read by City of Oconomowoc Engineering Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage-height observed, 9.45 ft, Oct. 6, 7, 9, 1986; minimum observed, 7.82 ft, Sept. 12, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height observed, 9.14 ft, Apr. 3; minimum observed, 7.88 ft, Nov. 2.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	8.96	---	---	---	---
2	---	7.88	---	---	---	---	---	---	---	---	8.66	---
3	8.66	---	---	---	---	8.80	9.14	---	---	---	---	---
4	---	---	---	8.86	---	---	---	---	---	---	---	---
5	---	---	8.92	---	---	---	---	---	---	8.54	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	8.42	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	8.80	---	---	---	8.78	---	---	---
9	---	---	---	8.90	8.76	8.87	---	8.87	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	8.78	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	8.28	---	8.89	---	---	---	8.68	---	---	8.59	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	8.92	---	---	8.79	---	---	---	8.81	---	---	---
16	---	---	---	---	---	8.91	---	---	---	---	---	---
17	---	---	---	---	---	---	8.32	8.86	---	---	---	---
18	---	---	---	8.81	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	8.10	---	---	---	---	8.94	---	---	8.74	8.72	---	---
21	---	---	8.85	---	---	---	8.18	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	8.91	---	---	8.74	---
24	---	---	---	---	8.76	---	---	---	---	---	---	---
25	---	---	---	8.78	---	---	---	---	---	8.74	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	8.00	---	---	---	---	---	8.53	---	---	---	---	8.28
28	---	8.94	---	---	---	9.09	---	---	8.62	---	---	---
29	---	---	8.84	---	---	---	---	---	---	---	---	---
30	---	---	---	8.72	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	8.96	---	---	---	---
MAX	8.66	8.94	8.92	8.90	8.80	9.09	9.14	8.96	8.81	8.74	8.74	8.28
MIN	8.00	7.88	8.84	8.72	8.76	8.80	8.18	8.86	8.62	8.54	8.66	8.28

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--January to December 1984 and February 1987 to current year.

REMARKS.--Lake sampled near center at a lake depth of 52 ft. Lake ice-covered during February 9 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 9 TO AUGUST 23, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 09		Apr. 17		June 08		July 25		Aug. 23	
Depth of sample (ft)	3.00	49.5	1.50	48.0	1.50	48.0	1.50	48.0	1.50	48.0
Lake stage (ft)	8.76		8.32		8.78		8.74		8.74	
Specific conductance ( $\mu$ S/cm)	472	585	514	510	499	519	466	538	474	543
pH (units)	8.90	7.80	8.20	8.20	8.40	7.50	8.40	7.30	8.30	7.30
Water temperature ( $^{\circ}$ C)	0.5	3.5	8.5	5.0	23.5	6.0	25.5	6.5	24.0	6.5
Color (Pt-Co. scale)	---	---	10	10	---	---	---	---	---	---
Turbidity (NTU)	---	---	0.80	0.50	---	---	---	---	---	---
Secchi-disc (meters)	7.60		3.70		2.70		2.90		2.70	
Dissolved oxygen	15.6	3.6	13.1	12.9	10.5	0.9	9.8	0	8.4	0
Hardness, as $\text{CaCO}_3$	---	---	250	250	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	44	44	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	34	34	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	12	12	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	2.0	2.1	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	213	215	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	27	26	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	26	26	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	3.0	3.9	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	306	306	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, ammonia, diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.40	0.40	---	---	---	---	---	---
Total phosphorus (as P)	---	---	---	---	E0.006	0.013	0.012	0.030	0.012	0.110
Phosphorus, ortho, diss (as P)	---	---	0.002	0.002	---	0.012	---	0.004	---	0.081
Iron, dissolved (Fe) $\mu\text{g/L}$	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g/L}$	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phyto. ( $\mu\text{g/L}$ )	---	---	E2.00	---	3.00	---	3.00	---	6.00	---

E Estimated.

2-9-89

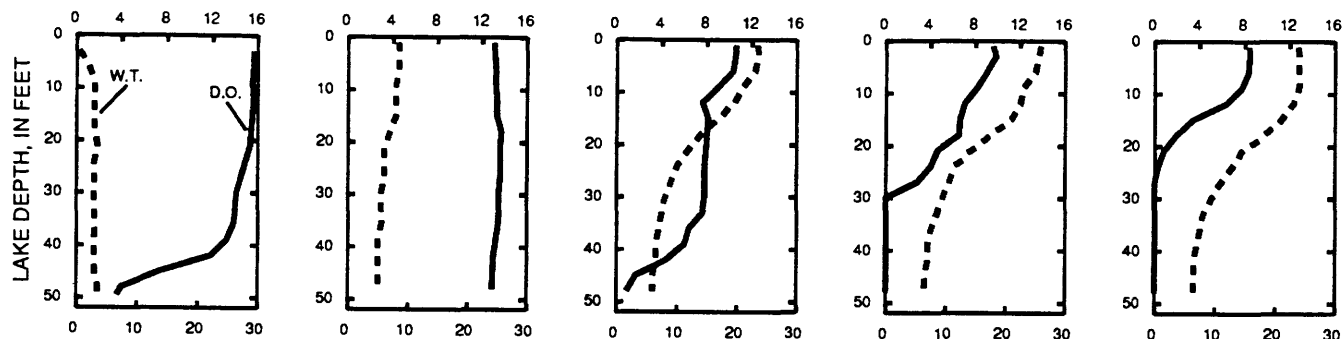
4-17-89

6-8-89

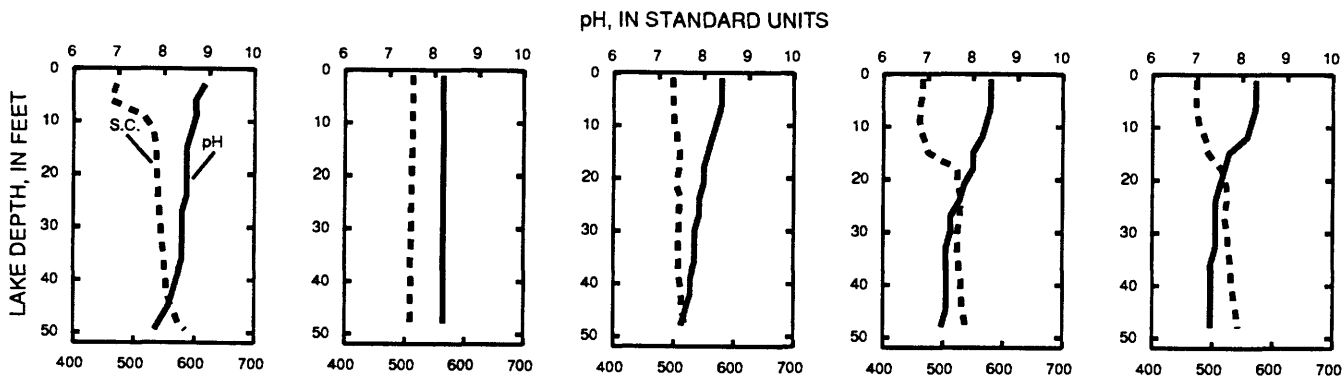
7-25-89

8-23-89

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



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



## SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER



## 05423500 SOUTH BRANCH ROCK RIVER AT WAUPUN, WI

LOCATION.--Lat 43°38'30", long 88°44'15", in NW 1/4 sec.33, T.14 N., R.15 E., Fond du Lac County, Hydrologic Unit 07090002, on left bank 260 ft upstream from U.S. Business Route 151 at Waupun, and 2.8 mi upstream from mouth.

DRAINAGE AREA.--63.6 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1948 to September 1969. March 1987 to current year. Monthly discharge only for October 1948, published in WSP 1308.

REVISED RECORDS.--WDR WI-88-1: Drainage area.

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 863.46 ft above National Geodetic Vertical Datum of 1929. October 1948 to September 1969, recording gage at site 150 ft downstream.

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except those for ice-affected periods, Jan. 5-7, Jan. 10 to Feb. 1, and those above 60 ft<sup>3</sup>/s, which are poor.

AVERAGE DISCHARGE.--23 years (1949-69, 1988-89), 23.8 ft<sup>3</sup>/s, 5.08 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft<sup>3</sup>/s, Apr. 3, 1959, gage height, 7.97 ft, from rating curve extended above 650 ft<sup>3</sup>/s; minimum, no flow at times in 1949, 1953-54, 1958-59, 1963-64.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 26	1015	*376	*5.73				

Minimum discharge, 4.0 ft<sup>3</sup>/s, Oct. 15, gage height, 1.89 ft.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 25, Jan. 8, 9, and Feb. 6 to Mar. 11.)

1.9	4.2	2.5	42
2.0	7.0	3.0	105
2.1	11	4.0	211
2.2	16	5.0	322
		5.1	336

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	6.5	25	11	44	5.4	66	29	244	15	8.8	45
2	6.5	7.0	23	10	26	5.4	60	27	187	13	8.4	38
3	6.0	7.2	23	9.8	22	5.4	55	25	140	11	8.0	29
4	5.3	8.2	21	9.0	16	5.4	52	23	100	10	64	27
5	5.0	8.0	22	8.2	14	5.4	52	24	74	8.5	52	26
6	4.9	8.8	22	8.6	11	5.2	48	23	61	7.6	37	23
7	4.7	9.2	22	9.0	10	5.2	44	21	51	6.8	34	21
8	4.3	11	19	10	9.0	5.2	39	21	42	6.3	36	19
9	4.6	15	17	9.0	8.6	5.2	33	22	35	6.3	33	20
10	5.0	20	15	8.2	8.2	6.0	29	20	32	6.2	25	18
11	4.5	17	12	8.2	8.0	10	29	19	28	8.3	21	17
12	4.4	19	11	8.2	7.6	31	27	17	33	6.2	18	15
13	4.8	22	11	7.0	8.0	75	25	16	36	6.4	15	18
14	4.7	20	13	6.4	7.6	162	25	15	36	5.8	17	17
15	4.3	24	12	6.7	7.4	186	24	14	35	5.8	15	16
16	7.0	40	10	6.7	7.2	107	23	13	33	5.2	14	15
17	6.4	33	9.4	7.0	7.0	66	29	13	29	5.2	12	14
18	6.5	28	9.2	7.4	6.8	34	28	12	26	17	12	15
19	6.5	27	9.8	7.4	6.6	28	27	13	24	13	11	14
20	5.9	25	14	11	6.4	20	26	12	21	11	19	13
21	6.9	23	14	9.8	6.2	16	27	11	18	9.9	12	13
22	5.9	22	16	8.6	6.2	14	26	9.4	17	10	18	12
23	11	20	29	9.0	6.0	30	24	9.0	15	9.1	13	10
24	11	20	24	11	6.0	135	23	9.7	13	8.0	11	10
25	10	19	20	11	6.0	290	26	53	24	7.0	10	10
26	9.3	34	15	22	5.8	327	25	45	27	6.3	9.8	10
27	9.3	36	25	17	5.6	286	25	35	27	7.2	9.6	10
28	8.3	33	17	14	5.6	205	31	25	29	6.5	15	10
29	6.8	30	13	15	---	155	32	30	25	11	11	9.8
30	6.7	28	12	20	---	107	31	264	19	11	9.8	9.4
31	6.8	---	11	46	---	80	---	305	---	9.9	13	---
TOTAL	201.3	620.9	516.4	352.2	288.8	2417.8	1011	1175.1	1481	270.5	592.4	524.2
MEAN	6.49	20.7	16.7	11.4	10.3	78.0	33.7	37.9	49.4	8.73	19.1	17.5
MAX	11	40	29	46	44	327	66	305	244	17	64	45
MIN	4.3	6.5	9.2	6.4	5.6	5.2	23	9.0	13	5.2	8.0	9.4

CAL YR 1988 TOTAL 7715.34 MEAN 21.1 MAX 193 MIN .52  
WTR YR 1989 TOTAL 9451.6 MEAN 25.9 MAX 327 MIN 4.3

## ROCK RIVER BASIN

05425500 ROCK RIVER AT WATERTOWN, WI

LOCATION.--Lat 43°11'17", long 88°43'34", in SW 1/4 sec.4, T.8 N., R.15 E., Jefferson County, Hydrologic Unit, 07090001, on left bank, 700 ft downstream from Milwaukee Street bridge, 1.1 mi downstream from Silver Creek, at Watertown.

DRAINAGE AREA.--969 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1931 to September 1970, October 1976 to current year.

REVISED RECORDS.--WSP 1438: 1933,1935(M), 1937(M), 1938-39, 1945(M); WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 792.58 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 26, 1933, nonrecording gage at site 700 ft upstream at different datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are poor. Some regulation caused by manipulation of gates at dams on Horicon Marsh, Lake Sinissippi, and other dams in the basin.

AVERAGE DISCHARGE.--52 years, (water years 1932-70, 1977-89), 475 ft<sup>3</sup>/s, 6.66 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,080 ft<sup>3</sup>/s, Mar. 31, 1979, gage height, 6.19 ft; maximum gage height, 6.32 ft, Apr. 4, 1959; minimum daily discharge, 0.9 ft<sup>3</sup>/s, Oct. 15, 1939, Sept. 9, 1944.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Apr. 6	0230	*1,640	*3.70	No other peak greater than base discharge.			

Minimum daily discharge, 47 ft<sup>3</sup>/s, Oct. 15.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 15-18, Dec. 25 to Jan. 9, Jan. 18-26, and Feb. 4 to Mar. 13.)

0.8	30	2.0	311
1.0	52	2.5	594
1.2	78	3.0	977
1.5	143	4.0	1,970

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	56	508	250	377	130	1470	282	372	160	235	426
2	93	71	483	250	372	140	1510	284	664	137	222	508
3	90	109	500	230	319	140	1550	308	823	119	219	558
4	66	124	523	220	300	150	1580	351	841	110	247	594
5	58	128	540	270	280	150	1610	445	857	97	277	610
6	72	127	530	280	250	160	1640	529	883	92	440	601
7	83	114	504	280	230	160	1640	575	911	82	587	619
8	86	109	414	280	200	170	1640	623	911	70	680	605
9	82	145	249	270	180	180	1620	658	911	227	722	502
10	70	162	208	251	160	200	1610	652	898	240	717	408
11	64	165	192	260	170	360	1580	609	854	219	707	377
12	59	191	191	246	190	840	1550	566	832	187	643	447
13	53	275	219	211	200	860	1520	551	805	165	518	532
14	48	333	237	197	190	875	1450	542	793	148	377	559
15	47	389	220	195	190	850	1360	529	780	137	294	551
16	52	446	210	180	170	778	1270	498	806	118	250	463
17	53	472	200	182	160	728	1210	416	805	105	217	334
18	52	481	200	180	150	712	1150	323	739	109	196	233
19	57	511	208	180	140	728	1070	268	710	137	174	189
20	59	536	216	180	140	766	1000	211	665	171	181	164
21	62	542	211	190	130	802	949	135	605	195	170	146
22	60	541	195	190	130	867	895	144	468	192	239	138
23	70	545	191	200	130	1020	784	141	383	177	291	136
24	62	473	204	200	130	1340	477	132	290	159	304	121
25	68	362	220	210	150	1500	361	128	219	145	300	103
26	72	336	240	220	140	1460	343	108	183	124	268	94
27	80	365	260	239	130	1380	375	111	178	115	238	92
28	68	406	280	263	130	1400	389	122	191	134	239	72
29	69	438	260	270	---	1440	399	126	197	189	249	70
30	67	480	240	288	---	1430	308	144	177	219	254	67
31	62	---	270	320	---	1440	---	195	---	244	253	---
TOTAL	2069	9432	9123	7182	5438	23156	34310	10706	18751	4723	10708	10319
MEAN	66.7	314	294	232	194	747	1144	345	625	152	345	344
MAX	93	545	540	320	377	1500	1640	658	911	244	722	619
MIN	47	56	191	180	130	130	308	108	177	70	170	67
CFSM	.07	.32	.30	.24	.20	.77	1.18	.36	.65	.16	.36	.35
IN.	.08	.36	.35	.28	.21	.89	1.32	.41	.72	.18	.41	.40

CAL YR 1988 TOTAL 126778 MEAN 346 MAX 1290 MIN 11 CFSM .36 IN. 4.87  
WTR YR 1989 TOTAL 145917 MEAN 400 MAX 1640 MIN 47 CFSM .41 IN. 5.60

## 05425912 BEAVERDAM RIVER AT BEAVER DAM, WI

LOCATION.--Lat 43°26'57", long 88°50'21", in NE 1/4 SW 1/4 sec.4, T.11 N., R.14 E., Dodge County, Hydrologic Unit 07090002, on left bank 5 ft upstream from bridge on Davis Street, 0.8 mi downstream from outlet of Beaverdam Lake, at Beaver Dam.

DRAINAGE AREA.--157 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 839.42 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by dam 0.8 mi upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 754 ft<sup>3</sup>/s, Sept. 26, 1986, gage height, 9.35 ft; minimum daily, 0.64 ft<sup>3</sup>/s, Oct. 30, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 313 ft<sup>3</sup>/s, Mar. 16, gage height, 7.68 ft; minimum daily, 0.64 ft<sup>3</sup>/s, Oct. 30.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used June 21-25, 30, July 1-8, and 12-15.)

5.3	0.25	6.0	32
5.4	.85	6.3	66
5.5	2.6	6.6	110
5.6	5.4	7.0	177
5.8	15	8.0	386

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	4.8	13	52	19	33	140	8.3	87	6.4	16	52
2	2.3	.77	5.6	49	20	32	140	5.8	111	5.7	16	45
3	1.7	2.7	5.8	57	20	76	139	4.0	117	5.6	14	39
4	3.0	2.9	6.0	63	19	123	143	2.4	125	5.6	34	36
5	1.4	3.3	6.5	72	20	115	145	6.0	165	8.5	26	40
6	2.8	5.6	7.0	76	43	110	139	3.5	202	10	26	38
7	3.7	1.7	7.5	75	22	103	134	2.8	207	9.6	21	38
8	3.1	1.7	6.2	72	23	97	148	2.8	205	13	22	41
9	3.1	3.6	5.8	69	23	93	154	3.3	203	15	20	48
10	5.5	2.6	6.6	66	22	90	126	3.2	184	11	16	43
11	4.4	1.8	8.1	64	21	90	89	3.2	169	10	17	41
12	3.0	3.9	8.6	64	20	95	77	3.6	176	6.4	17	41
13	2.2	4.8	7.3	61	89	128	55	4.2	176	6.3	16	39
14	2.4	4.9	4.5	59	58	179	30	5.4	175	7.1	19	37
15	2.4	5.3	5.1	57	37	237	14	5.8	172	12	20	35
16	4.2	18	5.6	55	41	287	12	6.2	158	8.5	18	34
17	4.4	11	6.4	54	40	299	19	5.4	148	7.0	15	31
18	4.2	1.5	7.5	53	38	290	18	3.4	139	15	14	26
19	2.3	2.9	8.5	53	39	278	17	1.3	89	13	14	19
20	2.1	7.0	11	52	38	273	12	5.4	20	19	19	9.3
21	3.4	3.8	17	50	37	260	9.3	3.1	9.6	25	14	5.2
22	4.2	3.1	25	49	37	251	5.0	3.6	8.6	24	15	13
23	5.5	3.6	24	34	36	232	4.8	3.2	9.0	23	14	5.7
24	2.5	3.8	24	21	35	232	5.3	2.1	8.5	21	12	1.5
25	2.1	5.7	25	22	35	243	8.2	2.0	12	21	11	3.5
26	1.1	14	25	23	34	246	7.4	2.4	24	16	10	3.6
27	2.1	17	42	23	33	252	7.4	.99	28	14	11	2.2
28	3.2	22	41	24	33	258	8.0	1.0	24	12	27	2.2
29	.94	12	51	26	---	255	8.0	2.5	13	18	35	3.1
30	.64	24	56	21	---	254	10	6.3	8.4	17	53	2.7
31	2.7	---	56	17	---	206	---	28	---	17	47	---
TOTAL	89.48	199.77	528.6	1533	932	5717	1824.4	141.19	3173.1	402.7	629	775.0
MEAN	2.89	6.66	17.1	49.5	33.3	184	60.8	4.55	106	13.0	20.3	25.8
MAX	5.5	24	56	76	89	299	154	28	207	25	53	52
MIN	.64	.77	4.5	17	19	32	4.8	.99	8.4	5.6	10	1.5
CAL YR 1988	TOTAL 8384.45	MEAN 22.9	MAX 214	MIN .64								
WTR YR 1989	TOTAL 15945.24	MEAN 43.7	MAX 299	MIN .64								

## ROCK RIVER BASIN

05426000 CRAWFISH RIVER AT MILFORD, WI

LOCATION.--Lat 43°06'00", long 88°50'58", in SW 1/4 sec.4, T.7 N., R.14 E., Jefferson County, Hydrologic Unit 07090002, on left bank near upstream side of highway bridge in Milford, 1.4 mi downstream from Rock Creek and 9.8 mi upstream from mouth.

DRAINAGE AREA.--762 mi<sup>2</sup>.

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

REVISED RECORDS.--WSP 975: 1937-38. WSP 1438: 1932-33(M), 1935(M), 1937, 1938-41(M), 1943-44(M), 1947-48(M). WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 779.40 ft above National Geodetic Vertical Datum of 1929. Prior to July 28, 1966, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are poor. Some diurnal fluctuation at lower flows, due to manipulation of gates on small dams upstream.

AVERAGE DISCHARGE.--58 years, 395 ft<sup>3</sup>/s, 7.04 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,140 ft<sup>3</sup>/s, Apr. 6, 1959, gage height, 11.15 ft; minimum observed, 0.2 ft<sup>3</sup>/s, Sept. 15, 1958, gage height, 1.11 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,250 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 20	1400	(a)	*5.30	Mar. 28	2300	*1,610	5.24

(a) Backwater from ice.

Minimum daily discharge, 31 ft<sup>3</sup>/s, Oct. 14.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9-12, 15-18, 25, Dec. 28 to Jan. 5, Jan. 8-10, and Feb. 2 to Mar. 25.)

1.5	29	3.0	510
1.7	52	3.5	778
2.0	110	4.0	1,030
2.5	283	5.0	1,510
		6.0	1,950

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	90	237	160	372	80	1340	259	155	105	108	301
2	88	71	233	150	300	80	1260	269	155	101	100	346
3	69	60	248	150	250	86	1170	253	206	90	88	402
4	82	75	240	140	220	94	1090	199	226	89	148	437
5	73	99	246	170	190	92	1010	231	225	76	150	454
6	60	100	220	170	170	96	912	251	213	64	171	441
7	56	72	239	172	150	100	826	229	199	65	181	413
8	55	79	186	170	130	110	772	220	210	56	192	387
9	56	74	170	170	110	110	706	224	227	59	198	373
10	60	123	160	170	100	120	623	207	214	67	191	338
11	64	115	150	171	100	200	548	191	203	82	179	304
12	53	112	140	164	110	340	543	179	221	90	170	286
13	39	131	128	171	120	500	464	161	240	89	151	265
14	31	155	122	161	130	700	429	152	240	84	133	252
15	39	128	120	157	120	800	423	140	253	74	138	235
16	47	93	110	154	110	940	350	141	242	77	131	220
17	68	200	100	150	100	1100	365	133	242	71	123	199
18	83	244	96	148	96	1200	327	118	237	62	113	178
19	79	249	93	149	90	1300	306	116	241	109	90	165
20	63	274	98	149	86	1300	283	139	227	134	108	155
21	75	228	105	155	84	1300	269	118	212	135	110	144
22	84	189	109	157	82	1300	260	111	193	144	123	156
23	82	183	120	164	82	1400	248	100	166	139	133	142
24	101	173	127	171	84	1400	238	66	147	134	127	94
25	91	181	130	178	86	1500	251	96	126	124	115	93
26	87	175	129	196	82	1450	249	110	112	111	109	102
27	46	159	163	207	80	1580	248	109	110	98	113	79
28	80	246	180	215	80	1600	242	75	108	103	115	71
29	96	246	160	227	---	1590	235	74	105	86	132	85
30	84	276	150	252	---	1540	247	93	102	106	145	75
31	61	---	170	289	---	1470	---	122	---	109	143	---
TOTAL	2134	4600	4879	5407	3714	25478	16234	4886	5757	2933	4228	7192
MEAN	68.8	153	157	174	133	822	541	158	192	94.6	136	240
MAX	101	276	248	289	372	1600	1340	269	253	144	198	454
MIN	31	60	93	140	80	80	235	66	102	56	88	71
CFSM	.09	.20	.21	.23	.17	1.08	.71	.21	.25	.12	.18	.31
IN.	.10	.22	.24	.26	.18	1.24	.79	.24	.28	.14	.21	.35

CAL YR 1988 TOTAL 101561 MEAN 277 MAX 1230 MIN 24 CFSM .36 IN. 4.96  
WTR YR 1989 TOTAL 87442 MEAN 240 MAX 1600 MIN 31 CFSM .31 IN. 4.27

## ROCK RIVER BASIN

267

05426031 ROCK RIVER AT JEFFERSON, WI

LOCATION.--Lat 42°59'46", long 88°48'26", in sec.2, T.6 N., R.14 E., Jefferson County, Hydrologic Unit 07090001, on right bank 30 ft downstream from bridge on State Highway 26, in Jefferson.

DRAINAGE AREA.--1,850 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage 774.97 ft above National Geodetic Vertical Datum of 1929 (levels by Wisconsin Department of Natural Resources). Auxiliary water-stage recorder 6.9 mi downstream from base gage to provide slope data.

REMARKS.--Estimated daily discharges: Periods of ice effect, Dec. 15-23, Dec. 26 to Jan. 28, and Feb. 2 to Mar. 22. Records good except for ice-affected periods and discharges less than 200 ft<sup>3</sup>/s, which are poor.

AVERAGE DISCHARGE.--11 years, 1,380 ft<sup>3</sup>/s, 10.13 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft<sup>3</sup>/s, Apr. 1, 1979, gage height, 10.79 ft; maximum gage height, 10.84 ft, Apr. 2, 1979; minimum daily discharge, 42 ft<sup>3</sup>/s, Aug. 18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,110 ft<sup>3</sup>/s, Mar. 27, gage height, 5.24 ft; minimum daily discharge, 154 ft<sup>3</sup>/s, Oct. 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	177	734	470	699	240	2790	589	485	303	377	865
2	191	182	719	450	740	240	2720	594	685	278	374	894
3	201	186	742	440	680	260	2640	606	873	251	369	972
4	183	199	719	410	600	270	2590	591	1010	244	424	1030
5	166	236	738	450	540	280	2550	658	1060	236	454	1060
6	157	273	767	490	500	280	2460	749	1090	228	468	1080
7	163	242	737	500	450	300	2390	786	1110	217	573	1040
8	168	236	664	490	400	310	2320	828	1130	213	687	1010
9	160	244	572	490	350	320	2240	867	1140	265	792	985
10	180	306	505	490	320	340	2180	881	1130	327	835	887
11	156	328	449	490	300	450	2170	846	1100	326	835	782
12	154	320	406	490	320	780	2140	803	1090	309	823	728
13	161	387	405	470	350	1300	2050	747	1100	290	756	739
14	166	414	411	430	370	1600	1980	700	1080	270	656	753
15	160	465	380	410	350	1700	1890	694	1070	251	545	751
16	166	734	360	410	330	1900	1750	678	1060	243	461	714
17	161	710	330	390	310	2000	1650	628	1060	229	414	640
18	176	714	320	380	290	2100	1600	528	1050	237	372	535
19	170	731	320	380	280	2100	1530	445	1000	264	333	436
20	172	750	330	380	260	2100	1420	391	971	307	343	374
21	173	745	350	390	260	2200	1200	336	916	326	317	338
22	173	722	350	400	250	2300	1150	295	832	348	407	304
23	186	714	350	410	250	2450	1030	284	710	352	432	268
24	208	709	353	430	250	2480	897	279	586	341	441	236
25	196	638	355	440	250	2530	826	259	456	321	431	218
26	193	603	390	470	270	2860	637	270	406	298	416	198
27	250	676	450	490	250	3070	560	249	349	292	394	186
28	233	668	490	520	240	3070	594	253	326	266	407	187
29	199	684	480	546	---	3040	603	251	311	281	408	180
30	190	727	450	594	---	2980	616	273	309	326	415	178
31	225	---	460	657	---	2890	---	332	---	356	415	---
TOTAL	5629	14720	15086	14257	10459	48740	51173	16690	25495	8795	15374	18568
MEAN	182	491	487	460	374	1572	1706	538	850	284	496	619
MAX	250	750	767	657	740	3070	2790	881	1140	356	835	1080
MIN	154	177	320	380	240	240	560	249	309	213	317	178
CFSM	.10	.27	.26	.25	.20	.85	.92	.29	.46	.15	.27	.33
IN.	.11	.30	.30	.29	.21	.98	1.03	.34	.51	.18	.31	.37
CAL YR 1988	TOTAL 250514	MEAN 684	MAX 2530	MIN 42	CFSM .37	IN. 5.04						
WTR YR 1989	TOTAL 244986	MEAN 671	MAX 3070	MIN 154	CFSM .36	IN. 4.93						

## ROCK RIVER BASIN

05426250 BARK RIVER NEAR ROME, WI

LOCATION.--Lat 42°57'39", long 88°40'09", in SE 1/4 SW 1/4 sec.24, T.6 N., R.15 E., Jefferson County, Hydrologic Unit 07090001, on left bank just upstream from bridge on Cushman Road, 2.8 mi southwest of Rome.

DRAINAGE AREA.--122 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1979 to September 1982. October 1982 to September 1983 (fragmentary). October 1983 to present.

GAGE.--Water-stage recorder. Elevation of gage is 810 ft, from topographic map.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair.

AVERAGE DISCHARGE.--8 years (water years 1981-82, 1984-89), 89.2 ft<sup>3</sup>/s, 9.93 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 443 ft<sup>3</sup>/s, Apr. 6, 1982, gage height, 2.39 ft; maximum gage height, 2.40 ft Oct. 1, 1986; minimum, 3.0 ft<sup>3</sup>/s, Aug. 4, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 155 ft<sup>3</sup>/s, Sept. 3, 4, gage height, 1.60 ft; minimum, 8.5 ft<sup>3</sup>/s, July 5.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used July 11 to Sept. 30; stage-discharge relation affected by ice Dec. 10-19, Jan. 8, 9, Feb. 3 to Mar. 10, and Mar. 19, 20.)

0.4	7.5	0.7	28
0.5	12	1.0	73
0.6	18	1.5	171
		2.0	293

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	30	85	45	61	29	146	88	51	11	65	112
2	29	24	85	40	59	29	140	79	48	11	60	111
3	34	24	82	36	42	29	131	66	46	12	47	135
4	13	25	79	35	39	29	122	72	47	12	89	146
5	13	30	77	32	37	29	113	73	44	12	71	142
6	16	27	75	37	36	29	112	71	42	15	59	137
7	18	43	73	38	35	30	105	70	39	18	52	126
8	23	57	69	45	34	30	100	70	38	24	53	108
9	22	70	63	38	33	35	89	71	36	18	50	105
10	20	69	52	36	32	50	82	68	18	18	42	92
11	13	67	45	35	32	78	76	64	16	30	55	77
12	15	72	43	38	32	93	72	60	23	31	56	66
13	16	83	46	37	33	94	73	47	37	27	56	71
14	22	77	45	36	33	102	72	48	38	23	55	74
15	25	66	43	37	33	107	69	48	39	21	59	121
16	25	50	42	37	32	104	69	43	36	20	44	140
17	25	49	41	37	31	92	76	31	34	19	59	113
18	26	77	42	37	31	92	75	40	28	19	59	99
19	24	97	45	39	32	92	70	50	24	49	43	88
20	24	82	51	38	32	92	66	44	24	84	33	81
21	30	76	51	38	30	91	64	39	23	69	29	73
22	32	72	52	37	28	92	57	38	26	60	42	67
23	35	68	54	39	28	96	58	34	22	56	47	32
24	28	63	51	41	29	102	57	30	11	45	37	23
25	27	59	45	43	30	109	66	28	11	32	46	26
26	34	65	42	46	31	115	69	20	13	26	65	45
27	41	74	58	45	30	94	71	10	21	25	70	67
28	31	78	54	46	30	86	86	12	20	28	88	55
29	12	88	52	50	---	142	97	14	19	34	79	39
30	13	87	52	55	---	147	88	17	12	47	78	34
31	19	---	47	60	---	143	---	47	---	62	74	---
TOTAL	731	1849	1741	1253	965	2482	2571	1492	886	958	1762	2605
MEAN	23.6	61.6	56.2	40.4	34.5	80.1	85.7	48.1	29.5	30.9	56.8	86.8
MAX	41	97	85	60	61	147	146	88	51	84	89	146
MIN	12	24	41	32	28	29	57	10	11	11	29	23
CFSM	.19	.51	.46	.33	.28	.66	.70	.39	.24	.25	.47	.71
IN.	.22	.56	.53	.38	.29	.76	.78	.45	.27	.29	.54	.79

CAL YR 1988 TOTAL 20852.1 MEAN 57.0 MAX 220 MIN 3.6 CFSM .47 IN. 6.36  
WTR YR 1989 TOTAL 19295 MEAN 52.9 MAX 147 MIN 10 CFSM .43 IN. 5.88

## ROCK RIVER BASIN

269

05427235 LAKE KOSHKONONG NEAR NEWVILLE, WI

LOCATION.--Lat 42°51'27", long 88°56'27", in NW 1/4 NE 1/4 sec.34, T.5 N., R.13 E., Jefferson County, Hydrologic Unit 07090001, 80 ft east of Pottawatomie Trail Bridge at Bingham Point Estates, and 4.5 mi northeast of Newville.

DRAINAGE AREA.--2,560 mi<sup>2</sup>, at lake outlet. Area of Lake Koshkonong, 16.3 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 770.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily lake levels: Dec. 16 and Feb. 4. Records good, except for estimated days, which are fair. Lake level regulated by dam at Indianford. Gage-height telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 8.34 ft, Mar. 31 and Apr. 4, 1989; minimum, 5.51 ft, Mar. 7-10, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 8.34 ft, Mar. 31 and Apr. 4; minimum, 5.51 ft, Mar. 7-10.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.22	6.10	6.64	6.11	6.11	5.57	8.31	6.45	5.91	5.94	6.11	6.18
2	6.26	6.06	6.59	6.13	6.12	5.55	8.32	6.41	5.96	5.97	6.11	6.27
3	6.23	6.06	6.57	6.14	6.13	5.56	8.30	6.38	6.02	5.98	6.09	6.37
4	6.24	6.08	6.51	6.13	6.15	5.60	8.29	6.31	6.13	5.98	6.14	6.46
5	6.18	6.15	6.48	6.12	6.17	5.58	8.27	6.37	6.23	5.96	6.17	6.56
6	6.13	6.21	6.46	6.13	6.19	5.55	8.22	6.33	6.33	5.93	6.18	6.64
7	6.11	6.15	6.48	6.11	6.18	5.53	8.17	6.30	6.40	5.91	6.16	6.68
8	6.08	6.18	6.42	6.10	6.17	5.52	8.14	6.29	6.48	5.87	6.18	6.69
9	6.07	6.18	6.37	6.09	6.16	5.51	8.10	6.29	6.53	5.90	6.21	6.76
10	6.12	6.30	6.32	6.06	6.15	5.53	8.01	6.28	6.52	5.91	6.25	6.75
11	6.09	6.26	6.24	6.03	6.13	5.59	7.96	6.27	6.51	5.91	6.29	6.73
12	6.03	6.25	6.18	6.01	6.11	5.78	7.92	6.26	6.53	5.93	6.31	6.69
13	6.00	6.28	6.13	5.99	6.10	6.06	7.84	6.23	6.53	5.94	6.32	6.66
14	5.99	6.27	6.08	5.96	6.08	6.38	7.79	6.21	6.51	5.91	6.34	6.62
15	5.99	6.25	6.03	5.94	6.05	6.71	7.73	6.19	6.48	5.90	6.35	6.58
16	6.01	6.44	5.99	5.91	6.01	6.96	7.64	6.20	6.46	5.91	6.29	6.56
17	6.02	6.45	5.95	5.88	5.98	7.16	7.60	6.19	6.45	5.89	6.23	6.53
18	6.05	6.46	5.91	5.85	5.94	7.26	7.51	6.16	6.44	5.88	6.17	6.49
19	6.04	6.50	5.88	5.84	5.90	7.32	7.43	6.14	6.43	6.08	6.10	6.43
20	6.00	6.56	5.87	5.83	5.86	7.38	7.35	6.16	6.40	6.17	6.12	6.37
21	6.05	6.54	5.85	5.82	5.82	7.39	7.24	6.09	6.36	6.16	6.05	6.29
22	6.04	6.54	5.83	5.83	5.78	7.40	7.13	6.04	6.33	6.18	6.02	6.26
23	6.09	6.55	5.86	5.83	5.74	7.43	7.02	6.00	6.28	6.19	5.98	6.13
24	6.13	6.55	5.84	5.83	5.71	7.50	6.93	5.92	6.23	6.21	5.95	6.02
25	6.10	6.56	5.82	5.83	5.68	7.61	6.89	5.94	6.16	6.20	5.92	5.97
26	6.08	6.59	5.82	5.86	5.65	7.75	6.78	5.95	6.10	6.16	5.90	5.92
27	6.07	6.64	5.92	5.89	5.61	7.93	6.66	5.88	6.06	6.12	5.90	5.87
28	6.15	6.67	5.95	5.92	5.59	8.08	6.58	5.80	6.00	6.07	5.91	5.84
29	6.09	6.62	5.98	5.95	---	8.19	6.54	5.79	5.93	6.04	5.95	5.83
30	6.08	6.66	6.02	5.99	---	8.26	6.51	5.78	5.91	6.11	5.92	5.81
31	6.07	---	6.08	6.05	---	8.30	---	5.82	---	6.12	5.91	---
MEAN	6.09	6.37	6.13	5.97	5.97	6.71	7.57	6.14	6.29	6.01	6.11	6.37
MAX	6.26	6.67	6.64	6.14	6.19	8.30	8.32	6.45	6.53	6.21	6.35	6.76
MIN	5.99	6.06	5.82	5.82	5.59	5.51	6.51	5.78	5.91	5.87	5.90	5.81

CAL YR 1988 MEAN 6.53 MAX 8.27 MIN 5.82  
WTR YR 1989 MEAN 6.31 MAX 8.32 MIN 5.51

## ROCK RIVER BASIN

05427570 ROCK RIVER AT INDIANFORD, WI

LOCATION.--Lat 42°48'15", long 89°05'25", in SW 1/4 SW 1/4 sec.16, T.4 N., R.12 E., Rock County, Hydrologic Unit 07090001, on right bank 50 ft upstream from bridge on County Trunk Highways F and M, 250 ft upstream from dam in Indianford, and 1.8 mi upstream from Yahara River.

DRAINAGE AREA.--2,630 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1975 to current year.

REVISED RECORDS.--WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 763.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair. Natural flow of stream affected by dam in Indianford. Discharge is adjusted for flow through wicket gates.

AVERAGE DISCHARGE.--14 years, 1,811 ft<sup>3</sup>/s, 9.35 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,900 ft<sup>3</sup>/s, Apr. 5, 1979, gage height, 16.23 ft; minimum daily, 39 ft<sup>3</sup>/s, June 19, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,620 ft<sup>3</sup>/s, Apr. 2, gage height, 13.47 ft; minimum daily discharge, 207 ft<sup>3</sup>/s, July 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	359	362	1330	884	994	637	3540	1240	356	207	693	843
2	389	348	1320	900	980	658	3580	1160	326	239	650	908
3	333	332	1400	916	901	684	3540	1090	491	291	602	988
4	334	352	1310	918	890	666	3420	1040	529	352	676	1040
5	361	359	1290	933	903	677	3470	946	637	331	636	1160
6	401	313	1230	952	908	656	3430	1080	663	280	759	1350
7	355	404	1290	889	913	642	3370	1060	726	293	719	1450
8	353	409	1200	762	901	632	3290	1090	816	256	703	1470
9	364	433	1130	834	886	631	3120	1150	1020	249	763	1570
10	305	459	1090	841	874	635	3070	1130	1140	244	781	1550
11	373	620	1010	863	869	669	2950	1090	1110	338	831	1490
12	339	752	948	801	868	798	3000	1050	1270	335	844	1460
13	286	684	910	812	888	978	2850	1050	1290	341	845	1460
14	246	775	889	786	902	1290	2690	986	1300	307	860	1440
15	251	759	861	771	884	1640	2740	854	1290	276	969	1360
16	241	407	806	748	861	1930	2570	826	1220	283	922	1330
17	307	760	783	749	841	2220	2580	801	1160	268	898	1290
18	286	992	764	723	805	2280	2430	781	1190	271	824	1230
19	307	995	752	706	775	2340	2330	752	1210	532	729	1170
20	281	1040	722	729	769	2430	2200	718	1190	550	706	1120
21	299	1010	766	700	732	2420	2220	695	1140	523	720	1050
22	320	997	761	704	721	2430	2070	688	1090	497	640	1050
23	286	991	691	730	698	2470	1950	627	990	493	693	932
24	286	1010	737	773	675	2560	1790	461	941	503	703	823
25	305	1050	726	757	663	2700	1730	474	865	640	649	675
26	315	1080	761	722	642	2850	1650	404	729	696	608	611
27	231	811	746	746	636	3040	1560	441	598	638	604	548
28	241	1070	776	766	612	3270	1490	386	598	726	613	419
29	350	1110	792	787	---	3480	1280	404	556	550	591	421
30	357	1110	819	798	---	3530	1220	369	318	599	614	404
31	276	---	857	834	---	3550	---	294	---	665	585	---
TOTAL	9737	21794	29467	24834	22991	55393	77130	25137	26759	12773	22430	32612
MEAN	314	726	951	801	821	1787	2571	811	892	412	724	1087
MAX	401	1110	1400	952	994	3550	3580	1240	1300	726	969	1570
MIN	231	313	691	700	612	631	1220	294	318	207	585	404
CFSM	.12	.28	.36	.30	.31	.68	.98	.31	.34	.16	.28	.41
IN.	.14	.31	.42	.35	.33	.78	1.09	.36	.38	.18	.32	.46
CAL YR 1988	TOTAL 398543	MEAN 1089	MAX 3570	MIN 39	CFSM .41	IN. 5.64						
WTR YR 1989	TOTAL 361057	MEAN 989	MAX 3580	MIN 207	CFSM .38	IN. 5.11						



## 05427948 PHEASANT BRANCH AT MIDDLETON, WI

LOCATION.--Lat 43°06'12", long 89°30'42", in NE 1/4 NW 1/4 sec.11, T.7 N., R.8 E., Dane County, Hydrologic Unit 07090001, on left bank at bridge on U.S. Highway 12, 2.5 mi upstream from Lake Mendota, at Middleton.

DRAINAGE AREA.--18.3 mi<sup>2</sup>, of which 1.22 mi<sup>2</sup> is noncontributing.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder, parshall flume, and concrete control. Datum of gage is 901.5 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records fair.

AVERAGE DISCHARGE.--15 years, 4.11 ft<sup>3</sup>/s, 3.26 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 516 ft<sup>3</sup>/s, Mar. 21, 1975, gage height, 7.54 ft; maximum gage height, 8.54 ft, Mar. 12, 1976; minimum discharge, 0.29 ft<sup>3</sup>/s, Jan. 26, 1978, gage height, 3.56 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Jan. 31	1815	102	5.69	Apr. 25	0130	107	5.73
Mar. 11	2000	*501	*7.96	July 9	0045	105	5.72
Mar. 23	1800	101	5.68	Aug. 28	1100	166	6.46

Minimum daily discharge, 0.50 ft<sup>3</sup>/s July 17.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 24-26, and Nov. 8.)

3.6	0.37	4.5	5.3
3.8	0.84	4.7	14
4.0	1.4	5.0	34
4.2	2.2	5.5	80
4.3	2.8	6.0	141
4.4	3.7	6.5	215

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	.98	1.4	1.2	10	.83	2.0	1.6	1.3	.57	.69	35
2	1.1	.98	1.3	1.1	2.6	.82	2.2	1.6	.98	.58	.63	2.8
3	1.0	.98	1.4	1.1	1.7	.81	2.2	1.4	2.2	.62	.73	1.6
4	1.0	1.1	1.4	.99	1.3	.87	2.2	1.6	1.5	.60	1.2	1.2
5	.98	1.2	1.4	.99	1.2	.88	2.0	1.5	1.1	.58	7.3	1.2
6	1.0	1.2	1.3	1.1	1.2	.89	1.9	1.2	.81	.56	.89	.99
7	1.0	1.3	1.3	1.5	1.2	.88	1.7	1.2	.73	.52	.65	.98
8	1.0	1.3	1.2	1.5	1.1	.87	1.6	1.1	.87	.81	.63	1.3
9	1.1	2.0	1.1	.96	.98	.93	1.5	1.1	.77	27	.63	2.2
10	1.0	3.0	1.1	.93	1.0	3.7	1.3	1.0	.73	1.2	.63	1.4
11	1.0	1.5	.99	1.5	1.0	173	1.3	.98	.68	.97	.63	1.1
12	.95	1.9	.95	16	1.0	110	1.3	1.0	1.6	.66	.63	.88
13	.96	2.5	1.1	4.0	1.0	54	1.2	1.0	.82	.60	.65	1.3
14	.99	1.6	1.1	1.6	1.0	42	1.2	.98	1.3	.57	4.4	.94
15	1.0	3.1	.99	1.2	.98	24	1.1	.95	.76	.56	1.4	.84
16	1.3	12	.86	1.1	.90	6.8	1.1	.94	.75	.54	.80	.79
17	1.8	1.9	.90	1.0	.88	4.1	1.4	.91	.70	.50	.72	.76
18	1.4	1.9	.94	1.0	.90	2.4	1.1	1.1	.67	1.6	.72	.74
19	1.2	1.9	1.0	11	.92	1.6	1.0	1.3	.65	17	.80	.73
20	1.2	1.4	1.2	17	.96	1.6	.98	1.2	.64	4.6	2.9	.71
21	2.2	1.3	1.0	3.3	.95	1.5	.96	1.1	.64	1.2	1.5	.68
22	1.6	1.2	1.7	1.8	.87	19	.92	1.0	.65	.87	5.9	.70
23	2.5	1.2	2.7	16	.78	43	.91	.81	.65	.65	1.2	.66
24	1.4	1.2	1.4	15	.79	15	.84	1.0	.64	.63	.68	.67
25	1.2	1.2	1.1	3.1	.89	7.0	28	9.1	.97	.90	.61	.70
26	1.1	4.9	1.0	3.6	1.0	3.1	2.1	1.6	1.5	.68	.66	.69
27	1.1	7.0	25	6.4	.92	3.0	1.6	1.4	.82	.67	.61	.66
28	1.1	2.1	16	14	.90	4.3	9.4	1.3	.76	.62	49	.66
29	1.0	1.7	3.1	22	---	3.6	2.6	1.6	.71	3.4	3.9	.66
30	.99	1.5	1.7	37	---	2.8	1.9	3.1	.61	3.6	1.3	.61
31	.98	---	1.3	44	---	2.3	---	2.8	---	.82	2.7	---
TOTAL	37.35	67.04	78.93	232.97	38.92	535.58	79.51	48.47	27.51	74.68	95.69	64.15
MEAN	1.20	2.23	2.55	7.52	1.39	17.3	2.65	1.56	.92	2.41	3.09	2.14
MAX	2.5	12	25	44	10	173	28	9.1	2.2	27	49	35
MIN	.95	.98	.86	.93	.78	.81	.84	.81	.61	.50	.61	.61
CFSM	.07	.12	.14	.41	.08	.94	.14	.09	.05	.13	.17	.12
IN.	.08	.14	.16	.47	.08	1.09	.16	.10	.06	.15	.19	.13

CAL YR 1988 TOTAL 931.10 MEAN 2.54 MAX 60 MIN .63 CFSM .14 IN. 1.89  
WTR YR 1989 TOTAL 1380.80 MEAN 3.78 MAX 173 MIN .50 CFSM .21 IN. 2.81

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1977 to current year.

INSTRUMENTATION.--Automatic pumping sampler since December 1977.

REMARKS.--Sediment records are fair except for the 1985 water year, which are poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,710 mg/L, June 10, 1984; minimum daily mean, 4 mg/L, Mar. 12, 1979. Maximum observed, 15,400 mg/L, Apr. 30, 1984; minimum observed, 4 mg/L, Mar. 12, 1979.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 2,870 tons, June 10, 1984; minimum daily, 0.02 ton on several days.

EXTREMES FOR 1985 WATER YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 5,130 mg/L, Nov. 1; minimum observed, 115 mg/L, Feb. 26.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 1,220 tons, July 25; minimum daily, 0.02 ton on several days.

EXTREMES FOR 1986 WATER YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 1,600 mg/L, July 10; minimum observed, 30 mg/L, Mar. 17.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 170 tons, Mar. 19; minimum daily, 0.06 ton on several days.

EXTREMES FOR 1987 WATER YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 2,810 mg/L, May 27; minimum observed, 96 mg/L, Sept. 16.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 81 tons, Oct. 4; minimum daily, 0.03 ton on several days.

EXTREMES FOR 1988 WATER YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 1,840 mg/L, Apr. 2; minimum observed, 8 mg/L, Aug. 8.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 110 tons, Jan. 31; minimum daily, 0.03 ton, Aug. 9.

EXTREMES FOR 1989 WATER YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 12,400 mg/L, Apr. 25; minimum observed, 27 mg/L, Aug. 23.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 1,290 tons, Mar. 11; minimum daily, 0.03 ton, on several days.

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1988				MAR 1989			
23...	0730	4.5	124	14...	1530	27	596
23...	0830	5.1	56	14...	1630	33	468
23...	1030	3.9	30	14...	1730	54	--
23...	1430	2.5	56	14...	1830	63	843
NOV				14...	1930	66	--
15...	1600	1.6	103	14...	2030	66	569
15...	1800	8.3	62	15...	0230	55	318
15...	2200	3.7	298	15...	0330	46	--
15...	2300	14	1330	15...	0930	19	103
16...	0100	27	1080	15...	1630	16	211
16...	0300	20	2290	15...	1730	15	--
16...	0400	29	1970	16...	2015	8.3	95
16...	1000	12	743	16...	2215	14	89
16...	1845	3.3	97	22...	1715	5.3	48
17...	0545	2.1	106	22...	2015	80	796
MAR 1989				23...	0115	34	170
10...	1630	9.2	112	23...	1015	14	88
11...	0345	22	67	24...	0845	7.9	201
11...	0645	20	45	24...	1530	11	283
11...	0745	20	--	24...	1930	25	585
11...	1245	39	--	25...	0630	8.3	172
11...	1345	53	615	APR			
11...	1645	332	--	25...	0045	16	811
11...	1745	411	7670	25...	0145	107	4960
11...	1845	472	3400	25...	0345	90	12400
14...	0100	59	761	25...	0745	42	3810
14...	0600	31	349	25...	1245	15	444
14...	1200	22	311	28...	0430	8.3	260
14...	1430	26	--	28...	0530	23	757

## ROCK RIVER BASIN

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05427948 PHEASANT BRANCH AT MIDDLETON, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
APR 1989				AUG 1989			
28...	0730	16	629	23...	0145	2.3	153
28...	0930	7.0	294	23...	0745	1.2	125
28...	1130	19	1920	23...	1745	0.84	27
28...	1330	14	1170	28...	0635	38	446
28...	1830	7.4	314	28...	0645	68	1350
MAY				28...	0715	92	1860
24...	2400	26	711	28...	0716	92	1690
25...	0100	34	1990	28...	0815	84	951
25...	0400	9.6	637	28...	0845	77	728
25...	0600	19	1110	28...	0945	124	3060
25...	1100	7.9	1270	28...	1045	156	2340
30...	1600	13	727	28...	1215	141	1430
JUL				28...	1415	56	950
21...	1902	1.7	131	28...	1645	48	650
22...	0502	0.76	49	28...	2245	15	270
22...	1102	1.0	60	29...	0545	4.2	169
23...	0102	0.74	31	29...	1345	3.1	112
AUG				SEP			
22...	1545	5.0	186	01...	0625	63	967
22...	1745	4.2	228	01...	0800	53	799
22...	2045	2.8	233	01...	1700	14	236
22...	2145	4.7	234	02...	0330	3.7	141
				02...	2000	2.1	35

DATE	TIME	CHARGE, INST. CUBIC FEET PER SECOND (00061)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	DIS- NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)	GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	NITRO- PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)
MAR 1989									
11...	0745	20	1.20	2.90	5.6	8.5	9.7	1.10	0.900
11...	1245	39	<1.40	3.90	6.1	10	--	0.900	0.740
11...	1645	332	0.800	3.10	2.9	6.0	6.8	0.830	0.830
11...	1845	472	0.900	2.80	7.2	10	11	1.10	0.650
14...	1430	26	2.90	2.30	2.2	4.5	7.4	2.10	1.40
14...	1730	54	2.00	2.10	2.1	4.2	6.2	1.10	0.950
14...	1930	66	1.70	2.50	2.3	4.8	6.5	2.10	1.20
15...	0330	46	2.50	2.70	4.4	7.1	9.6	1.70	1.10
15...	1730	15	3.00	2.20	2.1	4.3	7.3	0.940	0.800

## ROCK RIVER BASIN

05427948 PHEASANT BRANCH AT MIDDLETON, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.06	18	.08	.14	.03	3.1	e7.8	.12	.09	.16	.11	.04
2	.06	1.8	e.65	.13	.03	1.2	e4.9	.12	.08	.11	.09	.04
3	.05	.28	e.48	.11	.03	.29	e2.3	.11	.08	.09	.08	.04
4	.05	.22	.06	.11	.03	.22	e9.0	.11	.07	.08	.07	.04
5	.05	.18	.06	.10	.03	.17	e9.0	.11	.07	.07	.06	11
6	.05	.15	.05	.09	.03	.12	e10	.11	.06	.07	.06	.22
7	.08	.14	.05	.09	.03	.12	e2.8	.11	.07	.06	.06	.13
8	.06	.13	.05	.08	.03	25	e1.6	.10	.07	.06	.05	.09
9	.05	.87	.05	.07	.03	123	.39	.09	.06	.05	.04	161
10	.04	.39	.05	.07	.03	12	.35	.09	.06	.05	.06	.60
11	.04	.28	.05	.07	.03	4.0	.30	.11	.06	.05	.04	.26
12	.05	.24	.05	.07	.03	2.4	.28	e.60	.06	.05	1.9	.19
13	.04	.21	.05	.07	.03	2.1	.26	.09	.06	.04	13	.14
14	.04	.20	.05	.06	.03	.75	.27	e.83	.06	.04	.14	.11
15	e.48	.19	.04	.06	.03	.33	.24	e2.0	e1.1	.03	.10	.09
16	e1.2	.16	e5.2	.06	.02	.28	.21	e.94	e.40	.03	.09	.08
17	e2.0	.15	e2.0	.06	.02	.23	.20	.10	.07	.03	.08	e.97
18	21	.13	e1.0	.06	.02	.25	.19	.10	.06	.03	.07	e.51
19	148	.12	e.85	.05	.02	.26	.17	.09	.06	.03	.06	.05
20	.95	.11	e.65	e.23	.04	.21	.16	.09	.06	.03	.06	.05
21	.35	.10	e1.4	e.13	6.7	.16	.15	.08	e.65	.03	.06	.04
22	.24	.09	e1.3	.04	e243	.15	.15	.07	e1.8	.02	.06	e.83
23	.18	.09	e.60	.04	e169	.17	.18	.08	e.36	.02	.05	e1.7
24	.15	.09	e.44	.04	e321	.20	.16	.10	.05	15	.06	e1.1
25	.13	.09	e.36	.04	23	.20	.14	e.56	.05	1220	e1.2	e.78
26	.11	.08	.05	.04	7.4	.17	.14	e1.5	.05	124	e.52	e1.4
27	2.7	e.83	.05	.04	1.5	.18	.14	e2.0	.51	3.3	.05	e1.0
28	8.2	e.56	254	.04	.99	e7.8	.14	e.54	.42	.60	.05	e.73
29	.85	e.48	65	.04	---	e3.2	.13	e.50	6.7	.20	e.74	e.78
30	.43	e.28	.81	.04	---	e1.6	.13	e.68	6.6	.14	e.50	e1.3
31	.27	---	.20	.03	---	e5.0	---	e.56	---	.14	e.40	---
TOTAL	187.96	26.64	335.73	2.30	773.16	194.86	51.88	12.69	19.89	1364.61	19.91	185.31
WTR YR 1985	TOTAL 3174.94											

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1985 TO SEPTEMBER 1986  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	71	.15	.10	.08	.07	.60	.28	.28	.30	.30	.21
2	.07	22	.10	.10	.09	.07	.47	.26	.26	.29	.29	.20
3	.06	2.4	.15	.09	.08	.07	.70	.25	.25	.25	.27	.20
4	.07	.56	.15	.09	e2.8	.08	.56	.25	.24	.24	.27	.19
5	.08	.35	.15	.08	e9.0	.08	.56	.27	.24	.23	.27	.17
6	.06	e3.3	.15	.09	e5.2	.08	.51	.25	.24	.23	.66	.16
7	.06	e4.5	.15	.08	e3.2	.07	.49	.21	.24	.23	e1.6	.15
8	.06	.30	.15	.08	e2.3	.07	.44	.21	.23	e1.4	e1.5	.15
9	e2.1	.27	.15	.05	e2.2	.07	.41	.20	.21	.32	e1.0	e.60
10	e4.0	.26	.15	.05	.14	6.0	.40	.20	e2.0	34	e2.0	e3.4
11	e1.4	.26	.15	.08	.13	2.3	.39	.21	e1.3	24	e1.2	e22
12	e15	e3.3	.14	.08	.11	1.5	.38	.22	.27	1.6	.25	e2.9
13	e2.9	e16	.14	.06	.10	1.3	.37	2.3	.23	.66	.24	.47
14	e1.3	e11	.14	.07	.09	1.5	e4.8	2.3	.28	.47	e1.7	.37
15	.08	e3.1	.14	.09	.08	1.4	e2.4	2.6	.26	.53	.27	.33
16	.07	27	.13	.10	.08	3.2	.41	1.1	.23	.44	.24	.30
17	.07	2.3	.13	.11	.08	e42	.37	25	.20	.37	.24	.27
18	.10	26	.12	.10	.08	e150	.35	4.9	.20	.36	.22	.26
19	e2.8	13	.12	.10	.08	e170	.35	.87	.20	.33	.20	.25
20	e1.5	.70	.12	.10	.08	e32	.35	.60	.18	.32	.18	.24
21	.08	.27	.12	.10	.08	3.6	.33	.47	.17	.29	.18	e4.0
22	.08	.25	.13	.10	.07	6.0	.31	.42	e.78	.28	.16	e6.0
23	e3.8	.23	.13	.09	.07	8.0	.30	.40	e.60	.25	.15	e2.7
24	e13	.20	.12	.09	.07	3.9	.29	.36	.18	.24	.14	3.9
25	e2.3	.19	.12	.10	.07	2.5	e1.1	.34	.18	.43	.14	40
26	e1.6	.19	.11	.09	.07	2.1	e3.6	.32	.18	.27	e42	1.4
27	.09	.18	.10	.08	.07	1.3	.34	.36	e2.8	.73	e6.2	.49
28	.08	.18	.10	.09	.06	.88	.31	.35	e1.4	e6.0	.43	.32
29	.08	.15	.10	.09	---	.63	.29	.34	.32	.39	.33	11
30	.07	.15	.10	.08	---	.56	.32	.31	.29	.34	.28	1.9
31	.75	---	.10	.08	---	.52	---	.29	---	.33	.25	---
TOTAL	53.79	209.59	4.01	2.69	26.56	441.85	22.50	46.44	14.44	76.12	63.16	104.53
WTR YR 1986	TOTAL 1065.68											

e Estimated

## ROCK RIVER BASIN

275

05427948 PHEASANT BRANCH AT MIDDLETON, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1986 TO SEPTEMBER 1987  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.96	.19	.12	.09	.06	e75	.17	.13	.33	.06	.13	.13
2	.51	.19	.12	.09	.07	e10	.15	10	.29	.05	.17	.13
3	.38	.18	.13	.08	e2.4	e1.6	.13	.52	.25	.05	.13	.12
4	81	.18	.12	.08	e1.1	.22	.13	.32	.22	.05	.12	.12
5	3.0	.18	.11	.08	e.70	.22	.13	.27	.20	.07	.11	.11
6	.77	.17	.11	.08	e.60	.25	.13	.23	.19	.05	.10	.11
7	.46	.17	.11	.08	e1.6	.27	.13	.20	.18	.05	.10	.11
8	.40	.18	.11	.08	e1.7	.28	.12	.18	.18	.05	e3.2	.11
9	.35	.17	.11	.07	e.65	.24	.13	.15	.16	.04	e1.4	.11
10	.32	.16	.10	.07	.06	.18	.13	.13	.15	.04	e.44	.11
11	.31	.15	.10	.07	.06	.17	.13	.14	.16	.04	.12	.11
12	.38	.15	.10	.07	.06	.16	.13	.12	.15	.04	.11	.11
13	.34	.13	.09	.07	.05	.19	.12	.11	.14	.03	.11	.16
14	.32	.13	.10	.08	.05	e2.2	e5.0	4.2	.13	.03	.15	.12
15	.29	.13	.10	.08	.05	e1.3	e5.2	.26	.12	.05	.14	.12
16	.28	.13	.10	.07	.05	e1.0	e1.6	.23	.12	.03	e10	3.9
17	.27	.13	.10	.06	.05	e.95	.19	.21	.11	.03	e13	8.6
18	.25	.13	.10	.06	.05	e1.6	.17	.18	.11	.03	e1.0	2.4
19	.26	.13	.10	.06	.05	e2.9	.15	.21	.10	.04	.58	.27
20	.26	.13	.10	.06	.05	e1.5	.13	20	.10	e1.1	.31	.31
21	.25	.13	.09	.06	.05	.24	.13	5.9	.10	.17	.24	.25
22	.22	.13	.09	.05	.05	.23	e10	.41	.09	.14	.17	.20
23	.23	.15	.09	.05	.05	.21	e6.0	.26	.08	.13	.13	.17
24	.23	.14	.09	.04	.05	.20	.50	.22	.08	.14	.10	.14
25	.23	.13	.09	.04	.05	.22	.36	.23	.08	.12	.08	.12
26	.22	.13	.09	.04	.05	.22	.27	.22	.07	.12	2.4	.11
27	.22	.13	.09	.04	.05	.19	.23	69	.07	e.56	.91	.10
28	.21	.13	.09	.05	e.85	.17	.19	6.6	.06	e.26	.19	.09
29	.21	.13	.09	.05	---	.23	.17	2.7	.06	e1.2	.17	.09
30	.20	.12	.09	.05	---	.19	.14	.92	.06	.32	.15	.09
31	.20	---	.09	.05	---	.17	---	.46	---	.17	.14	---
TOTAL	93.53	4.43	3.12	2.00	10.66	102.50	32.16	124.71	4.14	5.26	36.10	18.62

WTR YR 1987 TOTAL 437.23

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.16	.16	.44	.26	e20	e4.5	.29	.23	.09	.12	.09	.06
2	.15	.13	.33	.24	e5.2	e2.7	19	.21	.09	.10	.08	.06
3	.15	.13	.29	.24	e2.8	e1.5	59	.20	.08	.08	.07	.06
4	.15	.12	.25	.21	e1.7	.28	3.5	.19	.08	.07	.07	.06
5	.16	.11	.22	.17	e1.2	.26	.89	.18	.08	.07	.07	.06
6	.16	.10	.20	.16	.30	.28	.88	.18	.08	.08	.06	.05
7	.16	e.60	.20	.15	.29	.34	.65	.18	.09	.09	.06	.05
8	.15	e.48	e1.4	.15	.25	.47	.60	e.74	.08	.08	.17	.04
9	.15	.13	e25	.15	.24	.37	.51	e1.0	.08	.07	.03	.04
10	.15	.11	e5.6	.16	.22	.30	.40	e.52	.08	1.3	.04	.04
11	.15	.10	.91	.16	.20	.27	.39	e.44	.07	.13	.05	.04
12	.15	.10	.67	.16	.19	.29	.36	.22	.08	.09	.06	.04
13	.15	.11	.49	.15	.19	.25	.34	.16	.07	.08	.07	.04
14	.15	.10	.41	.15	.19	.21	.32	.15	.07	.07	.08	.04
15	.15	.10	.30	.15	.18	.20	.29	.15	.07	.06	.24	.04
16	.19	.19	.33	.15	.18	.20	.28	.14	.06	.13	.08	.04
17	.21	12	.34	.16	.18	.20	.27	.14	.07	.83	.06	.05
18	.16	.56	.31	.17	.19	.19	.25	.14	.06	.17	e.30	.05
19	.15	.24	.35	.18	.19	.19	.24	.14	.06	.14	.05	13
20	.14	.19	.51	.30	.17	.18	.24	.13	.06	.13	.05	1.7
21	.16	.15	.43	.29	.16	.17	.23	.12	.06	.25	.05	.28
22	.22	.13	.41	.27	.18	.16	.24	.12	.07	.13	.23	33
23	.26	.13	.37	.25	.17	.17	.46	.12	.06	.12	31	9.9
24	.31	.11	.41	.23	.15	.58	.26	.11	.06	.12	.09	.33
25	.25	.13	.50	.22	.14	3.8	.23	.11	.06	.12	.07	.15
26	.23	.12	.47	.20	e1.2	.50	.30	.10	.05	.11	.07	.13
27	.14	.12	.38	.18	e1.7	.30	.42	.10	.05	.14	.06	.11
28	.12	25	.33	.18	e3.4	3.8	.34	.10	.59	.11	.06	.10
29	.12	8.8	.33	e.65	e5.3	6.4	.27	.09	2.6	.11	.06	.09
30	.12	.83	.31	e38	---	.65	.25	.09	.14	.10	.06	.08
31	.11	---	.28	e110	---	.37	---	.09	---	.09	.06	---
TOTAL	5.18	51.28	42.77	154.09	46.46	30.08	91.70	6.59	5.24	18.16	33.59	59.73

WTR YR 1988 TOTAL 544.87

e Estimated

## ROCK RIVER BASIN

05427948 PHEASANT BRANCH AT MIDDLETON, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	.09	.24	.13	e6.6	.05	.14	.29	.20	.03	.05	74
2	.09	.09	.23	.12	.20	.05	.16	.28	.08	.03	.04	.68
3	.08	.09	.23	.11	.13	.05	.16	.24	e.60	.03	.05	.15
4	.07	.10	.22	.10	.10	.05	.15	.26	e.32	.03	e.23	.11
5	.07	.11	.21	.10	.09	.05	.14	.24	.08	.03	e4.0	.11
6	.07	.11	.20	.10	.09	.05	.13	.19	.06	.03	e.10	.09
7	.07	.12	.19	.15	.08	.05	.12	.17	.05	.03	.04	.08
8	.07	.12	.17	.14	.08	.05	.10	.16	.06	.04	.04	e.26
9	.08	.17	.16	.09	.07	.05	.10	.15	.06	e32	.04	e.60
10	.07	.25	.15	.09	.07	.62	.08	.13	.05	.27	.04	e.29
11	.07	.12	.13	.14	.07	1290	.08	.13	.05	.14	.04	.09
12	.06	.16	.12	e14	.07	291	.08	.12	e.36	.08	.04	.07
13	.06	.21	.13	e1.6	.07	107	.07	.12	.06	.07	.04	e.26
14	.06	.13	.14	.15	.07	60	.07	.11	e.26	.06	e1.8	.07
15	.06	3.5	.11	.11	.06	15	.07	.11	.05	.06	e.30	.06
16	.08	39	.09	.10	.06	1.4	.06	.10	.05	.05	.05	.06
17	.11	.52	.10	.09	.06	.56	.08	.09	.05	.04	.04	.05
18	.08	.47	.10	.09	.06	.27	.06	.11	.04	e.36	.04	.05
19	.07	.42	.10	e7.7	.06	.17	.06	.13	.04	e15	.04	.05
20	.07	.29	.12	e15	.06	.15	.06	.11	.04	e1.9	e.95	.05
21	.12	.24	.09	.28	.06	.13	.05	.10	.04	.39	e.32	.04
22	.08	.21	e.40	.15	.05	20	.05	.09	.04	.12	8.6	.04
23	.29	.19	e.85	e14	.05	45	.05	.07	.04	.05	.32	.04
24	.15	.17	e.30	e13	.05	13	.04	.32	.04	.05	.05	.04
25	.12	.17	.09	.25	.05	3.2	424	26	e17	.07	.04	.04
26	.12	e7.7	.08	.29	.06	.25	.35	.31	e.32	.05	.04	.04
27	.11	e15	e29	e3.3	.05	.23	.20	.19	e.10	.05	.03	.04
28	.11	.41	e14	e11	.05	.33	18	.16	.04	.05	182	.04
29	.10	.32	e1.0	e23	---	.27	.51	.18	.04	e1.2	1.7	.04
30	.10	.28	.18	e54	---	.21	.35	e1.0	.04	e1.3	.21	.03
31	.09	---	.14	e70	---	.17	---	e.85	---	.06	.71	---
TOTAL	2.87	70.76	49.27	229.38	8.57	1849.41	445.57	32.51	20.26	53.67	201.99	77.57

WTR YR 1989 TOTAL 3041.83

e Estimated

## ROCK RIVER BASIN

277

054279502 GRABER POND AT MIDDLETON, WI

LOCATION.--Lat 43°07'11", long 89°30'25', in SW 1/4 SE 1/4 sec.35, T.8 N., R.8 E., Dane County, Hydrologic Unit 07090001, on south side of pond along Graber Road, in Middleton.

DRAINAGE AREA.--0.60 mi<sup>2</sup>. Area of Graber Pond, 0.02 mi<sup>2</sup>.

## WATER-STAGE RECORDS

PERIOD OF RECORD.--April to November 1988, and May to November 1989 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 896.77 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily mean gage height: Oct. 7-13, May 1-18, June 5-30, and July 1-3, 9-18. Records good except estimated daily mean gage heights, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.77 ft, Mar. 31, 1989; minimum observed, 3.98 ft, July 8, 1989.

EXTREMES FOR CURRENT PERIOD.--Water Year 1989: Maximum gage height observed, 5.77 ft, Mar. 31; minimum, 3.98 ft, July 8.

October and November 1989.--Maximum gage height, 4.30 ft, Oct. 16; minimum, 4.07 ft, Nov. 27-30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.61	4.43	4.58	---	---	---	---	5.24	4.73	4.27	4.27	4.83
2	4.59	4.43	---	---	---	---	---	5.22	4.73	4.23	4.25	4.84
3	4.57	4.43	---	---	---	---	---	5.25	4.74	4.18	4.23	4.81
4	4.53	4.44	---	---	---	---	---	5.23	4.76	4.14	4.22	4.77
5	4.50	4.44	---	---	---	---	---	5.20	4.76	4.09	4.27	4.73
6	4.50	4.44	---	---	---	---	---	5.16	4.73	4.04	4.26	4.70
7	4.49	4.45	---	---	---	---	---	5.11	4.70	4.01	4.24	4.69
8	4.48	4.44	---	---	---	---	---	5.05	4.67	3.99	4.22	4.68
9	4.46	4.47	---	---	---	---	---	5.00	4.63	4.30	4.21	4.68
10	4.44	4.53	---	---	---	---	---	4.96	4.60	4.34	4.20	4.68
11	4.42	4.53	---	---	---	---	---	4.93	4.56	4.34	4.18	4.67
12	4.40	4.53	---	---	---	---	---	4.90	4.64	4.33	4.16	4.64
13	4.39	4.55	---	---	---	---	---	4.86	4.63	4.30	4.15	4.62
14	4.39	4.55	---	---	---	---	---	4.83	4.68	4.28	4.14	4.62
15	4.39	4.55	---	---	---	---	---	4.78	4.67	4.26	4.14	4.60
16	4.38	4.64	---	---	---	---	---	4.73	4.64	4.24	4.15	4.57
17	4.40	4.64	---	---	---	---	---	4.68	4.60	4.22	4.15	4.55
18	4.43	4.63	---	---	---	---	---	4.65	4.57	4.20	4.15	4.53
19	4.43	4.62	---	---	---	---	---	4.67	4.53	4.26	4.14	4.51
20	4.43	4.61	---	---	---	---	---	4.67	4.50	4.32	4.13	4.47
21	4.44	4.61	---	---	---	---	---	4.65	4.47	4.32	4.13	4.45
22	4.45	4.61	---	---	---	---	---	4.64	4.45	4.32	4.20	4.42
23	4.48	4.61	---	---	---	---	---	4.62	4.40	4.32	4.21	4.40
24	4.49	4.59	---	---	---	---	---	4.60	4.37	4.29	4.21	4.38
25	4.49	4.55	---	---	---	---	---	4.72	4.39	4.27	4.20	4.35
26	4.49	4.55	---	---	---	---	---	4.72	4.40	4.26	4.19	4.34
27	4.48	4.58	---	---	---	---	---	4.69	4.41	4.24	4.19	4.32
28	4.46	4.58	---	---	---	---	---	4.67	4.40	4.22	4.53	4.30
29	4.46	4.58	---	---	---	---	---	4.64	4.37	4.22	4.67	4.28
30	4.46	4.58	---	---	---	---	---	4.65	4.33	4.28	4.66	4.27
31	4.45	---	---	---	---	---	---	4.72	---	4.28	4.63	---
MEAN	4.46	4.54	---	---	---	---	---	4.85	4.57	4.24	4.25	4.56
MAX	4.61	4.64	---	---	---	---	---	5.25	4.76	4.34	4.67	4.84
MIN	4.38	4.43	---	---	---	---	---	4.60	4.33	3.99	4.13	4.27





## ROCK RIVER BASIN

279

054279502 GRABER POND AT MIDDLETON, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--April to November 1988, and April to November 1989 (discontinued).

GAGE.--Digital recorder.

REMARKS.--Estimated daily rainfall: April 1, 7, 8, 17, 18. Records good except estimated daily rainfall, which is fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.02 in., Aug. 28, 1989.

EXTREMES FOR CURRENT PERIOD.--Water Year 1989: Maximum daily rainfall, 2.02 in., Aug. 28.  
October and November 1989.--Maximum daily rainfall, 0.86 in., Oct. 5.RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.13	.00	---	---	---	---	.02	.00	.00	.00	.00	.45
2	.00	.00	---	---	---	---	.00	.05	.00	.00	.00	.01
3	.02	.00	---	---	---	---	.00	.00	.46	.00	.00	.00
4	.00	.24	---	---	---	---	.00	.22	.00	.00	.54	.02
5	.00	.08	---	---	---	---	.00	.00	.00	.00	.17	.00
6	.00	.01	---	---	---	---	.00	.01	.00	.00	.00	.02
7	.00	.13	---	---	---	---	.03	.00	.00	.00	.00	.00
8	.00	.05	---	---	---	---	.02	.02	.12	1.53	.00	.22
9	.05	.40	---	---	---	---	.00	.00	.00	.28	.00	.28
10	.00	.01	---	---	---	---	.00	.00	.00	.00	.01	.02
11	.00	.00	---	---	---	---	.00	.01	.00	.15	.00	.00
12	.00	.35	---	---	---	---	.00	.00	.43	.00	.00	.03
13	.00	.00	---	---	---	---	.00	.00	.00	.00	.06	.20
14	.01	.00	---	---	---	---	.00	.00	.29	.00	.34	.00
15	.00	.61	---	---	---	---	.00	.00	.00	.00	.00	.00
16	.17	.00	---	---	---	---	.03	.00	.00	.01	.01	.00
17	.49	.00	---	---	---	---	.15	.00	.00	.00	.00	.00
18	.00	.00	---	---	---	---	.02	.09	.00	.48	.00	.00
19	.01	.13	---	---	---	---	.00	.16	.00	.89	.30	.00
20	.26	.00	---	---	---	---	.00	.00	.00	.01	.00	.00
21	.08	.00	---	---	---	---	.00	.01	.00	.24	.01	.00
22	.02	.06	---	---	---	---	.00	.00	.01	.00	.66	.00
23	.50	.00	---	---	---	---	.00	.00	.00	.01	.00	.00
24	.00	.00	---	---	---	---	.00	.77	.00	.02	.00	.00
25	.00	.00	---	---	---	---	1.38	.01	.21	.00	.00	.00
26	.00	.69	---	---	---	---	.00	.00	.21	.01	.08	.00
27	.04	.00	---	---	---	---	.00	.00	.00	.00	.00	.00
28	.00	.02	---	---	---	---	.63	.00	.00	.00	2.02	.00
29	.00	.12	---	---	---	---	.08	.18	.00	.86	.00	.00
30	.00	.03	---	---	---	---	.00	.55	.00	.00	.00	.00
31	.00	---	---	---	---	---	---	.20	---	.01	.83	---
TOTAL	1.78	2.93	---	---	---	---	2.36	2.28	1.73	4.50	5.03	1.25

[illegible]

## 05427965 SPRING HARBOR STORM SEWER AT MADISON, WI

LOCATION.--Lat 43°04'45", long 89°28'15", in NW 1/4 SE 1/4 sec.18, T.7 N., R.9 E., Dane County, Hydrologic Unit 07090001, in city park near the junction of Spring Harbor Drive and University Avenue in Madison.

DRAINAGE AREA.--3.29 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1976 to current year.

GAGE.--Water-stage recorder, crest-stage gage, and concrete control. Datum of gage is 855.3 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records are good except those for periods of flow between 0.00 ft<sup>3</sup>/s and 0.3 ft<sup>3</sup>/s, which are poor.

AVERAGE DISCHARGE.--13 years (1977-89), 1.36 ft<sup>3</sup>/s, 5.61 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 706 ft<sup>3</sup>/s, Aug. 31, 1981, gage height, 4.04 ft; no flow many days during period of record.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 481 ft<sup>3</sup>/s, Aug. 28, gage height, 3.44 ft; no flow on many days during current year.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).

0.41	0.0	0.9	12
0.5	0.55	1.0	18
0.6	1.8	1.1	26
0.7	3.8	1.2	34
0.8	6.7	1.4	51

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	1.0	.04	.00	.51	.00	.34	.02	.31	.00	.00	17
2	.02	.11	.06	.00	.18	.00	.18	.20	.00	.00	.00	.03
3	.16	.00	.05	.00	.03	.00	.08	.12	5.0	.00	.00	.00
4	.09	1.3	.00	.00	.00	.00	.07	2.0	.05	.00	5.0	.00
5	.00	.88	.00	.00	.00	.02	.00	.33	.00	.00	8.5	.00
6	.00	1.5	.00	.04	.00	.16	.0	.00	.00	.00	.00	1.3
7	.00	1.3	.00	3.8	.00	.24	.05	.00	.00	.00	.00	.06
8	.00	.84	.00	.09	.00	.22	.06	.00	.24	1.6	.00	1.7
9	.18	4.8	.00	.00	.05	.87	.0	.00	.01	18	.00	3.2
10	.02	1.5	.00	.00	.00	10	.00	.00	.00	.00	.00	.02
11	.00	.01	.00	3.1	.02	33	.00	.00	.00	2.0	.00	.04
12	.00	3.4	.00	1.8	.13	6.5	.00	.00	2.8	.24	.00	.00
13	.00	.44	.00	.02	.13	6.4	.00	.00	.03	.00	.09	1.8
14	.00	.01	.00	.00	.22	7.2	.00	.00	.03	.01	9.3	.00
15	.00	8.3	.00	.03	.10	3.0	.00	.00	.00	.00	.27	.00
16	1.5	8.4	.00	.10	.03	1.2	.22	.00	.00	.00	.00	.00
17	2.5	.02	.00	.00	.01	.04	.79	.00	.00	.00	.00	.00
18	.45	.00	.00	.00	.00	.42	.00	.57	.00	12	.00	.00
19	.0	1.9	.01	2.6	.11	.53	.00	.70	.00	20	3.1	.00
20	.57	.04	.70	.27	.15	.55	.00	.03	.00	.30	2.8	.00
21	2.1	.00	.01	.01	.09	.69	.00	.00	.00	2.0	.00	.00
22	.05	.00	5.7	.79	.00	3.3	.00	.00	.00	.65	7.6	.00
23	3.4	.00	.80	2.7	.00	9.5	.00	.00	.00	.04	.11	.00
24	.31	.00	.73	.40	.00	5.5	.00	1.3	.01	.23	.00	.00
25	.13	.00	.01	2.1	.36	2.5	15	2.3	1.4	.63	.00	.00
26	.00	12	.06	1.5	.17	1.5	.14	.00	6.0	.05	.20	.00
27	.02	1.2	21	1.9	.08	.76	.03	.00	.07	1.2	.02	.00
28	.62	.33	.29	1.7	.00	3.5	8.2	.00	.00	.06	47	.00
29	.00	.21	.00	4.8	---	.36	.57	1.4	.00	12	.22	.00
30	.00	.19	.01	4.8	---	.34	.05	7.9	.00	.32	.0	.00
31	.20	---	.00	7.1	---	.08	---	2.2	---	.00	7.4	---
TOTAL	13.52	49.68	29.47	39.65	2.37	98.38	25.78	19.07	15.95	71.33	91.61	25.15
MEAN	.44	1.66	.95	1.28	.085	3.17	.86	.62	.53	2.30	2.96	.84
MAX	3.4	12	21	7.1	.51	33	15	7.9	6.0	20	47	17
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.13	.50	.29	.39	.03	.96	.26	.19	.16	.70	.90	.25
IN.	.15	.56	.33	.45	.03	1.11	.29	.22	.18	.81	1.04	.28

CAL YR 1988 TOTAL 345.41 MEAN .94 MAX 24 MIN .00 CFSM .29 IN. 3.91  
WTR YR 1989 TOTAL 481.96 MEAN 1.32 MAX 47 MIN .00 CFSM .40 IN. 5.45

## ROCK RIVER BASIN

05427965 SPRING HARBOR STORM SEWER AT MADISON, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--February 1976 to current year.

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) (80155)
NOV 1988					JUN 1989				
15...	1550	16	300	13	25...	2020	15	1590	64
15...	1720	48	447	58	25...	2150	7.2	195	3.8
15...	1820	29	314	25	26...	1315	55	1120	166
15...	2020	8.7	490	12	26...	1620	8.7	232	5.5
15...	2310	11	279	8.3	JUL				
15...	2345	63	264	45	18...	2055	10	82	2.2
16...	0015	71	543	104	18...	2125	69	80	15
16...	0145	41	820	91	18...	2225	41	362	40
16...	0445	8.2	535	12	19...	0025	8.7	86	2.0
MAR 1989					29...	1530	48	970	126
10...	1320	14	468	18	29...	1600	67	327	59
10...	1420	35	477	45	29...	1630	76	296	61
10...	1520	44	340	40	29...	1830	46	141	17
10...	1750	29	105	8.2	29...	2130	7.7	63	1.3
10...	2135	7.7	30	0.63	AUG				
11...	1115	18	202	9.8	14...	1525	8.7	609	14
11...	1215	47	334	42	14...	1555	42	468	53
11...	1315	74	400	80	14...	1625	82	521	115
11...	1445	107	536	155	14...	1725	44	325	39
22...	1800	13	340	12	14...	1855	12	91	3.0
23...	1245	18	547	27	14...	1925	95	407	104
23...	1415	42	1020	115	14...	1955	14	121	4.6
23...	1915	9.1	198	4.9	28...	0550	33	128	11
APR					28...	0620	310	826	691
25...	0030	17	2410	111	28...	0650	310	704	589
25...	0100	147	2900	1150	28...	0720	313	397	335
25...	0200	61	1580	260	28...	0820	156	395	166
25...	0330	39	687	72	28...	0950	67	263	47
25...	0700	8.7	323	7.6	28...	0951	67	286	52
MAY					28...	1150	41	142	16
24...	2335	16	421	18	28...	1520	37	102	10
25...	0005	37	705	70	31...	2045	40	165	18
25...	0135	8.2	243	5.4	31...	2115	86	483	112
30...	1330	7.7	471	9.8	31...	2245	28	168	13
30...	1400	76	975	200	SEP				
30...	1425	82	812	180	01...	0015	112	418	126
30...	1600	35	447	42	01...	0245	41	173	19
30...	1800	7.7	129	2.7	01...	0345	66	108	19
					01...	0745	6.7	74	1.3

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LOCATION.--Lat 43°05'42", long 89°22'12", in SE 1/4 sec.12, T.7 N., R.9 E., Dane County, Hydrologic Unit 07090001, in city boat house at dam at outlet. in Madison.

PERIOD OF RECORD.--December 1902 to May 1903, January 1916 to current year (incomplete).

GAGE.--Water-stage recorder. Datum of gage is 840.00 ft above National Geodetic Vertical Datum of 1929, or 5.60 ft below city of Madison datum. Prior to Oct. 1, 1979, at datum 7.82 ft higher; prior to Nov. 15, 1971, nonrecording gage at same site and datum.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 12.01 ft, Apr. 5, 1959; minimum observed, 8.02 ft, Feb. 24 to Mar. 10, 1920, current datum.

**EXTREMES FOR CURRENT YEAR.**--Maximum gage height, 10.39 ft, Apr. 28; minimum, 9.24 ft, Nov. 23-25.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.70	9.62	9.38	9.49	9.58	9.48	10.24	10.27	10.06	9.84	9.97	10.31
2	9.71	9.58	9.37	9.48	9.60	9.49	10.20	10.27	10.05	9.83	9.97	10.31
3	9.70	9.55	9.39	9.47	9.59	9.53	10.18	10.25	10.07	9.82	9.95	10.29
4	9.70	9.55	9.38	9.47	9.59	9.58	10.16	10.23	10.07	9.81	9.97	10.26
5	9.66	9.58	9.37	9.47	9.60	9.58	10.15	10.25	10.06	9.80	10.02	10.23
6	9.65	9.57	9.37	9.49	9.60	9.57	10.13	10.23	10.04	9.78	10.01	10.22
7	9.64	9.52	9.38	9.49	9.60	9.56	10.11	10.21	10.02	9.77	9.98	10.20
8	9.64	9.51	9.38	9.48	9.58	9.55	10.10	10.20	10.01	9.74	9.96	10.20
9	9.64	9.49	9.37	9.48	9.58	9.54	10.10	10.18	10.01	9.89	9.95	10.20
10	9.65	9.53	9.36	9.47	9.58	9.54	10.04	10.16	9.97	9.89	9.94	10.16
11	9.62	9.48	9.35	9.46	9.57	9.57	10.02	10.15	9.94	9.87	9.93	10.12
12	9.60	9.46	9.34	9.47	9.56	9.72	10.01	10.13	9.95	9.87	9.93	10.08
13	9.58	9.46	9.35	9.47	9.58	9.88	9.99	10.11	9.97	9.86	9.92	10.05
14	9.57	9.44	9.35	9.47	9.58	10.00	9.99	10.09	9.97	9.83	9.94	10.02
15	9.58	9.42	9.34	9.46	9.57	10.10	10.00	10.08	9.96	9.82	9.97	9.98
16	9.59	9.48	9.33	9.46	9.56	10.13	10.01	10.06	9.96	9.81	9.96	9.95
17	9.62	9.43	9.32	9.46	9.56	10.16	10.03	10.04	9.95	9.80	9.95	9.91
18	9.65	9.39	9.32	9.45	9.56	10.16	10.03	10.03	9.94	9.81	9.93	9.88
19	9.64	9.39	9.32	9.44	9.56	10.16	10.04	10.02	9.94	9.89	9.92	9.83
20	9.63	9.37	9.34	9.44	9.55	10.16	10.05	10.03	9.92	9.92	9.97	9.81
21	9.67	9.32	9.33	9.44	9.54	10.14	10.04	10.01	9.91	9.91	9.95	9.79
22	9.66	9.28	9.33	9.44	9.54	10.14	10.06	9.99	9.89	9.92	10.01	9.79
23	9.70	9.26	9.37	9.44	9.53	10.14	10.05	9.98	9.90	9.93	10.02	9.73
24	9.71	9.26	9.37	9.45	9.52	10.18	10.06	9.98	9.89	9.93	9.99	9.67
25	9.69	9.27	9.36	9.47	9.51	10.22	10.17	10.03	9.88	9.94	9.98	9.64
26	9.67	9.32	9.37	9.46	9.51	10.23	10.20	10.03	9.90	9.96	9.98	9.62
27	9.67	9.37	9.48	9.46	9.50	10.25	10.22	10.00	9.92	9.95	9.99	9.59
28	9.69	9.38	9.49	9.47	9.49	10.28	10.26	9.98	9.90	9.93	10.16	9.57
29	9.65	9.37	9.50	9.49	---	10.29	10.28	9.98	9.86	9.92	10.25	9.57
30	9.64	9.39	9.50	9.50	---	10.29	10.28	10.00	9.85	9.98	10.20	9.55
31	9.64	---	9.49	9.54	---	10.27	---	10.05	---	9.97	10.17	---
MEAN	9.65	9.43	9.38	9.47	9.56	9.93	10.11	10.10	9.96	9.87	9.99	9.95
MAX	9.71	9.62	9.50	9.54	9.60	10.29	10.28	10.27	10.07	9.98	10.25	10.31
MIN												

LOCATION.--Lat 43°03'48", long 89°23'49", in SW 1/4 sec.23, T.7 N., R.9 E., Dane County, Hydrologic Unit 07090001, in Brittingham Park, in Madison.

PERIOD OF RECORD.--September 1915 to current year (fragmentary) in reports of the Geological Survey. For 1856 to March 1917 in reports of Wisconsin Railroad Commission, volume 19.

GAGE.--Water-stage recorder. Datum of gage is 840.00 ft above National Geodetic Vertical Datum of 1929, or 5.60 ft below city of Madison datum. Prior to Oct. 1, 1979, datum 3.61 ft higher; prior to Nov. 15, 1971, nonrecording gage at same site and datum.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 7.27 ft, July 28, 1929; minimum observed, 3.22 ft, Jan. 20, 1965, current datum.

**EXTREMES FOR CURRENT YEAR.**--Maximum gage height, 5.66 ft, Sept. 1; minimum, 4.13 ft, Dec. 21 and 22.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.04	4.61	4.67	4.32	4.33	4.21	5.03	4.99	5.23	4.89	5.19	5.64
2	5.03	4.65	4.62	4.31	4.33	4.22	5.13	5.01	5.19	4.88	5.18	5.65
3	5.01	4.69	4.57	4.30	4.33	4.26	5.13	5.01	5.20	4.88	5.17	5.65
4	4.96	4.74	4.53	4.28	4.33	4.32	5.08	5.07	5.18	4.87	5.19	5.63
5	4.96	4.76	4.49	4.28	4.33	4.32	5.05	5.06	5.16	4.86	5.23	5.61
6	4.96	4.74	4.46	4.29	4.33	4.31	5.04	5.06	5.14	4.85	5.19	5.62
7	4.95	4.77	4.41	4.30	4.33	4.31	5.02	5.06	5.13	4.84	5.14	5.61
8	4.95	4.78	4.36	4.31	4.31	4.30	4.99	5.09	5.12	4.83	5.11	5.61
9	4.95	4.80	4.32	4.30	4.30	4.30	4.94	5.10	5.10	4.96	5.11	5.62
10	4.92	4.82	4.30	4.29	4.29	4.31	4.92	5.10	5.09	4.94	5.09	5.60
11	4.91	4.83	4.28	4.28	4.28	4.38	4.89	5.10	5.10	4.97	5.08	5.58
12	4.91	4.87	4.27	4.29	4.27	4.51	4.85	5.10	5.13	4.97	5.07	5.54
13	4.91	4.88	4.27	4.28	4.29	4.60	4.82	5.12	5.09	4.96	5.06	5.54
14	4.91	4.88	4.25	4.28	4.29	4.66	4.80	5.13	5.07	4.94	5.07	5.51
15	4.91	4.93	4.22	4.26	4.28	4.72	4.79	5.14	5.02	4.94	5.10	5.49
16	4.92	5.00	4.21	4.26	4.27	4.75	4.80	5.15	4.98	4.94	5.08	5.47
17	4.93	5.01	4.19	4.25	4.26	4.79	4.81	5.16	4.97	4.93	5.07	5.44
18	4.93	5.02	4.18	4.25	4.26	4.81	4.80	5.18	4.97	5.00	5.06	5.43
19	4.92	5.03	4.17	4.24	4.26	4.83	4.79	5.21	4.97	5.10	5.06	5.41
20	4.94	5.01	4.16	4.23	4.25	4.84	4.80	5.18	4.97	5.13	5.11	5.38
21	4.95	5.00	4.14	4.24	4.25	4.83	4.81	5.18	4.95	5.12	5.09	5.33
22	4.91	4.99	4.14	4.24	4.24	4.84	4.81	5.18	4.94	5.15	5.19	5.28
23	4.89	4.97	4.16	4.24	4.23	4.86	4.81	5.17	4.92	5.16	5.21	5.18
24	4.82	4.90	4.16	4.24	4.23	4.89	4.79	5.16	4.91	5.16	5.19	5.15
25	4.77	4.84	4.15	4.25	4.23	4.90	4.89	5.18	4.91	5.15	5.16	5.09
26	4.74	4.85	4.18	4.26	4.22	4.92	4.88	5.13	4.92	5.16	5.13	5.02
27	4.72	4.87	4.34	4.26	4.21	4.94	4.88	5.11	4.92	5.14	5.10	4.96
28	4.65	4.82	4.35	4.27	4.22	4.99	4.93	5.13	4.92	5.15	5.29	4.91
29	4.61	4.79	4.35	4.28	---	5.03	4.95	5.14	4.91	5.17	5.40	4.86
30	4.59	4.72	4.34	4.30	---	5.02	4.96	5.18	4.90	5.21	5.40	4.82
31	4.58	---	4.33	4.32	---	5.01	---	5.22	---	5.20	5.41	---
MEAN	4.88	4.85	4.31	4.27	4.28	4.64	4.91	5.12	5.03	5.01	5.16	5.39
MAX	5.04	5.03	4.67	4.32	4.33	5.03	5.13	5.22	5.23	5.21	5.41	5.65
MIN	4.58	4.61	4.14	4.23	4.21	4.21	4.79	4.99	4.90	4.83	5.06	4.82

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LOCATION.--Lat 43°00'32", long 89°18'18", in SW 1/4 sec.3, T.6 N., R.10 E., Dane County, Hydrologic Unit 07090001, on left bank just upstream from bridge on U.S. Highway 51, at dam at outlet of Lake Waubesa and 1.0 mi southwest of McFarland.

REVISÉD RECORDS.--WSP 805, WDR WI-73-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 840.00 ft above National Geodetic Vertical Datum of 1929 (levels by Wisconsin Department of Natural Resources). September 1930 to Dec. 22, 1934, nonrecording gage at same site at datum 0.40 ft higher. Dec. 23, 1934 to Sept. 30, 1982, recording gage at same site at datum 0.40 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated by dams at outlets of Lake Mendota and Lake Waubesa. The Madison Metropolitan Sewerage District diverted an average of 53 ft<sup>3</sup>/s of effluent into the Badfish Creek basin during 1989 water year. The data were provided by the Madison Metropolitan Sewerage District. Prior to 1958 the effluent was discharged into the Yahara River above Mc Farland. Gage-height telemeter at station for Lake Waubesa stage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 867 ft<sup>3</sup>/s, Apr. 10, 1959, gage height, 5.82 ft; maximum gage height, 6.33 ft, July 23, 24, 1950, backwater from aquatic vegetation; minimum discharge, 1.0 ft<sup>3</sup>/s, Oct. 18, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 272 ft<sup>3</sup>/s, Sept. 1, 2, 9; maximum gage height, 5.29 ft, Sept. 12, 13, backwater from aquatic vegetation; minimum, 3.8 ft<sup>3</sup>/s Oct. 20.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	53	223	143	147	92	244	106	141	26	51	266
2	33	54	211	140	147	92	247	111	136	21	49	271
3	29	55	203	138	147	100	255	115	127	20	47	265
4	32	125	195	135	143	112	258	122	131	19	81	257
5	25	219	185	133	143	109	255	114	132	17	107	252
6	22	223	177	137	145	109	253	119	125	14	90	250
7	23	211	171	138	141	104	252	122	125	12	83	257
8	16	208	163	141	139	101	248	123	116	10	72	266
9	17	205	150	132	134	85	244	127	112	19	67	269
10	14	217	144	130	132	69	239	129	121	18	62	264
11	12	213	160	131	131	83	211	130	120	19	57	253
12	10	214	143	134	128	114	186	132	122	22	57	256
13	9.0	221	140	132	131	132	107	136	129	23	54	261
14	7.8	222	137	130	131	145	54	138	125	17	56	251
15	7.4	225	134	129	130	155	55	140	114	14	67	249
16	9.4	246	128	128	126	159	56	134	103	15	67	248
17	13	249	125	126	124	160	66	120	94	14	59	247
18	11	249	121	126	123	178	56	109	95	20	54	246
19	9.6	254	114	125	124	164	58	114	96	32	52	245
20	7.6	260	111	125	123	163	58	119	99	41	68	246
21	87	257	107	123	123	163	58	122	93	39	63	245
22	136	254	105	121	122	163	56	121	90	39	88	243
23	130	250	108	122	122	167	54	120	91	43	89	235
24	127	246	108	122	118	175	55	94	60	49	118	220
25	113	239	109	124	116	185	66	67	27	45	129	213
26	96	243	111	129	117	190	72	64	27	43	121	206
27	79	255	137	128	104	194	77	57	33	43	113	196
28	76	252	150	129	94	231	85	54	30	41	168	187
29	68	241	149	132	---	248	89	51	32	44	231	182
30	60	234	146	137	---	245	95	52	35	50	228	177
31	52	---	144	142	---	243	---	93	---	52	225	---
TOTAL	1367.8	6394	4509	4062	3605	4630	4109	3355	2881	881	2873	7223
MEAN	44.1	213	145	131	129	149	137	108	96.0	28.4	92.7	241
MAX	136	260	223	143	147	248	258	140	141	52	231	271
MIN	7.4	53	105	121	94	69	54	51	27	10	47	177
CFSM	.13	.65	.44	.40	.39	.46	.42	.33	.29	.09	.28	.74
IN.	.16	.73	.51	.46	.41	.53	.47	.38	.33	.10	.33	.82
CAL YR 1988	TOTAL 43777.4 MEAN 120 MAX 327 MIN 3.3 CFSM .37 IN. 4.98											
WTR YR 1989	TOTAL 45889.8 MEAN 126 MAX 271 MIN 7.4 CFSM .38 IN. 5.22											

## ROCK RIVER BASIN

05430150 BADFISH CREEK NEAR COOKSVILLE, WI

LOCATION.--Lat 42°50'00", long 89°11'48", in SW 1/4 SE 1/4 sec.4, T.4 N., R.11 E., Rock County, Hydrologic Unit 07090001, on right bank, 20 ft upstream from bridge on State Highway 59, 2.2 mi east of Cooksville, and 2.2 mi above the mouth.

DRAINAGE AREA.--82.6 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1977 to current year.

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

REMARKS.--Estimated daily discharges: Mar. 5-14, July 18-20, and ice periods listed in rating table below. Records good except those for estimated daily discharges, which are fair. Approximately 58 percent of flow is effluent from Nine Springs treatment plant. (Data provided by Madison Metropolitan Sewerage District.)

AVERAGE DISCHARGE.--12 years, 102 ft<sup>3</sup>/s.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 870 ft<sup>3</sup>/s, Sept. 1, 1981, gage height, 8.11 ft; minimum daily, 35 ft<sup>3</sup>/s, Aug. 1, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 833 ft<sup>3</sup>/s, Mar. 12, gage height, 7.92 ft; minimum daily, 67 ft<sup>3</sup>/s, June 11.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Aug. 2-9; stage-discharge relation affected by ice Jan. 7-10 and Feb. 4-9.)

4.5	64	5.0	152
4.7	98	6.0	340
		7.0	562

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	84	90	79	140	68	104	93	91	78	87	123
2	76	84	86	74	102	68	104	94	80	72	85	85
3	77	85	85	80	95	74	104	93	80	75	84	73
4	78	90	81	79	90	75	106	94	73	79	88	68
5	81	92	87	81	82	74	98	97	73	77	93	79
6	79	86	92	83	86	76	97	89	77	84	81	84
7	83	87	89	80	86	74	96	86	77	86	83	84
8	73	92	87	76	86	78	92	91	76	79	82	86
9	72	91	87	78	86	96	87	96	76	113	86	95
10	75	109	83	82	86	120	89	91	72	87	87	84
11	76	95	78	81	83	320	90	94	67	92	86	86
12	73	93	81	104	82	400	91	97	75	91	84	86
13	75	97	85	84	85	230	89	96	78	88	77	87
14	77	92	84	78	77	250	89	100	76	85	79	86
15	74	106	80	75	76	224	86	102	74	81	91	88
16	73	148	80	77	75	149	84	111	76	76	84	82
17	78	111	78	81	79	125	92	109	73	77	81	80
18	81	101	76	80	73	101	92	105	69	90	77	83
19	80	96	81	89	74	94	88	109	73	110	78	86
20	78	88	85	93	77	99	88	100	82	100	90	86
21	86	89	82	79	73	101	89	89	83	92	82	84
22	78	89	84	81	73	111	84	88	83	86	93	84
23	82	88	93	100	75	131	81	89	85	79	87	77
24	87	81	79	100	70	129	85	90	82	80	81	75
25	87	74	71	89	73	120	111	91	75	87	80	79
26	85	96	69	112	70	110	99	85	80	91	75	80
27	84	123	150	105	71	120	94	77	87	87	73	78
28	86	106	124	113	70	143	111	69	84	86	99	76
29	82	100	96	127	---	137	101	75	82	84	90	78
30	78	95	89	159	---	121	92	80	81	96	80	72
31	82	---	82	171	---	111	---	86	---	85	78	---
TOTAL	2465	2868	2694	2870	2295	4129	2813	2866	2340	2673	2601	2494
MEAN	79.5	95.6	86.9	92.6	82.0	133	93.8	92.5	78.0	86.2	83.9	83.1
MAX	89	148	150	171	140	400	111	111	91	113	99	123
MIN	72	74	69	74	70	68	81	69	67	72	73	68

CAL YR 1988 TOTAL 36370 MEAN 99.4 MAX 430 MIN 69  
WTR YR 1989 TOTAL 33108 MEAN 90.7 MAX 400 MIN 67



## ROCK RIVER BASIN

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05430175 YAHARA RIVER NEAR FULTON, WI

LOCATION.--Lat 42°49'50", long 89°10'09", in NE 1/4 NE 1/4 sec.10, T.4 N., R.11 E., Rock County, Hydrologic Unit 07090001, on right bank, 700 ft downstream from Badfish Creek, 2,000 ft upstream from bridge on State Highway 59, and 2.8 mi northwest of Fulton.

DRAINAGE AREA.--517 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 792.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair. Diurnal fluctuation caused by powerplant at Stebbensville 1.5 mi upstream, and additional regulation from other dams and powerplants upstream.

AVERAGE DISCHARGE.--12 years, 360 ft<sup>3</sup>/s, 9.46 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,040 ft<sup>3</sup>/s, Sept. 1, 1981, gage height, 8.36 ft; minimum daily, 60 ft<sup>3</sup>/s, Aug. 7, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,380 ft<sup>3</sup>/s, Mar. 12, gage height, 5.95 ft; minimum daily, 101 ft<sup>3</sup>/s, Aug. 2.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 11, 12, 29, Jan. 8-10, Feb. 4-10, and Mar. 5, 6.)

3.0	84	5.0	794
3.5	190	6.0	1,410
4.0	338		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	130	469	339	347	227	393	238	239	122	124	337
2	107	132	447	327	279	241	417	281	254	117	101	383
3	106	221	386	334	274	256	439	248	243	121	130	371
4	106	245	373	268	280	282	428	251	257	124	193	369
5	107	261	398	225	290	230	420	224	152	120	175	338
6	107	243	408	290	290	250	420	175	168	125	128	361
7	108	413	403	237	290	247	418	195	223	127	211	350
8	104	412	369	260	290	245	400	217	279	122	208	359
9	104	402	342	290	280	261	395	270	206	146	129	393
10	104	322	336	250	320	325	408	255	244	125	130	411
11	106	401	330	292	259	704	401	277	209	124	126	408
12	105	359	310	247	244	868	406	229	214	124	189	371
13	110	371	288	280	277	580	405	244	244	123	122	390
14	126	349	269	217	322	600	262	255	231	120	124	422
15	129	305	164	280	212	585	131	250	219	115	252	390
16	200	311	263	273	236	460	240	273	243	109	174	427
17	225	442	265	267	289	424	237	257	227	107	126	433
18	215	439	275	290	234	409	138	279	210	134	123	429
19	198	410	264	256	267	404	136	224	208	161	126	414
20	242	393	271	285	243	395	136	279	171	150	237	406
21	228	370	266	280	249	373	178	253	134	136	151	420
22	196	382	261	244	288	375	269	275	171	133	137	407
23	205	386	256	279	258	421	203	252	134	128	132	381
24	258	371	254	288	253	424	160	275	132	128	129	359
25	310	362	239	274	291	410	197	247	174	132	201	350
26	329	410	218	311	136	402	183	232	149	131	239	348
27	308	471	430	246	334	394	175	259	135	128	144	351
28	229	454	305	319	254	443	310	240	133	132	293	350
29	335	438	350	310	---	498	241	219	131	131	386	344
30	225	480	282	337	---	455	144	233	125	140	361	336
31	196	---	271	339	---	417	---	241	---	129	304	---
TOTAL	5540	10685	9762	8734	7586	12605	8690	7647	5859	3964	5605	11408
MEAN	179	356	315	282	271	407	290	247	195	128	181	380
MAX	335	480	469	339	347	868	439	281	279	161	386	433
MIN	104	130	164	217	136	227	131	175	125	107	101	336
CFSM	.35	.69	.61	.54	.52	.79	.56	.48	.38	.25	.35	.74
IN.	.40	.77	.70	.63	.55	.91	.63	.55	.42	.29	.40	.82

CAL YR 1988 TOTAL 102326 MEAN 280 MAX 1140 MIN 101 CFSM .54 IN. 7.36  
WTR YR 1989 TOTAL 98085 MEAN 269 MAX 868 MIN 101 CFSM .52 IN. 7.06

## ROCK RIVER BASIN

## 05430500 ROCK RIVER AT AFTON, WI

LOCATION.--Lat 42°36'33", long 89°04'14", in NE 1/4 sec.28, T.2 N., R.12 E., Rock County, Hydrologic Unit 07090001, on right bank in Afton, 0.3 mi downstream from highway bridge and 1.1 mi upstream from Bass Creek.

DRAINAGE AREA.--3,340 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1914 to current year. Monthly discharge only for January 1914, published in WSP 1308.

REVISED RECORDS.--WSP 1238: 1916(M), 1919(M), 1933, 1937-38, 1943. WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 742.36 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 21, 1932, a nonrecording gage, and Aug. 21, 1932, to Sept. 30, 1933, water-stage recorder, at same site at datum 1 ft higher.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records are good except those for ice-affected periods and periods of discharge below 800 ft<sup>3</sup>/s, which are fair. Diurnal fluctuation caused by powerplants above station.

AVERAGE DISCHARGE.--75 years, 1,853 ft<sup>3</sup>/s, 7.53 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,000 ft<sup>3</sup>/s, Mar. 23, 24, 1929, gage height, 11.81 ft present datum; maximum gage height observed, 13.05 ft, Feb. 5, 1916, present datum (backwater from ice); minimum discharge, 22 ft<sup>3</sup>/s, Sept. 9, 1964; minimum daily, 42 ft<sup>3</sup>/s, Aug. 25, 26, 1934; minimum gage height, 0.09 ft, Aug. 26, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,060 ft<sup>3</sup>/s, Apr. 2, gage height, 6.86 ft; minimum daily, 365 ft<sup>3</sup>/s, July 1.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 11-19, 27-31, Jan. 2-5, 8-14, Feb. 4-27, and Mar. 3-7.)

2.4	364	4.0	1,440
2.5	420	5.0	2,220
3.0	740	7.0	4,210

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	634	629	1780	1400	1410	944	3990	1560	729	365	935	1400
2	652	651	1900	1400	1430	925	4000	1590	829	392	889	1450
3	638	661	1890	1400	1220	960	4050	1530	861	389	855	1470
4	654	745	1840	1400	1400	980	3960	1480	953	489	914	1550
5	698	774	1770	1400	1500	960	3890	1420	1050	543	1050	1670
6	686	791	1790	1350	1500	1000	3900	1420	966	542	1010	1790
7	600	791	1790	1420	1500	980	3830	1400	1000	379	991	1940
8	525	1050	1750	1300	1500	956	3750	1430	1180	436	1050	1950
9	483	949	1620	1400	1400	968	3580	1510	1300	518	1040	2130
10	650	1150	1570	1400	1400	1190	3540	1530	1470	422	1020	2130
11	594	992	1500	1300	1300	1840	3450	1500	1520	503	1060	2070
12	575	1320	1400	1300	1300	2230	3410	1470	1540	579	1090	2010
13	563	1270	1300	1200	1300	1770	3350	1430	1670	485	1130	2000
14	494	1240	1300	1200	1300	1900	3150	1410	1700	484	1080	2050
15	552	1350	1300	1140	1300	2140	2940	1360	1700	479	1280	1940
16	545	1190	1300	1170	1200	2270	2800	1230	1620	446	1360	1890
17	655	1080	1200	1130	1200	2490	2940	1210	1610	442	1160	1880
18	728	1480	1200	1140	1200	2580	2700	1210	1540	520	1090	1810
19	644	1560	1200	1060	1100	2650	2560	1240	1570	724	1040	1760
20	686	1560	1210	1170	1100	2850	2360	1180	1560	907	1030	1690
21	760	1530	1150	1130	1000	2770	2390	1150	1490	916	1100	1600
22	700	1520	1190	1130	1000	2770	2420	1110	1430	833	991	1580
23	713	1540	1180	1100	1000	2840	2250	1110	1380	778	906	1540
24	650	1530	1120	1190	980	2920	2130	977	1260	737	983	1410
25	781	1520	1110	1200	980	3050	2070	890	1230	791	973	1300
26	812	1650	1130	1230	920	3170	1920	858	1160	939	1000	1150
27	805	1570	1200	1150	960	3350	1830	722	931	888	983	1130
28	689	1570	1300	1190	982	3600	1920	827	850	932	960	988
29	706	1650	1400	1280	---	3890	1870	832	810	941	1130	918
30	845	1670	1400	1310	---	4010	1550	824	704	902	1130	931
31	724	---	1400	1300	---	3990	---	755	---	890	1130	---
TOTAL	20441	36983	44190	38890	34382	68943	88500	38165	37613	19591	32360	49127
MEAN	659	1233	1425	1255	1228	2224	2950	1231	1254	632	1044	1638
MAX	845	1670	1900	1420	1500	4010	4050	1590	1700	941	1360	2130
MIN	483	629	1110	1060	920	925	1550	722	704	365	855	918
CFSM	.20	.37	.43	.38	.37	.67	.88	.37	.38	.19	.31	.49
IN.	.23	.41	.49	.43	.38	.77	.99	.43	.42	.22	.36	.55

CAL YR 1988 TOTAL 552740 MEAN 1510 MAX 4070 MIN 307 CFSM .45 IN. 6.16  
WTR YR 1989 TOTAL 509185 MEAN 1395 MAX 4050 MIN 365 CFSM .42 IN. 5.67

## 05431014 JACKSON CREEK AT PETRIE ROAD NEAR ELKHORN, WI

LOCATION.--Lat 42°31'18", long 88°30'59", in SW 1/4 SW 1/4 sec.8, T.2 N., R.17 E., Walworth County, Hydrologic Unit 07090001, on left bank 5 ft upstream of Petrie Road bridge, 2.5 mi upstream from Delavan Lake inlet at Mound Road, and 2.5 mi southeast of Elkhorn.

DRAINAGE AREA.--8.96 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 960 ft, from topographic map.

REMARKS.--Estimated daily discharges: Nov. 10-17, Sept. 9-30, and ice periods listed below. Records good except for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--6 years, 4.22 ft<sup>3</sup>/s, 6.40 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 359 ft<sup>3</sup>/s, Mar. 10, 1986, gage height, 8.84 ft; minimum daily, 0.03 ft<sup>3</sup>/s, Aug. 7, 12, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 124 ft<sup>3</sup>/s, Mar. 10, gage height, 7.92 ft; minimum daily, 0.07 ft<sup>3</sup>/s, Oct. 13-15.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Oct. 1 to Nov. 9, Nov. 18 to Dec. 6, Mar. 10 to Apr. 27, and Sept. 1-8; stage-discharge relation affected by ice Dec. 2 to Jan. 19 and Feb. 5 to Mar. 10.)

4.8	0.02	5.5	3.2	6.5	19
5.0	.12	5.7	5.4	6.7	26
5.1	.38	5.9	7.8	7.0	46
5.2	.61	6.1	11	7.5	96
5.3	1.2	6.3	14		

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.22	.09	.37	.27	4.1	.11	3.6	.46	.44	.18	3.6	73
2	.47	.09	.31	.25	2.2	.10	3.4	.46	.37	.18	1.9	39
3	.40	.09	.29	.23	1.4	.20	3.2	.43	.41	.20	.96	20
4	.16	.19	.27	.22	.94	.30	2.8	.37	.53	.18	16	12
5	.12	.26	.26	.21	.80	.25	2.4	.48	.41	.15	13	7.2
6	.12	.19	.28	.22	.60	.30	1.9	.40	.33	.16	7.6	5.7
7	.11	.13	.31	1.0	.45	.23	1.6	.35	.27	.15	4.9	5.1
8	.11	.17	.27	2.5	.35	.38	1.4	.35	.26	.14	3.6	4.2
9	.11	.25	.25	.70	.28	7.0	.88	.35	.26	.23	4.4	30
10	.10	1.2	.22	.21	.23	35	.50	.31	.25	.18	4.6	12
11	.10	.30	.20	.40	.21	24	.48	.26	.24	.17	3.3	6.0
12	.09	.84	.19	3.0	.20	9.7	.49	.27	.44	.17	2.2	2.0
13	.07	.60	.70	.60	.19	4.7	.41	.28	.50	.17	4.0	12
14	.07	.28	.30	.35	.18	4.1	.40	.29	.40	.16	3.9	6.0
15	.07	.25	.20	.31	.17	4.6	.39	.30	.38	.14	3.1	3.5
16	.08	2.0	.17	.29	.16	1.9	.34	.32	.37	.15	2.0	2.5
17	.09	1.5	.16	.27	.15	1.0	.40	.30	.35	.17	1.2	2.0
18	.10	.64	.16	.32	.15	.53	.37	.32	.30	.17	.81	1.6
19	.08	.45	.20	1.5	.14	1.1	.36	.34	.31	.75	.60	2.0
20	.08	.42	.80	3.5	.13	2.2	.34	.44	.30	1.1	.50	1.5
21	.09	.27	.20	1.2	.12	2.0	.34	.35	.26	.44	.41	1.2
22	.09	.20	.35	1.0	.12	4.5	.32	.30	.26	.27	.36	.90
23	.10	.20	.50	1.4	.11	4.4	.29	.29	.26	.23	.25	.70
24	.10	.20	.22	2.0	.11	3.2	.25	.28	.25	.18	.21	.56
25	.09	.20	.19	2.9	.11	3.3	.55	.33	.25	.18	.20	.80
26	.09	1.6	.18	7.2	.15	3.0	.49	.27	.57	.18	.20	.68
27	.09	2.2	5.0	3.6	.13	4.1	.39	.22	.39	1.6	.19	.58
28	.09	1.1	2.5	2.4	.12	13	.92	.22	.30	7.9	.53	.50
29	.09	.57	1.0	3.2	---	12	1.0	.29	.23	2.5	.86	.45
30	.09	.47	.50	4.7	---	7.2	.64	.30	.20	13	.50	e.40
31	.09	---	.30	4.5	---	5.0	---	.31	---	5.9	.36	---
TOTAL	3.76	16.95	16.85	50.45	14.00	159.40	30.85	10.24	10.09	37.28	86.24	254.07
MEAN	.12	.56	.54	1.63	.50	5.14	1.03	.33	.34	1.20	2.78	8.47
MAX	.47	2.2	5.0	7.2	4.1	35	3.6	.48	.57	13	16	73
MIN	.07	.09	.16	.21	.11	.10	.25	.22	.20	.14	.19	.40
CFSM	.01	.06	.06	.18	.06	.57	.11	.04	.04	.13	.31	.95
IN.	.02	.07	.07	.21	.06	.66	.13	.04	.04	.15	.36	1.05

CAL YR 1988 TOTAL 689.16 MEAN 1.88 MAX 45 MIN .04 CFSM .21 IN. 2.86  
WTR YR 1989 TOTAL 690.18 MEAN 1.89 MAX 73 MIN .07 CFSM .21 IN. 2.87

## ROCK RIVER BASIN

054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI

LOCATION.--Lat 42°39'03", long 88°33'03", in NW 1/4 NE 1/4 sec.12, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, on left bank 200 ft downstream of Interstate Highway 43, 1.1 mi upstream from Delavan Lake inlet at Mound Road, and 1.5 mi south of Elkhorn.

DRAINAGE AREA.--4.34 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 930 ft, from topographic map.

REMARKS.--Estimated daily discharges: Aug. 28-31, and ice periods listed in rating table below. Records good except for estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--6 years, 3.15 ft<sup>3</sup>/s, 9.86 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162 ft<sup>3</sup>/s, Sept. 26, 1986, gage height, 9.55 ft; minimum daily, 0.11 ft<sup>3</sup>/s, Sept. 23-24, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge observed 157 ft<sup>3</sup>/s, Sept. 1, gage height, 9.13 ft; minimum daily, 0.19 ft<sup>3</sup>/s, Oct. 9.

REVISIONS.--The date of the maximum gage height for water year 1988 has been changed to Jan. 19. Revised daily discharges, in cubic feet per second, for January 1988 are given below. These figures supersede those published in the report for 1988.

January 15	0.50	January 20	5.0	January 25	1.0
16	.70	21	3.0	26	.90
17	1.0	22	2.0	27	.80
18	2.5	23	1.5	28	.74
19	10	24	1.2	29	.70

MONTH	TOTAL	MEAN	MAX	MIN	CFSM	IN
January 1988	73.08	2.36	30	.46	.54	.63
Wtr Yr 1988	682.68	1.87	35	.11	.43	5.85

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Mar. 10 to Sept. 30; stage-discharge relation affected by ice Dec. 10-19, Dec. 29 to Jan. 11, and Feb. 4 to Mar. 8.)

5.0	0.20	5.4	1.8	6.0	12
5.1	.33	5.5	3.2	6.5	25
5.2	.50	5.6	4.8	7.0	41
5.3	.85	5.8	8.2	8.0	84

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.31	.83	.35	1.1	.27	2.3	.81	2.4	.46	2.1	53
2	1.8	.36	.78	.34	.61	.27	2.3	.83	.60	.41	1.4	5.4
3	.29	.31	.76	.34	.36	.26	2.1	.75	2.6	.45	.94	2.8
4	.26	3.6	.65	.33	.30	4.0	2.1	.96	.70	.41	7.3	1.9
5	.23	.52	.72	.33	.29	3.5	1.9	1.1	.60	.50	8.0	1.6
6	.21	.84	.75	.35	.28	.64	1.4	.69	.57	.48	3.2	3.2
7	.22	.77	.64	2.5	.28	.60	1.3	.58	.56	.54	2.0	1.7
8	.22	.94	.53	1.0	.28	1.1	1.1	.81	.55	.48	3.6	1.4
9	.19	4.0	.39	.37	.28	16	.81	.65	.55	3.2	3.3	15
10	.24	4.1	.33	.35	.28	27	.78	.57	.48	.54	1.4	5.4
11	.28	.84	.30	.74	.28	11	.89	.50	.45	.70	1.1	3.0
12	.24	2.6	.29	3.2	.28	2.8	.82	.54	3.3	.79	1.3	1.9
13	.22	1.7	.44	.57	.36	2.0	.75	.51	.67	.47	.97	5.8
14	.27	.85	.35	.47	.34	3.5	.82	.49	.71	.44	.80	3.3
15	.20	.78	.30	.46	.30	3.8	.69	.60	.55	.51	.79	2.1
16	.27	2.4	.29	.47	.27	1.5	1.0	.62	.60	.52	.69	1.6
17	.73	1.7	.28	.47	.27	1.0	.92	.56	.49	.48	.65	1.1
18	.38	.93	.27	.50	.27	1.1	.89	.57	.48	1.7	.61	1.0
19	.31	1.2	.34	1.4	.27	2.2	.73	2.0	.51	13	.56	1.1
20	.29	.77	2.8	.69	.30	2.3	.71	1.2	.56	4.0	1.4	.94
21	.59	.86	.53	.43	.29	2.0	.68	.50	.56	1.8	.58	.81
22	.28	.91	.99	.56	.27	2.3	.63	.83	.49	.65	.64	.86
23	1.7	.67	1.9	.72	.27	2.3	.61	.62	.47	.51	.64	.63
24	.42	.50	.63	.65	.27	2.3	.68	.48	.45	.49	.58	.61
25	.34	.49	.51	1.9	.27	2.7	3.4	1.3	2.1	.75	.59	.73
26	.32	7.5	.47	2.1	.28	2.7	.78	.46	2.3	1.2	.48	.71
27	.37	3.9	4.8	.64	.28	3.6	.68	.43	.60	25	.53	.69
28	.35	2.0	1.8	.58	.28	18	4.5	.42	.51	9.6	3.0	.76
29	.29	1.3	.50	.96	---	6.9	1.3	1.8	.46	8.1	1.7	.72
30	.28	1.1	.43	1.4	---	4.2	.84	.70	.53	19	1.2	.65
31	.30	---	.37	1.5	---	2.9	---	1.7	---	3.9	1.1	---
TOTAL	13.39	48.75	24.97	26.67	9.21	134.74	38.41	24.58	26.40	101.08	53.15	120.41
MEAN	.43	1.62	.81	.86	.33	4.35	1.28	.79	.88	3.26	1.71	4.01
MAX	1.8	7.5	4.8	3.2	1.1	27	4.5	2.0	3.3	25	8.0	53
MIN	.19	.31	.27	.33	.27	.26	.61	.42	.45	.41	.48	.61
CFSM	.10	.37	.19	.20	.08	1.00	.30	.18	.20	.75	.40	.92
IN	.11	.42	.21	.23	.08	1.15	.33	.21	.23	.87	.46	1.03
CAL YR 1988	TOTAL 601.11	MEAN 1.64	MAX 35	MIN .13	CFSM .38	IN. 5.15						
WTR YR 1989	TOTAL 621.76	MEAN 1.70	MAX 53	MIN .19	CFSM .39	IN. 5.33						

054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1983 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED-SEDIMENT DISCHARGE: October 1983 to current year.

TOTAL PHOSPHORUS DISCHARGE: October 1983 to current year.

INSTRUMENTATION.--Automatic pumping sampler since October 1983.

REMARKS.--Records good.

COOPERATION.--Observer furnished by Delavan Lake Sanitary District.

EXTREMES FOR PERIOD OF RECORD.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 5,520 mg/L Aug. 7, 1984; minimum observed, 1 mg/L on several days during 1984.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 58 tons Nov. 1, 1984; minimum daily, 0.01 ton on many days from 1984 to 1988.

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 8.20 mg/L Aug. 7, 1984; minimum observed, 0.04 mg/L Oct. 12, 1984, Mar. 29 and Apr. 7, 1988.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 216 lb May 25, 1984; minimum daily, 0.03 lb Sept. 23-24, 1987.

EXTREMES FOR CURRENT YEAR.--

SUSPENDED-SEDIMENT CONCENTRATIONS: Maximum observed, 2,120 mg/L June 25; minimum observed, 3 mg/L Nov. 30.

SUSPENDED-SEDIMENT DISCHARGE: Maximum daily, 18 tons Sept. 1; minimum daily, 0.00 ton Dec. 9-19.

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 2.10 mg/L Mar. 5; minimum observed, 0.07 mg/L Apr. 3.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 128 lb Sept. 1; minimum daily, 0.10 lb Dec. 18.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1988					
03...	0900	--	0.25	0.210	86
13...	1135	--	0.20	0.280	--
13...	1136	--	0.20	--	95
17...	0915	--	0.23	0.300	--
17...	0920	--	0.23	--	65
NOV					
01...	1010	--	0.29	0.110	44
04...	1115	--	6.4	--	188
04...	1145	--	11	0.730	170
04...	1215	--	12	--	134
04...	1245	--	16	--	94
04...	1315	--	14	0.490	85
04...	1345	--	12	--	78
04...	1415	--	9.9	--	60
04...	1430	--	8.9	--	44
04...	1445	--	8.2	0.330	41
09...	1900	--	16	--	337
10...	0945	--	3.6	0.140	4
14...	0940	--	0.81	--	38
17...	1320	--	1.6	0.100	65
21...	0900	--	0.85	--	69
26...	0400	--	9.8	--	1090
26...	0430	--	11	0.180	40
26...	0915	--	11	0.260	82
26...	0945	--	10	0.860	500
26...	0950	--	10	0.180	31
27...	1010	--	3.8	0.100	4
30...	1104	--	1.1	--	3
30...	1105	--	1.1	0.080	--
DEC					
20...	0545	--	8.9	0.880	192
20...	0615	--	13	0.670	207
20...	0645	--	11	--	186
20...	0715	--	9.3	0.550	149
28...	1130	--	1.8	0.140	14
JAN 1989					
12...	1309	--	2.0	--	22
12...	1310	--	2.0	0.230	--
FEB					
24...	1130	0.27	--	--	43
24...	1131	0.27	--	0.160	--

## ROCK RIVER BASIN

054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAR 1989					
04...	1415	4.0	--	--	673
04...	1445	4.0	--	0.640	311
04...	1515	4.0	--	--	169
04...	1545	4.0	--	0.780	--
04...	1615	4.0	--	--	155
04...	1645	4.0	--	0.980	--
04...	1715	4.0	--	--	85
04...	1745	4.0	--	1.00	--
04...	1815	4.0	--	--	68
04...	1845	4.0	--	1.50	--
04...	1915	4.0	--	--	57
04...	1945	4.0	--	1.70	--
04...	2015	4.0	--	--	49
04...	2045	4.0	--	1.90	--
04...	2115	4.0	--	--	43
05...	0015	3.5	--	--	30
05...	0045	3.5	--	2.00	51
05...	0145	3.5	--	2.10	23
10...	1230	--	12	0.660	168
10...	1245	--	13	1.00	244
14...	1140	--	1.7	--	6
14...	1141	--	1.7	0.120	--
14...	1330	--	2.0	--	20
14...	1615	--	7.4	0.380	--
14...	1645	--	7.9	--	253
14...	1730	--	7.7	0.260	--
14...	1815	--	7.2	--	175
14...	1900	--	6.5	0.530	--
15...	0300	--	6.7	--	50
15...	0315	--	6.7	0.280	--
15...	0400	--	6.5	--	42
15...	1025	--	3.5	0.310	13
28...	1015	--	54	--	384
28...	1100	--	63	0.360	--
28...	1115	--	63	--	156
28...	1200	--	56	0.270	--
28...	1245	--	46	--	95
28...	1330	--	37	0.340	--
28...	1345	--	35	0.370	89
28...	1415	--	30	--	63
28...	1500	--	25	0.290	--
28...	1515	--	23	0.340	--
28...	1546	--	21	--	56
28...	1715	--	17	--	28
28...	1800	--	15	0.240	--
28...	1930	--	13	--	25
28...	2100	--	12	0.190	--
28...	2230	--	11	--	16
28...	2400	--	10	0.160	--
29...	0130	--	9.6	--	13
29...	0300	--	9.0	0.140	--
29...	0430	--	8.4	--	15
29...	0515	--	8.2	0.140	--
29...	0900	--	7.0	0.130	--
29...	0905	--	7.0	--	11
APR					
03...	1040	--	1.9	--	20
03...	1041	--	1.9	0.070	--
03...	1054	--	1.9	--	29
03...	1055	--	1.9	0.120	--
25...	0345	--	16	1.10	446
25...	0430	--	14	--	205
25...	0515	--	9.6	0.430	--
25...	0845	--	3.5	0.150	12
25...	1235	--	2.2	--	11
25...	1236	--	2.2	0.150	--
28...	0645	--	8.8	0.320	136
28...	0730	--	12	--	115
28...	0815	--	13	0.230	79
28...	0900	--	11	--	47
28...	0945	--	8.1	0.200	43

## ROCK RIVER BASIN

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054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE D (MG/L) (80154)
MAY 1989					
23...	0855	--	0.48	--	13
23...	0856	--	0.48	0.080	--
25...	0015	--	0.50	--	17
25...	0100	--	0.57	--	27
25...	0145	--	1.0	0.130	--
25...	0230	--	5.2	--	63
25...	0315	--	4.7	0.330	--
25...	0400	--	5.2	--	51
25...	0445	--	3.5	--	39
25...	0615	--	1.9	0.190	--
25...	0700	--	1.5	--	17
25...	0915	--	0.81	--	15
25...	1045	--	0.74	--	12
25...	1130	--	0.74	0.140	--
JUN					
01...	0300	--	8.4	--	127
01...	0345	--	8.8	0.290	--
01...	0430	--	8.6	--	57
13...	1330	--	0.74	--	89
19...	2030	--	0.50	0.190	--
24...	0445	--	0.44	--	77
25...	2215	--	18	--	2120
25...	2300	--	21	0.320	--
25...	2345	--	22	--	1330
26...	0030	--	14	0.190	--
26...	0115	--	9.2	--	402
26...	1010	--	0.81	--	7
29...	1519	--	0.47	--	8
29...	1520	--	0.47	0.180	--
JUL					
06...	0800	--	0.47	--	233
09...	0300	--	12	--	454
09...	0315	--	13	0.290	--
09...	0400	--	11	--	189
09...	0445	--	12	0.600	--
09...	0530	--	12	--	74
09...	0615	--	10	--	64
09...	0700	--	8.6	0.330	--
10...	0955	--	0.52	0.360	29
10...	1105	--	0.58	--	14
10...	1106	--	0.58	0.320	--
19...	0045	--	10	--	45
19...	0130	--	11	0.270	27
19...	0215	--	12	--	36
19...	0345	--	9.2	0.230	--
19...	0630	--	9.4	--	39
19...	0645	--	10	--	62
19...	0730	--	10	0.220	--
19...	0815	--	12	--	47
19...	0900	--	11	0.180	--
19...	1030	--	8.1	--	128
19...	1115	--	7.4	0.410	--
19...	1145	--	13	--	143
19...	1315	--	20	--	95
19...	1330	--	20	0.190	--
19...	1400	--	17	0.240	60
19...	1415	--	15	--	175
19...	1500	--	12	0.230	--
19...	1545	--	11	--	269
19...	1630	--	9.6	--	193
19...	1715	--	8.4	0.150	--
19...	2000	--	8.2	0.240	--
19...	2045	--	17	--	99
19...	2130	--	23	--	88
19...	2215	--	31	0.370	--
19...	2300	--	31	--	110
19...	2345	--	25	--	139
20...	0030	--	19	0.170	--
20...	0115	--	14	--	281
20...	0200	--	11	--	284
20...	0245	--	9.6	0.150	--
20...	1055	--	2.3	0.230	19

## ROCK RIVER BASIN

054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
JUL 1989					
20...	1600	--	1.3	--	35
20...	1601	--	1.3	0.180	--
27...	1800	--	16	--	660
27...	1845	--	78	--	502
27...	1930	--	114	0.300	358
27...	2015	--	125	--	199
27...	2100	--	122	0.390	--
27...	2145	--	112	--	86
27...	2315	--	82	--	65
27...	2400	--	62	0.460	--
28...	0045	--	44	--	72
28...	0215	--	22	--	126
28...	0300	--	17	0.420	--
28...	0345	--	14	--	194
28...	0515	--	11	--	236
28...	0645	--	9.2	--	226
28...	0730	--	8.4	0.460	--
28...	1030	--	6.4	0.290	135
29...	1815	--	9.6	0.550	225
29...	1845	--	16	--	228
29...	1930	--	27	0.390	--
29...	2015	--	31	--	155
29...	2100	--	31	0.400	124
29...	2145	--	27	--	125
29...	2230	--	24	--	133
29...	2315	--	29	0.350	--
29...	2400	--	58	--	144
30...	0045	--	70	0.510	178
30...	0130	--	67	--	149
30...	0215	--	59	--	139
30...	0300	--	51	0.460	--
30...	0345	--	41	--	168
30...	0515	--	25	--	219
30...	0600	--	21	0.360	--
30...	0645	--	19	--	261
30...	0815	--	15	--	292
30...	0900	--	13	0.760	--
30...	0945	--	12	--	349
30...	1115	--	11	--	330
30...	1200	--	10	0.290	--
30...	1330	--	8.8	--	294
30...	1415	--	8.2	0.440	--
30...	1620	--	7.5	0.490	261
AUG					
02...	1845	--	1.3	--	66
04...	0145	--	12	0.680	220
04...	0215	--	21	--	153
04...	0300	--	29	0.440	--
04...	0345	--	26	--	105
04...	0430	--	19	0.310	--
04...	0515	--	15	--	111
04...	0600	--	12	0.370	--
04...	0645	--	10	--	161
04...	0730	--	8.4	0.430	--
04...	1115	--	5.3	0.290	161
05...	0245	--	9.0	--	141
05...	0300	--	9.6	0.360	--
05...	0345	--	15	--	233
05...	0430	--	17	0.510	--
05...	0515	--	17	--	280
05...	0600	--	14	0.460	--
05...	0645	--	12	--	225
05...	0815	--	10	--	259
05...	0900	--	9.0	0.530	--
05...	0940	--	8.6	0.360	242
05...	1600	--	8.6	0.370	279
05...	1715	--	8.6	--	122
08...	2000	--	14	--	269
08...	2100	--	17	0.290	88
08...	2145	--	16	0.370	--
08...	2230	--	12	--	101
08...	2315	--	10	--	80



## ROCK RIVER BASIN

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054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
AUG 1989					
08...	2400	--	9.2	0.270	--
09...	1335	--	2.7	0.110	--
09...	1350	--	2.6	--	8
24...	1144	--	0.60	0.150	--
24...	1145	--	0.60	--	9
29...	0715	1.7	--	--	35
29...	0735	1.7	--	0.190	--
31...	2300	1.1	--	0.490	143
31...	2345	1.1	--	--	353
SEP					
01...	0030	--	28	0.550	340
01...	0115	--	43	--	344
01...	0200	--	136	0.420	184
01...	0245	--	154	--	122
01...	0330	--	153	0.470	--
01...	0415	--	145	--	66
01...	0500	--	136	0.430	--
01...	0545	--	125	--	63
01...	0715	--	103	--	83
01...	0800	--	89	0.430	--
01...	0930	--	54	--	167
01...	1015	--	42	0.530	--
01...	1145	--	26	--	178
01...	1450	--	16	0.360	180
01...	1530	--	15	0.570	--
01...	1615	--	14	--	264
01...	1830	--	11	--	248
01...	1915	--	11	0.500	--
01...	2130	--	9.4	--	321
02...	0030	--	8.1	--	179
02...	0245	--	7.2	0.220	--
02...	0330	--	7.0	--	74
02...	0630	--	6.4	--	48
02...	0815	--	5.8	0.120	--
02...	0940	--	5.7	--	26
02...	0945	--	5.7	0.130	--
02...	1100	--	5.5	--	6
02...	1400	--	4.8	0.110	--
02...	1445	--	4.7	--	9
02...	1915	--	4.0	--	4
02...	2045	--	3.8	0.110	--
02...	2345	--	3.5	--	20
03...	0545	--	3.0	0.150	--
03...	0630	--	3.0	--	15
05...	1020	--	1.7	0.080	--
05...	1025	--	1.7	--	29
06...	0315	--	1.3	--	73
06...	0400	--	9.0	0.350	--
06...	0445	--	9.4	--	56
06...	0530	--	8.8	0.320	--
06...	0615	--	6.7	--	78
06...	0745	--	4.3	--	62
06...	0830	--	3.8	0.230	--
06...	0915	--	3.5	--	49
06...	1045	--	3.0	0.230	60
09...	0615	--	12	--	57
09...	0700	--	16	--	77
09...	0745	--	16	0.260	--
09...	0830	--	21	0.270	49
09...	0915	--	37	0.400	132
09...	1000	--	47	0.410	123
09...	1045	--	45	0.360	92
09...	1130	--	40	--	82
09...	1215	--	33	0.380	--
09...	1245	--	28	--	75
09...	1330	--	23	0.380	--
09...	1415	--	19	--	93
09...	1500	--	17	0.430	--
09...	1530	--	16	0.390	140
09...	1830	--	11	--	143
09...	1915	--	10	0.340	--
09...	2130	--	9.2	--	84
09...	2215	--	8.8	0.270	--
11...	1000	--	3.2	--	38
13...	0915	--	10	0.210	34
13...	1000	--	11	0.220	25
13...	1345	--	9.0	--	17
13...	1430	--	8.2	0.150	--
13...	1445	--	7.9	0.150	24

## ROCK RIVER BASIN

054310157 JACKSON CREEK TRIBUTARY NEAR ELKHORN, WI--CONTINUED

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.23	.04	.01	.02	.09	.03	.10	.02	e.50	.02	.65	18
2	e.34	.04	.01	.02	.05	.03	.11	.02	e.11	.04	.27	.63
3	.07	.03	.01	.02	.03	.03	.14	.02	e.56	.07	.12	.12
4	.06	.73	.01	.02	.03	e1.0	.16	.03	e.13	.10	2.5	.11
5	.05	.04	.01	.02	.02	e.84	.14	e.20	.04	.20	4.0	.11
6	.05	.05	.01	.02	.02	.07	.10	e.13	.04	.22	.29	.47
7	.05	.04	.01	e.52	.02	.09	.09	.02	.05	.09	.08	.13
8	.05	.03	.01	e.18	.03	.23	.07	.02	.06	.03	.73	.07
9	.05	e1.0	.00	e.08	.03	e8.4	.06	.02	.07	.96	.25	3.8
10	.06	e1.1	.00	.02	.03	e14	.05	.02	.07	.03	.03	.90
11	.07	e.15	.00	e.14	.03	e4.7	.06	.02	.07	.02	.02	.31
12	.06	e.56	.00	e.73	.03	.33	.05	.02	e.78	.03	.03	.13
13	.06	e.32	.00	e.11	.04	.08	.05	.02	.15	.02	.02	.38
14	.06	.09	.00	.03	.03	.93	.05	.02	.16	.01	.02	.21
15	.04	.10	.00	.03	.03	.30	.04	.02	.12	.02	.02	.14
16	.05	.36	.00	.03	.03	.05	e.18	.02	.13	.01	.02	.11
17	.13	.29	.00	.03	.03	.03	.05	.02	.11	.01	.01	.08
18	.06	.17	.00	.03	.03	.04	.05	.02	.10	.10	.01	.08
19	.05	.22	.00	e.25	.03	.07	.04	e.39	.11	3.1	.01	.08
20	.05	.14	.72	.05	.03	.07	.04	e.22	.12	1.5	e.25	.08
21	.09	.16	.03	.03	.03	.06	.04	.02	.12	e.34	e.11	.07
22	.04	.16	.05	.04	.03	.07	.03	.03	.10	e.12	.02	.07
23	e.32	.11	e.36	.05	.03	.06	.03	.02	.09	.02	.02	.06
24	.06	.07	.03	.05	.03	.06	.04	.02	.09	.01	.01	.06
25	.05	.07	.02	.14	.03	.07	1.3	e.23	e.42	e.14	.02	.07
26	.04	1.1	.02	e.41	.03	.07	.02	.01	e.47	e.21	.02	.07
27	.05	.05	e1.3	.05	.03	e.87	.02	.01	e.11	13	.03	.07
28	.05	.02	e.34	.04	.03	e9.6	.61	.01	.01	3.1	e.68	.08
29	.04	.01	e.15	.07	---	e2.3	.03	e.34	.01	2.7	e.32	.08
30	.04	.01	.02	.11	---	e1.1	.02	e.13	.02	10	e.22	.07
31	.04	---	.02	.12	---	.11	---	e.32	---	2.0	.10	---
TOTAL	2.46	7.26	3.14	3.46	0.90	45.69	3.77	2.41	4.92	38.22	10.88	26.64

WTR YR 1989 TOTAL 149.75

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.70	.19	.36	.30	1.14	.17	1.12	.62	2.51	.43	2.60	128
2	e2.50	.21	.33	.30	.63	.16	.97	.62	.38	.38	1.45	4.48
3	.33	.17	.32	.31	.37	.14	.79	.56	5.04	.41	.84	2.02
4	.31	7.75	.27	.31	.31	15.5	.81	.69	.94	.36	14.4	1.11
5	.27	.39	.30	.32	.29	28.4	.72	.76	.79	.43	15.7	.70
6	.26	e1.00	.31	.36	.28	1.74	.57	.48	.73	.41	3.82	4.01
7	.29	e.90	.26	e3.60	.28	.75	.53	.40	.71	.45	2.03	1.24
8	.29	e1.20	.22	e1.20	.28	e1.40	.44	.54	.69	.40	4.82	.83
9	.26	10.5	.16	.42	.27	e31.0	.34	.43	.67	6.34	3.12	29.2
10	.34	4.69	.13	.41	.27	e56.0	.33	.37	.58	.74	.86	5.13
11	.41	.60	.12	.89	.27	e20.0	.38	.32	.53	.89	.71	2.14
12	.36	e3.80	.12	e4.90	.27	e4.20	.36	.33	e5.00	.96	e1.70	1.17
13	.34	e2.30	.17	.70	.34	e2.80	.33	.31	.77	.53	e1.20	5.19
14	.41	.53	.14	.58	.32	6.10	.37	.29	.80	.47	.53	1.78
15	.31	.46	.12	.56	.28	6.22	.32	.35	.61	.50	.53	1.13
16	.44	e3.50	.11	.56	.25	2.25	.48	.35	.65	.48	.47	.87
17	e.83	e2.30	.11	.56	.25	1.44	.44	.31	.53	.41	.46	.64
18	e.36	.50	.10	.59	.25	1.43	.43	.31	.51	2.21	.43	.57
19	e.28	.65	.13	1.60	.24	2.49	.36	2.80	.53	17.1	.41	.59
20	e.25	.42	6.50	.80	.27	2.44	.35	1.58	.56	3.78	e1.90	.53
21	e.64	.46	.58	.49	.26	1.98	.35	.38	.54	1.92	.44	.46
22	e.24	.49	1.58	.64	.24	2.03	.32	.46	.46	.53	.50	.49
23	e2.30	.36	2.19	.81	.24	1.86	.32	.27	.42	.41	.51	.36
24	e.42	.27	.50	.73	.23	1.71	.36	.21	.38	.40	.47	.35
25	.32	.26	.40	2.07	.22	1.85	7.69	1.44	2.84	.61	.50	.43
26	.28	e13.0	.37	2.30	.21	1.68	.54	.32	e3.30	1.52	.43	.42
27	.30	e6.20	e7.90	.70	.20	2.10	.41	.27	e.65	48.5	.49	.41
28	.27	.98	e2.50	.63	.19	26.2	5.62	.24	.51	20.0	2.96	.45
29	.21	.60	.39	1.04	---	4.93	1.05	1.82	.45	15.4	1.70	.43
30	.19	.48	.35	1.45	---	2.55	.66	.44	.51	47.1	1.11	.39
31	.19	---	.31	1.55	---	1.60	---	2.62	---	5.92	1.04	---
TOTAL	15.90	65.16	27.35	31.68	8.65	233.12	27.76	20.89	33.59	179.99	68.13	195.52

WTR YR 1989 TOTAL 907.74

e Estimated

## ROCK RIVER BASIN

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## 05431017 DELAVAN LAKE INLET AT STATE HIGHWAY 50 AT LAKE LAWN, WI

LOCATION.--Lat 42°37'16", long 88°34'57", in NE 1/4 sec.22, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, on downstream headwall of State Highway 50 bridge, and 1.0 mi east of Lake Lawn.

DRAINAGE AREA.--21.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--1984 and 1985 water years (unpublished) to current year. Published as "at U.S. Highway 50" prior to October 1988.

GAGE.--Nonrecording gage. Datum of gage is 914.48 ft above National Geodetic Vertical Datum of 1929 (Wisconsin Department of Transportation benchmark).

REMARKS.--Daily mean discharges were estimated based on discharges upstream at Jackson Creek at Petrie Road near Elkhorn (05431014) and Jackson Creek Tributary near Elkhorn (054310157). Records poor.

AVERAGE DISCHARGE.--6 years, 11.6 ft<sup>3</sup>/s, 7.23 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 823 ft<sup>3</sup>/s, Mar. 10, 1986; minimum daily (estimated), 0.22 ft<sup>3</sup>/s, Sept. 15, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily (estimated), 195 ft<sup>3</sup>/s, Sept. 1; minimum daily (estimated), 0.34 ft<sup>3</sup>/s, Oct. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	.49	1.5	.88	9.1	.48	9.3	1.7	3.3	.81	9.1	195
2	2.7	.54	1.4	.83	4.9	.46	8.9	1.7	1.3	.76	5.1	81
3	1.1	.49	1.3	.79	3.1	.65	8.3	1.6	3.4	.84	2.8	42
4	.57	4.0	1.2	.76	2.1	4.6	7.6	1.7	1.7	.76	38	25
5	.46	1.0	1.2	.74	1.9	4.0	6.6	2.0	1.4	.79	33	16
6	.44	1.2	1.3	.78	1.5	1.2	5.1	1.5	1.2	.79	18	14
7	.43	1.0	1.2	4.5	1.2	1.0	4.4	1.3	1.1	.83	12	12
8	.43	1.3	1.1	5.9	.96	1.8	3.8	1.5	1.1	.75	11	9.6
9	.40	4.5	.88	1.8	.83	30	2.5	1.3	1.1	3.6	12	73
10	.43	6.4	.76	.76	.73	95	1.8	1.2	.97	.89	10	28
11	.47	1.4	.69	1.5	.69	58	1.8	1.0	.92	1.0	7.5	15
12	.42	4.2	.66	9.0	.67	22	1.8	1.1	4.2	1.1	5.6	5.8
13	.36	2.9	1.8	1.8	.73	11	1.5	1.1	1.6	.80	8.8	29
14	.41	1.4	.93	1.1	.69	11	1.6	1.1	1.5	.75	8.4	15
15	.34	1.3	.69	1.1	.63	13	1.5	1.2	1.3	.78	6.8	8.9
16	.43	6.3	.62	1.0	.58	5.2	1.7	1.2	1.3	.81	4.6	6.5
17	.91	4.6	.59	1.0	.56	3.0	1.7	1.1	1.2	.81	2.9	5.0
18	.57	2.1	.58	1.1	.56	2.1	1.6	1.2	1.1	2.0	2.2	4.1
19	.47	2.1	.73	4.3	.54	4.3	1.4	2.7	1.1	14	1.8	5.0
20	.45	1.6	4.4	7.5	.55	6.6	1.4	2.1	1.1	6.1	2.4	3.8
21	.77	1.4	.92	2.7	.52	5.9	1.3	1.2	1.1	2.7	1.4	3.1
22	.46	1.3	1.7	2.6	.50	11	1.2	1.4	1.0	1.2	1.3	2.7
23	1.9	1.1	2.9	3.4	.48	11	1.2	1.2	.98	.96	1.1	2.0
24	.61	.89	1.1	4.5	.48	8.5	1.2	1.0	.94	.84	.99	1.7
25	.52	.88	.88	7.6	.48	9.1	4.5	1.9	2.6	1.1	.98	2.3
26	.50	11	.82	16	.57	8.5	1.7	.99	3.4	1.5	.87	2.0
27	.55	8.2	14	7.6	.53	12	1.4	.86	1.4	28	.90	1.8
28	.53	4.1	6.7	5.3	.51	43	6.3	.85	1.1	25	4.0	1.7
29	.47	2.4	2.5	7.2	---	30	3.3	2.4	.91	13	3.4	1.6
30	.46	2.0	1.4	11	---	18	2.0	1.3	.92	44	2.2	1.4
31	.48	---	.95	10	---	13	---	2.3	---	16	1.8	---
TOTAL	20.74	82.09	57.40	125.04	36.59	445.39	98.4	44.70	46.24	173.27	220.94	614.0
MEAN	.67	2.74	1.85	4.03	1.31	14.4	3.28	1.44	1.54	5.59	7.13	20.5
MAX	2.7	11	14	16	9.1	95	9.3	2.7	4.2	44	38	195
MIN	.34	.49	.58	.74	.48	.46	1.2	.85	.91	.75	.87	1.4
CFSM	.03	.13	.08	.19	.06	.66	.15	.07	.07	.26	.33	.94
IN.	.04	.14	.10	.21	.06	.76	.17	.08	.08	.30	.38	1.05

CAL YR 1988 TOTAL 1940.76 MEAN 5.30 MAX 118 MIN .22 CFSM .24 IN. 3.31  
WTR YR 1989 TOTAL 1964.80 MEAN 5.38 MAX 195 MIN .34 CFSM .25 IN. 3.35

05431017 DELAVAN LAKE INLET AT STATE HIGHWAY 50 AT LAKE LAWN, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1983 to current year.

PERIOD OF DAILY RECORD.--

TOTAL PHOSPHORUS DISCHARGE: 1984 and 1985 water years (unpublished) to current year.

REMARKS.--Records poor. Daily mean discharges are estimated based on discharges from upstream stations 05431014 and 054310157.

COOPERATION.--Observer furnished by Delavan Lake Sanitary District.

EXTREMES FOR PERIOD OF RECORD.--

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 3.8 mg/L May 27, 1985; minimum observed, 0.02 mg/L

Apr. 10, 1988.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 1,088 lb Feb. 13, 1984; minimum daily, 0.22 lb Sept. 27, 1987 and Dec. 18, 1988.

EXTREMES FOR CURRENT YEAR.--

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 0.88 mg/L July 10; minimum observed, 0.05 mg/L Nov. 13 and July 28.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 626 lb Sept. 1; minimum daily, 0.22 lb Dec. 18.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988				MAY 1989			
13...	1330	0.36	0.310	23...	1625	1.2	0.130
17...	0945	0.91	0.260	JUN			
NOV				26...	1112	3.4	0.300
01...	1055	0.49	0.200	26...	1433	3.4	0.300
04...	1540	4.0	0.210	27...	1040	1.4	0.350
05...	0930	1.0	0.190	27...	1535	1.4	0.210
05...	1610	1.0	0.180	28...	0920	1.1	0.300
06...	0935	1.2	0.110	28...	1550	1.1	0.200
06...	1555	1.2	0.100	29...	0930	0.91	0.180
07...	0920	1.0	0.090	30...	1100	0.92	0.170
08...	1115	1.3	0.140	JUL			
10...	1100	6.4	0.150	10...	0950	0.89	0.560
10...	1525	6.4	0.080	10...	1048	0.89	0.110
11...	1055	1.4	0.100	10...	1535	0.89	0.880
11...	1525	1.4	0.080	11...	0925	1.0	0.230
12...	0940	4.2	0.130	12...	0915	1.1	0.240
12...	1525	4.2	0.150	13...	0915	0.80	0.420
12...	1540	4.2	0.090	19...	1500	14	0.530
13...	1050	2.9	0.050	20...	1130	6.1	0.400
14...	0850	1.4	0.080	20...	1330	6.1	0.580
14...	0851	1.4	0.090	20...	1500	6.1	0.270
15...	1150	1.3	0.080	21...	1010	2.7	0.370
16...	0845	6.3	0.200	22...	0945	1.2	0.110
17...	0915	4.6	0.160	22...	1545	1.2	0.200
17...	1440	4.6	0.120	23...	0940	0.96	0.280
18...	1045	2.1	0.150	24...	0925	0.84	0.320
18...	1525	2.1	0.180	28...	1125	25	0.050
19...	0850	2.1	0.140	28...	1520	25	0.400
20...	0915	1.6	0.160	29...	0910	13	0.070
26...	1100	11	0.110	29...	1550	13	<0.010
26...	1530	11	0.140	30...	0635	44	0.140
27...	0920	8.2	0.160	30...	1540	44	0.560
27...	1540	8.2	0.070	31...	0840	16	0.610
28...	1000	4.1	0.150	31...	1520	16	0.480
28...	1535	4.1	0.090	AUG			
29...	1000	2.4	0.130	01...	1015	9.1	0.250
29...	1530	2.4	0.100	01...	1530	9.1	0.170
30...	0935	2.0	0.090	02...	1045	5.1	0.240
30...	1310	2.0	0.140	03...	0945	2.8	0.310
JAN 1989				04...	1200	38	0.310
12...	1205	9.0	0.150	04...	1540	38	0.470
26...	1540	16	0.140	05...	1035	33	0.260
FEB				05...	1540	33	0.450
24...	1400	0.48	0.140	06...	0950	18	0.490
MAR				06...	1545	18	0.520
14...	1110	11	0.330	07...	1130	12	0.500
28...	1425	43	0.100	07...	1535	12	0.330
28...	1545	43	0.100	08...	1520	11	0.270
29...	1000	30	0.180	09...	1445	12	0.230
29...	1520	30	0.140	10...	0955	10	0.240
30...	0920	18	0.140	10...	1525	10	0.300
30...	1535	18	0.130	11...	1020	7.5	0.260
31...	1120	13	0.110	11...	1520	7.5	0.250
31...	1540	13	0.120	12...	0710	5.6	0.400
APR				13...	0700	8.8	0.420
01...	0945	9.3	0.100	24...	0955	0.99	0.690
02...	0940	8.9	0.130	29...	0840	3.4	0.260
03...	1305	8.3	0.120	29...	1540	3.4	0.300
25...	1205	4.5	0.290	30...	0905	2.2	0.430

WATER-QUALITY DATA. WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	
AUG 1989				SEP 1989				
30...	1545	2.2	0.170	05...	0910	16	0.250	
31...	0920	1.8	0.260	05...	1545	16	0.140	
31...	1505	1.8	0.290	06...	1105	14	0.330	
SEP	01...	0830	195	0.510	06...	1535	14	0.300
	01...	1540	195	0.770	08...	1535	9.6	0.330
	02...	1050	81	0.500	09...	1520	73	0.450
	02...	1540	81	0.370	10...	1830	28	0.200
	03...	0925	42	0.460	11...	1540	15	0.250
	03...	1530	42	0.390	13...	0950	29	0.330
	04...	0920	25	0.240	13...	1520	29	0.350
	04...	1540	25	0.300	14...	1535	15	0.270
					15...	1540	8.9	0.320
				16...	0920	6.5	0.260	

[illegible]

## ROCK RIVER BASIN

05431018 DELAVAN LAKE TRIBUTARY AT SOUTH SHORE DRIVE AT DELAVAN LAKE, WI

LOCATION.--43°35'08", long 88°37'19", in SE 1/4 SE 1/4 sec.32, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, on left bank at bridge on South Shore Drive, at Delavan Lake, and 0.3 mi upstream from Delavan Lake.

DRAINAGE AREA.--9.99 mi<sup>2</sup>, of which 2.33 mi<sup>2</sup> is non-contributing.

PERIOD OF RECORD.--October 1983 to September 1986, October 1988 to September 1989.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 930 ft, from topographic map.

REMARKS.--Artificial weir. Estimated daily discharges: Nov. 11-17, and ice period listed in rating table below. Records good except for estimated daily discharges, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103 ft<sup>3</sup>/s Mar. 10, 1986, gage height, 7.49 ft; minimum daily discharge, 0.03 ft<sup>3</sup>/s Aug. 9-11, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20 ft<sup>3</sup>/s Mar. 12, gage height, 6.56 ft; maximum gage height, 6.65 ft, Mar. 11, backwater from ice; minimum daily discharge, 0.03 ft<sup>3</sup>/s Aug. 9-11.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 10 to Mar. 11.)

5.60	0.02	5.9	1.2	6.4	13
5.65	.06	6.0	2.4	6.5	17
5.70	.11	6.1	4.1	6.6	22
5.75	.24	6.2	6.4	6.8	34
5.80	.47	6.3	9.3	7.0	50

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.22	.15	.09	.70	.13	2.6	.53	.19	.04	.06	1.2
2	.11	.21	.15	.08	.50	.08	2.5	.46	.14	.04	.05	.19
3	.10	.21	.15	.08	.40	.07	2.3	.42	.17	.04	.04	.12
4	.10	.31	.15	.08	.30	.20	2.3	.42	.23	.04	.16	.11
5	.08	.28	.15	.08	.25	.11	2.3	.42	.19	.04	.09	.10
6	.09	.22	.15	.08	.21	.10	2.2	.29	.15	.04	.08	.10
7	.13	.21	.15	.10	.18	.09	1.9	.28	.12	.04	.07	.09
8	.16	.21	.12	.25	.16	.08	1.7	.28	.11	.04	.05	.09
9	.17	.25	.12	.18	.15	.11	1.4	.28	.10	.06	.03	.26
10	.16	.32	.12	.14	.14	2.0	1.3	.28	.10	.05	.03	.19
11	.11	.25	.11	.12	.13	16	1.3	.25	.10	.05	.03	.10
12	.12	.22	.10	.11	.12	20	1.1	.21	.14	.04	.04	.09
13	.15	.20	.10	.10	.11	16	1.0	.21	.11	.05	.05	.10
14	.26	.18	.10	.10	.11	12	1.0	.21	.09	.04	.06	.10
15	.22	.17	.10	.10	.11	8.5	.94	.18	.09	.04	.06	.09
16	.28	.16	.09	.09	.10	6.2	.80	.17	.09	.05	.05	.09
17	.44	.16	.09	.09	.09	4.7	.80	.16	.08	.05	.04	.09
18	.47	.15	.09	.09	.09	3.9	.80	.13	.08	.06	.04	.09
19	.42	.15	.11	.12	.09	3.3	.74	.12	.07	.09	.04	.09
20	.40	.15	.15	.20	.09	3.1	.60	.12	.07	.08	.04	.09
21	.56	.13	.13	.14	.09	2.8	.59	.12	.07	.06	.04	.08
22	.49	.11	.11	.13	.09	2.7	.59	.11	.07	.07	.05	.07
23	.57	.11	.10	.13	.09	2.7	.59	.11	.06	.06	.04	.07
24	.59	.11	.09	.15	.08	2.7	.41	.11	.06	.05	.04	.09
25	.57	.11	.08	.19	.09	2.6	.71	.11	.06	.05	.04	.08
26	.53	.44	.09	.40	.08	2.3	.59	.11	.08	.06	.04	.05
27	.53	.31	.08	.30	.07	2.4	.57	.10	.07	.06	.04	.06
28	.53	.17	.08	.32	.07	3.2	.79	.10	.06	.08	.07	.05
29	.47	.15	.08	.40	---	3.5	.66	.17	.05	.08	.07	.07
30	.32	.15	.09	.54	---	3.1	.56	.28	.05	.14	.06	.11
31	.25	---	.10	.80	---	2.8	---	.18	---	.06	.05	---
TOTAL	9.52	6.02	3.48	5.78	4.69	127.47	35.64	6.92	3.05	1.75	1.65	4.11
MEAN	.31	.20	.11	.19	.17	4.11	1.19	.22	.10	.056	.053	.14
MAX	.59	.44	.15	.80	.70	20	2.6	.53	.23	.14	.16	1.2
MIN	.08	.11	.08	.08	.07	.07	.41	.10	.05	.04	.03	.05
CFSM	.04	.03	.01	.02	.02	.54	.16	.03	.01	.01	.01	.02
IN.	.05	.03	.02	.03	.02	.62	.17	.03	.01	.01	.01	.02

WTR YR 1989 TOTAL 210.08 MEAN .58 MAX 20 MIN .03 CFSM .08 IN. 1.02

## 423526088380101 DELAVAN LAKE AT SW END NEAR DELAVAN LAKE, WI

LOCATION.--Lat 42°35'26", long 88°38'01", sec.32, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, 2.6 mi southeast of Delavan.

DRAINAGE AREA.--41.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1983 to current year.

REMARKS.--Lake ice-covered during January 26 sampling.

WATER-QUALITY DATA, OCTOBER 12, 1988 TO MAY 24, 1989  
(Milligrams per liter unless otherwise indicated)

	Oct. 12		Jan. 26		Apr. 25		May 24			
Depth of sample (ft)	1.50	30.5	1.50	31.5	1.50	31.5	1.50	12.0	24.0	31.5
Lake stage (ft)	4.22		4.48		4.80		4.62			
Specific conductance (μS/cm)	514	516	539	550	541	543	540	540	545	548
pH (units)	8.60	8.60	8.50	8.50	8.50	8.50	8.70	8.70	8.40	8.30
Water temperature (°C)	14.5	14.0	3.0	3.5	9.0	8.5	16.0	16.0	12.5	11.5
Secchi-disc (meters)	0.90		1.80		3.80		3.60			
Dissolved oxygen	8.7	8.5	16.1	14.3	11.9	11.5	11.4	10.9	9.4	7.9
Silica, dissolved (SiO <sub>2</sub> )	---	---	---	---	<0.50	<0.50	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	---	---	0.280	0.280	---	---	---	---
Nitrogen, nitrite, total (as N)	---	---	---	---	0.020	0.020	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , total (as N)	---	---	---	---	0.300	0.300	---	---	---	---
Nitrogen, ammonia, total (as N)	---	---	---	---	0.260	0.280	---	---	---	---
Nitrogen, organic, total (as N)	---	---	---	---	0.74	1.1	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	---	---	1.0	1.4	---	---	---	---
Nitrogen, total (as N)	---	---	---	---	1.3	1.7	---	---	---	---
Total phosphorus (as P)	0.076	0.087	0.063	0.039	0.077	0.090	0.053	0.055	0.077	0.091
Phosphorus, ortho, diss (as P)	0.035	0.036	0.017	0.008	0.039	0.043	0.021	0.022	0.043	0.057
Chlorophyll a, phyto. (μg/L)	18.0	---	21.0	---	1.40	---	---	---	---	---

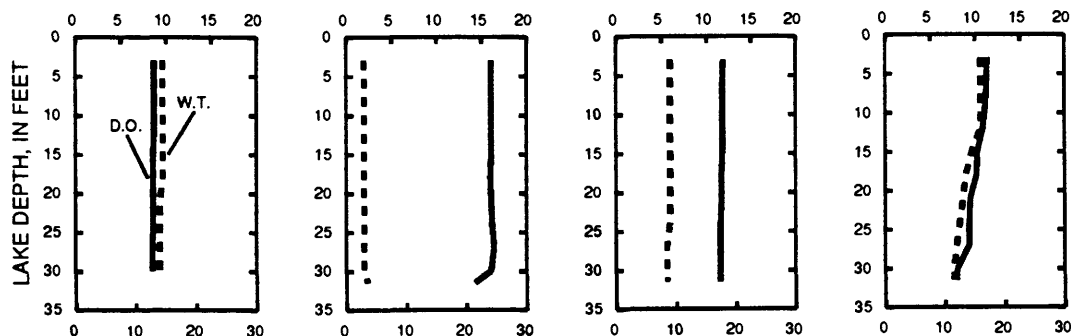
10-12-88

1-26-89

4-25-89

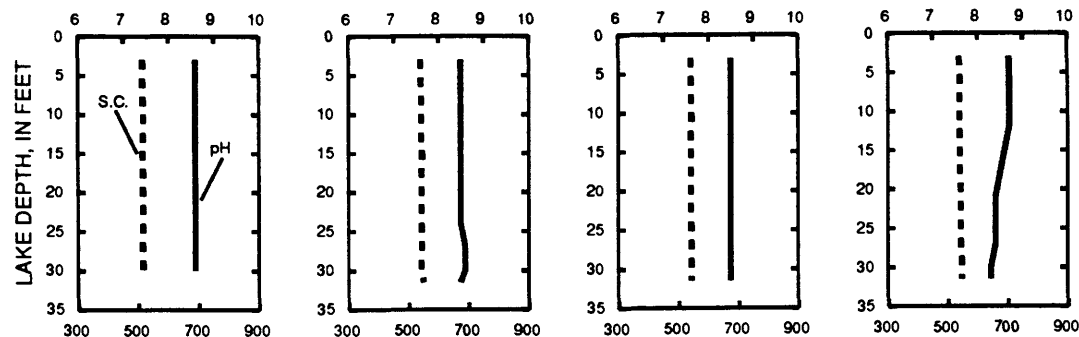
5-24-89

## 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

## ROCK RIVER BASIN

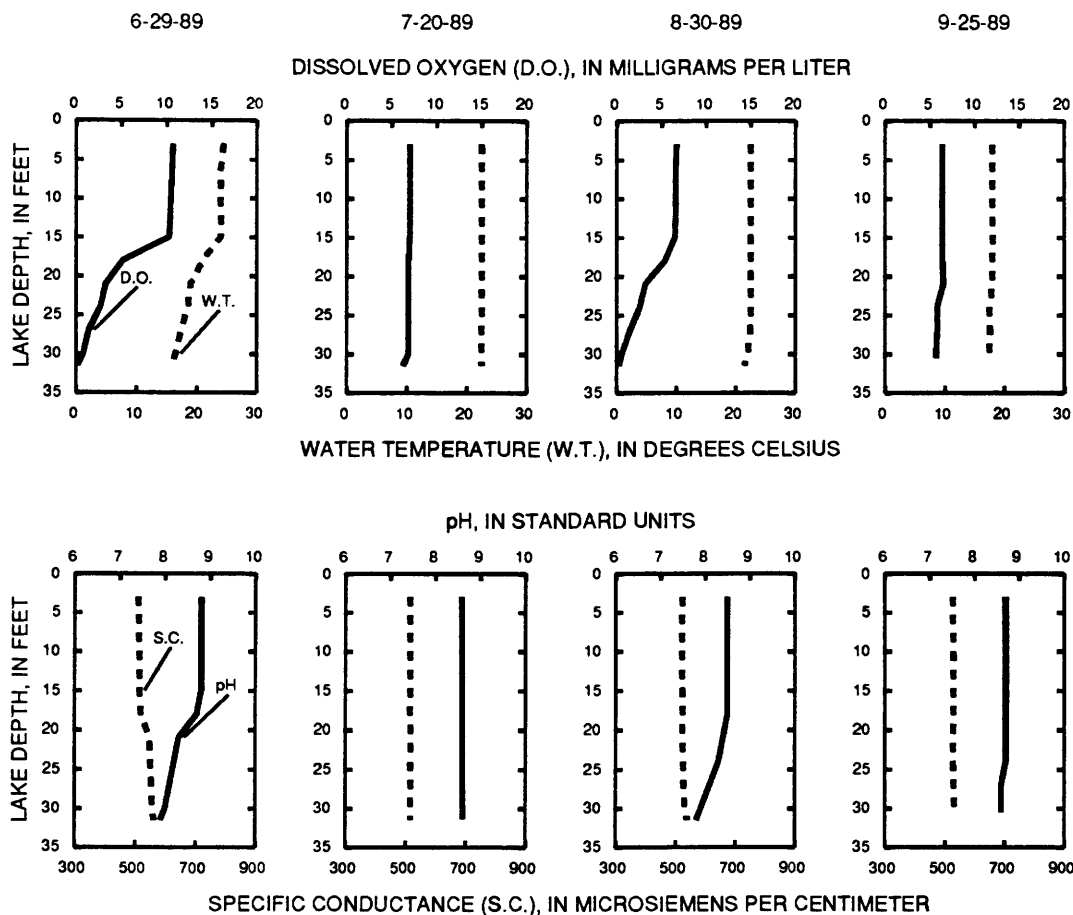
423526088380101 DELAVAN LAKE AT SW END NEAR DELAVAN LAKE, WI--CONTINUED

WATER-QUALITY DATA, JUNE 29 TO SEPTEMBER 25, 1989  
(Milligrams per liter unless otherwise indicated)

	June 29				July 20			
Depth of sample (ft)	1.50	18.0	24.0	31.5	1.50	18.0	27.0	31.5
Lake stage (ft)		4.71				4.62		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	512	520	551	563	515	516	517	517
pH (units)	8.80	8.70	8.20	7.90	8.60	8.60	8.60	8.60
Water temperature ( $^{\circ}\text{C}$ )	24.5	21.0	18.5	16.0	22.5	22.5	22.5	22.5
Secchi-disc (meters)		1.30				1.20		
Dissolved oxygen	10.7	5.2	2.7	0.2	7.0	6.9	6.9	6.3
Total phosphorus (as P)	---	0.030	---	0.183	0.023	0.026	0.032	0.043
Phosphorus, ortho, diss (as P)	---	0.004	---	0.130	0.002	0.001	0.001	0.011
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	5.30	---	---	---	9.90	---	---	---

	Aug. 30				Sep. 25	
Depth of sample (ft)	1.50	21.0	27.0	31.5	1.50	30.5
Lake stage (ft)		4.72				2.79
Specific conductance ( $\mu\text{S}/\text{cm}$ )	522	524	527	539	528	532
pH (units)	8.50	8.40	8.10	7.80	8.70	8.60
Water temperature ( $^{\circ}\text{C}$ )	22.5	22.5	22.5	21.5	18.0	17.5
Secchi-disc (meters)		2.20				2.10
Dissolved oxygen	6.7	3.2	1.5	0.3	6.4	5.7
Total phosphorus (as P)	0.023	0.027	0.025	0.044	0.041	0.037
Phosphorus, ortho, diss (as P)	<0.001	<0.001	0.002	0.014	0.037	0.004
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	*	---	---	---	19.0	---

\*Range 10-20





423556088365001 DELAVAN LAKE AT CENTER NEAR DELAVAN LAKE, WI

LOCATION.--Lat 42°35'60", long 88°36'50", sec.28, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, 2.6 mi southeast of Delavan.

DRAINAGE AREA.--41.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1983 to current year.

REMARKS.--Lake ice-covered during January 26 sampling.

WATER-QUALITY DATA, OCTOBER 12, 1988 TO APRIL 25, 1989  
(Milligrams per liter unless otherwise indicated)

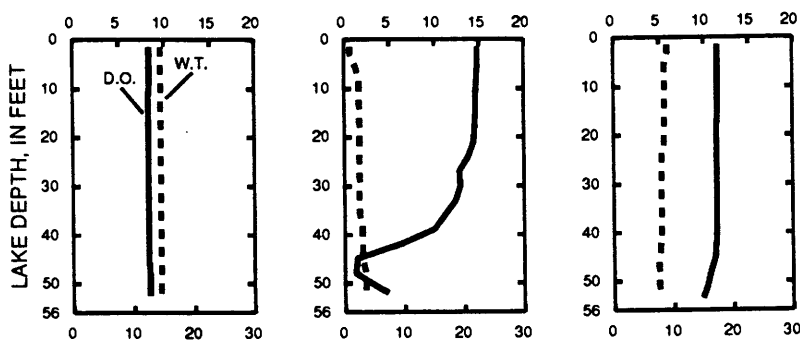
	Oct. 12		Jan. 26		Apr. 25	
Depth of sample (ft)	1.50	52.5	1.50	52.0	1.50	53.5
Lake stage (ft)		4.22		4.48		4.80
Specific conductance (μS/cm)	516	516	552	671	533	542
pH (units)	8.60	8.60	8.70	7.60	8.50	8.40
Water temperature (°C)	14.5	14.5	1.0	3.5	9.0	7.5
Secchi-disc (meters)		0.60		2.40		3.80
Dissolved oxygen	8.4	8.4	14.8	4.8	11.6	9.9
Silica, dissolved (SiO <sub>2</sub> )	---	---	---	---	<0.50	0.50
Nitrogen, nitrate, total (as N)	---	---	---	---	0.280	0.280
Nitrogen, nitrite, total (as N)	---	---	---	---	0.020	0.020
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , total (as N)	---	---	---	---	0.300	0.300
Nitrogen, ammonia, total (as N)	---	---	---	---	0.280	0.450
Nitrogen, organic, total (as N)	---	---	---	---	0.62	0.75
Nitrogen, amm. + org., total (as N)	---	---	---	---	0.90	1.2
Nitrogen, total (as N)	---	---	---	---	1.2	1.5
Total phosphorus (as P)	0.063	0.043	0.064	0.270	0.090	0.146
Phosphorus, ortho, diss (as P)	0.038	0.049	0.028	0.220	0.045	0.076
Chlorophyll a, phyto. (μg/L)	24.0	---	13.0	---	2.00	---

10-12-88

1-26-89

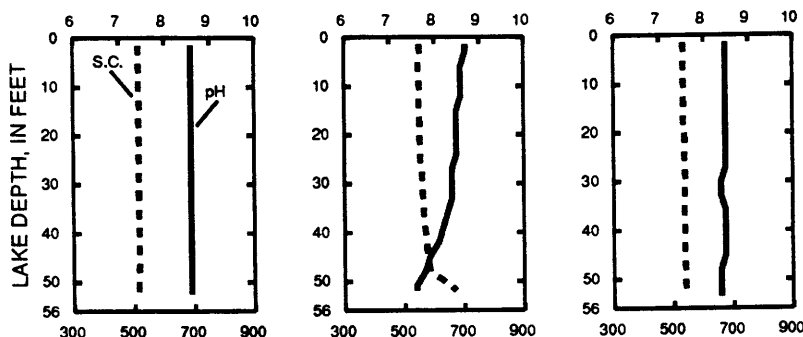
4-25-89

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

## ROCK RIVER BASIN

423556088365001 DELAVAN LAKE AT CENTER NEAR DELAVAN LAKE, WI--CONTINUED

WATER-QUALITY DATA, MAY 24 TO SEPTEMBER 25, 1989  
(Milligrams per liter unless otherwise indicated)

	May 24				June 29		July 20			
Depth of sample (ft)	1.50	15.0	39.0	52.5	1.50	51.5	1.50	30.0	42.0	51.5
Lake stage (ft)		4.62				4.71		4.62		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	532	536	546	551	518	578	516	539	581	592
pH (units)	8.70	8.70	8.20	8.00	8.80	7.70	8.60	8.30	7.60	7.50
Water temperature ( $^{\circ}\text{C}$ )	18.0	17.0	11.0	10.5	24.0	12.0	22.5	21.5	13.0	12.5
Secchi-disc (meters)		3.80				1.50		1.20		
Dissolved oxygen	11.6	10.6	7.3	3.3	10.2	0.2	6.9	4.3	0.3	0.3
Total phosphorus (as P)	0.041	0.051	0.102	0.326	---	---	0.033	0.029	0.309	0.441
Phosphorus, ortho, diss (as P)	0.006	0.009	0.075	0.153	---	---	0.001	0.009	0.240	0.325
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	---	---	---	---	6.30	---	11.0	---	---	---

	Aug. 30				Sep. 25			
Depth of sample (ft)	1.50	30.0	42.0	51.5	1.50	36.0	45.0	50.5
Lake stage (ft)		4.72				2.79		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	520	536	612	642	530	548	635	686
pH (units)	8.60	7.80	7.30	7.20	8.60	8.00	7.30	7.20
Water temperature ( $^{\circ}\text{C}$ )	22.5	21.5	13.5	12.5	18.0	18.0	14.0	12.5
Secchi-disc (meters)		1.80				1.60		
Dissolved oxygen	7.6	0.2	0.2	0.2	6.0	0.4	0.2	0.2
Total phosphorus (as P)	0.027	0.027	0.399	0.675	0.041	0.051	0.086	0.880
Phosphorus, ortho, diss (as P)	0.005	<0.001	0.325	0.580	0.010	0.016	0.041	0.067
Chlorophyll a, phyto. (g/L)	*	---	---	---	18.0	---	---	---

\* Range 10-20

5-24-89

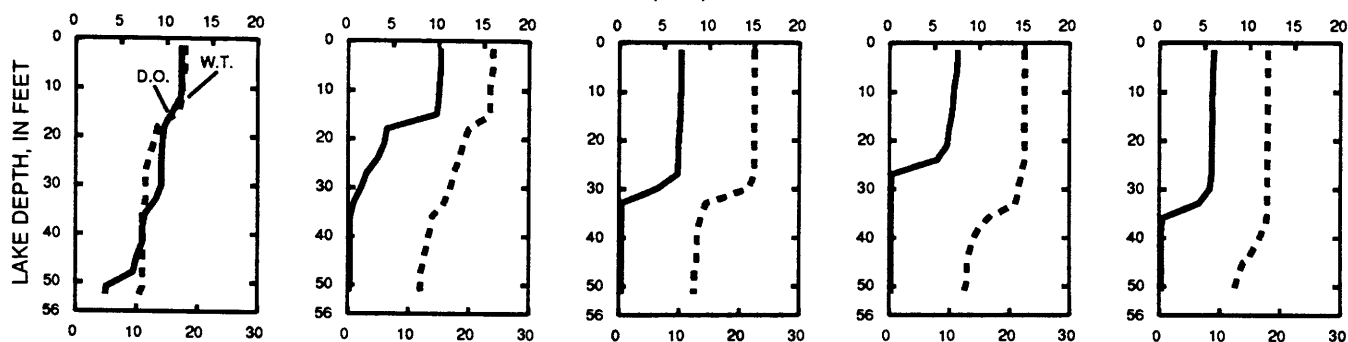
6-29-89

7-20-89

8-30-89

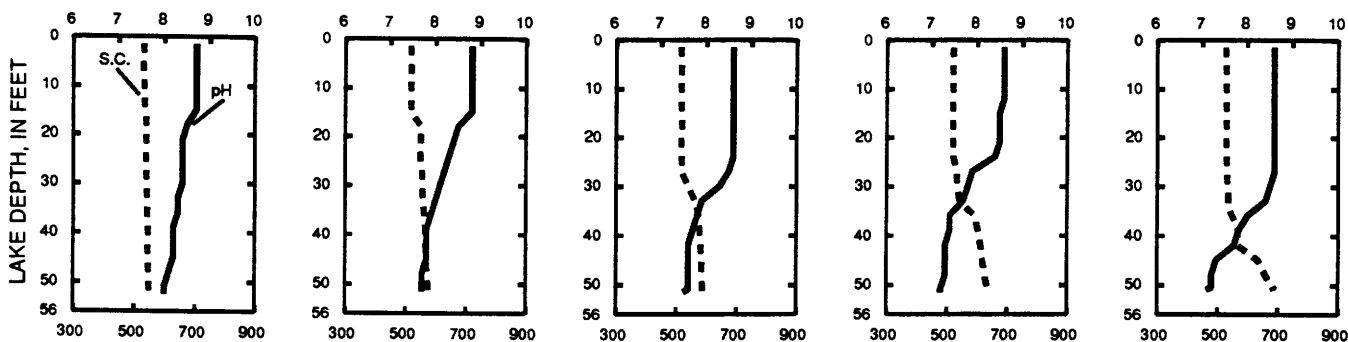
9-25-89

## 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

423659088354401 DELAVAN LAKE AT NORTH END NEAR LAKE LAWN, WI

LOCATION.--Lat 42°36'59", long 88°35'44", sec.22, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, 2.6 mi southeast of Delavan.

DRAINAGE AREA.--41.2 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1983 to current year.

REMARKS.--Lake ice-covered during January 26 sampling.

WATER-QUALITY DATA, OCTOBER 12, 1988 TO JUNE 29, 1989  
(Milligrams per liter unless otherwise indicated)

	Oct. 12		Jan. 26		Apr. 25		May 24			June 29	
Depth of sample (ft)	1.50	32.5	1.50	31.5	1.50	31.5	1.50	27.0	30.5	1.50	31.5
Lake stage (ft)	4.22		4.48		4.80		4.62			4.71	
Specific conductance (μS/cm)	515	516	551	555	542	543	540	544	549	521	573
pH (units)	8.60	8.60	8.60	8.60	8.50	8.40	8.80	8.70	8.30	8.80	7.90
Water temperature (°C)	14.0	13.5	1.5	3.0	9.0	7.5	18.5	18.0	12.0	23.0	14.0
Secchi-disc (meters)	0.60		2.30		3.20		2.20			1.40	
Dissolved oxygen	9.1	8.9	15.5	15.6	11.7	11.1	11.1	10.9	8.0	9.8	0.3
Silica, dissolved (SiO2)	---	---	---	---	<0.50	<0.50	---	---	---	---	---
Nitrogen, nitrate, total (as N)	---	---	---	---	0.280	0.280	---	---	---	---	---
Nitrogen, nitrite, total (as N)	---	---	---	---	0.020	0.020	---	---	---	---	---
Nitrogen, NO2 + NO3, total (as N)	---	---	---	---	0.300	0.300	---	---	---	---	---
Nitrogen, ammonia, total (as N)	---	---	---	---	0.300	0.270	---	---	---	---	---
Nitrogen, organic, total (as N)	---	---	---	---	1.0	1.1	---	---	---	---	---
Nitrogen, amm.+org., total (as N)	---	---	---	---	1.3	1.4	---	---	---	---	---
Nitrogen, total (as N)	---	---	---	---	1.6	1.7	---	---	---	---	---
Total phosphorus (as P)	0.058	0.064	0.057	0.058	0.087	0.080	0.036	0.039	0.200	---	---
Phosphorus, ortho, diss (as P)	0.032	0.028	0.035	0.021	0.049	0.045	0.010	0.008	0.096	---	---
Chlorophyll a, phyto. (μg/L)	33.0	---	12.0	---	1.80	---	---	---	---	7.50	---

10-12-88

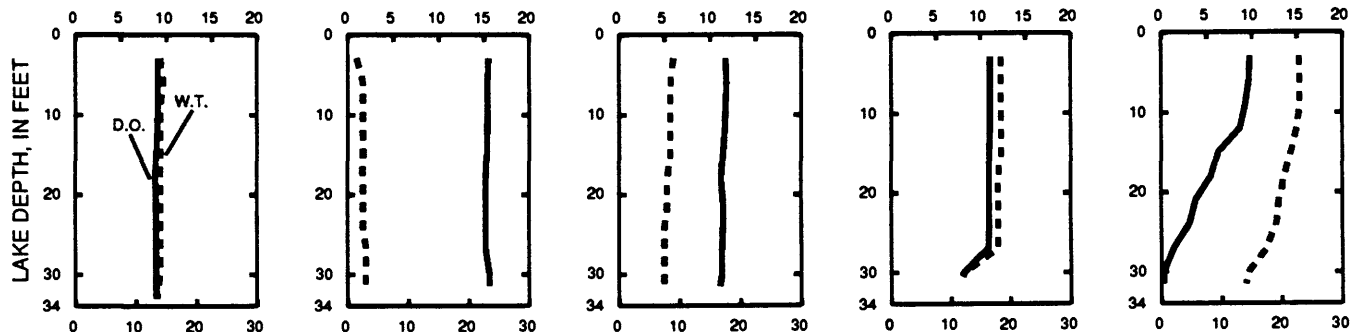
1-26-89

4-25-89

5-24-89

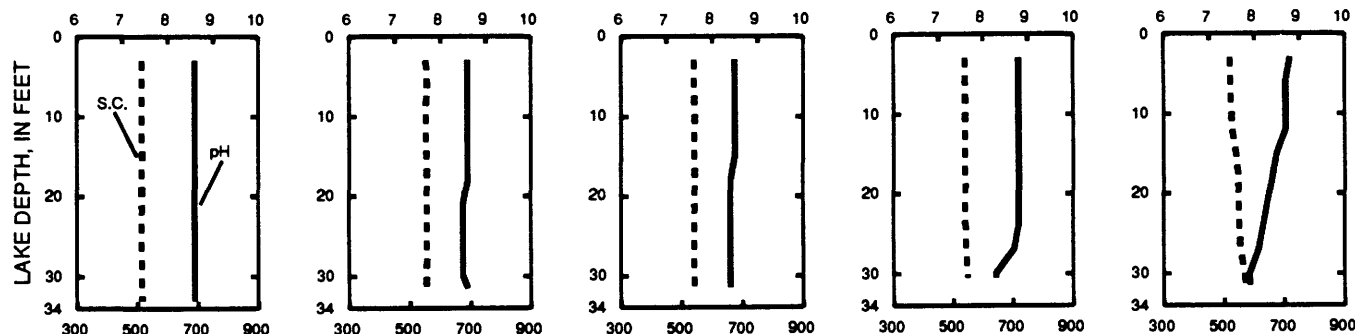
6-29-89

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



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

## pH, IN STANDARD UNITS



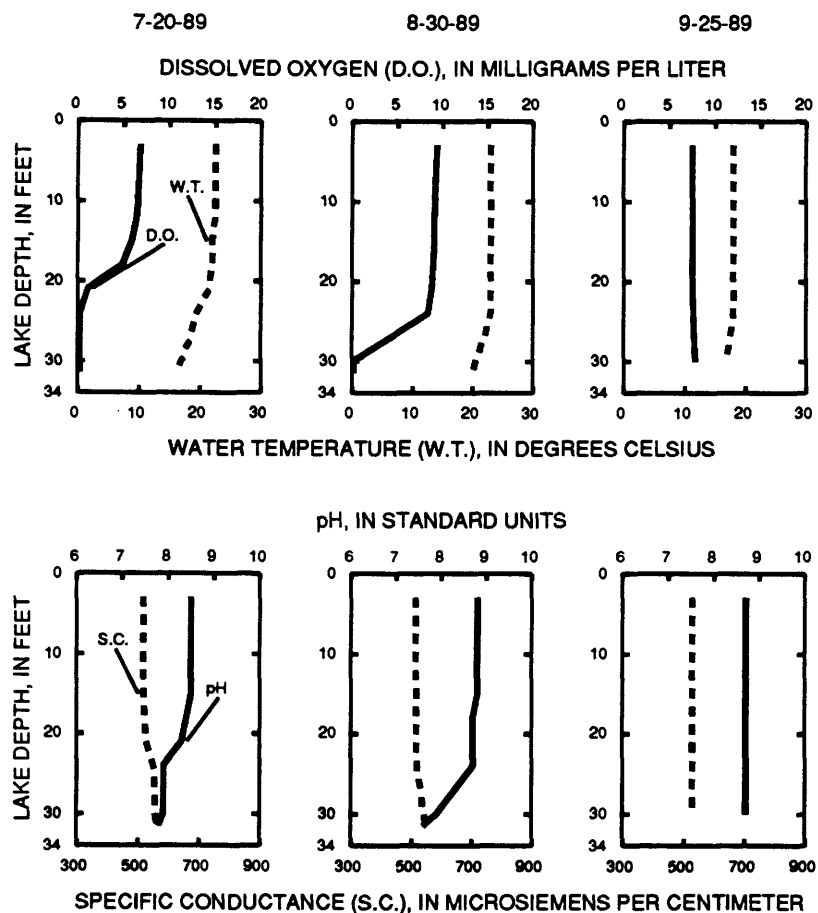
## SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER

423659088354401 DELAVAN LAKE AT NORTH END NEAR LAKE LAWN, WI--CONTINUED

WATER-QUALITY DATA, JULY 20 TO SEPTEMBER 25, 1989  
(Milligrams per liter unless otherwise indicated)

	July 20				Aug. 30				Sep. 25	
Depth of sample (ft)	1.50	21.0	27.0	31.5	1.50	21.0	27.0	31.5	1.50	29.5
Lake stage (ft)		4.62				4.72				2.79
Specific conductance ( $\mu\text{S}/\text{cm}$ )	517	528	556	565	514	517	531	550	528	529
pH (units)	8.50	8.30	7.90	7.80	8.80	8.70	8.30	7.60	8.70	8.70
Water temperature ( $^{\circ}\text{C}$ )	22.5	21.5	18.5	16.0	23.0	23.0	22.0	20.0	18.0	17.0
Secchi-disc (meters)		1.10				1.20				1.30
Dissolved oxygen	6.8	1.1	0.3	0.3	9.4	8.8	4.3	0.2	7.5	7.8
Total phosphorus (as P)	0.029	0.029	0.034	0.157	0.030	0.027	0.030	0.082	0.066	0.039
Phosphorus, ortho, diss (as P)	<0.001	<0.001	0.012	0.116	0.001	<0.001	0.001	0.041	0.011	0.006
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	11.0	---	---	---	*	---	---	---	52.0	---

E Estimated.



## ROCK RIVER BASIN

307

423706088363400 DELAVAN LAKE NEAR DELAVAN, WI

LOCATION.--Lat 42°36'27", long 88°36'19", in SW 1/4 NE 1/4 sec.28, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, at Delavan Lake Sanitary District lift station No. 2 at Delavan Lake Yacht Club, 1.0 mi south-east of outlet, and 2.7 mi southeast of Delavan.

DRAINAGE AREA.--41.4 mi<sup>2</sup>, of which 2.3 mi<sup>2</sup> is non-contributing.

PERIOD OF RECORD.--October 1983 to current year. October 1983 to September 1985 data published in Water Resources Investigation series report "Water Quality and Hydrology of Delavan Lake in Southeastern Wisconsin" by Stephen J. Field and Marvin D. Duerk.

GAGE.--Water-stage recorder. Datum of gage is 922.92 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 5, 1989, staff gage at bridge on North Shore Drive at same datum.

REMARKS.--Lake levels controlled by Town of Delavan. Lake levels drawn down about 0.75 ft during winter operation from October to May. Lake drawn down Sept. 1-30 for rehabilitation project.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.85 ft, Sept. 30, 1986; minimum observed, 1.67 ft, Sept. 30, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 5.08 ft, Aug. 5; minimum observed, 1.67 ft, Sept. 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.26	4.18	4.26	4.28	4.55	4.44	4.92	4.80	4.76	4.69	4.91	5.06
2	4.32	4.16	4.26	4.40	4.55	4.44	4.94	4.72	4.76	4.68	4.92	5.06
3	4.32	4.16	4.25	4.42	4.55	4.44	4.94	4.68	4.77	4.66	4.96	5.02
4	4.30	4.16	4.25	4.42	4.55	4.44	4.96	4.68	4.80	4.68	5.02	5.02
5	4.28	4.20	4.25	4.42	4.54	4.42	4.98	4.68	4.80	4.67	5.08	4.92
6	4.28	4.20	4.24	4.48	4.56	4.46	4.99	4.68	4.80	4.64	5.04	4.69
7	4.28	4.26	4.24	4.48	4.56	4.40	4.98	4.67	4.80	4.62	4.98	4.55
8	4.25	4.26	4.22	4.48	4.56	4.38	4.94	4.66	4.78	4.64	4.90	4.40
9	4.24	4.26	4.22	4.48	4.59	4.36	4.94	4.66	4.80	4.64	4.86	4.40
10	4.24	4.32	4.22	4.46	4.59	4.38	4.99	4.66	4.78	4.64	4.82	4.30
11	4.22	4.32	4.22	4.48	4.59	4.50	4.84	4.65	4.78	4.57	4.81	4.20
12	4.22	4.40	4.22	4.54	4.60	4.64	4.80	4.76	4.80	4.66	4.80	4.10
13	4.20	4.42	4.20	4.56	4.60	4.68	4.78	4.66	4.79	4.58	4.80	4.00
14	4.20	4.40	4.20	4.56	4.60	4.68	4.76	4.68	4.79	4.55	4.80	3.96
15	4.20	4.40	4.18	4.56	4.60	4.70	4.76	4.66	4.78	4.54	4.79	3.86
16	4.19	4.46	4.18	4.58	4.60	4.72	4.76	4.68	4.76	4.52	4.78	---
17	4.20	4.45	4.18	4.56	4.60	4.70	4.80	4.66	4.76	4.52	4.79	---
18	4.20	4.45	4.18	4.58	4.58	4.70	4.78	4.68	4.75	4.52	4.78	---
19	4.20	4.45	4.20	4.56	4.52	4.72	4.79	4.66	4.78	4.62	4.77	3.67
20	4.20	4.45	4.24	4.52	4.50	4.72	4.80	4.62	4.76	4.64	4.77	---
21	4.18	4.40	4.22	4.50	4.50	4.72	4.80	4.64	4.76	4.64	4.77	---
22	4.20	4.35	4.22	4.48	4.50	4.72	4.78	4.66	4.72	4.64	4.75	---
23	4.20	4.34	4.26	4.46	4.50	4.70	4.78	4.68	4.74	4.68	4.75	---
24	4.24	4.34	4.26	4.46	4.46	4.72	4.80	4.66	4.72	4.68	4.75	---
25	4.24	4.30	4.26	4.44	4.48	4.70	4.80	4.70	4.70	4.66	4.70	---
26	4.22	4.34	4.26	4.48	4.48	4.72	4.82	4.70	4.78	4.67	4.66	2.56
27	4.20	4.36	4.30	4.50	4.48	4.74	4.80	4.70	4.80	4.67	4.66	2.34
28	4.20	4.34	4.28	4.48	4.44	4.78	4.86	4.68	4.77	4.76	4.78	2.11
29	4.20	4.28	4.28	4.50	---	4.90	4.82	4.68	4.74	4.76	4.78	1.88
30	4.18	4.28	4.28	4.52	---	4.90	4.80	4.68	4.72	4.90	4.86	1.67
31	4.18	---	4.28	4.52	---	4.92	---	4.71	---	4.90	4.76	---
MEAN	4.23	4.32	4.24	4.49	4.54	4.63	4.85	4.68	4.77	4.65	4.83	---
MAX	4.32	4.46	4.30	4.58	4.60	4.92	4.99	4.80	4.80	4.90	5.08	5.06
MIN	4.18	4.16	4.18	4.28	4.44	4.36	4.76	4.62	4.70	4.52	4.66	1.67

e Estimated

## ROCK RIVER BASIN

05431022 DELAVAN LAKE OUTLET AT BORG ROAD NEAR DELAVAN, WI

LOCATION.--Lat 42°36'53", long 88°37'29", in SW 1/4 SE 1/4 sec.20, T.2 N., R.16 E., Walworth County, Hydrologic Unit 07090001, on right bank 25 ft upstream from bridge on Borg Road, 1.4 mi southeast of Delavan, and 0.2 mi downstream from Delavan Lake dam outlet.

DRAINAGE AREA.--42.1 mi<sup>2</sup>, of which 2.3 mi<sup>2</sup> is non-contributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 920 ft, from topographic map

REMARKS.--Estimated daily discharges: June 21-22, July 4-10, and ice period listed in rating table below. Records good except for estimated daily discharges, which are fair. Flow regulated by dam upstream from station. September flows are artificially high because of lake rehabilitation to draw down Delavan Lake.

AVERAGE DISCHARGE.--6 years, 22.6 ft<sup>3</sup>/s, 7.71 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 228 ft<sup>3</sup>/s Oct. 1, 1986, gage height, 7.92 ft; minimum daily discharge, no flow June 21-22, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 189 ft<sup>3</sup>/s Sept. 5, gage height, 7.93 ft; minimum daily discharge, no flow, June 21-22.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Nov. 19 to Dec. 13; stage-discharge relation affected by ice Dec. 16 to Jan. 19.)

4.92	0.01	5.30	3.0	6.50	47
5.00	0.05	5.40	5.3	7.00	74
5.10	0.35	5.50	8.1	7.50	122
5.20	1.4	6.00	26	8.00	202

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.19	.02	20	.02	3.0	17	10	30	.35	.02	.56	41
2	.21	.01	12	.01	2.9	17	10	30	.09	.02	.43	60
3	.14	.01	12	.01	2.8	18	8.1	14	.13	.01	.33	58
4	.14	.10	12	.01	2.8	18	7.3	7.4	.08	.02	7.3	57
5	.14	.08	12	.01	2.9	18	7.8	7.0	.12	.02	40	108
6	.15	.05	12	.01	2.9	17	7.7	7.1	.14	.02	54	174
7	.12	.03	12	.04	3.1	17	14	6.9	.16	.02	52	158
8	.16	.04	11	.02	3.2	17	24	6.1	.18	.01	51	142
9	.17	.10	11	.01	3.5	17	22	6.1	.14	.02	28	132
10	.17	.11	11	.01	3.7	22	22	6.2	.08	.02	.23	116
11	.13	.03	11	.01	3.7	21	22	5.8	.05	.01	.24	102
12	.10	.06	11	.03	3.6	20	22	5.5	.07	.01	.24	89
13	.05	.04	11	.02	4.2	21	22	6.5	.05	.01	.22	81
14	.05	.03	3.7	.02	3.7	22	10	6.6	.09	.01	.22	75
15	.05	.10	.05	.02	3.9	22	4.7	2.5	.04	.01	.22	63
16	.05	.31	.03	.03	10	22	5.1	.76	.03	.03	.24	37
17	.04	20	.02	4.0	18	21	5.9	.44	.04	.03	.30	30
18	.04	34	.02	18	18	20	5.6	.31	.04	.05	.24	80
19	.03	34	.02	22	18	21	5.8	.36	.04	.04	.23	110
20	.03	33	.03	22	18	21	5.6	.48	.02	.02	.23	114
21	.04	32	.01	22	18	21	6.2	.31	.00	.02	.21	128
22	.04	31	.01	21	17	20	5.4	.69	.00	.01	.22	132
23	.06	30	.02	21	17	20	5.5	.36	.02	.02	.19	103
24	.04	30	.01	13	18	20	5.3	.23	.03	.04	.13	136
25	.03	29	.01	2.7	18	21	6.1	.28	.03	.11	.07	165
26	.03	30	.01	2.7	18	22	6.8	.29	.02	.11	.07	166
27	.03	29	.01	2.4	18	23	7.7	.30	.03	.12	.11	162
28	.03	29	.01	2.6	18	23	23	.35	.02	.04	.17	163
29	.02	29	.01	3.2	---	17	29	.54	.02	.16	.14	167
30	.01	28	.01	3.2	---	11	29	.56	.01	.82	.17	154
31	.01	---	.05	3.4	---	11	---	.54	---	.76	.28	---
TOTAL	2.50	419.12	162.03	163.48	273.9	598	365.6	154.50	2.12	2.61	237.99	3303
MEAN	.081	14.0	5.23	5.27	9.78	19.3	12.2	4.98	.071	.084	7.68	110
MAX	.21	34	20	22	18	23	29	30	.35	.82	54	174
MIN	.01	.01	.01	.01	2.8	11	4.7	.23	.00	.01	.07	30
AC-FT	5.0	831	321	324	543	1190	725	306	4.2	5.2	472	6550
CFSM	.00	.33	.12	.13	.23	.46	.29	.12	.00	.00	.18	2.62
IN.	.00	.37	.14	.14	.24	.53	.32	.14	.00	.00	.21	2.92

CAL YR 1988 TOTAL 4045.28 MEAN 11.1 MAX 91 MIN .01 AC-FT 8020 CFSM .26 IN. 3.57  
WTR YR 1989 TOTAL 5684.85 MEAN 15.6 MAX 174 MIN .00 AC-FT 11280 CFSM .37 IN. 5.02

05431022 DELAVAN LAKE OUTLET AT BORG ROAD NEAR DELAVAN, WI--CONTINUED

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1983 to current year.

PERIOD OF DAILY RECORD.--

TOTAL PHOSPHORUS DISCHARGE: October 1983 to current year.

INSTRUMENTATION.--Automatic pumping sampler from October to December 1983. Observer samples from January 1984 to present.

REMARKS.--Records good.

COOPERATION.--Observer furnished by Delavan Lake Sanitary District.

EXTREMES FOR PERIOD OF RECORD.--

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 4.60 mg/L Apr. 22, 1984; minimum observed, 0.02 mg/L Mar. 31, 1988.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 432 lb May 28, 1984; minimum daily, 0.00 lb Aug. 9, 13, 1987.

EXTREMES FOR CURRENT YEAR.--

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 0.58 mg/L July 31; minimum observed, 0.05 mg/L on several days during current year.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 71.0 lb Sept. 29; minimum daily, less than 0.01 lb on several days during current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT 1988					
03...	0825	--	0.14	0.060	--
13...	0940	--	0.05	0.050	--
17...	0835	--	0.04	0.050	--
NOV					
01...	1040	--	0.02	0.290	--
04...	1530	--	0.23	0.290	--
05...	0925	--	0.08	0.380	--
05...	1600	--	0.08	0.320	--
06...	0830	--	0.05	0.230	--
06...	1540	--	0.05	0.190	--
07...	0820	--	0.03	0.130	--
08...	1100	--	0.03	0.290	--
10...	1030	--	0.11	0.200	--
10...	1510	--	0.11	0.170	--
11...	1035	--	0.03	0.210	--
11...	1510	--	0.03	0.170	--
12...	0930	--	0.03	0.180	--
13...	1029	--	0.03	0.180	--
14...	0835	--	0.03	0.230	--
14...	0836	--	0.03	0.220	--
15...	1140	--	0.04	0.150	--
16...	0835	--	0.26	0.250	--
17...	0905	--	30	0.180	--
17...	1500	--	30	0.160	--
18...	1025	--	35	0.140	--
18...	1510	--	35	0.050	--
19...	0850	--	34	0.050	--
20...	0755	--	33	0.090	--
26...	1040	--	30	0.050	--
26...	1505	--	30	0.090	--
27...	0940	--	28	0.120	--
27...	1520	--	30	0.120	--
28...	0835	--	30	0.080	--
28...	1525	--	29	0.080	--
29...	0955	--	30	0.070	--
29...	1515	--	30	0.070	--
30...	0915	--	28	0.070	--
30...	1430	--	28	0.080	--
DEC					
01...	0945	--	28	0.060	--
JAN 1989					
12...	1015	0.03	--	0.260	--
26...	1550	--	2.8	0.360	--
FEB					
24...	1005	--	18	0.180	--

## ROCK RIVER BASIN

05431022 DELAVAN LAKE OUTLET AT BORG ROAD NEAR DELAVAN, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
MAR 1989					
06...	1105	--	16	0.060	--
07...	0950	--	17	0.070	--
07...	1420	--	17	0.070	--
08...	0905	--	18	0.060	--
14...	1010	--	21	0.170	--
15...	1055	--	22	0.250	--
15...	1520	--	22	0.220	--
16...	0840	--	22	0.250	--
17...	0915	--	21	0.220	--
17...	1500	--	21	0.190	--
18...	0810	--	20	0.210	--
19...	0935	--	21	0.170	--
28...	1415	--	23	0.070	--
28...	1535	--	23	0.070	--
29...	0950	--	24	0.070	--
29...	1510	--	11	0.080	--
30...	0905	--	11	0.070	--
30...	1525	--	11	0.080	--
31...	1105	--	11	0.070	--
31...	1525	--	11	0.060	--
APR					
01...	0935	--	10	0.050	--
02...	0920	--	10	0.060	--
03...	1552	--	7.8	0.060	--
25...	1300	--	7.0	0.100	--
MAY					
23...	1310	--	0.45	0.070	--
JUN					
26...	1040	--	0.02	0.080	--
26...	1425	--	--	--	--
27...	1020	--	0.02	0.070	--
27...	1525	--	0.03	0.070	--
28...	0910	--	0.02	0.070	--
28...	1525	--	0.03	0.070	--
29...	0920	--	0.01	0.080	--
29...	0921	--	0.01	0.060	--
30...	1115	--	0.01	0.160	--
JUL					
10...	0930	0.02	--	0.110	--
10...	1032	0.02	--	0.080	--
10...	1525	0.02	--	0.110	--
11...	0915	--	0.0	0.100	--
12...	0905	--	0.01	0.090	--
13...	0900	--	0.0	0.100	--
19...	1340	--	0.03	0.330	--
20...	1015	--	0.01	0.120	--
20...	1520	--	0.01	0.110	--
20...	1620	--	0.01	0.090	--
21...	0955	--	0.01	0.110	--
22...	0920	--	0.01	0.100	--
22...	1525	--	0.01	0.150	--
23...	0925	--	0.02	0.080	--
24...	0837	--	0.04	0.130	--
28...	1010	--	0.04	0.120	--
28...	1500	--	0.04	0.200	--
29...	0755	--	0.04	0.100	--
29...	1540	--	0.04	0.100	--
30...	0755	--	0.76	0.530	--
30...	1720	--	1.1	0.380	--
31...	0830	--	0.76	0.580	--
31...	1500	--	0.76	0.540	--
AUG					
01...	1000	--	0.56	0.420	--
01...	1515	--	0.56	0.300	--
02...	1010	--	0.29	0.260	--
02...	1025	--	0.29	0.210	--
03...	0930	--	0.32	0.310	--
04...	1140	--	9.4	0.300	--
04...	1520	--	13	0.300	--
05...	1010	--	--	--	--
05...	1525	--	55	0.220	--
06...	0935	--	54	0.180	--



05431022 DELAVAN LAKE OUTLET AT BORG ROAD NEAR DELAVAN, WI--CONTINUED

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
AUG 1989					
06...	1520	--	53	0.130	--
07...	1115	--	52	0.120	--
07...	1315	--	52	0.080	--
08...	1500	--	51	0.080	--
09...	1425	--	1.1	0.120	--
10...	0945	--	0.23	0.150	--
10...	1515	--	0.23	0.120	--
11...	1010	--	0.23	0.100	--
11...	1510	--	0.23	0.120	--
12...	0800	--	0.23	0.070	--
13...	0745	--	0.20	0.100	--
24...	0925	--	0.15	0.120	--
29...	0735	--	0.11	0.280	--
29...	1530	--	--	2.00	--
30...	0855	--	0.14	0.090	3
30...	1535	--	0.11	0.090	--
31...	0910	--	0.26	0.090	--
31...	1450	--	0.26	0.090	--
SEP					
01...	0720	--	4.8	0.430	135
01...	1520	--	60	0.160	--
02...	1020	--	59	0.120	--
02...	1525	--	62	0.080	--
03...	0905	--	61	0.090	--
03...	1510	--	58	0.070	--
04...	0910	--	58	0.080	32
04...	1520	--	57	0.080	--
05...	0804	--	23	0.080	--
05...	0805	--	22	--	20
05...	0825	--	10	0.080	--
05...	1102	--	55	--	26
05...	1103	--	55	0.080	--
05...	1320	--	101	--	28
05...	1321	--	101	0.070	--
05...	1535	--	157	0.080	--
06...	1000	--	174	0.060	21
06...	1530	--	174	0.060	--
08...	1025	--	144	--	24
08...	1525	--	137	0.070	--
09...	1500	--	135	0.050	--
11...	0855	--	104	--	11
11...	1530	--	101	0.070	--
13...	0910	--	82	--	28
13...	1510	--	82	0.090	--
15...	1520	--	62	0.050	--
17...	0910	--	5.3	0.070	--
18...	0845	--	63	--	10
20...	0910	--	101	--	26
22...	0910	--	135	--	21
25...	0837	--	162	--	8
27...	0905	--	164	--	10
29...	1025	--	166	--	11

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

[illegible]

05431486 TURTLE CREEK AT CARVERS ROCK ROAD NEAR CLINTON, WI

LOCATION.--Lat 42°35'50", long 88°49'45", in SW 1/4 sec.27, T.2 N., R.14 E., Rock County, Hydrologic Unit 07090001, on left bank 25 ft downstream from bridge on Carvers Rock Road, 3.3 mi northeast of Clinton, 13 mi northeast of Beloit, and 17.8 mi upstream from mouth.

DRAINAGE AREA.--199 mi<sup>2</sup>, of which 2.33 mi<sup>2</sup> is noncontributing.

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 955: 1940. WSP 1308: 1950(M). WDR WI-71-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 823 ft, from topographic map. September 1939 to December 1979, water-stage recorder at site 1.8 mi downstream at a different datum.

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair. Some seasonal regulation caused by dams used to maintain levels of Turtle and Delavan Lakes. Drawdown of Delavan Lake from Sept. 1 to Nov. 4, 1989, caused an increase in flow by 30 to 174 ft<sup>3</sup>/s during the Sept. 1 to 30 period.

AVERAGE DISCHARGE.--50 years, 124 ft<sup>3</sup>/s, 8.55 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,500 ft<sup>3</sup>/s, Apr. 21, 1973, gage height, 12.85 ft, from rating curve extended above 6,500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum discharge, 8.0 ft<sup>3</sup>/s, Dec. 29, 1956, gage height, 2.04 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,200 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 11	0145	*1,170	*6.98				

Minimum discharge, 17 ft<sup>3</sup>/s, Feb. 3, gage height, 3.12 ft, result of freezeup.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9 to Jan. 19, Jan. 22, and Feb. 2 to Mar. 10.)

3.2	28	5.0	374
3.5	60	6.0	726
4.0	140	7.0	1,180

# DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	55	105	56	99	68	105	107	81	32	80	231
2	62	55	91	54	72	66	95	106	77	31	59	217
3	58	55	81	54	58	70	93	104	58	31	44	155
4	53	60	75	54	64	90	102	86	60	30	111	97
5	60	75	73	54	74	80	105	70	53	28	189	89
6	61	72	72	56	68	78	100	67	49	28	147	129
7	60	72	72	58	64	76	87	65	47	28	101	182
8	57	72	72	66	62	76	89	63	44	28	86	197
9	54	69	72	54	60	84	100	63	42	30	84	211
10	53	96	72	52	60	400	99	60	42	33	82	225
11	50	79	70	56	60	906	99	56	41	30	67	199
12	48	78	70	58	62	431	97	53	44	34	54	193
13	49	90	72	58	70	225	91	53	50	41	46	171
14	52	82	74	58	66	131	89	53	49	38	42	159
15	51	83	72	58	64	152	78	53	46	29	42	142
16	48	144	70	58	60	124	67	51	47	30	41	129
17	49	126	68	60	60	98	71	50	45	29	35	111
18	50	94	68	64	60	87	69	51	42	31	33	86
19	50	108	72	94	60	101	69	54	41	58	33	87
20	49	112	78	121	60	122	67	60	39	89	35	105
21	54	108	66	102	60	112	71	56	35	56	34	129
22	57	92	64	100	60	110	72	51	34	44	33	143
23	62	89	60	97	60	109	71	48	33	40	32	157
24	64	90	56	102	60	107	68	47	32	38	33	153
25	63	90	52	108	68	113	94	47	31	38	33	155
26	63	111	54	157	76	118	85	45	36	36	33	191
27	63	163	84	106	72	129	81	39	39	41	34	212
28	61	140	94	90	68	213	103	39	41	63	43	209
29	58	127	96	100	---	262	119	44	42	66	66	207
30	55	121	76	119	---	190	113	50	39	114	45	207
31	55	---	58	105	---	135	---	61	---	99	34	---
TOTAL	1719	2808	2259	2429	1827	5063	2649	1852	1359	1343	1831	4878
MEAN	55.5	93.6	72.9	78.4	65.2	163	88.3	59.7	45.3	43.3	59.1	163
MAX	64	163	105	157	99	906	119	107	81	114	189	231
MIN	48	55	52	52	58	66	67	39	31	28	32	86
CFSM	.28	.48	.37	.40	.33	.83	.45	.30	.23	.22	.30	.83
IN.	.32	.53	.43	.46	.34	.96	.50	.35	.26	.25	.35	.92

CAL YR 1988	TOTAL 37114	MEAN 101	MAX 1000	MIN 43	CFSM .51	IN. 7.01
WTR YR 1989	TOTAL 30017	MEAN 82.2	MAX 906	MIN 28	CFSM .42	IN. 5.67

## ROCK RIVER BASIN

05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI

LOCATION.--Lat 42°54'01", long 90°22'23", in SW 1/4 SE 1/4 sec.16, T.5 N., R.1 E., Iowa County, Hydrologic Unit 07090003, on the left bank 75 ft upstream from Enloe Road and 2.7 mi east of Livingston.

DRAINAGE AREA.--16.4 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 1,010 ft, from topographic map.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 602 ft<sup>3</sup>/s, Mar. 11, 1989, gage height, 8.21 ft; minimum discharge, 0.86 ft<sup>3</sup>/s, Dec. 24, 25, 1988, gage height, 2.60 ft, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 602 ft<sup>3</sup>/s, Mar. 11, gage height, 8.21 ft; minimum discharge, 0.86 ft<sup>3</sup>/s, Dec. 24, 25, gage height, 2.60 ft, result of freezeup.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Jan. 23 and 28; stage-discharge relation affected by ice Dec. 8 to Jan. 22 and Feb. 2 to Mar. 10.)

2.6	0.86	3.5	26
2.7	1.9	4.0	55
2.9	4.6	4.5	92
3.1	10	5.0	138
		6.0	255

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	4.8	4.9	4.3	10	2.8	4.1	4.9	3.7	2.3	2.5	7.2
2	4.6	4.5	5.9	4.2	6.0	2.8	4.3	4.8	3.6	2.3	2.4	3.5
3	4.3	4.6	5.1	4.2	5.4	2.8	4.2	4.5	4.1	2.4	2.3	2.5
4	4.3	4.9	5.0	4.2	4.8	3.0	4.2	4.7	3.5	2.2	2.5	2.4
5	4.3	5.2	5.1	4.8	4.4	2.9	4.0	4.9	3.2	2.1	4.4	2.4
6	4.2	4.8	4.9	5.8	4.1	2.8	3.9	4.2	3.1	2.0	2.6	2.4
7	4.3	4.9	4.5	5.0	3.8	2.8	3.9	4.2	3.0	2.2	2.2	2.4
8	4.4	5.4	4.3	4.7	3.6	3.0	4.1	4.2	3.1	2.0	2.1	3.4
9	4.5	5.2	4.0	4.7	3.5	15	3.7	4.2	3.1	2.1	2.2	3.9
10	4.6	5.6	3.7	4.8	3.4	120	3.7	3.9	2.9	1.9	2.1	3.4
11	4.3	4.8	3.6	5.0	3.4	214	3.7	3.7	2.8	1.8	2.3	3.0
12	4.2	6.0	3.5	8.0	3.4	45	3.7	3.5	3.6	2.2	2.4	2.8
13	4.3	7.5	3.5	6.0	3.4	26	3.7	3.4	3.2	2.2	2.7	3.0
14	4.4	5.6	3.5	5.4	3.3	50	3.7	3.3	2.8	2.0	2.7	3.1
15	4.4	5.6	3.3	5.4	3.3	15	3.5	3.7	2.8	2.3	2.5	2.9
16	4.8	6.9	3.3	5.0	3.2	8.4	3.8	3.3	2.9	2.4	2.3	2.8
17	4.9	4.9	3.5	4.9	3.2	7.6	3.8	3.3	2.7	1.8	2.3	2.9
18	5.3	4.5	3.6	4.8	3.1	5.2	3.6	3.5	2.7	2.9	2.3	2.8
19	4.5	4.6	3.6	11	3.1	5.6	3.5	3.6	2.6	3.5	2.4	2.8
20	4.3	4.4	3.5	7.0	3.0	4.5	3.6	3.9	2.4	2.7	3.0	2.8
21	5.0	4.2	3.3	3.5	3.0	6.8	3.7	3.2	2.4	2.3	2.7	2.8
22	4.4	4.4	3.3	10	3.0	10	3.5	3.3	2.4	2.4	2.5	2.9
23	5.5	4.4	3.2	16	3.0	10	3.5	3.3	2.4	2.4	2.5	2.8
24	4.6	4.3	2.8	9.1	3.1	6.6	3.3	3.4	2.4	2.3	2.6	2.8
25	4.3	4.3	3.1	5.0	3.2	5.4	32	3.5	2.5	2.3	2.4	2.9
26	4.2	7.2	3.5	6.7	3.1	5.0	5.9	3.2	2.8	2.3	3.6	2.8
27	4.4	5.8	7.0	31	3.0	5.1	5.1	3.0	2.8	2.3	4.7	2.8
28	4.4	4.7	5.6	21	2.9	6.1	10	3.2	2.4	2.1	6.7	2.7
29	4.3	4.4	4.6	68	---	4.9	6.2	5.0	2.3	2.5	4.9	2.8
30	4.5	4.7	4.4	74	---	4.3	5.1	3.8	2.3	2.9	3.4	2.7
31	4.7	---	4.3	74	---	4.1	---	3.9	---	2.7	3.3	---
TOTAL	139.8	153.1	127.4	427.5	105.7	607.5	155.0	118.5	86.5	71.8	89.5	90.4
MEAN	4.51	5.10	4.11	13.8	3.77	19.6	5.17	3.82	2.88	2.32	2.89	3.01
MAX	5.5	7.5	7.0	74	10	214	32	5.0	4.1	3.5	6.7	7.2
MIN	4.2	4.2	2.8	3.5	2.9	2.8	3.3	3.0	2.3	1.8	2.1	2.4

CAL YR 1988 TOTAL 3600.6 MEAN 9.84 MAX 70 MIN 2.8  
WTR YR 1989 TOTAL 2172.7 MEAN 5.95 MAX 214 MIN 1.8

05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI--CONTINUED

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1987 to current year.

DISSOLVED OXYGEN: July 1987 to current year.

INSTRUMENTATION.--Continuous water temperature and dissolved oxygen recorder since July 17, 1987.

REMARKS.--Water-quality analyses by the Wisconsin State Laboratory of Hygiene.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum observed, 35.0°C July 10, 1989; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 18.5 mg/L Apr. 6-7, 1989; minimum observed, 0.5 mg/L July 31, 1987.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 35.0°C July 10; minimum observed, 0.0°C on many days.

DISSOLVED OXYGEN: Maximum observed, 18.5 mg/L Apr. 6-7; minimum observed, 3.1 mg/L July 6-7, 10-11.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	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 (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)
OCT 1988							
05...	1330	85543	--	4.3	765	8.40	12.0
NOV							
30...	0950	85543	--	4.3	755	--	0.5
30...	1000	85543	--	4.3	--	8.15	0.5
JAN 1989							
22...	1730	85543	10	--	--	--	0.0
22...	1830	85543	10	--	--	--	0.0
23...	1115	85543	--	9.1	--	--	1.0
23...	1116	85543	--	9.1	--	--	1.0
23...	1630	85543	--	23	--	--	0.5
23...	1800	85543	--	28	--	--	0.0
29...	0700	85543	--	23	--	--	0.5
29...	1300	85543	--	71	--	--	0.5
29...	1545	85543	--	141	--	--	0.5
30...	0100	85543	--	37	--	--	0.0
30...	1415	85543	--	50	--	--	2.5
30...	1545	85543	--	171	--	--	1.5
30...	1546	85543	--	172	--	--	1.5
30...	1645	85543	--	237	--	--	0.5
30...	1756	85543	--	231	--	--	0.5
30...	1757	85543	--	231	--	--	0.5
30...	2215	85543	--	86	--	--	0.0
31...	0927	85543	--	15	480	--	1.0
31...	1338	85543	--	104	350	--	1.0
31...	1345	85543	--	104	--	--	2.5
31...	1346	85543	--	106	--	--	2.5
31...	1500	85543	--	207	--	--	2.0
31...	1501	85543	--	207	--	--	2.0
31...	1524	85543	--	227	350	--	1.0
31...	1545	85543	--	233	--	--	1.5
31...	1546	85543	--	233	--	--	1.5
31...	2200	85543	--	53	--	--	0.5
FEB							
22...	1550	85543	--	3.0	710	--	0.0
MAR							
11...	1330	85543	--	255	--	--	1.0
11...	1515	85543	--	559	--	--	0.5
11...	2315	85543	--	112	--	--	0.0

## ROCK RIVER BASIN

05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L) (00310)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988							
05...	3.6	13.3	3.1	14	9.20	0.090	0.180
NOV							
30...	--	--	--	--	--	--	--
30...	4.1	14.2	2.5	27	10.0	0.190	0.160
JAN 1989							
22...	270	--	--	1940	--	2.40	--
22...	290	--	<87	1850	--	3.00	--
23...	73	--	<92	476	--	6.60	--
23...	47	--	--	82	--	6.70	--
23...	130	--	--	1070	--	4.50	--
23...	17	--	--	1180	--	4.20	--
29...	96	--	--	276	--	6.60	--
29...	94	--	--	456	--	5.50	--
29...	130	--	--	3160	--	5.80	--
30...	770	--	--	8130	--	6.10	--
30...	300	--	--	2010	--	6.30	--
30...	580	--	--	4930	--	4.60	--
30...	620	--	--	3590	--	4.20	--
30...	920	--	--	8820	--	5.40	--
30...	970	--	--	5580	--	6.80	--
30...	730	--	--	3620	--	6.50	--
30...	750	--	--	2100	--	5.80	--
31...	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--
31...	240	--	--	1870	--	4.20	--
31...	250	--	--	4000	--	4.00	--
31...	490	--	--	3260	--	4.20	--
31...	470	--	--	2650	--	4.10	--
31...	--	--	--	--	--	--	--
31...	540	--	--	3500	--	4.50	--
31...	530	--	--	3110	--	4.40	--
31...	330	--	--	1510	--	4.80	--
FEB							
22...	--	--	--	--	--	--	--
MAR							
11...	380	--	--	2880	--	4.60	--
11...	350	--	--	3720	--	4.40	--
11...	220	--	--	940	--	4.10	--
DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)
APR 1989							
13...	0920	85543	3.6	710	4.0	--	--
20...	0945	85543	3.6	--	8.5	3.0	11.4
25...	0115	85543	43	--	13.5	190	8.1
25...	0145	85543	95	--	13.0	800	6.8
25...	0200	85543	--	--	13.0	--	6.3
25...	0215	85543	179	--	13.5	2200	6.2
25...	0400	85543	113	--	13.0	3000	6.0
25...	0545	85543	47	--	12.0	2100	6.8
MAY							
18...	1345	85543	3.5	700	--	--	--
JUN							
29...	1235	85543	2.2	730	24.0	--	--
JUL							
17...	1230	85543	1.9	745	24.5	--	--
AUG							
02...	1148	85543	2.2	700	24.5	--	--
28...	1330	85543	9.1	--	--	370	--
SEP							
08...	0815	85543	3.4	720	19.0	--	--

## ROCK RIVER BASIN

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05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI--CONTINUED

## WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDEED (MG/L) (00530)	RESIDUE VOLA- TILE, SUS- PENDEED (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,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
APR 1989						
13...	--	--	--	--	--	--
20...	9	--	7.70	<0.020	--	0.070
25...	1190	--	--	0.340	--	--
25...	6030	--	--	1.20	--	--
25...	--	--	--	--	--	--
25...	24300	--	--	2.20	--	--
25...	21000	--	--	2.00	--	--
25...	12200	--	--	1.80	--	--
MAY						
18...	--	--	--	--	--	--
JUN						
29...	--	--	--	--	--	--
JUL						
17...	--	--	--	--	--	--
AUG						
02...	--	--	--	--	--	--
28...	2820	380	4.10	0.800	14	--
SEP						
08...	--	--	--	--	--	--

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	ALA- CHLOR TOTAL RECOVER (UG/L) (77825)	ATRA- ZINE, TOTAL (UG/L) (39630)	CARBO- FURAN WATER WHOLE TOT. REC (UG/L) (82615)	CHLOR- DYRIFOS TOTAL RECOVER (UG/L) (38932)	CYAN- AZINE TOTAL (UG/L) (81757)	FONOFOS (DY- FONATE) WATER WHOLE TOT. REC (UG/L) (82614)	METOLA- CHLOR IN WATER WHOLE (UG/L) (39356)	PHORATE OTAL (UG/L) (39023)	TERBU- FOS (UG/L) (82088)
APR 1989											
25...	0115	43	0.20	0.33	<2.0	<1.0	<0.90	<0.2	<0.20	<0.20	<0.20
25...	0145	95	2.20	0.77	<3.0	<1.0	<0.90	<0.2	0.23	<0.20	<0.20
25...	0200	149	0.30	0.87	<2.0	<1.0	1.1	<0.2	1.30	<0.20	<0.20
25...	0400	113	1.10	1.4	<3.0	<1.0	1.6	<0.2	0.70	<0.20	<0.20

## ROCK RIVER BASIN

05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI--CONTINUED

## WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	20.5	16.5	18.0	8.5	2.0	4.5	1.5	.00	.50	.00	.00	.00
2	19.0	13.5	16.0	7.5	.50	4.0	3.0	.00	1.0	.00	.00	.00
3	16.5	9.0	12.5	11.0	4.0	7.0	4.0	.00	1.5	.00	.00	.00
4	12.0	7.5	10.0	10.5	7.5	8.5	2.5	.00	.50	.00	.00	.00
5	13.0	5.5	9.0	8.5	3.0	6.0	4.0	.00	1.5	.00	.00	.00
6	12.0	5.0	8.5	4.0	.50	2.5	5.5	.00	2.5	.00	.00	.00
7	13.0	4.5	8.5	6.0	1.5	3.5	3.0	.00	1.0	.00	.00	.00
8	13.5	6.5	10.0	9.0	2.5	5.5	.50	.00	.00	.00	.00	.00
9	16.5	10.0	12.5	8.5	5.5	7.0	.00	.00	.00	.00	.00	.00
10	16.5	9.5	12.5	7.5	3.0	5.5	.00	.00	.00	.00	.00	.00
11	12.5	6.5	9.5	7.5	2.0	4.5	.00	.00	.00	.00	.00	.00
12	11.0	3.5	7.0	4.0	2.0	3.0	.00	.00	.00	.00	.00	.00
13	10.5	2.5	6.5	8.5	3.0	5.0	.00	.00	.00	.00	.00	.00
14	15.5	6.0	10.0	8.5	3.5	5.5	.00	.00	.00	.00	.00	.00
15	18.0	9.5	13.5	13.0	6.0	9.0	.00	.00	.00	.00	.00	.00
16	19.5	14.0	16.5	12.5	1.0	5.5	.00	.00	.00	.00	.00	.00
17	15.0	9.0	11.5	5.0	.00	2.0	.00	.00	.00	.50	.00	.50
18	12.5	6.5	9.0	6.5	1.5	4.0	.00	.00	.00	.50	.50	.50
19	11.5	5.0	8.0	6.5	4.0	5.5	.00	.00	.00	1.0	.00	.50
20	8.0	5.0	6.5	4.0	1.0	2.5	.50	.00	.50	.50	.00	.00
21	10.0	6.5	8.5	2.5	.50	1.0	1.0	.00	.00	.50	.00	.00
22	11.5	3.5	7.5	4.0	.00	1.5	1.5	.00	.50	1.5	.00	.50
23	11.0	6.0	8.0	6.5	1.0	3.5	2.5	.50	1.0	1.5	.00	.50
24	8.0	4.0	5.5	8.0	2.5	5.0	2.0	.00	1.0	1.0	.00	.50
25	8.0	1.5	4.5	6.5	3.0	4.5	.00	.00	.00	1.5	.50	1.0
26	8.5	1.0	4.5	8.5	4.0	6.5	.00	.00	.00	2.5	.00	.50
27	7.5	3.5	5.5	6.5	1.5	3.5	.00	.00	.00	1.5	.00	.00
28	7.0	.50	3.5	3.0	.00	1.0	.00	.00	.00	1.5	.00	.50
29	5.5	.00	2.5	2.5	.00	1.5	.00	.00	.00	.50	.00	.50
30	5.5	.00	2.0	2.0	.00	1.0	.00	.00	.00	3.0	.00	.50
31	8.0	.50	3.5	---	---	---	.00	.00	.00	3.0	.50	1.0
MONTH	20.5	.00	8.7	13.0	.00	4.3	5.5	.00	.37	3.0	.00	.23
FEBRUARY			MARCH			APRIL			MAY			
1	2.0	.00	.50	.50	.00	.00	3.5	.00	2.0	11.5	8.0	10.0
2	.00	.00	.00	.00	.00	.00	14.0	2.5	7.5	14.5	6.5	10.5
3	.00	.00	.00	.00	.00	.00	10.5	7.0	8.0	19.5	7.0	13.0
4	.00	.00	.00	.00	.00	.00	12.5	4.5	8.0	13.5	10.0	11.5
5	.00	.00	.00	.00	.00	.00	10.5	6.0	8.0	16.5	8.5	11.5
6	.00	.00	.00	.00	.00	.00	14.0	3.5	8.5	10.5	5.5	7.5
7	.00	.00	.00	.50	.00	.00	14.0	4.5	9.0	17.0	3.5	10.0
8	.00	.00	.00	.50	.00	.00	12.5	5.5	8.5	12.5	8.0	10.5
9	.00	.00	.00	.50	.00	.00	7.0	1.0	4.0	20.5	8.0	13.5
10	.00	.00	.00	.50	.00	.00	9.5	1.0	4.5	21.5	9.0	15.0
11	.00	.00	.00	1.0	.00	.50	12.0	2.0	6.5	22.0	8.5	15.0
12	.00	.00	.00	2.0	.00	.50	14.0	3.5	8.0	22.0	9.5	15.5
13	.00	.00	.00	4.0	.50	1.5	13.0	3.0	8.0	22.5	11.5	16.5
14	.00	.00	.00	2.0	1.0	1.5	16.0	7.0	11.0	21.0	12.5	16.5
15	.00	.00	.00	4.0	.00	1.0	17.5	6.0	11.5	25.5	13.5	18.5
16	.00	.00	.00	4.5	.00	1.5	13.0	8.0	10.5	26.0	14.0	20.0
17	.00	.00	.00	---	---	---	15.5	9.0	11.5	25.0	14.5	20.0
18	.00	.00	.00	---	---	---	17.0	8.5	12.0	19.5	15.5	17.5
19	.00	.00	.00	1.0	.00	.50	19.0	6.5	12.0	20.0	15.5	17.5
20	.50	.00	.00	2.5	.00	1.0	12.5	8.5	10.5	24.0	16.0	19.5
21	.50	.00	.00	4.5	.00	1.5	19.5	8.0	13.5	24.5	13.0	18.5
22	.50	.00	.00	7.5	.00	2.5	13.0	8.0	9.5	24.0	14.0	19.0
23	.50	.00	.00	9.5	1.0	5.0	19.0	7.0	12.0	26.0	14.0	20.0
24	.50	.00	.00	11.0	4.0	7.5	18.5	8.5	13.5	26.0	17.5	21.5
25	.50	.00	.00	13.5	5.0	9.0	20.5	12.0	15.5	26.0	17.0	21.0
26	.50	.00	.00	17.0	5.5	11.0	20.5	12.0	15.5	21.5	14.5	18.0
27	.50	.00	.00	20.0	10.5	15.0	20.0	11.5	15.0	25.0	11.5	18.0
28	.50	.00	.00	14.5	10.5	13.0	14.0	8.5	10.0	21.5	12.5	17.5
29	---	---	---	10.5	6.5	9.0	13.0	8.0	9.5	22.5	15.0	18.5
30	---	---	---	10.0	4.5	7.0	17.5	6.5	11.5	23.0	17.5	20.0
31	---	---	---	5.0	2.0	3.5	---	---	---	21.0	18.5	19.5
MONTH	2.0	.00	.02	---	---	---	20.5	.00	9.8	26.0	3.5	16.2



## 319

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

[illegible]

## ROCK RIVER BASIN

05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI--CONTINUED

## OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	16.0	11.4	13.4	13.9	9.3	11.5
2	---	---	---	---	---	---	16.9	9.6	13.3	14.4	9.6	11.9
3	---	---	---	---	---	---	17.4	9.5	12.3	15.6	8.4	11.9
4	---	---	---	---	---	---	17.6	10.3	13.3	13.5	8.3	10.5
5	---	---	---	---	---	---	18.1	10.3	13.8	15.1	9.2	11.5
6	---	---	---	---	---	---	18.5	10.2	14.3	15.2	9.4	12.0
7	---	---	---	---	---	---	18.5	9.7	13.5	15.9	8.4	12.4
8	---	---	---	---	---	---	16.7	9.6	12.7	15.8	8.4	11.6
9	---	---	---	---	---	---	16.0	10.9	13.6	16.1	7.8	11.8
10	---	---	---	---	---	---	17.4	11.1	14.0	15.5	7.6	11.1
11	---	---	---	---	---	---	16.9	10.3	13.4	14.0	7.1	10.4
12	---	---	---	---	---	---	17.5	10.1	13.3	13.0	6.7	9.6
13	---	---	---	---	---	---	17.1	9.5	13.0	11.7	6.4	8.8
14	---	---	---	---	---	---	16.8	8.9	12.4	12.0	6.6	9.1
15	---	---	---	---	---	---	17.1	8.5	12.3	11.9	5.8	8.7
16	---	---	---	---	---	---	15.0	8.5	11.4	11.8	5.8	8.5
17	---	---	---	---	---	---	16.2	8.6	11.8	12.1	5.8	8.6
18	---	---	---	---	---	---	16.0	8.9	11.7	10.2	5.8	8.1
19	---	---	---	---	---	---	15.9	8.2	11.8	11.0	6.4	8.0
20	---	---	---	---	---	---	14.2	8.2	10.7	11.4	6.1	8.6
21	---	---	---	---	---	---	15.0	7.6	11.0	10.8	5.1	7.1
22	---	---	---	---	---	---	13.6	7.6	10.4	10.8	5.4	8.1
23	---	---	---	---	---	---	14.9	7.8	11.3	12.0	5.5	8.4
24	---	---	---	---	---	---	15.1	7.3	10.9	11.7	5.5	7.9
25	---	---	---	---	---	---	8.4	5.1	6.5	12.2	5.5	8.5
26	---	---	---	---	---	---	9.9	6.8	8.5	12.4	5.5	9.0
27	---	---	---	---	---	---	11.6	8.2	9.6	14.1	6.0	10.0
28	---	---	---	11.8	7.6	9.4	10.0	8.5	9.1	13.5	6.0	9.7
29	---	---	---	14.0	8.5	11.1	11.6	8.7	10.0	9.5	3.8	7.1
30	---	---	---	15.5	9.8	12.2	12.9	9.1	11.2	8.7	3.9	6.1
31	---	---	---	15.8	10.8	13.0	---	---	---	8.0	4.9	6.2
MONTH	---	---	---	---	---	---	18.5	5.1	11.8	16.1	3.8	9.4
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.2	5.3	7.4	12.3	4.5	7.9	12.4	4.5	8.1	---	---	---
2	8.1	4.6	5.9	11.6	3.7	7.1	12.5	4.6	7.8	---	---	---
3	8.5	4.8	6.8	10.6	3.6	6.5	11.8	4.6	7.2	9.2	4.9	6.8
4	7.2	4.8	6.1	10.3	3.5	6.5	11.0	4.0	6.5	9.9	5.5	7.1
5	8.5	4.5	6.7	10.2	3.3	6.4	9.1	4.2	6.4	10.5	5.4	7.4
6	10.2	4.9	7.0	9.9	3.1	6.3	6.8	4.3	5.8	10.5	5.0	7.1
7	10.5	4.6	7.4	11.9	3.1	6.5	9.9	5.6	7.6	9.9	5.4	7.0
8	9.1	4.8	7.2	10.3	3.6	6.9	11.1	5.7	8.0	10.9	5.6	7.4
9	11.5	6.6	8.7	11.1	3.7	6.9	11.0	5.3	7.7	8.2	5.7	7.0
10	11.5	5.4	8.8	11.0	3.1	6.6	---	---	---	10.5	6.6	7.9
11	11.4	5.4	8.2	10.5	3.1	6.2	---	---	---	10.3	6.7	8.3
12	10.0	6.2	7.9	11.2	4.2	7.0	---	---	---	11.8	7.4	9.5
13	11.3	5.3	8.2	11.0	4.3	7.2	---	---	---	12.2	8.2	9.7
14	9.2	5.2	7.1	11.8	5.0	7.9	---	---	---	12.3	7.4	9.6
15	11.1	6.2	8.8	12.5	5.1	7.6	12.9	6.2	8.9	12.8	7.6	9.9
16	11.8	5.6	8.9	12.8	4.8	8.7	14.3	5.6	9.4	13.1	7.6	9.9
17	11.2	5.1	8.2	12.0	4.8	8.3	14.3	5.6	9.3	13.4	7.0	9.7
18	11.3	5.3	7.9	10.8	5.4	7.4	13.5	5.5	8.9	13.4	6.8	9.6
19	11.8	4.1	8.0	8.6	5.6	6.7	14.4	5.6	8.8	13.4	6.5	9.3
20	11.5	4.3	7.6	9.1	4.9	6.8	13.1	5.2	8.0	14.0	6.4	9.3
21	11.6	4.1	7.6	9.2	5.0	6.7	13.9	4.7	8.2	13.2	6.4	9.0
22	11.2	4.2	7.4	9.9	5.5	7.3	13.3	4.1	7.4	13.8	6.3	9.3
23	11.9	4.1	7.6	10.5	5.1	7.5	11.5	4.4	6.9	13.5	8.2	10.1
24	12.1	4.0	7.7	9.8	5.0	7.2	13.5	5.8	8.7	13.7	8.0	10.5
25	11.7	3.8	7.4	11.1	4.6	7.3	13.9	5.7	8.9	14.7	6.6	10.5
26	11.1	4.9	7.6	11.1	4.3	7.2	10.3	5.7	7.2	15.1	7.0	10.6
27	11.9	4.5	7.9	11.2	4.2	7.2	9.2	4.3	6.3	15.4	8.3	11.1
28	12.2	4.2	8.0	11.8	4.3	7.7	6.4	4.1	5.2	16.1	5.9	10.9
29	12.1	4.3	8.0	10.5	5.4	7.7	8.1	4.6	5.8	16.3	5.9	10.4
30	11.2	4.7	7.7	11.1	6.2	8.0	10.3	4.9	7.1	16.2	7.4	10.6
31	---	---	---	12.1	5.0	8.1	---	---	---	---	---	---
MONTH	12.2	3.8	7.7	12.8	3.1	7.2	---	---	---	---	---	---

## ROCK RIVER BASIN

321

05432055 LIVINGSTON BRANCH PECATONICA RIVER NEAR LIVINGSTON, WI--CONTINUED

## PRECIPITATION QUANTITY

PERIOD OF RECORD.--July 1987 to current year (during non-freezing periods).

GAGE.--Micrologger.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.36 in. Aug. 30, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.47 in. July 18.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	---	---	---	---	.07	.17	.00	.00	.00	.22
2	.00	.00	---	---	---	---	.01	.00	.23	.00	.00	.01
3	.02	.00	---	---	---	---	.00	.00	.25	.00	.02	.00
4	.00	.21	---	---	---	---	.00	.13	.01	.00	1.02	.02
5	.00	.01	---	---	---	---	.00	.01	.00	.00	.11	.00
6	.00	.00	---	---	---	---	.00	.00	.00	.00	.00	.01
7	.00	.11	---	---	---	---	.00	.00	.00	.00	.00	.00
8	.00	.00	---	---	---	---	.10	.06	.11	.00	.00	.46
9	.02	.24	---	---	---	---	.00	.05	.00	.00	.00	.36
10	.00	.00	---	---	---	---	.00	.00	.00	.00	.00	.00
11	.00	.00	---	---	---	---	.00	.00	.00	.20	.00	.00
12	.00	.44	---	---	---	---	.00	.00	.70	.00	.00	.04
13	.00	.00	---	---	---	---	.00	.00	.00	.01	.02	.11
14	.00	.00	---	---	---	---	.00	.00	.00	.00	.60	.00
15	.00	.30	---	---	---	---	.00	.20	.06	.02	.00	.01
16	.16	.00	---	---	---	---	.08	.00	.00	.00	.00	.00
17	.41	.00	---	---	---	---	.02	.00	.00	.00	.00	.00
18	.05	.00	---	---	---	---	.00	.32	.00	1.47	.00	.00
19	.00	.05	---	---	---	---	.00	.17	.00	.28	.38	.00
20	.23	.00	---	---	---	---	.11	.01	.00	.00	.00	.00
21	.01	.00	---	---	---	---	.00	.01	.00	.04	.00	.00
22	.07	.00	---	---	---	---	.02	.00	.00	.03	.12	.00
23	.24	.00	---	---	---	---	.00	.00	.00	.02	.00	.00
24	.00	.00	---	---	---	---	.15	.09	.00	.00	.00	.00
25	.00	.00	---	---	---	---	1.42	.00	.09	.00	.00	.00
26	.00	.67	---	---	---	---	.06	.00	.12	.00	.74	.00
27	.07	.00	---	---	---	.00	.03	.00	.00	.00	.02	.00
28	.00	.00	---	---	---	.17	.72	.00	.00	.00	.69	.00
29	.00	.00	---	---	---	.00	.00	.71	.00	.49	.00	.00
30	.00	.00	---	---	---	.00	.00	.07	.00	.00	.00	.00
31	.00	---	---	---	---	.00	---	.27	---	.00	.80	---
TOTAL	1.28	2.03	---	---	---	---	2.79	2.27	1.57	2.56	4.52	1.24

## ROCK RIVER BASIN

05432500 PECATONICA RIVER AT DARLINGTON, WI

LOCATION.--Lat 42°40'40", long 90°07'07", in NE 1/4 sec.3, T.2 N., R.3 E., Lafayette County, Hydrologic Unit 07090003, on right bank in Darlington, 0.3 mi downstream from Vinegar Branch, and 3.6 mi upstream from Otter Creek.

DRAINAGE AREA.--273 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WDR WI-76-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 802.42 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair.

AVERAGE DISCHARGE.--50 years, 186 ft<sup>3</sup>/s, 9.25 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,000 ft<sup>3</sup>/s, July 16, 1950, gage height, 20.71 ft, from rating curve extended above 11,000 ft<sup>3</sup>/s basis of slope-area determination of peak flow; minimum, 17 ft<sup>3</sup>/s, Nov. 29, 1966, gage height, 2.09 ft, result of freezeup; minimum gage height, 1.07 ft, Dec. 6, 1968, result of freezeup.

EXTREMES OUTSIDE OF PERIOD OF RECORD.--Flood of Feb. 21, 1937, reached a stage of 17.6 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 12	1600	*2,410	*13.15	No other peak greater than base discharge.			

Minimum daily discharge, 38 ft<sup>3</sup>/s, July 8, 10.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 9-18, Dec. 25 to Jan. 18, Jan. 21, 22, 26-31, Feb. 4 to Mar. 12, and Mar. 19-21.)

1.4	38	6.0	512
2.0	86	8.0	804
3.0	176	10.0	1,160
4.0	270	12.0	1,830

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71	74	75	84	845	68	105	103	66	43	51	345
2	71	75	67	80	276	68	104	99	64	43	46	155
3	68	74	88	74	157	70	102	95	62	43	44	82
4	66	77	74	72	120	72	99	90	70	43	47	64
5	67	88	74	72	92	74	95	91	62	42	90	58
6	66	88	82	72	84	72	91	92	56	40	80	56
7	67	83	77	72	82	70	89	83	53	39	58	54
8	68	82	55	72	80	68	88	81	52	38	48	58
9	70	85	60	70	80	72	89	82	52	39	45	74
10	71	92	64	70	80	200	81	79	53	38	44	76
11	69	90	60	74	80	960	78	72	51	39	43	64
12	67	84	58	80	78	1800	79	69	65	42	43	56
13	66	99	56	84	78	1330	77	68	85	43	42	54
14	67	102	58	82	78	589	74	67	67	41	43	55
15	69	90	60	80	76	629	74	67	57	39	52	53
16	71	103	58	78	76	255	73	68	56	39	56	50
17	76	103	56	78	74	176	76	65	54	40	47	49
18	82	88	60	78	74	106	79	65	52	47	43	48
19	82	83	67	87	74	100	74	68	51	82	44	46
20	76	82	76	189	72	98	71	73	50	80	56	45
21	80	79	80	170	72	96	74	68	48	59	53	45
22	85	75	73	130	72	136	74	62	47	50	46	44
23	86	75	83	239	70	240	72	61	48	49	45	43
24	92	76	84	291	70	331	69	60	47	48	44	43
25	83	77	82	197	70	244	144	59	46	57	43	42
26	78	93	74	150	70	185	199	59	47	51	47	43
27	74	119	250	170	68	157	106	57	52	45	64	44
28	74	103	310	250	68	150	152	54	50	43	63	43
29	73	88	170	400	---	155	182	55	47	44	82	43
30	70	84	110	700	---	130	123	63	44	61	71	43
31	71	---	90	820	---	117	---	67	---	58	55	---
TOTAL	2276	2611	2731	5165	3216	8818	2893	2242	1654	1465	1635	1975
MEAN	73.4	87.0	88.1	167	115	284	96.4	72.3	55.1	47.3	52.7	65.8
MAX	92	119	310	820	845	1800	199	103	85	82	90	345
MIN	66	74	55	70	68	68	69	54	44	38	42	42
CFSM	.27	.32	.32	.61	.42	1.04	.35	.26	.20	.17	.19	.24
IN.	.31	.36	.37	.70	.44	1.20	.39	.31	.23	.20	.22	.27
CAL YR 1988	TOTAL 45695	MEAN 125	MAX 600	MIN 55	CFSM .46	IN. 6.23						
WTR YR 1989	TOTAL 36681	MEAN 100	MAX 1800	MIN 38	CFSM .37	IN. 5.00						

## 05433000 EAST BRANCH PECATONICA RIVER NEAR BLANCHARDVILLE, WI

LOCATION.--Lat 42°47'10" long 89°51'40", in SE 1/4 sec. 26, T.4 N., R.5 E., Lafayette County, Hydrologic Unit 07090003, on left bank at downstream side of bridge on State Highway 78, 1.8 mi south of Blanchardville and 4.5 mi upstream from Sawmill Creek.

DRAINAGE AREA.--221 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1939 to September 1986, October 1987 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 796.8 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1939, nonrecording gage at bridge 50 ft upstream at same datum.

REMARKS.--Estimated daily discharges: May 28 to June 8 and ice periods listed in rating table below. Records fair except those for estimated daily discharges and the periods Apr. 28-30 and May 6-18 when silt covered the orifice, which are poor.

AVERAGE DISCHARGE.--49 years (1940-86, 1988-89), 145 ft<sup>3</sup>/s, 8.91 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,700 ft<sup>3</sup>/s, Feb. 28, 1948, gage height, 15.74 ft; minimum, 18 ft<sup>3</sup>/s, Nov. 29, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 12	1400	(a)*1,400	(a)*12.97	No other peak greater than base discharge.			
(a) Backwater from ice.							
Minimum daily, 67 ft <sup>3</sup> /s, Sept. 24.							

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Mar. 16, 17, Mar. 21 to May 15, June 13, July 19, 20, Aug. 29, Sept. 1, 2, and Sept. 24-30; stage-discharge relation affected by ice Dec. 8 to Jan. 25, Feb. 2 to Mar. 13, and Mar. 18-20.)

3.6	67	8.0	526
4.0	95	10.0	894
6.0	274	12.0	1,650

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89	93	98	130	536	88	121	122	90	75	76	124
2	90	93	92	120	120	88	120	120	88	74	75	102
3	88	93	101	110	110	90	120	117	86	74	74	81
4	87	96	97	110	100	100	119	114	94	74	75	79
5	86	100	95	100	100	98	117	121	90	73	96	78
6	87	100	96	100	98	94	113	113	86	73	82	77
7	87	97	95	98	98	90	111	108	86	73	76	77
8	88	98	86	98	96	88	110	106	86	72	75	79
9	89	99	86	96	96	98	106	106	89	86	74	84
10	90	106	84	96	94	180	99	101	83	85	73	84
11	89	102	84	96	94	640	100	99	82	74	73	78
12	88	98	88	96	94	1100	100	98	94	76	73	75
13	88	107	92	94	94	540	101	98	113	76	73	75
14	88	103	92	94	94	433	110	98	83	74	77	76
15	89	101	86	94	94	533	106	99	81	73	81	74
16	90	117	84	94	92	195	105	97	81	74	80	73
17	92	109	84	96	92	170	113	94	80	74	74	72
18	95	100	84	100	92	120	108	91	79	80	73	72
19	94	99	96	120	92	110	107	91	79	116	73	71
20	92	99	110	180	92	110	108	91	78	109	82	70
21	96	97	100	140	92	122	112	90	77	81	78	70
22	96	96	100	130	90	133	107	87	77	79	75	70
23	97	96	96	180	90	231	101	87	77	78	76	68
24	100	96	94	200	90	352	99	84	76	77	75	67
25	94	97	94	120	90	248	149	84	76	76	74	68
26	93	106	96	113	88	180	132	84	77	77	75	69
27	93	120	230	124	88	158	117	83	79	75	81	69
28	93	108	290	191	90	151	140	84	77	74	89	68
29	91	101	180	185	---	152	149	86	75	75	120	69
30	91	100	160	436	---	134	129	88	74	89	82	68
31	91	---	140	504	---	126	---	92	---	80	80	---
TOTAL	2821	3027	3410	4445	3096	6952	3429	3033	2493	2446	2440	2287
MEAN	91.0	101	110	143	111	224	114	97.8	83.1	78.9	78.7	76.2
MAX	100	120	290	504	536	1100	149	122	113	116	120	124
MIN	86	93	84	94	88	88	99	83	74	72	73	67
CFSM	.41	.46	.50	.65	.50	1.01	.52	.44	.38	.36	.36	.34
IN.	.47	.51	.57	.75	.52	1.17	.58	.51	.42	.41	.41	.38
CAL YR 1988	TOTAL 49725	MEAN 136	MAX 540	MIN 83	CFSM .61	IN. 8.37						
WTR YR 1989	TOTAL 39879	MEAN 109	MAX 1100	MIN 67	CFSM .49	IN. 6.71						

## ROCK RIVER BASIN

05434500 PECATONICA RIVER AT MARTINTOWN, WI

LOCATION.--Lat 42°30'34", long 89°47'58", in SE 1/4 sec.32, T.1 N., R.6 E., Green County, Hydrologic Unit 07090003, on right bank about 400 ft downstream from highway bridge in Martintown, 0.3 mi upstream from Wisconsin-Illinois State line and 8.8 mi downstream from Skinner Creek.

DRAINAGE AREA.--1,034 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 1308: 1949-50(M). WDR WI-71-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 757.83 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 6, 1940, nonrecording gage at same site and datum. Auxiliary recording gage 1.2 mi downstream, at same datum, which records stage above 7.4 ft.

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except those for ice-affected periods, which are fair. Diurnal fluctuation at low flow caused by powerplant in Argyle, 28.2 mi upstream.

AVERAGE DISCHARGE.--50 years, 452 ft<sup>3</sup>/s, 9.48 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,100 ft<sup>3</sup>/s, July 1, 1969, gage height, 21.46 ft; no flow for part of Dec. 14, 1939.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 14	1800	(a)*4,900	(a)*15.61	No other peak greater than base discharge.			
(a) Backwater from ice.							

Minimum daily discharge, 230 ft<sup>3</sup>/s, Sept. 30.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used Sept. 20-30; stage-discharge relation affected by ice Dec. 10 to Mar. 14, and Mar. 20, 21.)

2.8	217	7.0	1,100
3.0	245	9.0	1,600
4.0	396	11.0	2,140
5.0	626	13.0	2,950
6.0	856	16.0	5,550

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	330	336	359	560	1800	310	578	510	331	254	280	512
2	335	349	350	500	1900	300	544	440	333	258	263	897
3	332	354	337	470	1600	300	522	412	320	249	251	782
4	322	360	356	460	1000	350	507	405	340	249	252	483
5	318	356	354	440	920	450	486	385	328	249	314	350
6	315	380	341	430	800	430	468	381	323	245	431	323
7	317	395	350	420	680	380	447	378	304	247	360	315
8	318	378	343	410	600	350	432	367	293	237	300	318
9	324	376	285	400	540	370	415	360	294	232	275	333
10	327	392	300	390	500	780	399	355	292	243	262	374
11	327	408	320	390	460	1500	384	349	292	255	258	367
12	332	413	350	380	440	1800	388	339	301	243	255	334
13	316	396	360	370	420	2200	379	335	321	247	252	309
14	318	395	360	370	400	4000	370	327	351	246	251	300
15	322	409	350	360	390	4640	368	331	332	243	253	291
16	328	426	340	350	380	3630	366	328	310	235	264	285
17	329	456	330	350	370	2370	367	326	298	236	268	276
18	337	443	330	340	360	1230	372	325	294	249	261	266
19	349	401	340	340	350	781	369	330	290	301	253	259
20	352	382	350	440	350	720	364	333	284	365	263	266
21	353	374	370	460	340	660	361	334	282	349	285	259
22	356	365	380	500	340	623	362	324	268	309	282	261
23	369	359	390	580	330	624	359	314	279	278	260	248
24	379	346	390	820	330	824	349	311	262	259	258	244
25	376	348	390	920	320	1040	359	307	270	262	254	231
26	371	358	390	920	320	979	409	305	269	261	255	241
27	359	406	480	820	310	833	540	298	262	259	271	236
28	343	451	820	860	310	760	512	293	271	258	302	234
29	342	432	1000	1100	---	762	555	294	273	251	302	233
30	341	381	900	1500	---	725	588	302	258	263	324	230
31	337	---	680	1700	---	646	---	321	---	281	314	---
TOTAL	10474	11625	12995	18350	16860	35367	12919	10719	8925	8113	8673	10057
MEAN	338	387	419	592	602	1141	431	346	297	262	280	335
MAX	379	456	1000	1700	1900	4640	588	510	351	365	431	897
MIN	315	336	285	340	310	300	349	293	258	232	251	230
CFSM	.33	.37	.41	.57	.58	1.10	.42	.33	.29	.25	.27	.32
IN.	.38	.42	.47	.66	.61	1.27	.46	.39	.32	.29	.31	.36

CAL YR 1988 TOTAL 199580 MEAN 545 MAX 1900 MIN 285 CFSM .53 IN. 7.18  
WTR YR 1989 TOTAL 165077 MEAN 452 MAX 4640 MIN 230 CFSM .44 IN. 5.94

# ROCK RIVER BASIN

325

05436500 SUGAR RIVER NEAR BRODHEAD, WI

LOCATION.--Lat 42°36'42", long 89°23'53", in SW 1/4 sec.26, T.2 N., R.9 E., Green County, Hydrologic Unit 07090004, on left bank at downstream side of highway bridge, 1.2 mi southwest of Brodhead, and 1.9 mi upstream from Sylvester Creek.

DRAINAGE AREA.--523 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1914 to current year. Monthly discharge only for January and February 1914, published in WSP 1308.

REVISED RECORDS.--WSP 1238: 1914-16, 1918, 1922, 1927, 1933. WSP 1508: 1916-17(M), 1919(M), 1920, 1921(M), 1927-28(M), 1930(M), 1931, 1936(M), 1943(M). WDR WI-71-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 768.14 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 17, 1938, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Ice periods listed in rating tables below. Records good except those for periods of ice effect, which are fair. Some regulation from dam and powerplant upstream.

AVERAGE DISCHARGE.--75 years, 350 ft<sup>3</sup>/s, 9.09 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,800 ft<sup>3</sup>/s, Sept. 13, 1915, gage height, 11.4 ft from floodmarks, from rating curve extended above 7,500 ft<sup>3</sup>/s; minimum, 35 ft<sup>3</sup>/s, Sept. 19, 1959, gage height, -0.16 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft<sup>3</sup>/s and maximum (\*):

DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)	DATE	TIME	DISCHARGE (ft <sup>3</sup> /s)	GAGE HEIGHT (ft)
Mar. 13	2300	*2,740	*6.57	No other peak greater than base discharge.			
Minimum discharge, 127 ft <sup>3</sup> /s, July 9.							

RATING TABLES (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Dec. 11 to Jan. 17 and Feb. 5 to Mar. 10.)

Oct. 1 to Mar. 13				Mar. 14 to Sept. 30			
0.30	176	3.0	944	0.10	123	3.0	922
1.0	328	5.0	1,780	1.0	316	5.0	1,780
2.0	612	7.0	3,080	2.0	592	7.0	3,080

## DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	209	292	410	786	180	393	314	245	146	178	251
2	205	218	275	350	733	180	365	298	262	143	167	296
3	208	217	270	320	495	180	355	282	241	142	159	294
4	200	217	266	290	430	180	348	267	235	139	159	237
5	190	229	262	270	400	180	331	265	231	137	210	215
6	188	234	259	240	350	180	317	262	214	133	268	187
7	186	231	257	240	300	180	306	255	204	133	244	187
8	189	230	249	230	270	180	300	247	195	131	206	195
9	193	237	224	230	250	210	289	229	191	130	189	224
10	201	263	222	230	230	260	279	223	189	164	172	243
11	198	264	220	230	220	906	272	226	187	164	173	252
12	188	265	220	230	220	1780	269	220	188	154	171	225
13	190	265	240	270	210	2640	251	217	187	152	168	211
14	198	272	230	260	210	2470	246	220	193	149	168	203
15	212	285	230	250	200	1900	252	220	190	146	168	201
16	198	354	220	240	200	1450	253	216	185	143	168	195
17	198	356	220	240	190	1050	263	213	183	142	168	189
18	208	333	210	237	190	659	260	210	181	145	160	183
19	231	301	220	260	190	498	258	216	176	168	157	178
20	213	285	230	278	180	440	254	226	179	230	167	173
21	211	277	230	353	180	409	249	218	170	233	179	170
22	214	265	230	317	180	377	250	222	160	207	173	168
23	222	252	230	289	180	382	245	206	160	189	164	160
24	222	253	230	385	180	450	249	198	166	177	169	161
25	223	252	220	434	180	537	250	199	162	168	172	161
26	214	270	210	410	180	541	293	197	147	159	168	162
27	213	328	210	485	180	486	286	193	141	159	167	176
28	211	372	280	478	180	486	324	191	156	156	173	160
29	208	347	430	580	---	524	357	205	149	158	192	159
30	205	314	540	685	---	523	351	272	149	177	199	157
31	211	---	480	715	---	452	---	249	---	186	200	---
TOTAL	6346	8195	8106	10436	7694	20870	8715	7176	5616	4960	5576	5973
MEAN	205	273	261	337	275	673	290	231	187	160	180	199
MAX	231	372	540	715	786	2640	393	314	262	233	268	296
MIN	186	209	210	230	180	180	245	191	141	130	157	157
CFSM	.39	.52	.50	.64	.53	1.29	.56	.44	.36	.31	.34	.38
IN.	.45	.58	.58	.74	.55	1.48	.62	.51	.40	.35	.40	.42
CAL YR 1988	TOTAL 118934	MEAN 325	MAX 1860	MIN 154	CFSM .62	IN. 8.46						
WTR YR 1989	TOTAL 99663	MEAN 273	MAX 2640	MIN 130	CFSM .52	IN. 7.09						

## ROCK RIVER BASIN

05437500 ROCK RIVER AT ROCKTON, IL

LOCATION.--Lat 42°26'55", long 89°04'11", in SW 1/4 NE 1/4 sec.24, T.46 N., R.1 E., Winnebago County, Hydrologic Unit 07090005, on right bank 750 ft downstream from State Highway 75 in Rockton, 1.0 mi downstream from Pecatonica River, and at mile 156.1.

DRAINAGE AREA.--6,363 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1903 to July 1906, October 1906 to March 1909, July 1914 to September 1919, October 1939 to current year. Published as "below mouth of Pecatonica River at Rockton" 1903-9; as "at Rockford" 1914-19. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORD.--WSP 325: 1903-9. WSP 895: 1904(M). WSP 1508: 1915, 1916-17(M). WDR IL-75-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 707.94 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1906, nonrecording gage at site 800 ft upstream at datum about 1 ft higher. Oct. 1, 1906, to Mar. 31, 1909, nonrecording gage at site 800 ft upstream at datum about 2 ft higher. July 30, 1914, to Apr. 30, 1919, nonrecording gage at site at Rockford about 21 mi downstream, at different datum. Oct. 1, 1939, to Aug. 10, 1973, at site 800 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 12, 17, 18, Dec. 27 to Jan. 20, and Feb. 5 to Mar. 13. Water-discharge records good except those for estimated daily discharges, which are poor. Low flow regulated by powerplant above station. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--57 years (water years 1904-5, 1915-19, 1940-89), 4,073 ft<sup>3</sup>/s, 8.69 in/yr, discharge for site at Rockford adjusted for difference in drainage area.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft<sup>3</sup>/s, Mar. 30, 1916, gage height, 13.06 ft, site and datum then in use; minimum daily, 501 ft<sup>3</sup>/s, Sept. 14, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1937 reached a stage of 14.6 ft (backwater from ice), from painted floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,910 ft<sup>3</sup>/s, Mar. 17, gage height, 7.03 ft; minimum daily discharge, 756 ft<sup>3</sup>/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	1560	3080	2350	4700	1750	5890	3130	1480	937	1540	2920
2	1520	1450	3210	2100	4350	1600	6120	3260	1510	841	1450	3420
3	1510	1480	3090	2100	3530	1600	5960	3200	1680	937	1330	3350
4	1490	1550	3050	2350	3020	1700	5850	2820	1780	973	1640	3350
5	1490	1690	2880	2300	2600	2400	5660	2780	1800	1000	2090	3330
6	1480	1730	2900	2200	2200	3100	5600	2480	1720	1100	2040	3240
7	1460	1700	2800	2100	2100	2900	5530	2540	1730	884	2070	3240
8	1360	1860	2890	2100	2600	2600	5360	2430	1780	756	1930	3180
9	1290	1750	2610	2200	2750	2400	5170	2550	1910	954	1870	3450
10	1300	1990	2400	2500	2800	2500	4990	2610	2080	921	1710	3510
11	1450	1780	2020	2300	2750	3300	4980	2460	2070	838	1660	3500
12	1340	2170	2000	2200	2650	4500	4840	2320	2320	1050	1590	3470
13	1340	2130	2250	2100	2550	6200	4810	2330	2430	1080	1670	3420
14	1300	2110	2410	2200	2400	6900	4620	2190	2480	808	1530	3330
15	1270	2320	2280	2100	2300	7630	4370	2170	2540	955	1640	3230
16	1350	2400	2150	2000	2250	8180	4240	2000	2480	873	1880	3030
17	1350	2410	2100	1900	2150	8790	4260	1940	2300	885	1680	2940
18	1500	2480	2000	1900	2100	8120	4160	1950	2260	905	1530	2730
19	1460	2480	2080	1900	2000	7630	4000	1970	2180	1170	1540	2660
20	1450	2430	2150	2000	1950	8090	3810	1850	2220	1490	1530	2500
21	1520	2370	2060	2210	1850	6970	3710	1910	2030	1490	1570	2380
22	1630	2230	2130	2280	1750	5800	3800	1870	1950	1540	1460	2350
23	1550	2230	2100	2310	1700	5340	3680	1820	1890	1460	1450	2290
24	1550	2240	2120	2430	1650	5200	3450	1700	1750	1380	1420	2020
25	1610	2260	2180	2740	1800	5250	3560	1580	1710	1310	1470	1990
26	1680	2320	1950	3060	1750	5480	3360	1510	1710	1390	1520	1780
27	1680	2560	1900	3320	1700	5870	3190	1380	1490	1430	1460	1800
28	1620	2680	1900	3310	1800	6210	3420	1400	1330	1480	1480	1600
29	1500	3010	1900	3490	---	6770	3540	1440	1210	1450	1590	1500
30	1660	3140	2300	3900	---	6760	3340	1470	1210	1560	1630	1480
31	1560	---	2600	4440	---	6610	---	1580	---	1460	1690	---
TOTAL	45670	64510	73490	76390	67750	158150	135270	66640	57030	35307	50660	82990
MEAN	1473	2150	2371	2464	2420	5102	4509	2150	1901	1139	1634	2766
MAX	1680	3140	3210	4440	4700	8790	6120	3260	2540	1560	2090	3510
MIN	1270	1450	1900	1900	1650	1600	3190	1380	1210	756	1330	1480
CFSM	.23	.34	.37	.39	.38	.80	.71	.34	.30	.18	.26	.43
IN.	.27	.38	.43	.45	.40	.92	.79	.39	.33	.21	.30	.49

CAL YR 1988 TOTAL 1218000 MEAN 3328 MAX 12000 MIN 1040 CFSM .52 IN. 7.12  
WTR YR 1989 TOTAL 913857 MEAN 2504 MAX 8790 MIN 756 CFSM .39 IN. 5.34



## ILLINOIS RIVER BASIN

327

05527800 DES PLAINES RIVER AT RUSSELL, IL

LOCATION.--Lat 42°29'22", long 87°55'32", in SE 1/4 sec.3, T.46 N., R.11 E., Lake County, Hydrologic Unit 07120004, on right bank at upstream side of Russell Road bridge, 0.3 mi west of Russell, 7.2 mi upstream from Mill Creek, and at mile 109.3.

DRAINAGE AREA.--123 mi<sup>2</sup>.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1961-63, and annual maximum, water years 1962-66. June 1967 to current year.

REVISED RECORDS.--WDR IL-75-1: Drainage area. WDR IL-76-1: 1960-68(M), 1973(M).

GAGE.--Water-stage recorder. Datum of gage is 662.00 ft above National Geodetic Vertical Datum of 1929. Oct. 17, 1961, to June 29, 1967, crest-stage gage at left downstream side of bridge at datum 4.29 ft higher.

REMARKS.--Estimated daily discharges: Dec. 28 to Mar. 10 and Sept. 15-30. Water-discharge records fair except those for estimated daily discharges, which are poor. Gage-height telemeter at station.

AVERAGE DISCHARGE.--22 years, 96.8 ft<sup>3</sup>/s, 10.69 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 ft<sup>3</sup>/s, Mar. 21, 1979, gage height, 9.69 ft; maximum gage height, 10.75 ft, Mar. 6, 1976, and Sept. 27, 1986; no flow at times during several years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 155 ft<sup>3</sup>/s, Sept. 7, gage height, 5.42 ft; no flow for several days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	6.4	40	23	27	9.5	120	24	24	5.8	30	39
2	.03	6.6	38	21	28	9.5	117	22	26	3.6	31	87
3	.04	9.3	37	20	25	9.5	107	20	26	3.0	27	104
4	.01	14	34	19	22	10	97	19	27	3.2	27	118
5	.00	18	34	18	20	11	86	19	22	3.9	31	131
6	.00	18	33	20	17	12	77	17	6.8	4.3	32	144
7	.00	18	32	21	15	13	69	17	3.1	5.4	32	151
8	.00	21	32	22	13	15	62	16	2.4	7.5	33	152
9	.00	24	30	23	12	25	55	15	2.0	5.8	31	151
10	.00	29	31	25	12	40	48	14	1.8	5.7	23	142
11	.05	32	29	28	11	69	44	13	2.7	4.8	12	128
12	.05	33	28	29	11	87	39	14	5.1	4.7	6.2	106
13	.00	34	28	28	11	100	37	14	7.9	5.1	3.0	88
14	.00	34	29	26	11	106	32	14	10	6.5	1.9	73
15	.00	33	29	23	10	126	28	16	12	8.0	2.3	60
16	.00	39	27	22	10	119	28	17	14	9.0	1.5	45
17	.26	44	26	24	10	108	26	18	16	8.6	1.2	35
18	.52	47	25	23	10	98	24	20	16	9.9	.99	25
19	.32	52	24	22	9.5	75	23	22	3.9	11	.75	18
20	.24	52	26	21	9.5	64	23	22	1.6	13	.79	13
21	1.6	46	26	20	9.5	58	21	22	1.2	15	.92	11
22	.48	42	26	20	9.5	53	19	22	1.3	16	1.9	8.0
23	.59	38	27	20	9.0	50	18	22	2.0	18	2.1	6.0
24	1.1	36	27	20	9.0	48	18	22	3.2	17	2.1	4.0
25	1.5	33	25	20	9.0	48	20	26	7.7	15	2.3	3.0
26	1.4	34	26	21	9.5	54	22	27	13	14	2.1	2.5
27	2.0	37	27	22	9.5	62	25	27	20	14	2.4	2.0
28	4.3	41	26	23	9.5	72	26	25	23	15	4.8	1.5
29	5.3	42	25	24	---	85	29	22	15	17	15	1.2
30	5.5	42	24	25	---	102	29	22	9.4	21	23	1.0
31	6.4	---	25	26	---	115	---	23	---	28	19	---
TOTAL	31.69	955.3	896	699	368.5	1853.5	1369	613	326.1	318.8	403.25	1850.2
MEAN	1.02	31.8	28.9	22.5	13.2	59.8	45.6	19.8	10.9	10.3	13.0	61.7
MAX	6.4	52	40	29	28	126	120	27	27	28	33	152
MIN	.00	6.4	24	18	9.0	9.5	18	13	1.2	3.0	.75	1.0
CFSM	.01	.26	.23	.18	.11	.49	.37	.16	.09	.08	.11	.50
IN.	.01	.29	.27	.21	.11	.56	.41	.19	.10	.10	.12	.56
CAL YR 1988	TOTAL 23220.92	MEAN 63.4	MAX 438	MIN .00	CFSM .52	IN. 7.02						
WTR YR 1989	TOTAL 9684.34	MEAN 26.5	MAX 152	MIN .00	CFSM .22	IN. 2.93						

## ILLINOIS RIVER BASIN

05543830 FOX RIVER AT WAUKESHA, WI

LOCATION.--Lat 43°00'17", long 88°14'37", in SW 1/4 sec.3, T.6 N., R.18 E., Waukesha County, Hydrologic Unit 07120006, on left bank 20 ft downstream from Prairie Street bridge in Waukesha, 1.0 mi downstream from dam and 3.2 mi downstream from Pewaukee River.

DRAINAGE AREA.--126 mi<sup>2</sup>.

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

GAGE.--Water-stage recorder. Datum of gage is 793.04 ft above National Geodetic Vertical Datum of 1929 (levels by city of Waukesha).

REMARKS.--Estimated daily discharge: Ice periods listed in rating table below. Records good except for ice-affected periods, which are fair. There is occasional regulation from mill dam 1.0 mi upstream.

AVERAGE DISCHARGE.--26 years, 98.6 ft<sup>3</sup>/s, 10.63 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,260 ft<sup>3</sup>/s, Apr. 22, 1973, gage height, 7.42 ft; minimum, 3.0 ft<sup>3</sup>/s, Jan. 1, 1964, gage height, 1.52 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 759 ft<sup>3</sup>/s, July 27, gage height, 5.34 ft; minimum daily, 25 ft<sup>3</sup>/s, Oct. 9, 13, and Dec. 22.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Stage-discharge relation affected by ice Feb. 4-12 and Feb. 16 to Mar. 6.)

2.6	21	3.2	117
2.8	39	3.5	182
3.0	74	4.0	308

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	31	76	45	114	34	182	113	197	33	196	139
2	44	31	63	43	88	33	146	100	183	29	153	134
3	37	31	66	41	73	33	115	84	135	28	129	118
4	31	45	60	39	54	37	118	73	129	27	146	101
5	28	55	57	39	48	36	118	40	109	26	236	88
6	27	55	52	41	43	37	112	58	86	28	227	88
7	26	54	81	51	41	38	104	51	67	28	209	97
8	26	48	60	62	39	38	98	52	52	26	162	91
9	25	62	44	52	38	44	90	56	44	148	122	163
10	27	112	41	44	38	78	84	53	45	104	108	202
11	27	100	39	43	38	165	77	51	36	79	63	212
12	26	91	36	52	39	213	75	48	45	57	84	148
13	25	97	36	47	41	193	70	45	54	54	115	174
14	26	85	40	44	42	205	68	43	54	43	99	170
15	26	73	39	42	41	239	68	44	49	37	90	153
16	27	129	38	41	38	222	65	45	50	36	85	138
17	37	133	35	41	37	173	70	45	45	35	76	120
18	36	101	33	41	37	121	72	43	38	51	68	106
19	33	81	35	44	38	110	70	43	36	200	60	91
20	27	74	43	47	38	98	69	43	34	244	101	83
21	30	65	30	43	37	76	66	40	32	210	91	78
22	30	62	25	43	36	75	64	38	31	147	166	73
23	48	58	50	45	35	104	62	35	31	114	167	68
24	54	57	52	50	35	167	60	31	29	44	135	64
25	42	53	45	56	36	194	139	38	28	53	113	61
26	37	96	43	77	38	199	131	37	47	54	92	58
27	35	114	80	70	36	209	112	32	73	170	80	30
28	33	110	85	67	35	238	105	29	57	224	86	50
29	32	98	66	73	---	261	107	33	44	222	87	52
30	31	87	54	90	---	242	114	150	38	228	80	48
31	31	---	47	99	---	215	---	173	---	250	77	---
TOTAL	1003	2288	1551	1612	1253	4127	2831	1766	1898	3029	3703	3198
MEAN	32.4	76.3	50.0	52.0	44.7	133	94.4	57.0	63.3	97.7	119	107
MAX	54	133	85	99	114	261	182	173	197	250	236	212
MIN	25	31	25	39	35	33	60	29	28	26	60	30
CFSM	.26	.61	.40	.41	.36	1.06	.75	.45	.50	.78	.95	.85
IN.	.30	.68	.46	.48	.37	1.22	.84	.52	.56	.89	1.09	.94

CAL YR 1988 TOTAL 28402.9 MEAN 77.6 MAX 697 MIN 9.9 CFSM .62 IN. 8.39  
WTR YR 1989 TOTAL 28259 MEAN 77.4 MAX 261 MIN 25 CFSM .61 IN. 8.34

## ILLINOIS RIVER BASIN

329

05544200 MUKWONAGO RIVER AT MUKWONAGO, WI

LOCATION.--Lat 42°51'24", long 88°19'40", in NE 1/4 NE 1/4 sec.35, T.5 N., R.18 E., Waukesha County, Hydrologic Unit 07120006, on left bank 100 ft upstream from bridge on State Highway 83 in Mukwonago, 100 ft downstream from railroad bridge, and 800 ft downstream from dam.

DRAINAGE AREA.--74.1 mi<sup>2</sup>.

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

REVISED RECORDS.--WDR WI-79-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 779.23 ft above National Geodetic Vertical Datum of 1929 (South-eastern Wisconsin Regional Planning Commission bench mark). Prior to Oct. 19, 1981, at datum 0.85 ft higher.

REMARKS.--No estimated daily discharges. Records good. Discharge affected by manipulation of gates at dams 800 ft and 11.4 mi upstream.

AVERAGE DISCHARGE.--16 years, 57.6 ft<sup>3</sup>/s, 10.56 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 300 ft<sup>3</sup>/s, Mar. 5, 1976, gage height, 2.50 ft; maximum gage height, 3.55 ft, Sept. 29, 1986; minimum daily, 1.8 ft<sup>3</sup>/s, Dec. 23, 1976.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 240 ft<sup>3</sup>/s, Sept. 1, gage height, 3.28 ft; minimum daily, 6.5 ft<sup>3</sup>/s, Nov. 6.

RATING TABLE (gage height, in feet, and discharge, in cubic feet per second).  
(Shifting-control method used July 26 to Sept. 30.)

1.7	6	2.4	64
1.8	8	2.7	126
2.0	15	3.0	199
2.2	34	3.3	271

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	6.8	66	36	45	26	76	43	21	12	166	174
2	34	6.8	63	26	45	26	74	41	23	12	108	204
3	35	6.8	61	27	55	27	70	39	22	12	82	201
4	37	7.0	59	27	63	30	69	38	25	12	104	176
5	37	6.6	43	28	58	31	67	40	40	11	70	152
6	34	6.5	36	30	54	47	64	38	39	10	49	146
7	32	7.0	36	31	50	53	62	37	39	10	51	85
8	30	9.6	35	33	47	50	61	35	34	10	52	63
9	28	19	35	33	45	48	59	34	33	13	50	113
10	28	51	34	35	44	47	54	33	30	13	49	128
11	27	63	33	33	42	52	51	33	26	13	51	78
12	26	66	33	34	42	58	47	26	25	13	53	58
13	25	70	33	33	42	64	38	22	25	13	49	58
14	25	91	34	32	42	66	33	22	24	13	37	59
15	25	98	34	33	42	67	33	22	24	13	30	59
16	24	119	34	32	41	68	33	22	24	12	30	59
17	21	112	37	32	41	84	29	23	24	12	28	55
18	25	67	37	32	41	87	28	23	23	12	27	49
19	23	53	37	32	40	81	30	24	23	22	26	46
20	23	54	37	31	40	77	32	26	17	28	29	45
21	27	54	36	32	24	72	33	26	11	31	30	44
22	30	54	35	33	15	69	33	25	10	36	19	46
23	31	54	37	34	16	66	33	24	11	52	14	46
24	31	53	37	34	16	64	26	23	11	70	15	41
25	32	53	37	34	19	63	26	19	11	59	15	38
26	32	57	38	35	21	62	28	20	11	44	16	19
27	22	59	59	37	23	50	31	13	12	60	17	12
28	8.2	70	63	37	25	50	39	12	13	76	18	13
29	6.8	72	59	38	---	57	47	14	12	45	18	14
30	6.8	70	57	40	---	70	47	16	12	125	19	14
31	6.9	---	55	44	---	78	---	18	---	166	22	---
TOTAL	805.7	1516.1	1330	1028	1078	1790	1353	831	655	1030	1344	2295
MEAN	26.0	50.5	42.9	33.2	38.5	57.7	45.1	26.8	21.8	33.2	43.4	76.5
MAX	37	119	66	44	63	87	76	43	40	166	166	204
MIN	6.8	6.5	33	26	15	26	26	12	10	10	14	12
CFSM	.35	.68	.58	.45	.52	.78	.61	.36	.29	.45	.59	1.03
IN.	.40	.76	.67	.52	.54	.90	.68	.42	.33	.52	.67	1.15

CAL YR 1988 TOTAL 15959.8 MEAN 43.6 MAX 150 MIN 6.5 CFSM .59 IN. 8.01  
WTR YR 1989 TOTAL 15055.8 MEAN 41.2 MAX 204 MIN 6.5 CFSM .56 IN. 7.56

## ILLINOIS RIVER BASIN

425425088083500 LITTLE MUSKEGO LAKE AT MUSKEGO, WI

LOCATION.--Lat 42°54'25", long 88°08'35", in SE 1/4 NW 1/4 sec.9, T.5 N., R.20 E., Waukesha County, Hydrologic Unit 07120006, at Muskego.

DRAINAGE AREA.--11.6 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

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

GAGE.--Staff gage at lake inlet. Datum of gage is 693.40 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Lake levels controlled at dam outlet. Lake levels drawn down approximately 1.5 ft from October through April. Published previously as station number 425450088083500.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage-height observed, 99.75 ft, Aug. 17, 1987; minimum observed, 97.42 ft, Jan. 21, Feb. 4, and Mar. 15, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage-height observed, 99.47 ft, Sept. 9; minimum observed, 97.42 ft, Jan. 21, Feb. 4, and Mar. 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98.93	98.19	---	---	97.69	97.47	97.52	98.53	98.83	98.71	99.27	99.17
2	---	98.17	---	---	---	---	97.52	98.55	98.85	98.71	99.11	99.07
3	---	98.17	97.87	---	---	---	97.62	98.59	98.83	98.69	98.93	98.87
4	---	98.23	---	---	97.42	---	97.77	98.61	98.83	98.67	98.87	98.87
5	---	98.27	---	---	---	---	97.92	98.61	98.81	98.67	98.87	98.87
6	---	98.27	---	---	---	---	98.06	98.61	98.85	98.67	98.87	98.97
7	---	98.27	---	97.57	---	---	98.08	98.61	98.77	98.67	98.91	98.87
8	98.47	98.33	---	---	---	97.47	98.09	98.55	98.77	98.67	99.09	98.87
9	98.41	98.33	---	---	---	---	98.09	98.61	98.75	98.77	98.87	99.47
10	98.35	98.36	97.87	---	---	---	98.11	98.61	98.75	98.74	98.87	99.37
11	98.29	98.36	---	---	97.47	---	98.15	98.61	98.75	98.77	98.87	99.27
12	98.23	98.43	---	---	---	---	98.13	98.61	98.77	98.77	98.87	99.27
13	98.13	98.45	---	---	---	---	98.15	98.61	98.77	98.77	98.89	99.16
14	98.07	98.46	---	97.52	---	---	98.17	98.62	98.77	98.77	98.87	99.17
15	98.03	98.47	---	---	---	97.42	98.18	98.62	98.77	98.77	98.87	99.07
16	97.99	98.49	---	---	---	---	98.19	98.62	98.77	98.77	98.87	99.07
17	97.99	98.48	97.77	---	---	---	98.21	98.62	98.77	98.77	98.87	99.07
18	97.99	98.45	---	---	97.47	---	98.22	98.62	98.77	98.81	98.85	98.97
19	98.05	98.45	---	---	---	---	98.23	98.63	98.77	98.87	98.87	98.97
20	---	98.45	---	---	---	---	98.23	98.63	98.76	98.93	98.87	98.97
21	---	98.43	---	97.42	---	---	98.25	98.63	98.77	98.97	98.85	98.87
22	---	98.39	---	---	---	97.47	98.25	98.63	98.77	98.97	98.87	98.87
23	---	98.34	---	---	---	---	98.27	98.64	98.75	98.97	98.87	98.87
24	---	98.32	97.57	---	---	---	98.27	98.65	98.75	97.96	98.87	98.87
25	---	98.29	---	---	97.52	---	98.37	98.65	98.77	98.97	98.87	98.87
26	98.13	98.27	---	---	---	---	98.41	98.67	98.79	98.87	98.87	98.87
27	98.17	98.25	---	---	---	---	98.44	98.68	98.77	99.11	98.87	98.80
28	98.17	98.25	---	97.47	---	---	98.47	98.69	98.77	99.07	98.87	98.87
29	98.17	98.23	---	---	---	97.52	98.48	98.68	98.73	99.07	98.87	98.87
30	98.17	98.21	---	---	---	---	98.52	98.75	98.73	99.07	98.87	98.87
31	98.17	---	97.57	---	---	---	---	98.83	---	99.27	98.87	---
MAX	98.93	98.49	97.87	97.57	97.69	97.52	98.52	98.83	98.85	99.27	99.27	99.47
MIN	97.99	98.17	97.57	97.42	97.42	97.42	97.52	98.53	98.73	97.96	98.85	98.80

425425088083500 LITTLE MUSKEGO LAKE AT MUSKEGO, WI--CONTINUED

## WATER-QUALITY RECORDS

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

REMARKS.--Lake sampled about 1,000 ft north-northwest of dam outlet at an approximate lake depth of 65 ft. An aeration system in the lake may disrupt the physical and chemical measurements in the lake. Water-quality analyses by Wisconsin State Laboratory of Hygiene. February sampling during ice cover. Published previously as station number 425450088083500.

WATER-QUALITY DATA, OCTOBER 18, 1988 TO MAY 8, 1989  
(Milligrams per liter unless otherwise indicated)

	Oct. 18		Feb. 01		Apr. 11		May 08		
Depth of sample (ft)	1.50	65.0	1.50	62.0	1.50	67.0	1.50	55.0	66.0
Lake stage (ft)	97.99		97.69		98.15		98.55		
Specific conductance (µS/cm)	614	615	655	721	665	670	662	662	668
pH (units)	8.50	8.50	8.30	7.70	7.60	8.00	8.30	8.10	7.60
Water temperature (°C)	13.0	12.5	1.5	3.5	5.0	4.5	12.0	9.5	7.5
Color (Pt-Co. scale)	---	---	---	---	10	15	---	---	---
Turbidity (NTU)	---	---	---	---	2.1	2.8	---	---	---
Secchi-disc (meters)	---	1.20	---	2.60	---	1.50	---	1.80	---
Dissolved oxygen	11.2	10.1	12.7	0.8	12.8	10.7	11.8	9.1	1.6
Hardness, as CaCO <sub>3</sub>	---	---	---	---	250	250	---	---	---
Calcium, dissolved (Ca)	---	---	---	---	46	45	---	---	---
Magnesium, dissolved (Mg)	---	---	---	---	34	33	---	---	---
Sodium, dissolved (Na)	---	---	---	---	38	37	---	---	---
Potassium, dissolved (K)	---	---	---	---	2.2	2.2	---	---	---
Alkalinity, as CaCO <sub>3</sub>	---	---	---	---	197	200	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	---	---	---	---	43	43	---	---	---
Fluoride, dissolved (F)	---	---	---	---	0.1	0.1	---	---	---
Chloride, dissolved (Cl)	---	---	---	---	72	73	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	---	---	---	---	1.6	1.6	---	---	---
Solids, dissolved, at 180°C	---	---	---	---	372	372	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	<0.020	<0.020	---	---	0.260	0.260	---	---	---
Nitrogen, ammonia, dissolved (as N)	<0.020	<0.020	---	---	0.050	0.060	---	---	---
Nitrogen, amm. + org., total (as N)	0.90	0.80	---	---	0.80	0.70	---	---	---
Total phosphorus (as P)	0.024	0.060	0.026	0.210	0.033	0.030	0.040	0.030	0.080
Phosphorus, ortho, diss (as P)	0.005	0.005	0.003	0.175	0.003	0.003	0.002	0.003	0.012
Iron, dissolved (Fe) µg/L	---	---	---	---	<50	<50	---	---	---
Manganese, dissolved (Mn) µg/L	---	---	---	---	<40	<40	---	---	---
Chlorophyll a, phyto. (µg/L)	42.0	---	6.00	---	16.0	---	13.0	---	---

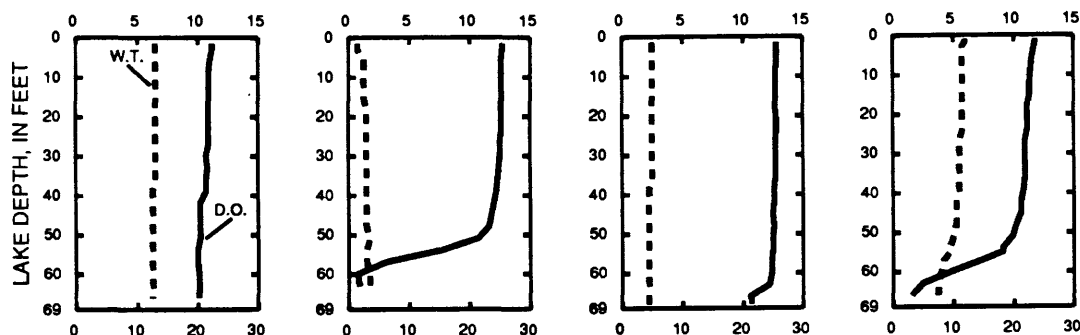
10-18-88

2-1-89

4-11-89

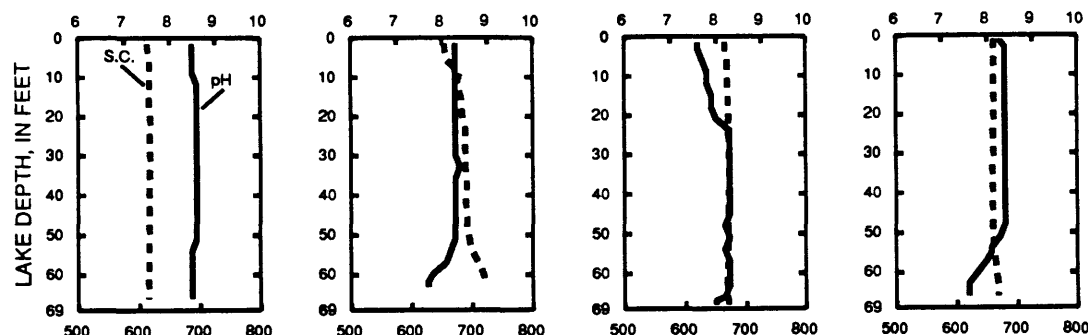
5-8-89

## 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

425425088083500 LITTLE MUSKEGO LAKE AT MUSKEGO, WI--CONTINUED

WATER-QUALITY DATA, MAY 23 TO JUNE 20, 1989  
(Milligrams per liter unless otherwise indicated)

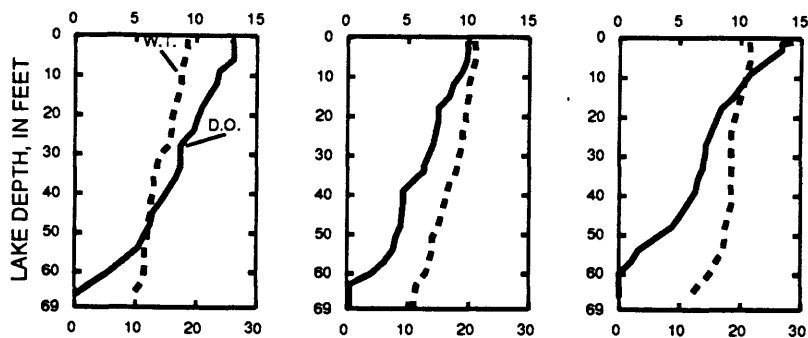
	May 23			June 06			June 20		
Depth of sample (ft)	1.50	28.0	66.0	1.50	34.0	67.0	1.50	60.0	66.0
Lake stage (ft)	98.64			98.85			98.76		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	652	655	677	644	656	685	634	670	691
pH (units)	8.50	8.30	7.50	8.40	8.20	7.50	8.70	7.60	7.50
Water temperature ( $^{\circ}\text{C}$ )	18.5	15.5	9.5	21.0	18.0	11.0	21.5	15.0	11.5
Secchi-disc (meters)	1.30			1.90			0.70		
Dissolved oxygen	13.1	8.7	0	9.9	6.3	0.2	13.4	0	0
Total phosphorus (as P)	0.040	0.030	0.130	0.012	0.013	0.105	0.014	0.052	0.086
Phosphorus, ortho, diss (as P)	0.003	0.003	0.090	0.005	0.013	0.156	0.004	0.045	0.073
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	28.0	---	---	10.0	---	---	81.0	---	---

5-23-89

6-6-89

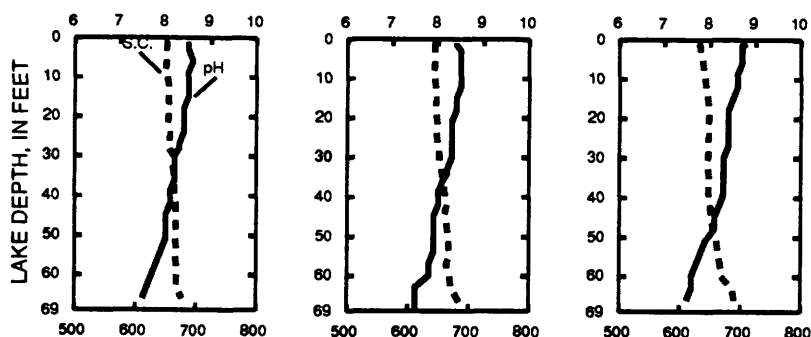
6-20-89

## 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

## 425425088083500 LITTLE MUSKEGO LAKE AT MUSKEGO, WI--CONTINUED

WATER-QUALITY DATA, JULY 10 TO AUGUST 8, 1989  
(Milligrams per liter unless otherwise indicated)

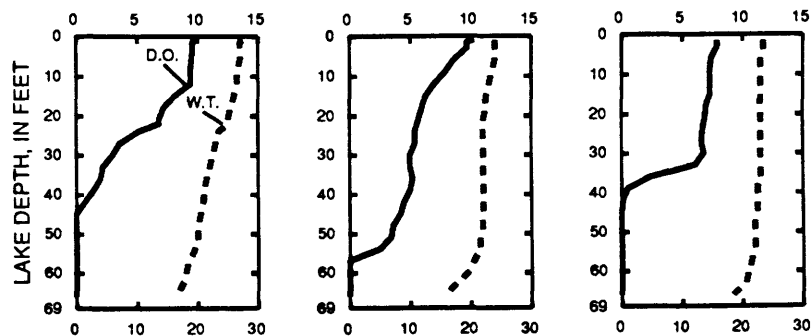
	July 10			July 24			Aug. 08		
Depth of sample (ft)	1.50	22.0	65.0	1.50	60.0	66.0	1.50	45.0	66.0
Lake stage (ft)	98.74			98.96			99.09		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	596	603	651	624	655	701	603	617	674
pH (units)	8.70	8.40	7.30	8.50	7.60	7.20	8.50	7.60	7.20
Water temperature ( $^{\circ}\text{C}$ )	27.0	25.0	16.5	24.0	19.5	15.5	23.5	22.5	18.5
Secchi-disc (meters)	1.00			1.30			0.80		
Dissolved oxygen	9.6	6.8	0	9.7	0	0	7.9	0	0
Total phosphorus (as P)	0.034	0.023	0.130	0.061	0.040	0.120	0.047	0.046	0.400
Phosphorus, ortho, diss (as P)	0.003	0.004	0.103	0.003	0.019	0.091	0.004	0.033	0.360
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	38.0	---	---	50.0	---	---	40.0	---	---

7-10-89

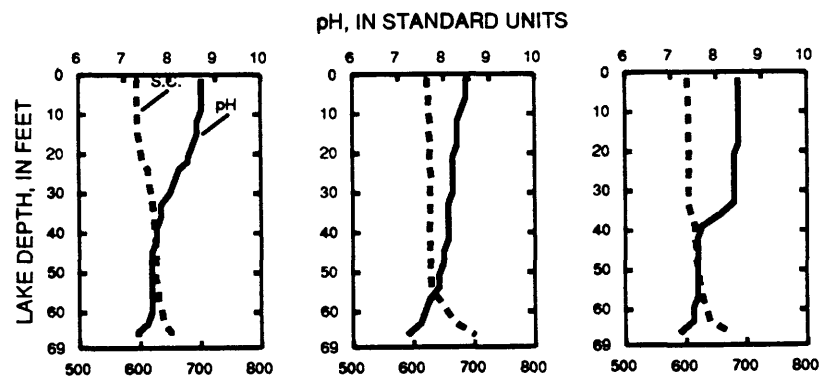
7-24-89

8-8-89

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



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



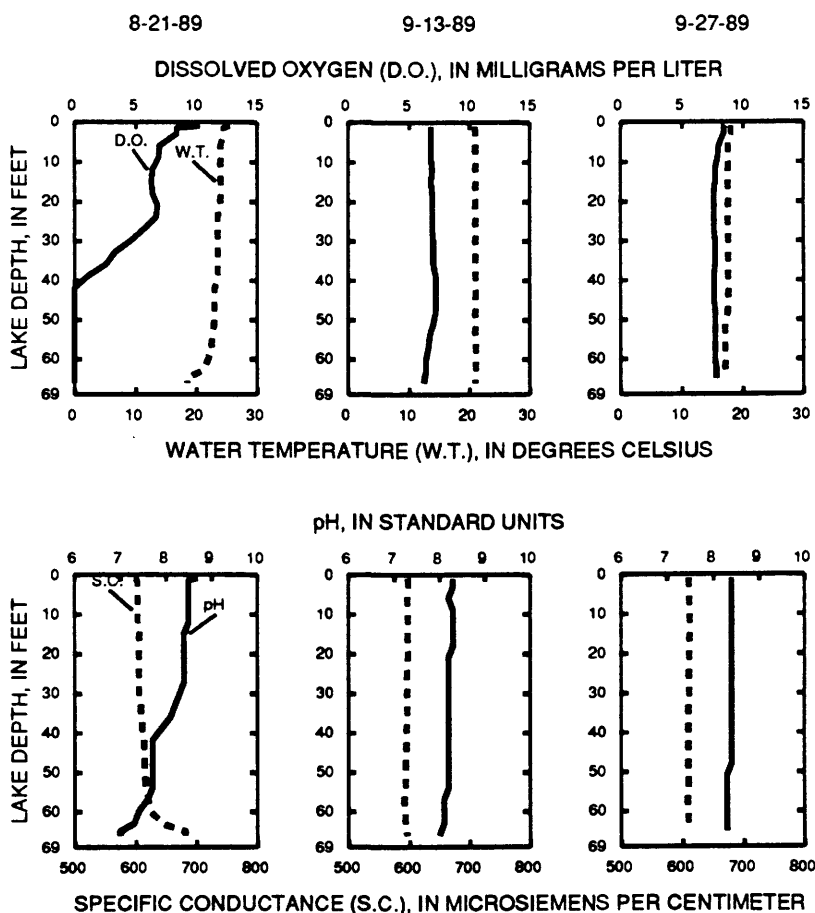
## SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER

## ILLINOIS RIVER BASIN

425425088083500 LITTLE MUSKEGO LAKE AT MUSKEGO, WI--CONTINUED

WATER-QUALITY DATA, AUGUST 21 TO SEPTEMBER 27, 1989  
(Milligrams per liter unless otherwise indicated)

	Aug. 21			Sep. 13		Sep. 27	
Depth of sample (ft)	1.50	42.0	65.0	1.50	66.0	1.50	64.0
Lake stage (ft)	98.85			99.16		98.80	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	603	613	682	598	596	611	609
pH (units)	8.50	7.70	7.00	8.30	8.00	8.40	8.30
Water temperature ( $^{\circ}\text{C}$ )	24.5	23.0	18.5	21.0	21.0	18.0	17.0
Secchi-disc (meters)		0.70			0.80		1.20
Dissolved oxygen	8.4	0	0	6.8	6.2	8.4	7.8
Total phosphorus (as P)	0.044	0.030	0.160	0.050	0.052	0.035	0.040
Phosphorus, ortho, diss (as P)	0.003	0.004	0.122	0.004	0.006	0.004	0.006
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	57.0	---	---	44.0	---	26.0	---





425344088070100 BIG MUSKEGO LAKE, BASS BAY, NEAR MUSKEGO, WI

LOCATION.--Lat 42°53'44", long 88°07'01", in SW 1/4 NE 1/4 sec.15, T.5 N., R.20 E., Waukesha County, Hydrologic Unit 07120006, 1.3 mi southeast of Muskego.

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

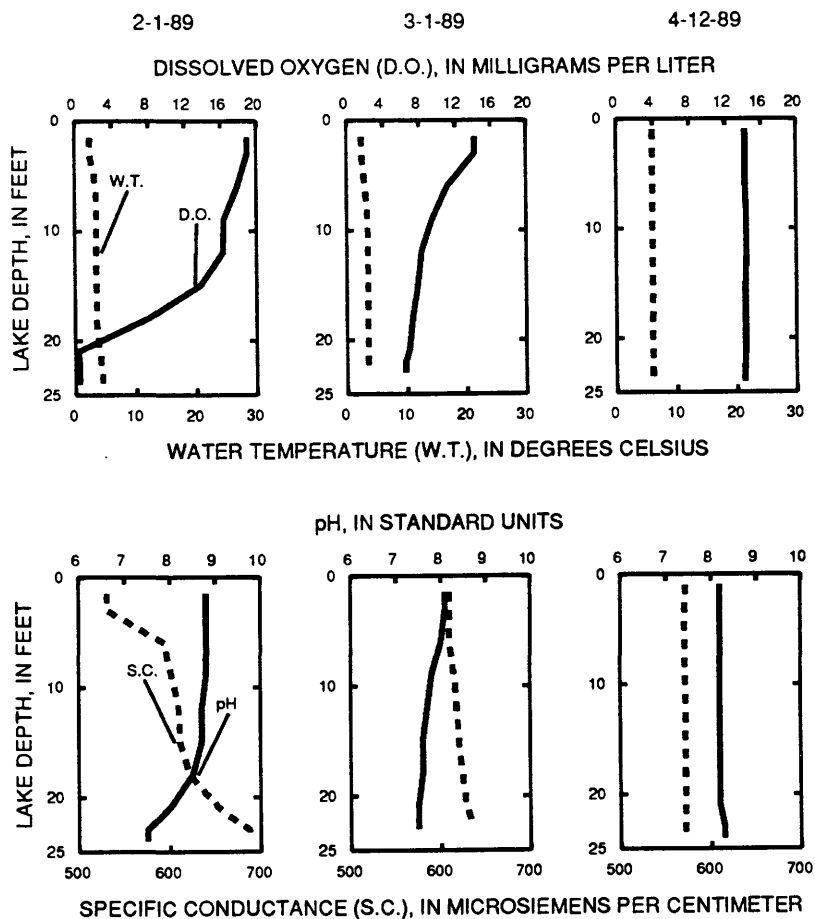
REMARKS.--Lake ice-covered during February 1 and March 1 sampling.

## WATER-QUALITY DATA, FEBRUARY 1 TO APRIL 12, 1989

(Milligrams per liter unless otherwise indicated)

	Feb. 01		Mar. 01		Apr. 12	
Depth of sample (ft)	1.50	23.0	1.50	22.0	1.50	23.0
Lake stage (ft)	11.76		11.64		11.71	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	531	688	610	633	572	572
pH (units)	8.80	7.50	8.10	7.50	8.20	8.30
Water temperature ( $^{\circ}\text{C}$ )	2.5	4.5	2.5	3.5	6.0	6.0
Secchi-disc (meters)		0.90		1.00		1.00
Dissolved oxygen	19.0	0.5	14.3	6.5	14.3	14.2
Total phosphorus (as P)	0.063	0.180	0.052	0.121	0.055	0.047
Phosphorus, ortho, diss (as P)	0.004	0.119	0.005	0.054	0.004	0.004
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	47.0	---	39.0	---	42.0	---

E Estimated.



425344088070100 BIG MUSKEGO LAKE, BASS BAY, NEAR MUSKEGO, WI--CONTINUED

WATER-QUALITY DATA, JUNE 20 1 TO AUGUST 22, 1989  
(Milligrams per liter unless otherwise indicated)

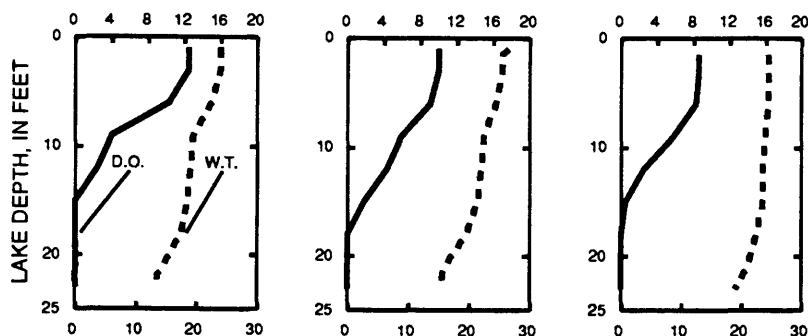
	June 20		July 24		Aug. 22	
Depth of sample (ft)	1.50	22.0	1.50	22.0	1.50	23.0
Lake stage (ft)	11.34		11.24		11.58	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	560	650	558	683	569	667
pH (units)	8.60	7.10	8.40	6.90	8.30	6.80
Water temperature ( $^{\circ}\text{C}$ )	24.0	13.5	25.5	15.5	24.5	19.0
Secchi-disc (meters)		0.70		0.90		0.80
Dissolved oxygen	12.5	0	10.0	0	8.6	0
Total phosphorus (as P)	0.052	0.400	0.030	0.080	0.050	0.250
Phosphorus, ortho, diss (as P)	---	0.320	---	0.019	---	0.173
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	40.0	---	16.0	---	39.0	---

6-20-89

7-24-89

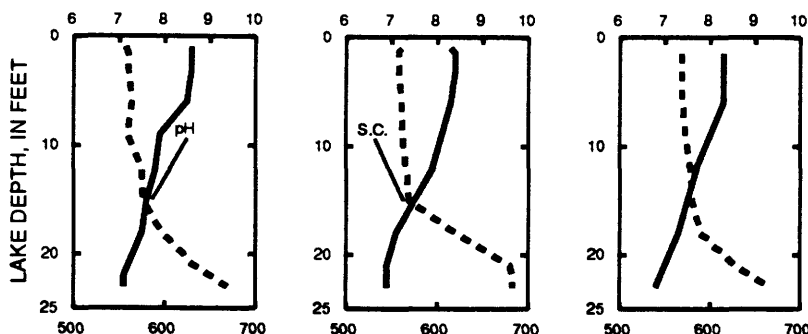
8-22-89

## 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

425212088072800 BIG MUSKEGO LAKE, SOUTH SITE, NEAR MUSKEGO, WI

LOCATION.--Lat 42°52'12", long 88°07'28", in NW 1/4 NW 1/4 sec.27, T.5 N., R.20 E., Waukesha County, Hydrologic Unit 07120006, near Muskego.

DRAINAGE AREA.--33.9 mi<sup>2</sup>.

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

REMARKS.--Lake sampled at south end of lake at a depth of about 3 ft. Lake ice-covered during February 1 and March 1 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 1 TO AUGUST 22, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 01		Mar. 01		Apr. 12	
Depth of sample (ft)	0.50	3.00	0.50	2.00	0.50	2.50
Lake stage (ft)	11.76		11.64		11.71	
Specific conductance (μS/cm)	638	673	772	802	545	545
pH (units)	8.60	8.60	8.40	8.40	7.90	8.10
Water temperature (°C)	2.5	3.0	0.5	2.0	5.5	5.5
Color (Pt-Co. scale)	---	---	---	---	40	40
Turbidity (NTU)	---	---	---	---	12	---
Secchi-disc (meters)	0.60		0.55		0.40	
Dissolved oxygen	16.2	16.5	24.0	23.8	13.6	13.7
Hardness, as CaCO <sub>3</sub>	---	---	---	---	230	220
Calcium, dissolved (Ca)	---	---	---	---	44	41
Magnesium, dissolved (Mg)	---	---	---	---	29	28
Sodium, dissolved (Na)	---	---	---	---	23	23
Potassium, dissolved (K)	---	---	---	---	2.6	2.6
Alkalinity, as CaCO <sub>3</sub>	---	---	---	---	156	155
Sulfate, dissolved (SO <sub>4</sub> )	---	---	---	---	58	58
Fluoride, dissolved (F)	---	---	---	---	0.1	0.1
Chloride, dissolved (Cl)	---	---	---	---	46	45
Silica, dissolved (SiO <sub>2</sub> )	---	---	---	---	<0.20	<0.20
Solids, dissolved, at 180°C	---	---	---	---	318	320
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss (as N)	---	---	---	---	0.410	0.400
Nitrogen, ammonia, dissolved (as N)	---	---	---	---	0.040	0.040
Nitrogen, amm. + org., total (as N)	---	---	---	---	1.5	1.6
Total phosphorus (as P)	0.048	0.060	0.033	0.044	---	0.069
Phosphorus, ortho, diss (as P)	0.003	0.004	E0.005	E0.004	0.003	0.005
Iron, dissolved (Fe) μg/L	---	---	---	---	<50	<50
Manganese, dissolved (Mn) μg/L	---	---	---	---	<40	<40
Chlorophyll a, phyto. (μg/L)	33.0	---	---	---	31.0	---

	June 20		July 24		Aug. 22	
Depth of sample (ft)	0.50	2.00	0.50	2.50	0.50	2.00
Lake stage (ft)	11.34		11.24		11.58	
Specific conductance (μS/cm)	540	546	548	547	558	559
pH (units)	9.00	9.00	8.90	9.00	8.60	8.70
Water temperature (°C)	24.5	25.0	27.0	27.0	24.0	24.0
Secchi-disc (meters)	0.30		0.20		0.30	
Dissolved oxygen	9.7	9.6	11.0	10.9	8.2	8.1
Total phosphorus (as P)	0.095	0.122	0.089	0.110	0.117	0.120
Phosphorus, ortho, diss (as P)	0.005	0.005	0.005	0.005	0.005	0.005
Chlorophyll a, phyto. (μg/L)	36.0	---	E40.0	---	E55.0	---

E Estimated.

## ILLINOIS RIVER BASIN

425109088075000 MUSKEGO LAKE OUTLET NEAR WIND LAKE, WI

LOCATION.--Lat 42°51'09", long 88°07'50", in SE 1/4 NE 1/4 sec.33, T.5 N., R.20 E., Waukesha County, Hydrologic Unit 07120006, on right bank 8 ft upstream of dam outlet of Muskego Lake, 700 ft north of Muskego Dam Drive, 2 mi northeast of Wind Lake.

DRAINAGE AREA.--28.3 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--October 1987 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 760.00 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 18, 1987, nonrecording gage at same site and datum.

REMARKS.--No estimated daily lake levels. Records good. Lake levels regulated by concrete dam with one 5-foot lift gate.

EXTREMES FOR PERIOD OF RECORD.--Maximum instantaneous gage height, 12.44 ft, Apr. 6, 1988; minimum instantaneous, 9.81 ft, Sept. 20, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum instantaneous gage-height, 12.11 ft, Mar. 29; minimum instantaneous, 10.35 ft, Oct. 1.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.48	10.74	11.60	11.69	11.76	11.64	11.88	11.62	11.42	11.11	11.60	11.77
2	10.59	10.70	11.60	11.68	11.74	11.64	11.89	11.59	11.37	11.11	11.59	11.76
3	10.55	10.68	11.62	11.68	11.73	11.68	11.86	11.57	11.46	11.08	11.57	11.74
4	10.61	10.75	11.60	11.67	11.72	11.72	11.81	11.52	11.43	11.11	11.68	11.71
5	10.59	10.80	11.61	11.67	11.72	11.71	11.85	11.54	11.43	11.06	11.70	11.72
6	10.57	10.77	11.60	11.69	11.73	11.70	11.82	11.58	11.40	11.02	11.76	11.76
7	10.57	10.81	11.63	11.70	11.73	11.69	11.79	11.56	11.37	11.02	11.72	11.77
8	10.59	10.82	11.61	11.70	11.72	11.68	11.78	11.57	11.37	10.97	11.70	11.78
9	10.61	10.86	11.59	11.69	11.71	11.68	11.74	11.65	11.39	10.97	11.69	11.85
10	10.61	10.96	11.58	11.68	11.71	11.68	11.71	11.65	11.37	11.01	11.68	11.85
11	10.67	10.96	11.57	11.68	11.71	11.72	11.65	11.56	11.34	11.08	11.67	11.82
12	10.65	10.98	11.56	11.68	11.70	11.77	11.71	11.55	11.37	11.08	11.66	11.81
13	10.60	10.99	11.57	11.67	11.71	11.79	11.66	11.53	11.38	11.09	11.65	11.84
14	10.56	11.08	11.57	11.67	11.71	11.82	11.60	11.49	11.40	11.03	11.63	11.82
15	10.58	11.09	11.57	11.67	11.70	11.85	11.66	11.47	11.39	10.99	11.66	11.76
16	10.58	10.76	11.57	11.67	11.70	11.85	11.60	11.48	11.37	10.98	11.64	11.73
17	10.67	11.14	11.58	11.67	11.69	11.87	11.68	11.46	11.35	10.97	11.63	11.68
18	10.68	11.27	11.58	11.67	11.69	11.87	11.64	11.44	11.35	10.97	11.61	11.64
19	10.67	11.31	11.59	11.66	11.69	11.86	11.62	11.45	11.37	11.26	11.57	11.63
20	10.63	11.38	11.61	11.66	11.69	11.86	11.61	11.46	11.34	11.33	11.58	11.63
21	10.66	11.34	11.61	11.66	11.68	11.85	11.66	11.44	11.32	11.27	11.60	11.63
22	10.68	11.34	11.61	11.65	11.68	11.84	11.64	11.44	11.28	11.25	11.58	11.69
23	10.68	11.36	11.61	11.65	11.67	11.83	11.61	11.42	11.26	11.24	11.66	11.63
24	10.69	11.40	11.63	11.66	11.67	11.83	11.58	11.32	11.28	11.24	11.63	11.57
25	10.71	11.42	11.62	11.66	11.66	11.85	11.65	11.40	11.25	11.24	11.58	11.56
26	10.70	11.48	11.64	11.69	11.66	11.86	11.68	11.36	11.22	11.24	11.56	11.60
27	10.55	11.36	11.70	11.69	11.65	11.86	11.69	11.37	11.22	11.30	11.56	11.55
28	10.62	11.55	11.70	11.69	11.65	11.92	11.67	11.32	11.25	11.48	11.58	11.50
29	10.70	11.55	11.70	11.70	---	12.03	11.61	11.32	11.17	11.46	11.57	11.55
30	10.70	11.58	11.70	11.72	---	11.98	11.59	11.35	11.13	11.57	11.57	11.54
31	10.63	---	11.69	11.73	---	11.94	---	11.38	---	11.60	11.53	---
MAX	10.71	11.58	11.70	11.73	11.76	12.03	11.89	11.65	11.46	11.60	11.76	11.85
MIN	10.48	10.68	11.56	11.65	11.65	11.64	11.58	11.32	11.13	10.97	11.53	11.50

## ILLINOIS RIVER BASIN

339

425109088075000 MUSKEGO LAKE OUTLET NEAR WIND LAKE, WI--CONTINUED

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1987 to September 1989 (discontinued).

GAGE.--Water-stage recorders for headwater and tailwater elevations, and concrete dam. Datum of gage is 760.00 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 18, 1987, nonrecording gage for headwater elevations, and concrete dam.

REMARKS.--Records good. One 5-foot lift gate in Muskego Lake dam was in operation during the year; Dec. 8-13, and Sept. 9-19 discharge through gate was computed by a rating developed from the tailwater stage.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 115 ft<sup>3</sup>/s, Apr. 8, 1988; no flow many days during period of record.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 79 ft<sup>3</sup>/s, Sept. 14; minimum, no flow on many days during current year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	4.1	12	21	7.3	37	6.3	.00	.00	4.4	22		
2	.00	.00	4.5	11	18	7.2	39	4.0	.00	.00	3.7	20		
3	.00	.00	5.6	11	16	11	34	2.7	.10	.00	2.6	18		
4	.00	.00	4.6	9.9	16	15	28	1.1	.00	.00	12	14		
5	.00	.00	5.0	10	16	14	32	2.1	.00	.00	13	15		
6	.00	.00	4.7	12	17	13	28	3.5	.00	.00	20	20		
7	.00	.00	6.4	13	17	12	24	2.0	.00	.00	15	22		
8	.00	.00	12	13	15	11	24	2.7	.00	.00	13	23		
9	.00	.00	19	12	15	11	18	9.6	.00	.00	12	57		
10	.00	.00	19	11	14	11	14	10	.00	.00	11	72		
11	.00	.00	18	11	14	15	8.5	2.3	.00	.00	10	69		
12	.00	.00	18	11	13	21	14	2.0	.00	.00	9.0	68		
13	.00	.00	12	9.9	15	24	8.7	1.3	.00	.00	7.6	77		
14	.00	.00	2.8	10	15	28	5.6	.00	.00	.00	6.6	79		
15	.00	.00	2.7	10	14	33	8.8	.00	.00	.00	8.8	73		
16	.00	.00	2.9	10	13	33	5.1	.00	.00	.00	7.0	70		
17	.00	.00	3.2	10	12	36	12	.00	.00	.00	6.5	66		
18	.00	.00	3.6	9.7	12	36	7.3	.00	.00	.00	4.8	63		
19	.00	.00	3.8	9.1	12	34	6.2	.00	.00	.00	2.6	22		
20	.00	.00	5.2	9.0	12	34	6.0	.10	.00	.00	3.4	6.4		
21	.00	.00	5.1	8.6	11	32	8.9	.00	.00	.00	4.5	6.3		
22	.00	.00	5.3	8.2	11	31	7.2	.00	.00	.00	3.6	13		
23	.00	.00	5.2	7.9	9.7	30	5.3	.00	.00	.00	9.1	7.0		
24	.00	.00	6.4	8.6	9.7	30	3.3	.00	.00	.00	6.4	2.7		
25	.00	.00	5.9	9.2	8.7	33	8.5	.00	.00	.00	3.5	2.5		
26	.00	.10	7.4	12	8.6	34	11	.00	.00	.00	2.3	4.7		
27	.00	.00	13	12	7.7	34	13	.00	.00	1.1	2.3	1.6		
28	.00	2.1	14	13	7.9	44	9.8	.00	.00	.20	3.0	.40		
29	.00	1.9	13	13	---	62	5.3	.00	.00	.00	3.0	1.8		
30	.00	3.5	13	15	---	53	4.1	.00	.00	3.0	2.6	1.2		
31	.00	---	12	16	---	47	---	.00	---	4.5	1.7	---		
TOTAL	0.00	7.60	257.4	338.1	371.3	836.5	436.6	49.70	0.10	8.80	215.0	917.60		
MEAN	.00	.25	8.30	10.9	13.3	27.0	14.6	1.60	.003	.28	6.94	30.6		
MAX	.00	3.5	19	16	21	62	39	10	.10	4.5	20	79		
MIN	.00	.00	2.7	7.9	7.7	7.2	3.3	.00	.00	.00	1.7	.40		
AC-FT	.0	15	511	671	736	1660	866	99	.2	17	426	1820		
CFSM	.00	.01	.29	.39	.47	.95	.51	.06	.00	.01	.25	1.08		
IN.	.00	.01	.34	.44	.49	1.10	.57	.07	.00	.01	.28	1.21		
CAL YR 1988	TOTAL	5638.65	MEAN	15.4	MAX	115	MIN	.00	AC-FT	11180	CFSM	.54	IN.	7.41
WTR YR 1989	TOTAL	3438.70	MEAN	9.42	MAX	79	MIN	.00	AC-FT	6820	CFSM	.33	IN.	4.52

## ILLINOIS RIVER BASIN

425109088075000 MUSKEGO LAKE OUTLET NEAR WIND LAKE, WI--CONTINUED

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

TOTAL PHOSPHORUS DISCHARGE: October 1987 to September 1989 (discontinued).

REMARKS.--Records fair. Total phosphorus discharge was computed using concentration data from samples collected at downstream side of dam at station 05544386; or if very little or no flow, samples were collected at upstream side of dam in Big Muskego Lake.

COOPERATION.--Observer furnished by Wind Lake Management District.

EXTREMES FOR CURRENT YEAR.--

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 0.760 mg/L, Aug. 6; minimum observed, 0.030 mg/L, Mar. 23.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 359 lb, Sept. 10; minimum daily, 0.00 lb Oct. 1 to Nov. 27, and May 14 to July 26.

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.16	3.05	6.57	1.57	12.0	1.55	.00	.00	2.83	71.5
2	.00	.00	.26	2.78	5.75	1.54	11.4	.87	.00	.00	2.39	40.8
3	.00	.00	.47	2.66	5.05	2.29	9.48	.51	.00	.00	1.85	17.1
4	.00	.00	.57	2.42	4.70	3.09	7.08	.19	.00	.00	19.1	6.99
5	.00	.00	.92	2.45	4.65	2.94	7.52	.43	.00	.00	40.8	6.21
6	.00	.00	1.22	2.94	4.84	2.69	6.16	.85	.00	.00	79.4	8.24
7	.00	.00	1.93	2.95	4.69	2.40	5.56	.59	.00	.00	39.5	8.61
8	.00	.00	4.01	2.93	4.19	2.24	5.86	1.02	.00	.00	16.3	10.6
9	.00	.00	7.17	2.70	3.88	2.08	4.66	3.43	.00	.00	8.20	110
10	.00	.00	6.52	2.47	3.56	2.10	3.90	1.51	.00	.00	6.21	359
11	.00	.00	5.73	2.39	3.44	2.83	2.57	.16	.00	.00	5.83	212
12	.00	.00	5.12	2.30	3.11	3.99	4.42	.05	.00	.00	5.24	96.9
13	.00	.00	3.18	2.10	3.48	4.47	2.74	.02	.00	.00	4.38	49.1
14	.00	.00	.67	2.13	3.43	5.13	1.68	.00	.00	.00	3.79	32.6
15	.00	.00	.59	2.08	3.09	5.91	2.58	.00	.00	.00	4.96	30.1
16	.00	.00	.64	1.99	2.79	5.84	1.43	.00	.00	.00	3.92	30.2
17	.00	.00	.73	1.94	2.60	6.30	3.15	.00	.00	.00	3.64	28.8
18	.00	.00	.81	1.83	2.59	6.29	1.92	.00	.00	.00	2.68	27.7
19	.00	.00	.88	1.69	2.57	5.85	1.58	.00	.00	.00	1.44	9.78
20	.00	.00	1.23	1.63	2.57	5.81	1.47	.00	.00	.00	1.85	2.88
21	.00	.00	1.23	1.53	2.43	5.39	2.14	.00	.00	.00	2.61	2.86
22	.00	.00	1.30	1.42	2.32	5.12	1.67	.00	.00	.00	4.54	6.08
23	.00	.00	1.28	1.34	2.10	4.85	1.19	.00	.00	.00	22.2	3.22
24	.00	.00	1.61	1.43	2.10	4.90	.74	.00	.00	.00	8.63	1.26
25	.00	.00	1.51	1.51	1.88	5.39	2.35	.00	.00	.00	2.33	1.13
26	.00	.00	1.92	2.07	1.85	5.53	3.67	.00	.00	.00	1.34	2.20
27	.00	.00	3.57	2.37	1.67	5.91	5.17	.00	.00	.39	1.27	.78
28	.00	.02	3.65	2.74	1.71	12.4	3.69	.00	.00	.02	1.61	.21
29	.00	.03	3.45	3.25	---	26.8	1.73	.00	.00	.00	1.54	.87
30	.00	.09	3.33	3.97	---	22.8	1.15	.00	.00	1.50	1.30	.58
31	.00	---	3.09	4.80	---	17.5	---	.00	---	2.90	1.50	---
TOTAL	0.00	0.14	68.75	73.86	93.61	191.95	120.66	11.18	0.00	4.81	303.18	1178.30

WTR YR 1989 TOTAL 2046.44

## ILLINOIS RIVER BASIN

341

05544386 MUSKEGO CANAL AT MUSKEGO LAKE OUTLET NEAR WIND LAKE, WI  
(Formerly published as Muskego Canal near Wind Lake)

LOCATION.--Lat 42°51'08", long 88°07'52", in SE 1/4 sec.33, T.5 N., R.20 E., Waukesha County, Hydrologic Unit 07120006, on right bank 8 ft downstream of dam outlet of Muskego Lake, 700 ft north of Muskego Dam Drive, 2 mi northeast of Wind Lake.

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

REMARKS.--Samples collected upstream of dam in Big Muskego Lake if there was little or no flow. These concentrations were used to compute total phosphorus discharge at station 4251090880750000.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
OCT 1988						
19...	0940	85543	0.0	--	--	0.170
NOV						
22...	1135	80020	0.0	--	--	0.090
DEC						
09...	1210	80020	19	630	2.5	0.070
28...	1145	80020	14	--	--	0.050
JAN 1989						
12...	1115	80020	11	--	--	0.040
FEB						
01...	1045	80020	20	665	4.0	0.060
17...	1215	80020	11	--	--	0.040
MAR						
01...	1225	85543	--	--	--	0.040
23...	1255	80020	30	795	7.0	0.030
29...	1514	80020	--	--	--	0.090
APR						
01...	0917	80020	--	--	--	0.060
06...	1240	80020	26	550	9.5	0.040
12...	1055	85543	--	--	--	0.060
MAY						
09...	0810	85543	5.3	--	--	0.080
23...	1250	85543	0.0	--	--	0.080
AUG						
05...	1548	80020	20	--	--	0.650
06...	1953	80020	16	--	--	0.760
09...	1250	85543	12	--	--	0.110
21...	1500	85543	5.8	--	--	0.100
SEP						
13...	1135	85543	77	--	--	0.120
13...	1854	80020	80	--	--	0.090
14...	1849	80020	76	--	--	0.070
15...	1912	80020	71	--	--	0.080

## ILLINOIS RIVER BASIN

424915088083900 WIND LAKE AT WIND LAKE, WI

LOCATION.--Lat 42°49'15", long 88°08'39", in NW 1/4 SW 1/4 sec.9, T.4 N., R.20 E., Racine County, Hydrologic Unit 07120006, at Wind Lake.

PERIOD OF RECORD.--February 1985 to current year.

REMARKS.--Lake sampled near center at a lake depth of about 50 feet. Lake ice-covered during March 1 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, OCTOBER 18, 1988 TO MAY 8, 1989  
(Milligrams per liter unless otherwise indicated)

	Oct. 18			Mar. 01		Apr. 11		May 08		
Depth of sample (ft)	1.50	44.0	50.0	1.50	49.0	1.50	50.0	1.50	45.0	50.0
Lake stage (ft)	6.92			7.95		8.05		8.14		
Specific conductance (μS/cm)	528	528	527	606	698	591	586	594	593	595
pH (units)	8.40	8.40	8.40	6.60	7.10	7.20	8.10	8.30	8.00	7.90
Water temperature (°C)	12.5	12.0	11.5	2.0	3.0	5.5	4.5	13.0	11.0	10.5
Color (Pt-Co. scale)						30	30			
Turbidity (NTU)						3.0	3.2			
Secchi-disc (meters)	1.20			1.40		1.20		2.70		
Dissolved oxygen	10.6	10.3	10.3	17.7	7.5	12.9	13.1	11.3	9.0	7.0
Hardness, as CaCO <sub>3</sub>						250	250			
Calcium, dissolved (Ca)						48	49			
Magnesium, dissolved (Mg)						32	32			
Sodium, dissolved (Na)						26	27			
Potassium, dissolved (K)						3.0	3.2			
Alkalinity, as CaCO <sub>3</sub>						172	173			
Sulfate, dissolved (SO <sub>4</sub> )						62	62			
Fluoride, dissolved (F)						0.2	0.2			
Chloride, dissolved (Cl)						49	49			
Silica, dissolved (SiO <sub>2</sub> )						0.30	0.30			
Solids, dissolved, at 180°C						360	356			
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss (as N)				0.340	0.240	0.400	0.410	<0.020		
Nitrogen, ammonia, dissolved (as N)				0.300	0.730	0.140	0.130			
Nitrogen, amm. + org., total (as N)						1.5	1.5			
Total phosphorus (as P)	0.032	0.024	0.025	0.047	0.080	0.056	0.051	0.060	0.070	0.060
Phosphorus, ortho, diss (as P)			0.006		0.045	0.005	0.005	0.014		0.027
Iron, dissolved (Fe) μg/L						<50	<50			
Manganese, dissolved (Mn) μg/L						<40	<40			
Chlorophyll a, phyto. (μg/L)	29.0			35.0		25.0		4.00		

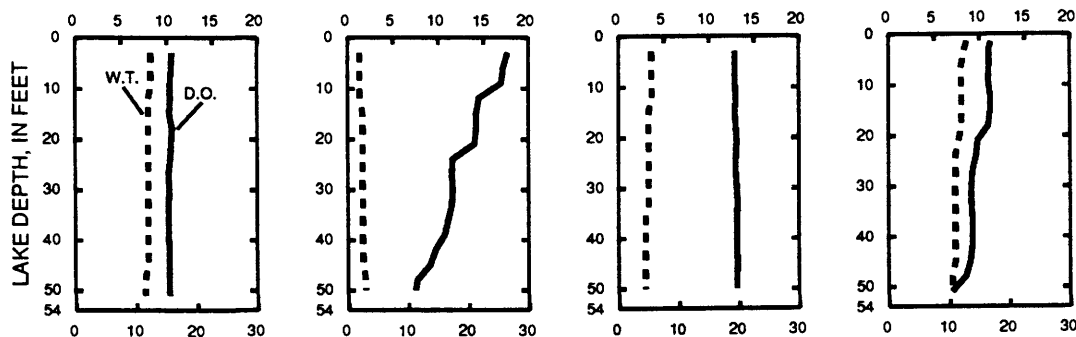
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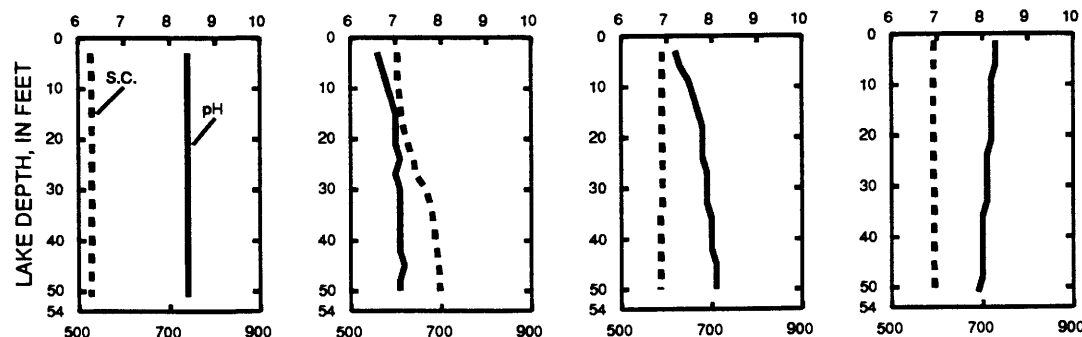
5-8-89

## 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



## 424915088083900 WIND LAKE AT WIND LAKE, WI--CONTINUED

WATER-QUALITY DATA, JUNE 7 TO SEPTEMBER 27, 1989  
(Milligrams per liter unless otherwise indicated)

	June 07				July 11			
Depth of sample (ft)	1.50	12.0	27.0	50.0	1.50	12.0	30.0	49.0
Lake stage (ft)		7.98				7.61		
Specific conductance ( $\mu\text{S}/\text{cm}$ )	577	587	614	631	565	569	622	633
pH (units)	8.70	8.60	7.50	7.20	8.60	8.40	7.20	7.10
Water temperature ( $^{\circ}\text{C}$ )	22.0	21.0	14.0	12.0	26.5	25.5	14.0	12.5
Secchi-disc (meters)		1.30				1.50		
Dissolved oxygen	9.9	9.1	0	0	8.0	5.5	0	0
Total phosphorus (as P)	0.016	0.016	0.131	0.390	0.025	0.026	0.290	0.490
Phosphorus, ortho, diss (as P)	0.003	0.004	0.091	0.310	0.003	---	---	0.430
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	15.0	---	---	---	14.0	---	---	---

	Aug. 08				Sep. 27		
Depth of sample (ft)	1.50	24.0	42.0	50.0	1.50	45.0	48.0
Lake stage (ft)		8.35				8.10	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	559	594	643	647	578	623	676
pH (units)	8.30	7.30	7.00	7.00	7.60	7.10	6.90
Water temperature ( $^{\circ}\text{C}$ )	23.5	19.5	13.0	13.0	16.0	14.5	13.0
Secchi-disc (meters)		1.60				0.90	
Dissolved oxygen	7.3	0.1	0	0	5.7	0	0
Total phosphorus (as P)	0.026	0.052	0.500	0.530	0.061	0.080	0.550
Phosphorus, ortho, diss (as P)	0.003	---	---	0.490	0.005	---	0.500
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	14.0	---	---	---	26.0	---	---

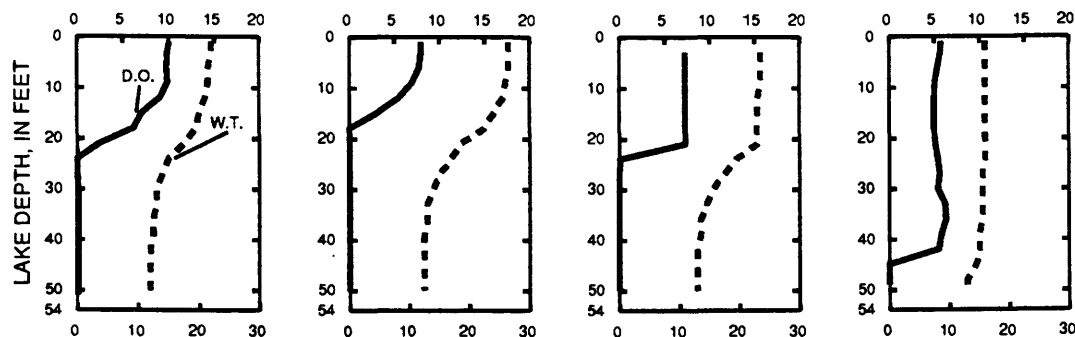
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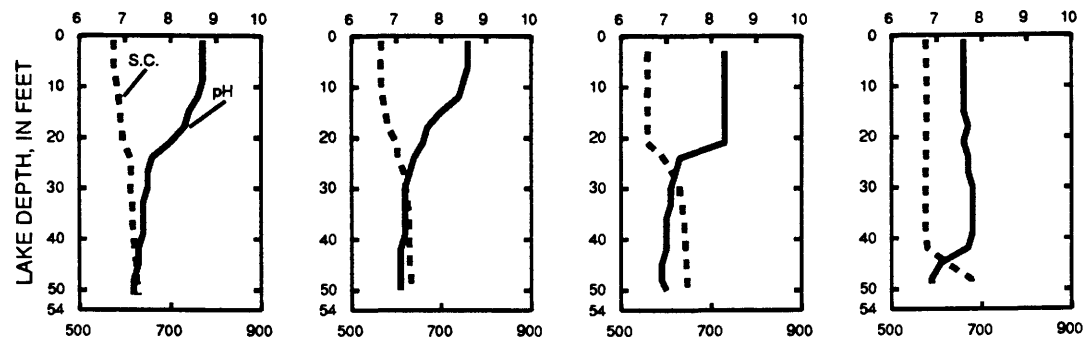
9-27-89

## 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

## ILLINOIS RIVER BASIN

424848088083100 WIND LAKE OUTLET AT WIND LAKE, WI

LOCATION.--Lat 42°48'48", long 88°08'31", in NE 1/4 NW 1/4 sec.16, T.4 N., R.20 E., Racine County, Hydrologic Unit 07120006, at Wind Lake.

DRAINAGE AREA.--39.6 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

PERIOD OF RECORD.--March 1985 to current year.

GAGE.--Water-stage recorder and concrete dam. Datum of gage is 760.30 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 2, 1987, nonrecording gage at same site and datum.

REMARKS.--Lake ice-covered Dec. 11 to Mar. 28. Records good. Lake level regulated by dam with two 10-foot gates at outlet. Previously published as Wind Lake at Wind Lake, WI

EXTREMES FOR PERIOD OF RECORD.--Maximum instantaneous gage-height, 8.61 ft, Sept. 1, 1989; minimum instantaneous, 5.57 ft, Feb. 26, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum instantaneous gage-height, 8.61 ft, Sept. 1; minimum instantaneous, 6.87 ft, Oct. 27.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.97	6.91	7.55	7.29	7.52	7.95	8.24	8.18	8.04	7.69	8.01	8.53
2	7.05	6.89	7.55	7.29	7.56	7.95	8.37	8.15	8.02	7.68	8.02	8.29
3	7.04	6.89	7.54	7.28	7.60	7.99	8.43	8.14	8.03	7.66	8.03	8.07
4	7.05	6.93	7.51	7.27	7.62	8.06	8.29	8.14	8.03	7.65	8.14	7.99
5	7.01	6.99	7.49	7.26	7.65	8.07	8.12	8.15	8.02	7.62	8.23	8.04
6	6.99	7.02	7.49	7.28	7.69	8.08	7.95	8.15	8.00	7.60	8.29	8.21
7	6.98	7.00	7.51	7.28	7.71	8.09	7.84	8.14	7.98	7.58	8.32	8.32
8	6.98	7.02	7.51	7.29	7.73	8.09	7.90	8.14	7.97	7.56	8.35	8.31
9	6.97	7.03	7.52	7.28	7.75	8.08	7.97	8.16	7.95	7.62	8.36	8.37
10	6.98	7.12	7.53	7.27	7.76	8.00	8.02	8.16	7.93	7.62	8.37	8.38
11	6.96	7.11	7.54	7.26	7.77	7.94	8.05	8.16	7.90	7.61	8.38	8.33
12	6.94	7.13	7.54	7.27	7.79	7.90	8.09	8.15	7.92	7.62	8.38	8.24
13	--	7.16	7.55	7.26	7.82	7.84	8.12	8.14	7.94	7.60	8.38	8.20
14	6.90	7.17	7.53	7.26	7.84	7.75	8.14	8.13	7.93	7.58	8.37	8.17
15	6.89	7.19	7.49	7.26	7.86	7.71	8.16	8.13	7.93	7.56	8.37	8.11
16	6.90	7.26	7.45	7.25	7.86	7.64	8.18	8.13	7.92	7.55	8.36	8.06
17	6.91	7.30	7.42	7.25	7.88	7.59	8.23	8.12	7.91	7.53	8.35	8.02
18	6.92	7.31	7.38	7.24	7.89	7.53	8.25	8.11	7.90	7.54	8.33	8.01
19	6.92	7.32	7.35	7.24	7.90	7.44	8.26	8.12	7.90	7.70	8.31	8.10
20	6.90	--	7.34	7.25	7.91	7.37	8.26	8.13	7.88	7.79	8.32	8.13
21	6.92	--	7.32	7.24	7.93	7.28	8.24	8.11	7.87	7.77	8.30	8.14
22	6.92	--	7.30	7.24	7.94	7.18	8.22	8.10	7.85	7.76	8.28	8.16
23	6.95	7.35	7.29	7.25	7.94	7.09	8.22	8.09	7.84	7.75	8.28	8.15
24	6.97	7.36	7.27	7.26	7.94	7.04	8.22	8.07	7.83	7.74	8.27	8.12
25	6.95	7.36	7.25	7.27	7.95	7.04	8.27	8.08	7.81	7.74	8.25	8.12
26	6.93	7.42	7.24	7.31	7.95	7.06	8.30	8.06	7.80	7.73	8.24	8.11
27	6.92	7.45	7.30	7.33	7.95	7.13	8.31	8.03	7.79	7.76	8.23	8.10
28	6.93	7.49	7.31	7.36	7.95	7.34	8.31	8.00	7.77	7.84	8.24	8.09
29	6.92	7.50	7.31	7.39	--	7.62	8.27	8.00	7.73	7.84	8.25	8.09
30	6.91	7.53	7.30	7.42	--	7.87	8.22	8.00	7.71	7.97	8.23	8.08
31	6.90	--	7.29	7.46	--	8.09	--	8.02	--	7.99	8.22	--
MAX	7.05	7.53	7.55	7.46	7.95	8.09	8.43	8.18	8.04	7.99	8.38	8.53
MIN	6.89	6.89	7.24	7.24	7.52	7.04	7.84	8.00	7.71	7.53	8.01	7.99

## ILLINOIS RIVER BASIN

345

424848088083100 WIND LAKE OUTLET AT WIND LAKE, WI--CONTINUED

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1987 to September 1989 (discontinued).

GAGE.--Water-stage recorder and concrete dam. Datum of gage is 760.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharge: Dec. 25 to Mar. 8, May 18-26, Sept. 2-5, 10-13. Records are poor. Lake level regulated by dam with two 10-foot gates at outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 172 ft<sup>3</sup>/s, Feb. 3, 1988; no flow many days during period of record.EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 145 ft<sup>3</sup>/s, Apr. 4; no flow on many days during current year.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	.17	.20	15	6.0	6.0	5.3	1.3	.21	.20	.22	17
2	.17	.17	9.3	15	6.0	6.0	41	1.2	.22	.20	.21	4.0
3	.18	.17	17	15	6.0	6.0	112	1.2	.21	.20	.20	3.3
4	.18	.17	17	15	6.0	6.0	145	1.2	.21	.20	.39	2.6
5	.17	.17	17	15	6.0	6.0	139	1.2	.21	.20	1.4	1.9
6	.17	.16	17	15	6.0	6.0	125	1.2	.21	.20	3.3	1.3
7	.17	.17	17	15	6.0	6.0	65	1.2	.21	.20	4.7	4.6
8	.17	.17	17	15	6.0	6.0	1.2	1.2	.22	.20	6.0	4.1
9	.17	.17	16	15	6.0	35	1.2	.59	.21	.20	6.7	79
10	.17	.16	16	15	6.0	53	1.2	.26	.21	.20	7.3	140
11	.17	.17	17	15	6.0	50	1.2	.22	.21	.19	7.6	140
12	.17	.19	17	15	6.0	52	1.1	.22	.21	.19	7.8	140
13	.17	.18	17	15	6.0	66	1.1	.22	.21	.19	7.8	141
14	.17	.18	17	15	6.0	72	1.1	.22	.21	.19	7.4	125
15	.17	.19	17	15	6.0	69	1.2	.22	.21	.19	7.2	128
16	.17	.16	17	15	6.0	68	1.4	.22	.21	.19	6.8	133
17	.17	.17	17	15	6.0	69	2.3	.22	.21	.19	6.0	137
18	.16	.18	16	15	6.0	70	3.0	.22	.21	.19	5.1	55
19	.16	.13	16	15	6.0	70	3.5	.22	.21	.20	4.2	.00
20	.16	.00	16	15	6.0	69	3.4	.22	.21	.10	4.5	.00
21	.16	.00	16	15	6.0	67	2.6	.22	.21	.19	3.9	.00
22	.16	.03	16	15	6.0	67	2.0	.22	.21	.20	3.3	.10
23	.16	.20	16	15	6.0	65	2.1	.22	.21	.20	3.0	.02
24	.16	.20	16	15	6.0	38	2.1	.22	.21	.20	2.6	.00
25	.17	.20	15	15	6.0	27	3.8	.22	.21	.20	2.1	.00
26	.17	.19	15	13	6.0	22	4.9	.22	.21	.20	1.6	.00
27	.17	.19	15	11	6.0	9.1	5.5	.22	.21	.20	1.3	.00
28	.18	.19	15	9.0	6.0	2.9	5.3	.22	.21	.20	1.7	.00
29	.17	.19	15	8.0	---	3.0	3.7	.22	.20	.21	1.9	.00
30	.17	.19	15	7.0	---	3.7	2.1	.22	.20	.20	1.4	.00
31	.17	---	15	6.0	---	3.8	---	.22	---	.21	1.4	---
TOTAL	5.24	4.81	479.50	429.0	168.0	1099.5	689.3	15.17	6.30	6.03	119.02	1256.92
MEAN	.17	.16	15.5	13.8	6.00	35.5	23.0	.49	.21	.19	3.84	41.9
MAX	.18	.20	17	15	6.0	72	145	1.3	.22	.21	7.8	141
MIN	.16	.00	.20	6.0	6.0	2.9	1.1	.22	.20	.10	.20	.00
AC-FT	10	9.5	951	851	333	2180	1370	30	12	12	236	2490
CFSM	.00	.00	.39	.35	.15	.90	.58	.01	.01	.00	.10	1.06
IN.	.00	.00	.45	.40	.16	1.03	.65	.01	.01	.01	.11	1.18
CAL YR 1988	TOTAL 6876.40	MEAN 18.8	MAX 172	MIN .00	AC-FT 13640	CFSM .47	IN. 6.46					
WTR YR 1989	TOTAL 4278.79	MEAN 11.7	MAX 145	MIN .00	AC-FT 8490	CFSM .30	IN. 4.02					

## ILLINOIS RIVER BASIN

424848088083100 WIND LAKE OUTLET AT WIND LAKE, WI--CONTINUED

## WATER-QUALITY RECORDS

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

PERIOD OF DAILY RECORD.--

TOTAL PHOSPHORUS DISCHARGE: October 1987 to September 1989 (discontinued).

REMARKS.--Records fair. Total phosphorus discharge was computed using concentration data from surface samples collected in Wind Lake at station 424915088083900.

EXTREMES FOR CURRENT YEAR.--

TOTAL PHOSPHORUS CONCENTRATIONS: Maximum observed, 0.061 mg/L, Sept. 27; minimum observed, 0.016 mg/L, June 7.

TOTAL PHOSPHORUS DISCHARGE: Maximum daily, 55.6 lb, Sept. 10; minimum daily, 0.00 lb on many days.

PHOSPHOROUS, TOTAL, POUNDS PER DAY, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.03	.03	3.24	3.21	1.62	1.69	.43	.02	.02	.03	7.24
2	.05	.03	1.78	3.24	3.14	1.57	13.2	.39	.02	.02	.03	1.69
3	.05	.03	3.63	3.24	3.04	1.52	36.1	.38	.02	.02	.03	1.37
4	.05	.03	3.72	3.24	2.95	1.47	47.1	.38	.02	.02	.08	1.07
5	.04	.03	3.74	3.24	2.85	1.43	45.1	.39	.02	.02	.34	.78
6	.04	.03	3.76	3.24	2.76	1.38	40.6	.37	.02	.03	.94	.54
7	.04	.03	3.78	3.24	2.68	1.34	21.1	.37	.02	.03	1.60	1.85
8	.04	.03	3.63	3.24	2.59	1.31	.37	.37	.02	.03	2.41	1.66
9	.04	.03	3.54	3.24	2.51	8.04	.37	.19	.02	.03	3.16	31.3
10	.04	.03	3.55	3.24	2.43	13.0	.36	.08	.02	.03	3.50	55.6
11	.04	.03	3.57	3.24	2.35	13.2	.36	.06	.02	.03	3.67	55.3
12	.04	.03	3.59	3.26	2.28	14.8	.35	.06	.02	.03	3.74	55.0
13	.03	.03	3.60	3.39	2.21	20.1	.35	.06	.02	.03	3.72	55.2
14	.03	.03	3.62	3.55	2.14	23.0	.35	.05	.02	.03	3.48	48.5
15	.03	.03	3.66	3.72	2.07	20.7	.37	.05	.02	.03	3.35	49.2
16	.03	.03	3.63	3.89	2.00	18.9	.42	.05	.02	.03	3.19	50.7
17	.03	.03	3.59	4.07	1.95	17.6	.70	.05	.02	.03	2.76	52.2
18	.03	.03	3.55	4.27	1.91	16.7	.91	.05	.02	.03	2.33	21.0
19	.03	.02	3.53	4.46	1.88	15.4	1.09	.04	.02	.03	1.92	.00
20	.03	.00	3.50	4.67	1.86	13.9	1.05	.04	.02	.01	2.05	.00
21	.03	.00	3.46	4.89	1.83	12.7	.82	.04	.02	.03	1.76	.00
22	.03	.00	3.42	5.12	1.80	11.6	.62	.04	.02	.03	1.47	.02
23	.03	.03	3.36	5.36	1.77	10.5	.66	.04	.02	.03	1.35	.00
24	.03	.03	3.36	5.61	1.75	6.22	.65	.04	.02	.03	1.15	.00
25	.03	.03	3.24	5.87	1.72	4.43	1.20	.03	.02	.03	.91	.00
26	.03	.03	3.24	5.33	1.69	3.57	1.54	.03	.02	.03	.69	.00
27	.03	.03	3.24	4.72	1.67	1.48	1.72	.03	.02	.03	.58	.00
28	.03	.03	3.24	4.04	1.64	.48	1.68	.03	.02	.03	.74	.00
29	.03	.03	3.24	3.76	---	.62	1.17	.03	.02	.03	.82	.00
30	.03	.03	3.24	3.45	---	.91	.68	.03	.02	.03	.60	.00
31	.03	---	3.24	3.09	---	1.08	---	.03	---	.03	.55	---
TOTAL	1.09	0.80	103.28	122.16	62.68	260.57	222.68	4.23	0.60	0.86	52.95	490.22

WTR YR 1989 TOTAL 1322.12

## ILLINOIS RIVER BASIN

347

424937088103400 LONG (KEE NONG GO-MONG) LAKE AT WIND LAKE, WI

LOCATION.--Lat 42°49'37", long 88°10'34", in NW 1/4 NW 1/4 sec.7, T.4 N., R.20 E., Racine County, Hydrologic Unit 07120006, at Wind Lake.

DRAINAGE AREA.--4.29 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

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

GAGE.--Staff gage at lake outlet read by Jack Puetz. Elevation of lake is 777 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 6.39 ft, Sept. 10, 1989; minimum observed, less than 3.92 ft, Sept. 6, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 6.39 ft, Sept. 10; minimum observed, 4.58 ft, Oct. 24, 31.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	5.59	---	---	---
2	---	---	---	---	---	---	---	---	---	5.41	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	6.00
6	---	---	---	---	---	---	---	---	---	---	5.96	---
7	---	4.75	---	---	---	---	---	5.55	5.57	---	---	---
8	---	---	---	---	5.20	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	5.80	---
10	---	---	---	---	---	---	---	---	---	---	---	6.39
11	---	---	---	---	---	---	5.66	---	5.54	5.21	5.78	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	5.98	---
14	---	5.40	---	---	---	---	---	5.55	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	5.60	---	---	5.64	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	5.51	---	---	---
20	---	---	---	---	---	---	---	---	---	---	5.92	---
21	---	5.24	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	5.60	5.58	---	---	---	---
23	---	---	---	---	---	---	---	---	---	5.61	---	---
24	4.58	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	5.47	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	5.97	---
28	---	5.40	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	5.60	---	---	5.73	---	---
31	4.58	---	---	---	---	---	---	---	---	---	---	---
MAX	4.58	5.40	---	---	5.20	---	5.66	5.58	5.59	5.73	5.98	6.39
MIN	4.58	4.75	---	---	5.20	---	5.60	5.55	5.47	5.21	5.78	6.00

## WATER-QUALITY RECORDS

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

REMARKS.--Lake sampled in southwest end of lake at an approximate lake depth of 26 ft. Lake ice-covered during February 8 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 8 TO AUGUST 9, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 08		Apr. 11		June 07		July 11		Aug. 09	
Depth of sample (ft)	1.50	26.0	1.50	26.0	1.50	26.0	1.50	25.0	1.50	26.0
Lake stage (ft)	5.20		5.66		5.57		5.21		5.80	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	498	668	511	512	526	549	502	550	497	574
pH (units)	8.30	7.10	7.80	7.90	8.30	7.20	8.60	7.10	8.30	7.10
Water temperature ( $^{\circ}\text{C}$ )	3.0	4.5	6.0	6.0	23.0	12.0	27.0	12.0	22.5	12.0
Color (Pt-Co. scale)	---	---	50	50	---	---	---	---	---	---
Turbidity (NTU)	---	---	2.5	3.2	---	---	---	---	---	---
Secchi-disc (meters)	0.90		1.30		2.20		2.10		1.60	
Dissolved oxygen	23.1	2.8	12.2	12.3	8.0	0.1	8.3	0	7.9	0
Hardness, as $\text{CaCO}_3$	---	---	240	250	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	48	49	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	30	30	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	11	11	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	2.9	3.1	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	167	166	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	65	65	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	25	25	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	1.6	1.7	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	318	318	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss. (as N)	---	---	0.460	0.460	---	---	---	---	---	---
Nitrogen, ammonia, diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	1.3	1.2	---	---	---	---	---	---
Total phosphorus (as P)	---	---	0.043	0.038	0.015	---	0.019	0.180	0.024	0.390
Phosphorus, ortho, diss (as P)	---	---	0.004	0.004	---	0.127	---	0.136	---	0.340
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	---	---	16.0	---	6.00	---	8.00	---	15.0	---

2-8-89

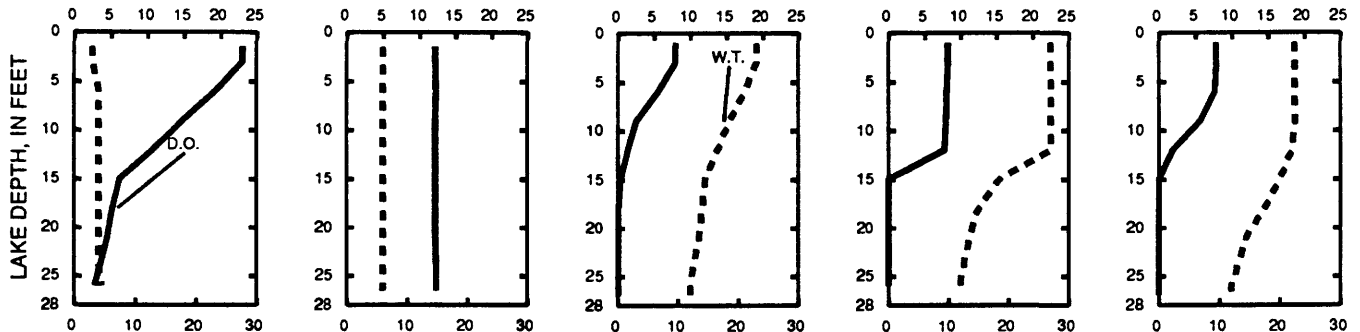
4-11-89

6-7-89

7-11-89

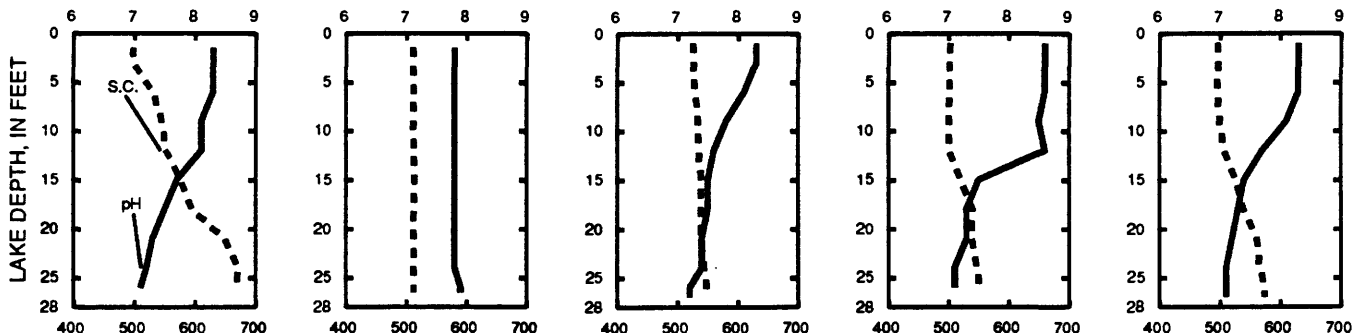
8-9-89

## 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

## ILLINOIS RIVER BASIN

349

424857088101500 WAUBEESEE LAKE AT WIND LAKE, WI

LOCATION.--Lat 42°48'57", long 88°10'15", in SE 1/4 SE 1/4 sec.7, T.4 N., R.20 E., Racine County, Hydrologic Unit 07120006, at Wind Lake.

DRAINAGE AREA.--5.16 mi<sup>2</sup>.

## LAKE-STAGE RECORDS

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

GAGE.--Staff gage read by Robert Anschutz.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.52 ft, Sept. 9, 1989; minimum observed, 3.38 ft, Nov. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 5.52 ft, Sept. 9; minimum observed, 3.38 ft, Nov. 3.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.56	---	---	---	---	---	5.20	---	---	4.50	4.66	---
2	3.64	---	---	---	---	---	---	---	---	---	---	---
3	---	3.38	---	---	---	---	---	---	---	4.46	---	---
4	---	---	---	---	---	---	---	---	4.88	4.44	---	5.24
5	---	---	---	---	---	---	---	---	---	---	4.76	5.26
6	---	---	---	---	---	---	---	5.08	---	4.38	---	5.40
7	3.58	---	---	---	---	---	5.12	5.08	4.85	---	4.72	---
8	---	---	---	---	4.56	---	---	---	---	4.34	---	---
9	3.54	---	---	---	---	---	---	---	---	4.44	4.68	5.52
10	---	---	---	---	---	---	---	---	---	---	---	5.44
11	---	3.56	---	---	---	---	---	---	---	4.38	---	---
12	---	---	---	---	---	---	5.16	---	4.78	4.40	4.64	---
13	3.48	---	---	---	---	---	---	5.04	---	4.36	---	5.34
14	---	---	---	---	---	---	---	---	---	---	---	5.30
15	3.46	---	---	---	---	---	5.14	---	---	4.32	---	---
16	---	3.68	---	---	---	---	---	---	---	---	---	5.22
17	---	---	---	---	---	---	---	---	---	---	---	5.18
18	---	---	---	---	---	---	---	4.98	4.74	---	4.58	---
19	---	---	---	---	---	---	---	---	---	4.48	---	---
20	3.46	---	---	---	---	---	---	5.00	4.70	---	4.58	5.08
21	---	---	---	---	---	---	---	---	---	4.51	---	---
22	---	3.66	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	5.12	---	4.66	---	4.54	4.98
24	---	---	---	---	---	---	---	4.96	---	---	---	---
25	3.48	---	---	---	---	---	5.16	---	4.62	---	---	---
26	---	---	---	---	---	4.98	5.13	---	---	---	4.48	---
27	---	---	---	---	---	---	---	4.88	---	4.42	4.46	---
28	---	---	---	---	---	---	---	---	---	4.52	4.50	---
29	3.44	---	---	---	---	---	5.16	---	---	4.53	---	4.84
30	---	3.72	---	---	---	---	---	---	---	4.68	---	---
31	---	---	---	---	---	5.24	---	---	---	---	---	---
MAX	3.64	3.72	---	---	4.56	5.24	5.20	5.08	4.88	4.68	4.76	5.52
MIN	3.44	3.38	---	---	4.56	4.98	5.12	4.88	4.62	4.32	4.46	4.84

## WATER-QUALITY RECORDS

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

REMARKS.--Lake ice-covered during February 8 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene. Lake sampled near southwest end at a lake depth of about 70 ft.

WATER-QUALITY DATA, FEBRUARY 8 TO AUGUST 9, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 08		Apr. 12		June 07		July 11		Aug. 09	
Depth of sample (ft)	1.50	71.0	1.50	71.0	1.50	69.0	1.50	70.0	1.50	70.0
Lake stage (ft)	4.56		5.16		4.85		4.38		4.68	
Specific conductance ( $\mu\text{S}/\text{cm}$ )	429	513	482	502	495	488	475	488	452	489
pH (units)	7.90	7.50	7.20	7.40	8.40	7.30	8.50	7.20	8.60	7.30
Water temperature ( $^{\circ}\text{C}$ )	1.5	3.5	6.0	4.5	22.5	6.0	27.0	6.0	23.0	6.0
Color (Pt-Co. scale)	---	---	30	30	---	---	---	---	---	---
Turbidity (NTU)	---	---	1.4	1.9	---	---	---	---	---	---
Secchi-disc (meters)	3.40		2.60		3.80		2.80		2.50	
Dissolved oxygen	14.0	1.5	11.9	5.4	9.1	0.9	8.5	0	8.9	0
Hardness, as $\text{CaCO}_3$	---	---	230	230	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	43	43	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	29	30	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	12	12	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	3.0	3.2	---	---	---	---	---	---
Alkalinity, as $\text{CaCO}_3$	---	---	176	177	---	---	---	---	---	---
Sulfate, dissolved ( $\text{SO}_4$ )	---	---	46	46	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	24	24	---	---	---	---	---	---
Silica, dissolved ( $\text{SiO}_2$ )	---	---	1.3	1.5	---	---	---	---	---	---
Solids, dissolved, at $180^{\circ}\text{C}$	---	---	288	294	---	---	---	---	---	---
Nitrogen, $\text{NO}_2 + \text{NO}_3$ , diss (as N)	---	---	0.300	0.340	---	---	---	---	---	---
Nitrogen, ammonia, dissolved (as N)	---	---	<0.020	0.050	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.90	1.0	---	---	---	---	---	---
Total phosphorus (as P)	---	---	0.016	0.018	0.010	0.068	0.011	0.030	0.011	0.050
Phosphorus, ortho, diss (as P)	---	---	0.004	0.004	---	0.046	---	0.014	---	0.032
Iron, dissolved (Fe) $\mu\text{g}/\text{L}$	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) $\mu\text{g}/\text{L}$	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phyto. ( $\mu\text{g}/\text{L}$ )	---	---	4.00	---	E1.00	---	3.00	---	5.00	---

E Estimated.

2-8-89

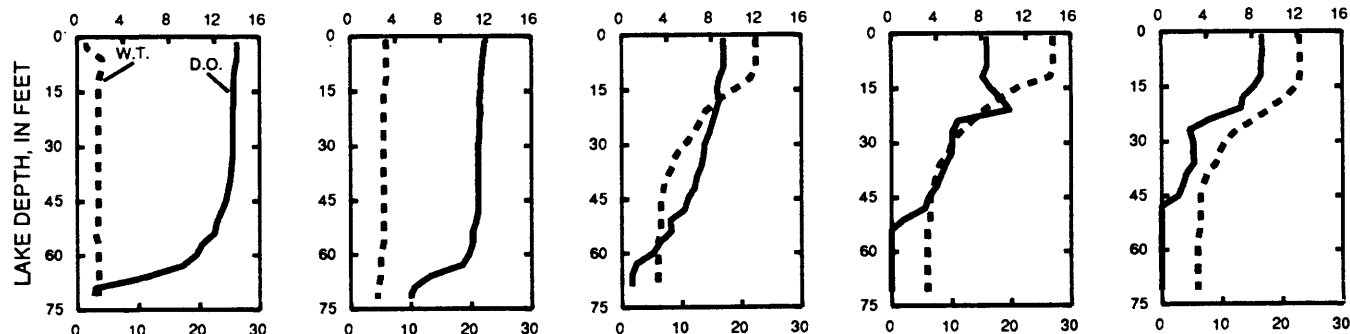
4-12-89

6-7-89

7-11-89

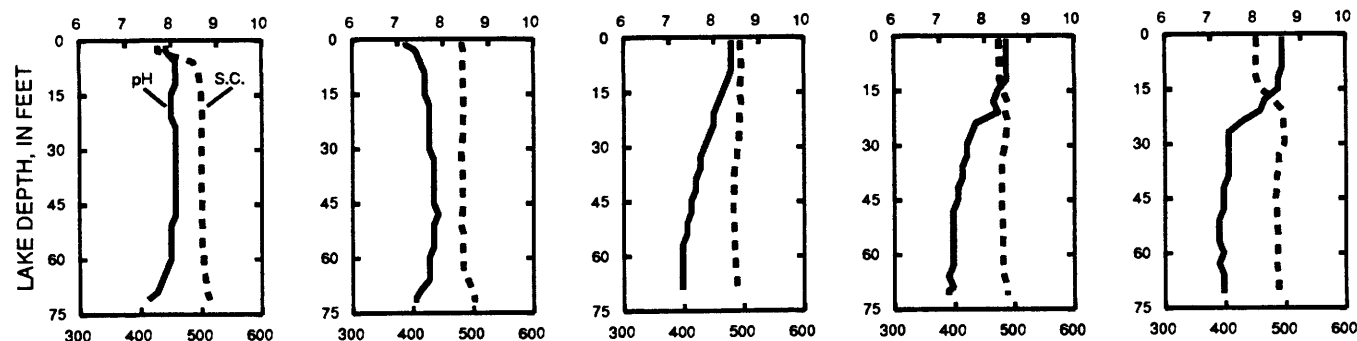
8-9-89

## 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



## ILLINOIS RIVER BASIN

351

424727088332300 PLEASANT LAKE NEAR LA GRANGE, WI

## LAKE-STAGE RECORDS

LOCATION.--Lat 42°47'27", long 88°33'23", in SW 1/4 sec.24, T.4N., R.16 E., Walworth County, Hydrologic Unit 07120006, 2.6 mi southeast of LaGrange.

PERIOD OF RECORD.--October 1984 to current year.

GAGE.--Staff gage read by Gordon Dobbs. Elevation of gage is 879 ft, from topographic map.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 8.90 ft, Apr. 30, 1987; minimum observed, 7.12 ft, July 15, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height observed, 7.92 ft, Apr. 9; minimum observed, 7.12 ft, July 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	7.42	---	---	---	---	---	---	---	---	7.30	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	7.60	---	---	---	---	---	7.60	---	---	7.62
5	---	---	---	---	---	---	---	---	---	---	7.48	---
6	---	7.41	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	7.76	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	7.34	---	---	---	---	---	7.92	---	---	7.22	---	---
10	---	---	---	---	---	---	---	---	---	---	---	7.67
11	---	---	---	---	---	---	---	---	7.50	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	7.48	---	---	---	---	---	---	---	---	7.42	---
14	---	---	---	---	---	---	---	7.70	---	---	---	---
15	---	---	---	---	---	---	---	---	---	7.12	---	---
16	7.28	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	7.52
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	7.37	---
21	---	---	---	---	---	---	---	7.78	---	---	---	---
22	7.31	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	7.22	---	---
24	---	---	---	---	---	---	---	---	---	---	---	7.52
25	---	---	---	---	---	---	---	---	7.38	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	7.29	---
28	---	---	---	---	---	---	7.86	---	---	---	---	---
29	7.31	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	7.52	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	7.42	7.48	7.60	---	---	---	7.92	7.78	7.60	7.52	7.48	7.67
MIN	7.28	7.41	7.60	---	---	---	7.86	7.70	7.38	7.12	7.29	7.52

## WATER-QUALITY RECORDS

LOCATION.--Lat 42°47'16", long 88°33'02", in SE 1/4 sec.24, T.4N., R.16 E., Walworth County, Hydrologic Unit 07120006, near center of lake, and 2.7 mi southeast of LaGrange.

PERIOD OF RECORD.--June 1985 to current year.

REMARKS.--Secchi disc readings made by Gordon Dobbs.

## SECCHI DISC TRANSPARENCY (IN METERS) WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	SECCHI DISC (M) (00078)	DATE	TIME	SECCHI DISC (M) (00078)
OCT 1988			JUL 1989		
02...	--	2.44	02...	1200	3.60
09...	--	2.51	09...	1200	3.50
16...	--	2.74	15...	1200	2.20
22...	--	2.97	23...	1200	1.80
29...	--	3.12	30...	1200	1.70
MAY 1989			AUG		
07...	1200	2.40	05...	1200	1.90
14...	1200	3.20	13...	1200	2.10
21...	1200	3.60	20...	1200	2.40
JUN			27...	1200	2.40
04...	1200	2.70	SEP		
11...	1200	3.50	04...	1200	2.30
11...	2000	3.10	10...	1200	2.40
25...	1200	2.70	17...	1200	2.40
			24...	1200	2.60

## ILLINOIS RIVER BASIN

05546500 FOX RIVER AT WILMOT, WI

LOCATION.--Lat 42°30'40", long 88°10'45", in SW 1/4 sec.30, T.1 N., R.20 E., Kenosha County, Hydrologic Unit 07120006, on right bank 100 ft downstream from bridge on County Trunk Highway C, 300 ft upstream from Wilmot Dam, 1.0 mi north of Wisconsin-Illinois State line, and 6.0 mi upstream from Fox Chain of Lakes.

DRAINAGE AREA.--868 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 1308: 1943(M), 1945(M). WDR WI-67-1: Drainage area.

GAGE.--Water-stage recorder and concrete dam. Datum of gage is 735.22 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1965, nonrecording gage and concrete dam.

REMARKS.--Estimated daily discharges: Ice periods, Dec. 9-10, Feb. 5-13, and Feb. 16 to Mar. 1. Records are good, except for estimated periods, which are fair. Three 6-ft lift gates in Wilmot dam were in operation during the year; discharge through gates computed by weir and orifice formulas and added to flow over dam. Gage-height telemeter and data-collection platform at station.

AVERAGE DISCHARGE.--50 years, 546 ft<sup>3</sup>/s, 8.54 in/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,520 ft<sup>3</sup>/s, Mar. 31, 1960, gage height, 9.25 ft, from graph based on gage readings; no flow part of day Oct. 26, 1945; minimum daily discharge, 35 ft<sup>3</sup>/s, Sept. 9, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,850 ft<sup>3</sup>/s, Sept. 3, gage height, 6.59 ft; minimum daily, 50 ft<sup>3</sup>/s, July 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	242	171	574	343	544	202	1160	514	215	112	873	845
2	352	168	522	320	513	190	1060	488	359	76	781	1570
3	430	167	508	284	315	188	975	445	371	63	640	1780
4	372	190	491	248	286	204	1020	413	362	63	872	1610
5	254	282	390	257	280	240	1040	402	366	66	1010	1320
6	240	331	380	264	270	268	997	336	344	63	908	1180
7	209	319	373	268	260	271	897	355	315	56	807	1160
8	162	311	256	263	260	259	748	344	293	50	683	1090
9	147	317	230	279	250	275	610	337	239	63	528	1070
10	149	444	220	298	250	408	466	334	222	70	554	1240
11	148	631	209	285	250	827	410	371	202	98	532	1290
12	151	581	263	313	240	1140	360	236	188	134	498	1200
13	139	581	262	335	240	1230	382	256	193	138	484	1100
14	132	648	276	313	236	1290	370	245	201	131	433	1070
15	128	575	225	287	216	1210	370	228	203	112	368	1030
16	134	722	187	265	210	1130	362	223	206	101	202	926
17	140	872	203	260	210	1100	364	211	194	98	240	870
18	154	852	212	251	210	974	392	205	178	94	243	812
19	164	787	219	252	220	944	369	212	165	134	227	588
20	160	764	254	284	220	956	313	232	159	346	214	402
21	165	694	275	263	220	884	309	247	143	270	204	404
22	177	595	272	265	210	831	334	233	134	374	202	400
23	195	427	287	283	210	764	328	214	131	352	204	377
24	228	401	297	296	210	727	316	194	120	334	218	319
25	284	404	280	322	210	750	341	208	108	312	244	287
26	272	436	231	398	210	780	385	198	108	286	257	241
27	239	530	245	484	216	831	432	189	108	232	261	250
28	232	592	271	453	223	981	504	177	84	374	276	226
29	183	625	295	422	---	1360	569	167	76	507	279	201
30	168	601	315	442	---	1480	543	172	112	602	254	193
31	168	---	335	475	---	1310	---	190	---	856	233	---
TOTAL	6318	15018	9357	9772	7189	24004	16726	8576	6099	6567	13729	25051
MEAN	204	501	302	315	257	774	558	277	203	212	443	835
MAX	430	872	574	484	544	1480	1160	514	371	856	1010	1780
MIN	128	167	187	248	210	188	309	167	76	50	202	193
CFSM	.23	.58	.35	.36	.30	.89	.64	.32	.23	.24	.51	.96
IN.	.27	.64	.40	.42	.31	1.03	.72	.37	.26	.28	.59	1.07

CAL YR 1988 TOTAL 169758 MEAN 464 MAX 2260 MIN 65 CFSM .53 IN. 7.28  
WTR YR 1989 TOTAL 148406 MEAN 407 MAX 1780 MIN 50 CFSM .47 IN. 6.36

## 423246088175800 POWERS LAKE AT POWERS LAKE, WI

LOCATION.--Lat 42°32'46", long 88°17'58", in NW 1/4 SE 1/4 sec.13, T.1 N., R.18 E., Walworth County, Hydrologic Unit 07120006, at Powers Lake.

DRAINAGE AREA.--3.42 mi<sup>2</sup>.

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

REMARKS.--Lake sampled near center at a lake depth of about 32 ft. Lake ice-covered during February 8 sampling. Water-quality analyses by Wisconsin State Laboratory of Hygiene.

WATER-QUALITY DATA, FEBRUARY 8 TO AUGUST 21, 1989  
(Milligrams per liter unless otherwise indicated)

	Feb. 08		Apr. 10		June 06		July 10		Aug. 21	
Depth of sample (ft)	1.50	30.0	1.50	32.0	1.50	32.0	1.50	32.0	1.50	32.0
Lake stage (ft)	9.56		9.84		9.82		9.44		6.74	
Specific conductance (μS/cm)	382	498	463	462	466	487	445	477	454	509
pH (units)	8.10	7.80	8.00	8.20	8.50	7.70	8.50	7.40	8.50	7.30
Water temperature (°C)	2.0	5.0	6.5	6.5	21.0	14.0	27.0	15.5	24.0	17.0
Color (Pt-Co. scale)	---	---	10	10	---	---	---	---	---	---
Turbidity (NTU)	---	---	<0.50	<0.50	---	---	---	---	---	---
Secchi-disc (meters)	3.20		5.20		3.70		3.20		3.30	
Dissolved oxygen	18.2	7.7	12.0	11.9	9.6	1.3	8.2	0	8.7	0
Hardness, as CaCO <sub>3</sub>	---	---	220	220	---	---	---	---	---	---
Calcium, dissolved (Ca)	---	---	34	33	---	---	---	---	---	---
Magnesium, dissolved (Mg)	---	---	33	33	---	---	---	---	---	---
Sodium, dissolved (Na)	---	---	14	14	---	---	---	---	---	---
Potassium, dissolved (K)	---	---	2.5	2.6	---	---	---	---	---	---
Alkalinity, as CaCO <sub>3</sub>	---	---	177	176	---	---	---	---	---	---
Sulfate, dissolved (SO <sub>4</sub> )	---	---	33	33	---	---	---	---	---	---
Fluoride, dissolved (F)	---	---	0.1	0.1	---	---	---	---	---	---
Chloride, dissolved (Cl)	---	---	28	28	---	---	---	---	---	---
Silica, dissolved (SiO <sub>2</sub> )	---	---	5.4	5.4	---	---	---	---	---	---
Solids, dissolved, at 180°C	---	---	256	254	---	---	---	---	---	---
Nitrogen, NO <sub>2</sub> + NO <sub>3</sub> , diss. (as N)	---	---	0.040	0.040	---	---	---	---	---	---
Nitrogen, ammonia, diss. (as N)	---	---	<0.020	<0.020	---	---	---	---	---	---
Nitrogen, amm. + org., total (as N)	---	---	0.40	0.30	---	---	---	---	---	---
Total phosphorus (as P)	---	---	<0.020	<0.020	0.009	0.008	0.007	<0.020	0.009	0.003
Phosphorus, ortho, diss (as P)	---	---	0.003	0.003	---	0.003	---	0.002	---	0.003
Iron, dissolved (Fe) μg/L	---	---	<50	<50	---	---	---	---	---	---
Manganese, dissolved (Mn) μg/L	---	---	<40	<40	---	---	---	---	---	---
Chlorophyll a, phyto. (μg/L)	---	---	E1.00	---	3.00	---	E2.00	---	E3.00	---

E Estimated.

2-8-89

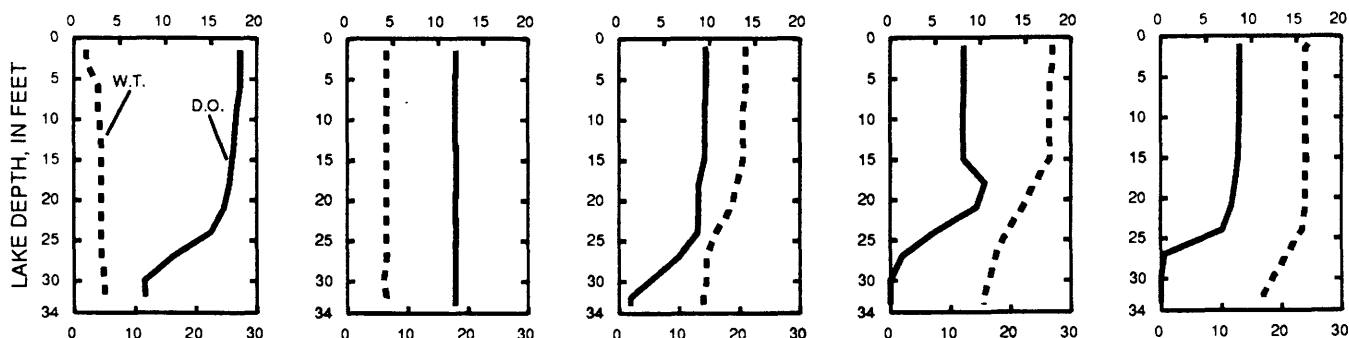
4-10-89

6-6-89

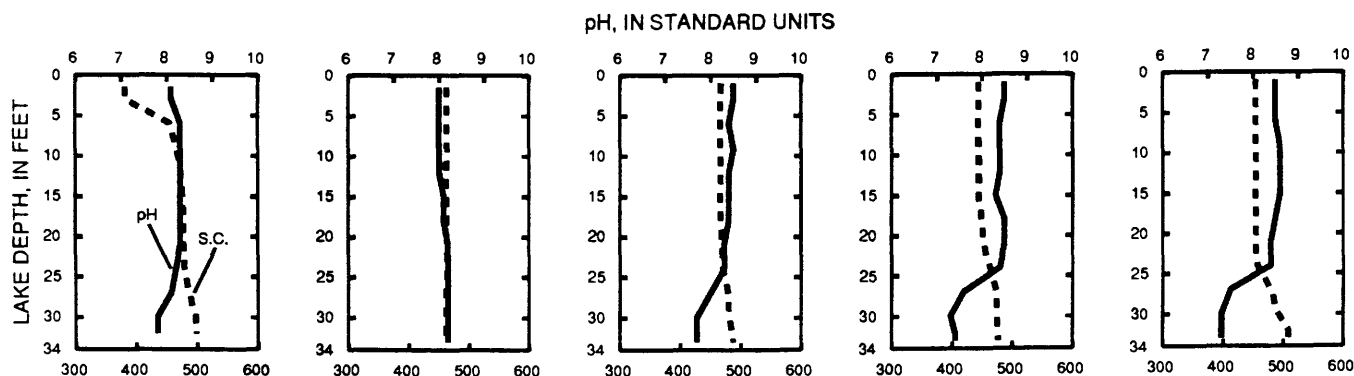
7-10-89

8-21-89

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



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



## SPECIFIC CONDUCTANCE (S.C.), IN MICROSIEMENS PER CENTIMETER

## 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.

## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM	
						GAGE HEIGHT (FT)	DIS-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, 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.	E 1.86	1959-89	06-13-89	12.64	93
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, AT BOX CULVERT ON STATE HIGHWAY 13, 4.0 MI NORTH OF MAPLE.	4.01	1957-89	06-13-89	13.49	325
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, AT BOX CULVERT ON STATE HIGHWAY 13, 8.0 MI NORTHWEST OF RED CLIFF.	1.14	1959-89	05-24-89	12.84	164
*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, ON COUNTY TRUNK HIGHWAY C, 2.5 MI WEST OF WASHBURN.	E 33.9	1959-65 1966# 1967-89	05-24-89	11.24	325
04026450	BAD RIVER NEAR MELLE, 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, ON LEFT BANK 150 FT DOWNSTREAM FROM BRIDGE ON U.S. FOREST SERVICE ROAD, 4.4 MI SOUTHEAST OF MELLE.	83.4	1971-75# 1976-89	04-17-89	4.47	673
*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, AT BOX CULVERT ON U.S. HIGHWAY 63, 0.8 MI EAST OF GRANDVIEW.	16.9	1960-89	06-13-89	11.69	170
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, AT CULVERT ON STATE HIGHWAY 70, 2.2 MI SOUTHEAST OF ALVIN.	1.24	1960-89	10-25-88	10.48	9
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, AT BRIDGE ON COUNTRY ROAD, AT WINDSOR DAM, 3.8 MI UPSTREAM FROM CONFLUENCE OF NORTH AND SOUTH FORKS, 4.0 MI SOUTHWEST OF ALVIN.	27.8	1967-68# 1970-89	06-01-89	2.62	72
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, AT CORRUGATED TWIN BARREL CULVERTS ON U.S. FOREST SERVICE ROAD 2159, 5.4 MI EAST OF NEWALD.	9.47	1970-89	03-28-89	12.02	51
*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, AT BOX CULVERT ON STATE HIGHWAY 101, 6.0 MI NORTH OF FENCE.	41.40	1958-89	03-28-89	12.43 D	--
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, AT 3-BARREL CORRUGATED CULVERT ON COUNTY TRUNK HIGHWAY N, 5.5 MI WEST OF AURORA.	35.0	1970-89	03-28-89	14.40	515
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, AT BRIDGE ON U.S. HIGHWAY 8, 0.7 MI NORTHWEST OF CAVOUR.	150	1970-89	03-28-89	12.83	770

## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989						ANNUAL MAXIMUM	
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED							
04067800	ARMSTRONG CREEK NEAR ARMSTRONG CREEK, WI	LAT 45°39'29", LONG 88°28'44", IN W 1/2 SEC.27, T.37 N., R.16 E., FOREST COUNTY, AT BRIDGE ON U.S. HIGHWAY 8, 1.8 MI NORTHWEST OF ARMSTRONG CREEK.	23.3	1958-89	1989	B	<70
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, AT PIPE ARCH CULVERT ON COUNTY TRUNK HIGHWAY C, 0.6 MI EAST OF INTER-SECTION WITH STATE HIGHWAY 32 AT WABENO.	34.1	1970-89	03-28-89	11.78	125
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, AT BRIDGE ON U.S. HIGHWAY 141, 3.8 MI SOUTH OF COLEMAN.	21.4	1958-89	03-28-89	13.53	360
*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, AT BRIDGE ON STATE HIGHWAY 32, 6.1 MI NORTH OF PULASKI.	41.80	1961-89	03-27-89	16.13 G	1,240
*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, AT CONCRETE CULVERT ON STATE HIGHWAY 21, 0.2 MI WEST OF WAUTOMA.	3.59	1959-89	05-31-89	12.04	86
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, AT CONCRETE CIRCULAR CULVERT ON U.S. HIGHWAY 8, 3.5 MI NORTH OF NASHVILLE.	10.0	1970-89	03-28-89	12.40	44
*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, AT TWIN CULVERTS ON U.S. HIGHWAY 45 AND STATE HIGHWAY 47, 1.5 MI SOUTH OF ELCHO.	9.00	1958-89	1989	B	<40
*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, AT CULVERT ON COUNTY TRUNK HIGHWAY A, 3.2 MI NORTH FROM JUNCTION OF STATE HIGHWAYS 55 AND 52 AT LILY.	52.4	1970-89	03-28-89	9.82	55
*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, AT CULVERT ON STATE HIGHWAY 64, 3.5 MI SOUTHWEST OF LANGLADE.	8.00	1959-65 1966-72# 1973-89	03-27-89	10.60	35
*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, AT CULVERT ON COUNTY TRUNK HIGHWAY E, 1.5 MI NORTH OF BIG FALLS.	4.90	1959-65 1966# 1967-89	05-31-89	10.89	54
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, AT BRIDGE ON U.S. HIGHWAY 41, 1.0 MI SOUTHWEST OF BRIDGE ON ALGOMA STREET AT FOX RIVER, AT OSHKOSH.	15.3	1961-89	03-26-89	12.57	430
*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, AT BRIDGE ON STATE HIGHWAY 55, 3.0 MI NORTH OF KAUKAUNA.	15.0	1960-89	03-27-89	14.49 G	430
04085300	NESHOTA RIVER TRIBUTARY NEAR DENMARK, WI	LAT 44°23'43", LONG 87°52'13", IN NE 1/4 SEC.7, T.22 N., R.22 E., BROWN COUNTY, AT BOX CULVERT ON U.S. HIGHWAY 141, 3.8 MI NORTHWEST OF DENMARK.	3.08	1959-89	03-27-89	12.72 G	100
*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, AT BRIDGE ON COUNTRY ROAD, 2.4 MI NORTHEAST OF CHILTON.	29.5	1961-89	03-27-89	12.33 G	--
*04087050	LITTLE MENOMONEE RIVER NEAR FREISTADT, WI	LAT 43°12'24", LONG 88°02'24", ON COMMON BOUNDARY OF SECS.29 AND 32, T.9 N., R.21 E., OZAUKEE COUNTY, AT BRIDGE ON DONGES BAY ROAD, 2.0 MI SOUTH OF FREISTADT.	8.00	1958-89	03-27-89	11.04	120

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989							
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED							
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, 400 FT UPSTREAM FROM BRIDGE ON S. 68TH STREET, 6.0 MI SOUTHWEST OF MOUTH OF MILWAUKEE RIVER, AT MILWAUKEE.	3.26	1959-89	09-03-89	20.63	470
*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, AT BRIDGE ON WEST NICHOLSON ROAD, 3.0 MI SOUTHWEST OF SOUTH MILWAUKEE.	13.8	1958-89	09-03-89	15.13	220
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, AT CULVERT ON COUNTY TRUNK HIGHWAY U, 3.0 MI SOUTHEAST OF NORTH CAPE.	3.92	1962-89	09-03-89	12.39	142
*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, AT BOX CULVERT ON STATE HIGHWAY 43, 3.0 MI NORTHWEST OF KENOSHA.	7.25	1960-89	11-16-88	11.86	20
ST. CROIX RIVER BASIN							
*05333100	LITTLE FROG CREEK NEAR MINONG, WI	LAT 46°05'48", LONG 91°46'39", IN NW 1/4 SEC.29, T.42 N., R.11 W., WASHBURN COUNTY, AT CULVERT ON COUNTRY ROAD, 2.5 MI EAST OF MINONG.	13.0	1961-89	04-08-89	13.46	130
*05335380	BASHAW BROOK NEAR SHELL LAKE, WI	LAT 45°47'02", LONG 92°07'51", IN SW 1/4 SEC.8, T.38 N., R.14 W., BURNETT COUNTY, AT TWIN BOX CULVERTS ON COUNTRY ROAD, 10.5 MI NORTHWEST OF SHELL LAKE.	24.9	1959-65 1966# 1967-89	04-08-89	12.95	126
*05340300	TRADE RIVER NEAR FREDERIC, WI	LAT 45°37'41", LONG 92°29'19", IN SW 1/4 SEC.4, T.36 N., R.17 W., POLK COUNTY, AT BOX CULVERT ON STATE HIGHWAYS 35 AND 48, 2.5 MI SOUTHWEST OF FREDERIC.	6.34	1958-89	04-08-89	12.30	165
05341900	KINNICKINNIC RIVER TRIBUTARY AT RIVER FALLS, WI	LAT 44°49'57", LONG 92°38'23", IN NE 1/4 SEC.14, T.27 N., R.19 W., PIERCE COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY FF, 1.6 MI SOUTHWEST OF RIVER FALLS.	7.26	1959-89	03-28-89	14.54	2,720
CHIPPEWA RIVER BASIN							
05357360	BEAR RIVER NEAR POWELL, WI	LAT 46°04'40", LONG 90°00'52", IN NE 1/4 SEC.32, T.42 N., R.4 E., IRON COUNTY, AT BRIDGE ON STATE HIGHWAY 182, 3.0 MI WEST OF POWELL.	118	1970-89	03-28-89	11.79 G	300
05357390	WEBER CREEK NEAR MERCER, WI	LAT 46°11'16", LONG 90°07'57", IN SE 1/4 SEC.21, T.43 N., R.3 E., IRON COUNTY, AT CULVERT ON U.S. HIGHWAY 51, 3.7 MI NORTHEAST OF MERCER.	7.10	1970-89	03-28-89	10.81	55
05358100	SMITH CREEK NEAR PARK FALLS, WI	LAT 45°57'06", LONG 90°28'07", IN NE 1/4 SEC.15, T.40 N., R.1 W., PRICE COUNTY, AT CULVERT ON STATE HIGHWAY 13, 1.5 MI NORTHWEST OF PARK FALLS.	E 9.46	1970-89	03-28-89	11.55	91
*05359600	PRICE CREEK NEAR PHILLIPS, WI	LAT 45°43'33", LONG 90°40'12", IN SW 1/4 SEC.31, T.38 N., R.2 W., PRICE COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY W, 13.0 MI WEST OF PHILLIPS.	16.9	1958-65 1966# 1967-89	1989	B	<70
*05361400	HAY CREEK NEAR PRENTICE, WI	LAT 45°32'32", LONG 90°21'37", IN SE 1/4 SEC.4, T.35 N., R.1 E., PRICE COUNTY, AT CULVERT ON U.S. HIGHWAY 8, 3.5 MI WEST OF PRENTICE.	21.9	1961-89	04-05-89	12.36	490
05361420	DOUGLAS CREEK NEAR PRENTICE, WI	LAT 45°31'06", LONG 90°15'28", IN NE 1/4 SEC.17, T.35 N., R.2 E., PRICE COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY C, 2.3 MI SOUTHEAST OF INTERSECTION WITH STATE HIGHWAY 13 AT PRENTICE.	E 25.2	1970-89	04-05-89	11.98	275

## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989							
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
CHIPPEWA RIVER BASIN--CONTINUED							
05361600	NORTH FORK JUMP RIVER NEAR PHILLIPS, WI	LAT 45°37'45", LONG 90°23'32", IN SW 1/4 SEC.5, T.36 N., R.1 E., PRICE COUNTY, AT CULVERT ON STATE HIGHWAY 13, 4.0 MI SOUTH OF PHILLIPS.	10.4	1970-89	03-27-89	11.08 G	19
*05364000	YELLOW RIVER AT CADOTT, WI	LAT 44°57'21", LONG 91°08'48", IN NE 1/4 SEC.31, T.29 N., R.6 W., CHIPPEWA COUNTY, AT BRIDGE ON STATE HIGHWAY 27, AT CADOTT.	351	1943-61# 1962-89	03-27-89	13.47 G	3,200
05364100	SETH CREEK NEAR CADOTT, WI	LAT 44°59'24", LONG 91°08'48", IN SW 1/4 SEC.17, T.29 N., R.6 W., CHIPPEWA COUNTY, AT CULVERT ON STATE HIGHWAY 27, 3.1 MI NORTH OF CADOTT.	3.04	1962-89	03-27-89	13.85	346
05364500	DUNCAN CREEK AT BLOOMER, WI	LAT 45°07'00", LONG 91°30'00", IN SEC.8, T.30 N., R.9 W., CHIPPEWA COUNTY, 0.2 MI BELOW BLOOMER DAM, AT BLOOMER.	49.2	1945-51# 1958-89	03-27-89	8.18	2,700
*05365700	GOGGLE-EYE CREEK NEAR THORP, WI	LAT 44°58'40", LONG 90°48'00", ON WEST BOUNDARY SEC.19, T.29 N., R.3 W., CLARK COUNTY, AT CULVERT ON STATE HIGHWAY 73, 1.3 MI NORTH OF THORP.	6.70	1958-89	03-27-89	15.58 G	550
*05366500	EAU CLAIRE RIVER NEAR FALL CREEK, WI	LAT 44°48'35", LONG 91°16'50", IN NW 1/4 SEC.19, T.27 N., R.7 W., EAU CLAIRE COUNTY, 500 FT EAST OF COUNTY TRUNK HIGHWAY K, 3.2 MI NORTH OF FALL CREEK.	758	1943-55# 1958-89	03-29-89	17.94	21,400
05367030	WILLOW CREEK NEAR EAU CLAIRE, WI	LAT 44°44'11", LONG 91°26'48", ON COMMON BOUNDARY OF SECS.14 AND 15, T.26 N., R.9 W., EAU CLAIRE COUNTY, AT BOX CULVERT ON STATE HIGHWAY 93, 4.0 MI SOUTH OF EAU CLAIRE.	4.38	1958-89	03-27-89	12.80	267
*05367480	EAST BRANCH PINE CREEK TRIBUTARY NEAR DALLAS, WI	LAT 45°16'50", LONG 91°48'30", IN SW 1/4 SEC.1, T.32 N., R.12 W., BARRON COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY O, 1.5 MI NORTH OF DALLAS.	3.85	1960-89	03-27-89	14.62	315
05367700	LIGHTNING CREEK AT ALMENA, WI	LAT 45°25'17", LONG 92°01'57", IN NW 1/4 SEC.19, T.34 N., R.13 W., BARRON COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY P, AT ALMENA.	19.8	1958-89	03-27-89	12.61	615
05370600	ARKANSAW CREEK TRIBUTARY NEAR ARKANSAW, WI	LAT 44°38'31", LONG 92°03'09", IN SW 1/4 SEC.14, T.25 N., R.14 W., PEPIN COUNTY, AT BOX CULVERT ON U.S. HIGHWAY 10, 1.2 MI NORTHWEST OF ARKANSAW.	2.56	1959-89	03-27-89	13.13	300
*05370900	SPRING CREEK NEAR DURAND, WI	LAT 44°34'13", LONG 91°57'48", IN S 1/2 SEC.9, T.24 N., R.13 W., BUFFALO COUNTY, AT BRIDGE ON COUNTRY ROAD, 4.0 MI SOUTH OF BRIDGE ON CHIPPEWA RIVER AT DURAND.	6.49	1962-89	03-27-89	13.27	305
BUFFALO RIVER BASIN							
05371800	BUFFALO RIVER TRIBUTARY NEAR OSSEO, WI	LAT 44°35'01", LONG 91°05'40", IN S 1/2 SEC.3, T.24 N., R.6 W., JACKSON COUNTY, AT CULVERT ON U.S. HIGHWAY 10, 6.5 MI EAST OF OSSEO.	1.44	1960-89	03-27-89	10.98	50
05371920	BUFFALO RIVER NEAR MONDOVI, WI	LAT 44°31'36", LONG 91°41'46", IN SW 1/4 SE 1/4 SEC.27, T.24 N., R.11 W., BUFFALO COUNTY, AT BRIDGE ON STATE HIGHWAY 88, 4.0 MI SOUTH OF MONDOVI.	E 279	1974-89	03-27-89	14.91	4,080
WAUMANDEE CREEK BASIN							
*05378200	EAGLE CREEK NEAR FOUNTAIN CITY, WI	LAT 44°09'49", LONG 91°42'28", IN SW 1/4 SEC.33, T.20 N., R.11 W., BUFFALO COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY G, 2.5 MI NORTH OF FOUNTAIN CITY.	26.8	1961-89	03-27-89	15.84	1,560

## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
BLACK RIVER BASIN							
05380800	BLACK RIVER TRIBUTARY NEAR WHITTLESEY, WI	LAT 45°12'34", LONG 90°19'05", IN SW 1/4 SEC.35, T.32 N., R.1 E., TAYLOR COUNTY, AT BRIDGE ON STATE HIGHWAY 13, 1.1 MI SOUTH OF WHITTLESEY.	2.12	1960-89	03-26-89	11.72	136
*05380900	POPLAR RIVER NEAR OWEN, WI	LAT 44°53'10", LONG 90°34'17", IN NW 1/4 SEC.25, T.28 N., R.2 W., CLARK COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY N, 4.2 MI SOUTH OF OWEN.	157	1958-65 1966# 1967-89	03-27-89	19.60	11,100
*05380970	CAWLEY CREEK NEAR NEILLSVILLE, WI	LAT 44°36'42", LONG 90°34'31", IN SW 1/4 SEC.25, T.25 N., R.2 W., CLARK COUNTY, AT BRIDGE ON STATE HIGHWAY 73, 3.7 MI NORTH OF NEILLSVILLE.	38.6	1961-89	03-15-89	15.90	2,100
*05382200	FRENCH CREEK NEAR ETTRICK, WI	LAT 44°11'04", LONG 91°18'49", IN NE 1/4 SEC.27, T.20 N., R.8 W., TREMPLEAU COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAYS D AND T, 2.5 MI WEST OF ETTRICK.	14.3	1960-89	03-27-89	9.46	95
MORMON CREEK BASIN							
*05386300	MORMON CREEK NEAR LA CROSSE, WI	LAT 43°46'00", LONG 91°08'27", IN NE 1/4 SEC.19, T.15 N., R.6 W., LA CROSSE COUNTY, AT BRIDGE ON COUNTRY ROAD, 6.0 MI SOUTHEAST OF LA CROSSE.	25.5	1961-89	09-01-89	11.46	715
BAD AXE RIVER BASIN							
*05387100	NORTH FORK BAD AXE RIVER NEAR GENOA, WI	LAT 43°33'10", LONG 91°08'58", IN SW 1/4 SEC.36, T.13 N., R.7 W., VERNON COUNTY, AT BRIDGE ON STATE HIGHWAY 56, 4.1 MI SOUTHEAST OF GENOA.	80.9	1959-65 1966# 1967-89	03-24-89	10.71	280
WISCONSIN RIVER BASIN							
*05390140	MUSKRAT CREEK AT CONOVER, WI	LAT 46°03'27", LONG 89°15'24", IN SW 1/4 SEC.4, T.41 N., R.10 E., VILAS COUNTY, AT CORRUGATED CULVERT ON U.S. HIGHWAY 45, 0.1 MI NORTH OF CONOVER.	10.2	1970-89	03-28-89	11.59	52
05390240	FOURMILE CREEK NEAR THREE LAKES, WI	LAT 45°50'17", LONG 89°04'32", IN NE 1/4 SEC.26, T.39 N., R.11 E., ONEIDA COUNTY, AT 2-BARREL CORRUGATED CULVERT ON FOURMILE CREEK ROAD, 5.5 MI NORTHEAST OF THREE LAKES.	10.3	1970-89	03-28-89	12.72 D	85
05391260	GUDEGAST CREEK NEAR STARKS, WI	LAT 45°41'41", LONG 89°15'42", IN NW 1/4 SEC.16, T.37 N., R.10 E., ONEIDA COUNTY, AT CORRUGATED CULVERT ON COUNTRY ROAD, 3.0 MI NORTHWEST OF STARKS.	14.0	1970-89	05-25-89	12.96	111
05391950	SQUAW CREEK NEAR HARRISON, WI	LAT 45°32'47", LONG 89°29'16", IN SW 1/4 SEC.3, T.35 N., R.8 E., LINCOLN COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY A, 5.0 MI NORTHEAST OF HARRISON.	3.23	1970-89	05-25-89	10.53	16
*05392150	MISHONAGON CREEK NEAR WOODRUFF, WI	LAT 45°54'41", LONG 89°45'30", IN NE 1/4 SEC.32, T.40 N., R.6 E., VILAS COUNTY, AT TWIN CULVERTS ON STATE HIGHWAY 47, 3.0 MI NORTHWEST OF WOODRUFF.	17.6	1958-89	06-01-89	10.51	77
*05392350	BEARSKIN CREEK NEAR HARSHAW, WI	LAT 45°38'43", LONG 89°41'12", IN SW 1/4 SEC.36, T.37 N., R.6 E., ONEIDA COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY K, 2.1 MI SOUTHWEST OF HARSHAW.	31.1	1958-65 1966# 1967-89	03-27-89	9.22	48
05393640	LITTLE PINE CREEK NEAR IRMA, WI	LAT 45°23'37", LONG 89°40'20", IN NW 1/4 SEC.31, T.34 N., R.7 E., LINCOLN COUNTY, AT BOX CULVERT ON U.S. HIGHWAY 51, 3.0 MI NORTH OF IRMA.	22.0	1970-89	03-28-89	12.28	74



## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989					ANNUAL MAXIMUM		
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
WISCONSIN RIVER BASIN--CONTINUED							
*05394200	DEVIL CREEK NEAR MERRILL, WI	LAT 45°08'56", LONG 89°47'13", IN N 1/2 SEC.30, T.31 N., R.6 E., LINCOLN COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY F, 5.8 MI SOUTHWEST OF MERRILL.	9.58	1961-89	03-28-89	G	300
05395020	LLOYD CREEK NEAR DOERING, WI	LAT 45°13'57", LONG 89°22'04", IN SE 1/4 SEC.21, T.32 N., R.9 E., LANGLADE COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY C, 4.5 MI EAST OF DOERING.	7.80	1970-89	05-26-89	11.60	104
05395100	TRAPPE RIVER TRIBUTARY NEAR MERRILL, WI	LAT 45°08'07", LONG 89°30'08", IN SW 1/4 SEC.28, T.31 N., R.8 E., LINCOLN COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY P, 9.5 MI SOUTHEAST OF MERRILL.	1.58	1959-89	03-28-89	15.80	150
05396100	PET BROOK TRIBUTARY NEAR EDGAR, WI	LAT 44°56'40", LONG 89°57'05", IN SE 1/4 SEC.31, T.29 N., R.5 E., MARATHON COUNTY, AT CULVERT ON STATE HIGHWAY 29, 1.5 MI NORTHEAST OF EDGAR.	6.86	1962-89	04-05-89	13.98 G	670
05396300	WISCONSIN RIVER TRIBUTARY AT WAUSAU, WI	LAT 44°57'28", LONG 89°39'52", IN NE 1/4 NW 1/4 SEC.34, T.29 N., R.7 E., MARATHON COUNTY, ON ROAD RIGHT-OF-WAY OF 24TH AVENUE OPPOSITE THE ACE MOTEL, 300 FT EAST OF U.S. HIGHWAY 51, AT WAUSAU.	1.10	1982-89	05-25-89	5.46	111
05397600	BIG SANDY CREEK NEAR WAUSAU, WI	LAT 45°01'55", LONG 89°27'00", IN SE 1/4 SEC.31, T.30 N., R.9 E., MARATHON COUNTY, AT BRIDGE ON STATE HIGHWAY 52, 10.0 MI NORTHEAST OF WAUSAU.	11.5	1959-89	03-28-89	12.03	360
05400025	JOHNSON CREEK NEAR KNOWLTON, WI	LAT 44°44'19", LONG 89°36'39", IN SE 1/4 NE 1/4 SEC.13, T.26 N., R.7 E., MARATHON COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY X, 2.7 MI EAST OF KNOWLTON.	25.1	1973-89	03-27-89	14.79	680
05401800	YELLOW RIVER TRIBUTARY NEAR PITTSVILLE, WI	LAT 44°28'58", LONG 90°07'05", ON COMMON BOUNDARY OF SECS.11 AND 14, T.23 N., R.3 E., WOOD COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY C, 2.0 MI NORTH OF PITTSVILLE.	7.23	1959-89	03-28-89	12.20	300
*05403520	WEBSTER CREEK AT NEW LISBON, WI	LAT 43°51'23", LONG 90°10'25", IN NE 1/4 SEC.19, T.16 N., R.3 E., JUNEAU COUNTY, AT BRIDGE ON STATE HIGHWAY 80, 1.2 MI SOUTH OF NEW LISBON.	11.8	1961-89	05-26-89	13.16	170
*05403550	ONEMILE CREEK NEAR MAUSTON, WI	LAT 43°45'50", LONG 90°04'45", IN SE 1/4 SEC.24, T.15 N., R.3 E., JUNEAU COUNTY, AT BRIDGE ON STATE HIGHWAY 58, 2.4 MI SOUTH OF MAUSTON.	30.2	1958-89	03-28-89	14.39	500
05403630	HULBERT CREEK NEAR WISCONSIN DELLS, WI	LAT 43°37'37", LONG 89°48'36", IN SE 1/4 SW 1/4 SEC.5, T.13 N., R.6 E., SAUK COUNTY, 1.6 MI UPSTREAM FROM MOUTH, AND 2.0 MI WEST OF WISCONSIN DELLS.	11.2	1971-77# 1978-89	03-28-89	3.81 D	78
05403700	DELL CREEK NEAR LAKE DELTON, WI	LAT 43°33'05", LONG 89°51'55", IN NW 1/4 SEC.2, T.12 N., R.5 E., SAUK COUNTY, ON RIGHT BANK 50 FT UPSTREAM FROM HIGHWAY BRIDGE, 6.0 MI SOUTHWEST OF LAKE DELTON, AND 7.0 MI UPSTREAM FROM MOUTH.	44.9	1957-65# 1966-70 1971-80# 1983-89	03-28-89	5.91	244
*05404200	NARROWS CREEK AT LOGANVILLE, WI	LAT 43°26'32", LONG 90°02'06", IN SE 1/4 SEC.8, T.11 N., R.4 E., SAUK COUNTY, AT BRIDGE ON STATE HIGHWAYS 23 AND 154, 0.2 MI NORTH OF LOGANVILLE.	40.1	1958-65 1966# 1967-89	03-11-89	14.37	1,725
*05405600	ROWAN CREEK AT POYNETTE, WI	LAT 43°23'13", LONG 89°23'25", IN S 1/2 SEC.35, T.11 N., R.9 E., COLUMBIA COUNTY, AT BRIDGE ON U.S. HIGHWAY 51, AT POYNETTE.	10.4	1961-89	07-19-89	14.41	610
05406800	ROCKY BRANCH NEAR RICHLAND CENTER, WI	LAT 43°18'52", LONG 90°23'22", IN E 1/2 SEC.29, T.10 N., R.1 E., RICHLAND COUNTY, AT CULVERT ON STATE HIGHWAY 80, 1.5 MI SOUTH OF RICHLAND CENTER.	1.68	1960-89	03-24-89	11.06	60

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

				ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989		ANNUAL MAXIMUM	
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
WISCONSIN RIVER BASIN--CONTINUED							
*05407100	RICHLAND CREEK NEAR PLUGTOWN, WI	LAT 43°11'12", LONG 90°44'23", IN NW 1/4 SEC.9, T.8 N., R.3 W., CRAWFORD COUNTY, AT BRIDGE ON U.S. HIGHWAY 61, 2.0 MI SOUTH OF PLUGTOWN.	19.2	1958-89	08-09-89	16.41	1,140
*05407200	CROOKED CREEK NEAR BOSCOBEL, WI	LAT 43°06'27", LONG 90°42'18", IN SE 1/4 SEC.2, T.7 N., R.3 W., GRANT COUNTY, AT BRIDGE ON U.S. HIGHWAY 61, 1.6 MI SOUTH OF BOSCOBEL.	12.9	1959-89	05-24-89	11.69	245
GRANT RIVER BASIN							
*05413400	PIGEON CREEK NEAR LANCASTER, WI	LAT 42°49'00", LONG 90°43'20", IN SW 1/4 SEC.15, T.4 N., R.3 W., GRANT COUNTY, AT CULVERT ON COUNTRY ROAD, 2.0 MI SOUTH OF LANCASTER.	6.93	1960-65 1966# 1967-89	03-10-89	12.53	420
PLATTE RIVER BASIN							
*05414200	BEAR BRANCH NEAR PLATTEVILLE, WI	LAT 42°45'46", LONG 90°30'06", IN NW 1/4 SEC.4, T.3 N., R.1 W., GRANT COUNTY, AT BOX CULVERT ON STATE HIGHWAY 81, 2.3 MI NORTHWEST OF PLATTEVILLE.	2.80	1958-89	03-10-89	11.00	160
GALENA RIVER BASIN							
*05414900	PATS CREEK NEAR ELK GROVE, WI	LAT 42°40'03", LONG 90°22'40", IN SW 1/4 SEC.4, T.2 N., R.1 E., LAFAYETTE COUNTY, AT BRIDGE ON STATE HIGHWAY 81, 7.0 MI SOUTHEAST OF PLATTEVILLE.	8.49	1960-89	03-10-89	12.39	355
05414915	MADDEN BRANCH NEAR BELMONT, WI	LAT 42°40'03", LONG 90°19'45", IN NE 1/4 NE 1/4 SEC.11, T.2 N., R.1 E., LAFAYETTE COUNTY, AT STATE HIGHWAY 81, 4.7 MI SOUTH OF BELMONT.	2.83	1981-82# 1984-89	1989	B	<100
ROCK RIVER BASIN							
*05423800	EAST BRANCH ROCK RIVER TRIBUTARY NEAR SLINGER, WI	LAT 43°23'06", LONG 88°18'29", IN S 1/2 SEC.26, T.11 N., R.18 E., WASHINGTON COUNTY, AT CULVERT ON U.S. HIGHWAY 41, 4.0 MI NORTHWEST OF SLINGER.	4.42	1960-89	03-25-89	12.18	180
*05425700	ROBBINS CREEK AT COLUMBUS, WI	LAT 43°20'48", LONG 89°01'55", IN SE 1/4 SEC.11, T.10 N., R.12 E., COLUMBIA COUNTY, AT CULVERT ON U.S. HIGHWAY 16, AT COLUMBUS.	8.01	1960-89	03-25-89	11.58	125
05425827	MAUNESHA RIVER NEAR SUN PRAIRIE, WI	LAT 43°13'37", LONG 89°09'33", IN SE 1/4 SEC.23, T.9 N., R.11 E., DANE COUNTY, AT BRIDGE ON TOWN ROAD, 4.2 MI NORTHEAST OF SUN PRAIRIE.	26.0	1973-89	03-25-89	12.35	460
*05427200	ALLEN CREEK NEAR FORT ATKINSON, WI	LAT 42°53'54", LONG 88°51'35", IN NE 1/4 SEC.17, T.5 N., R.14 E., JEFFERSON COUNTY, AT BOX CULVERT ON STATE HIGHWAY 26, 2.5 MI SOUTHWEST OF FORT ATKINSON.	10.2	1958-89	03-25-89	10.31	88
05427800	TOKEN CREEK NEAR MADISON, WI	LAT 43°10'52", LONG 89°19'28", IN SW 1/4 SEC.4, T.8 N., R.10 E., DANE COUNTY, AT CULVERT ON U.S. HIGHWAY 51, 8 MI NORTHEAST OF STATE CAPITOL IN MADISON.	24.3	1961-65 1966# 1967-75 1976-81# 1982-89	03-25-89	12.94	300
05430403	FISHER CREEK TRIBUTARY AT JANESVILLE, WI	LAT 42°40'18", LONG 89°03'31", IN SW 1/4 SE 1/4 SEC.34, T.3 N., R.12 E., ROCK COUNTY, AT CULVERT ON ROCKPORT ROAD, 0.4 MI WEST OF SOUTH CROSBY AVENUE, AND 0.6 MI UPSTREAM FROM COUNTY TRUNK HIGHWAY D, AT JANESVILLE.	1.95	1982-89	09-05-89	6.79	485

## ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989

ANNUAL MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS DURING WATER YEAR 1989							
STATION NO.	STATION NAME	LOCATION	DRAINAGE AREA (MI <sup>2</sup> )	PERIOD OF RECORD	DATE	ANNUAL MAXIMUM GAGE HEIGHT (FT)	DIS-CHARGE (FT <sup>3</sup> /S)
ROCK RIVER BASIN--CONTINUED							
*05431400	LITTLE TURTLE CREEK AT ALLENS GROVE, WI	LAT 42°34'46", LONG 88°45'33", IN NE 1/4 SEC.6, T.1 N., R.15 E., WALWORTH COUNTY, AT BRIDGE ON COUNTRY ROAD, 0.2 MI SOUTH OF ALLENS GROVE.	41.8	1962-89	03-25-89	11.90	370
*05432300	ROCK BRANCH NEAR MINERAL POINT, WI	LAT 42°50'02", LONG 90°09'15", IN SE 1/4 SEC.8, T.4 N., R.3 E., IOWA COUNTY, AT BOX CULVERT ON STATE HIGHWAY 23, 2.5 MI SOUTH OF MINERAL POINT.	4.83	1959-89	03-11-89	11.89	225
*05433500	YELLOWSTONE RIVER NEAR BLANCHARDVILLE, WI	LAT 42°46'55", LONG 89°59'50", IN NE 1/4 SEC.34, T.4 N., R.4 E., LAFAYETTE COUNTY, 0.6 MI UPSTREAM FROM BRIDGE ON COUNTY TRUNK HIGHWAY F, 7.0 MI WEST-SOUTHWEST OF BLANCHARDVILLE.	28.5	1954-65# 1966-89	03-11-89	9.42	1,420
05435900	SUGAR RIVER TRIBUTARY NEAR PINE BLUFF, WI	LAT 43°02'48", LONG 89°38'42", IN SE 1/4 SEC.27, T.7 N., R.7 E., DANE COUNTY, AT CULVERT ON COUNTY TRUNK HIGHWAY J, 1.1 MI SOUTHEAST OF PINE BLUFF.	7.42	1961-89	03-12-89	14.52	350
*05436200	GILL CREEK NEAR BROOKLYN, WI	LAT 42°49'38", LONG 89°26'43", IN NW 1/4 SEC.16, T.4 N., R.9 E., GREEN COUNTY, AT CULVERT ON STATE HIGHWAY 92, 4.3 MI WEST OF BROOKLYN.	3.34	1961-89	03-12-89	13.67	140
*05437200	EAST FORK RACCOON CREEK TRIBUTARY NEAR BELOIT, WI	LAT 42°30'44", LONG 89°06'40", ON COMMON BOUNDARY OF SECS.30 AND 31, T.1 N., R.12 E., ROCK COUNTY, AT CULVERT ON STATE HIGHWAY 81, 2.9 MI WEST OF BELOIT.	4.64	1958-89	03-11-89	12.47	180
ILLINOIS RIVER BASIN							
05545100	SUGAR CREEK AT ELKHORN, WI	LAT 42°41'05", LONG 88°30'50", IN SW 1/4 SEC.29, T.3 N., R.17 E., WALWORTH COUNTY, AT CULVERT ON STATE HIGHWAY 11, 2.0 MI NORTHEAST OF ELKHORN.	6.68	1962-89	09-03-89	11.38	65
05545200	WHITE RIVER TRIBUTARY NEAR BURLINGTON, WI	LAT 42°41'03", LONG 88°21'37", ON COMMON BOUNDARY OF SECS.27 AND 34, T.3 N., R.18 E., WALWORTH COUNTY, AT BOX CULVERT ON STATE HIGHWAY 11, 4.5 MI WEST OF BURLINGTON.	2.42	1958-89	09-03-89	11.70	97
*05548150	NORTH BRANCH NIPPERSINK CREEK TRIBUTARY NEAR GENOA CITY, WI	LAT 42°30'15", LONG 88°23'01", IN E 1/2 SEC.32, T.1 N., R.18 E., WALWORTH COUNTY, AT BRIDGE ON COUNTY TRUNK HIGHWAY B, 3.0 MI WEST OF GENOA CITY.	13.8	1962-89	09-03-89	11.03	136

\* Also a low-flow partial-record station.  
# Operated as a continuous-record station.  
B Peak did not reach bottom of gage.  
D Backwater from beaver dam.  
E Revised.  
G Backwater from ice.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

## MEASUREMENTS AT MISCELLANEOUS SITES

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table.

## DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1989

Stream	Tributary to	Location	Drainage Area (mi <sup>2</sup> )	Measured Previously (Water Years)	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
STREAMS TRIBUTARY TO LAKE MICHIGAN						
Brule River	Lake Michigan	Lat 45°56'51", long 88°13'04", in NW 1/4 SW 1/4 sec.17, T.41 N., R.31 W., Michigan Meridian, Iron County, at powerplant, near Florence.			06-21-89	29.4
					06-21-89	36.0
					06-21-89	35.2
					07-26-89	56.8
					07-26-89	60.2
					08-10-89	135
Pine River	Menominee River	Lat 45°49'39", long 88°14'54", in NW 1/4 SE 1/4 sec.28, T.39 N., R.18 E., Michigan Meridian, Florence County, at powerplant, near Florence.		--	09-28-89	46.9
					09-28-89	47.3
Pine River	Menominee River	Lat 45°49'37", long 88°14'51", in NW 1/4 SE 1/4 sec.28, T.39 N., R.18 E., Michigan Meridian, Florence County, below powerplant, near Florence.		--	09-28-89	92.2
					09-28-89	89.0
CHIPPEWA RIVER BASIN						
Magee Creek	E. Fk. Chippewa River	Lat 46°10'36", long 90°31'17", in SE 1/4 NW 1/4 sec.29, T.43 N., R.2 W., Ashland County, on town road, 3.8 mi northeast of Glidden.	14.8	--	10-04-88	1.9
Manitowish River	Chippewa River	Lat 46°07'14", long 89°38'20", in SE 1/4 NE 1/4 sec.17, T.42 N., R.7 E., Vilas County, on County Highway M, 0.6 mi north of Boulder Junction.	70.5	1939-40	10-05-88	42.51
Rice Creek	Manitowish River	Lat 46°09'17", long 89°43'02", in NW 1/4 NW 1/4 sec.2, T.42 N., R.6 E., Vilas County, at bridge on town road 5.5 mi northwest of Boulder Junction.	10.2	--	10-05-88	1.89
Stevenson Creek	Trout River	Lat 46°03'41", long 89°38'47", in NW 1/4 SE 1/4 sec.5, T.41 N., R.7 E., Vilas County, at County Highway M, 3.6 mi south of Boulder Junction.	7.96	1976	10-05-88	0.38
Trout River	Manitowish River	Lat 46°02'02", long 89°46'20", in SE 1/4 NW 1/4 sec.17, T.42 N., R.6 E., Vilas County, at bridge on County Highway H, approximately, 8.5 mi southwest of Boulder Junction.	58.9	--	10-05-88	26.05
Gresham Creek	Trout River	Lat 46°02'41", long 89°46'01", in SE 1/4 SE 1/4 sec.8, T.42 N., R.6 E., Vilas County, at bridge on County Highway H, 7.5 mi southwest of Boulder Junction.	11.03	--	10-05-88	4.19
Moose Creek	Turtle River	Lat 46°13'22", long 90°12'23", in NE 1/4 NW 1/4 sec.11, T.43 N., R.2 E., Iron County, at town road, approximately 7 mi northwest of Mercer.	8.47	--	10-04-88	3.62
Swamp Creek	Flambeau River	Lat 46°09'20", long 90°17'21", in SW 1/4 SE 1/4 sec.31, T.43 N., R.2 E., Iron County, at town road, approximately 11 mi west of Mercer.	15.4	--	10-04-88	7.42
Deer Creek	Flambeau River	Lat 46°03'09", long 90°20'57", in SW 1/4 SE 1/4 sec.3, T.41 N., R.1 E., Ashland County, on County Highway F, 7.6 mi northeast of Butternut.	8.03	--	10-04-88	1.83
Butternut Creek	Flambeau River	Lat 46°01'27", long 90°29'11", in SW 1/4 SW 1/4 sec.15, T.41 N., R.1 W., Ashland County, on County Highway F, 1 mi northeast of Butternut.	23.6	--	10-04-88	6.32
Spiller Creek	Butternut Creek	Lat 45°58'54", long 90°32'06", in SE 1/4 SE 1/4 sec.31, T.41 N., R.1 W., Ashland County, on town road, 2.8 mi southwest of Butternut.	8.82	--	10-04-88	2.62

## DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1989

Stream	Tributary to	Location	Drainage Area (mi <sup>2</sup> )	Measured Previously (Water Years)	Date	Discharge (ft <sup>3</sup> /s)
CHIPPEWA RIVER BASIN--CONTINUED						
Squaw Creek	Flambeau River	Lat 45°51'11", long 90°00'07", in SW 1/4 NW 1/4 sec.28, T.40 N., R.4 E., Vilas County, on State Highway 70, 6.3 mi southwest of Lac du Flambeau.	39.3	--	10-05-88	1.81
Springstead Creek	S. Fk. Flambeau River	Lat 45°55'55", long 90°06'40", in SE 1/4 SE 1/4 sec.16, T.40 N., R.3 E., Price County, at bridge on U.S. Forest Road 147, 16 mi east of Park Falls.	17.0	1967 1969-72 1974 1976	10-05-88	2.18
Hay Creek	S. Fk. Flambeau River	Lat 45°56'45", long 90°17'47", in SW 1/4 NE 1/4 sec.13, T.40 N., R.1 E., Price County, at State Highway 182, 8 mi east of Park Falls.	24.9	--	10-06-88	14.0
Douglas Creek	S. Fk. Jump River	Lat 45°31'03", long 90°15'26", in SW 1/4 NE 1/4 sec.17, T.35 N., R.2 E., Price County, at culvert on County Highway C, 2.3 mi southeast of Prentice.	25.2	1971	10-06-88	1.05
Mondeaux Creek	Douglas Creek	Lat 45°29'18", long 90°16'46", in SE 1/4 NW 1/4 sec.30, T.35 N., R.2 E., Price County, at town road, 3.1 mi northeast of Ogema.	11.1	--	10-06-88	0.49
S. Fk. Jump River	Chippewa River	Lat 45°23'20", long 90°30'30", in NW 1/4 NW 1/4 sec.33, T.34 N., R.1 W., Price County, on right bank 2.1 mi downstream from Mondaux River and 11 mi southwest of Ogema.	327	--	10-06-88	18.86
Web Creek	N. Fk. Jump River	Lat 45°28'52", long 90°35'48". in SW 1/4 SW 1/4 sec.26, T.35 N., R.2 W., Price County, on County Highway N, approximately 3.3 mi southeast of Catawba.	9.50	--	10-07-88	0.28
WISCONSIN RIVER BASIN						
Wisconsin River	Mississippi River	Lat 45°17'41", long 89°47'34", in SW 1/4 SW 1/4 sec.31, T.33 N., R.6 E., Lincoln County, 0.5 mi downstream from powerplant at Grandfather Dam, 9.5 mi northwest of Merrill.	--	--	07-13-89 07-20-89 07-20-89 08-22-89	1,799 428 1,120 978
ROCK RIVER BASIN						
Rock River	Mississippi River	Lat 42°29'47", long 89°02'31", in SE 1/4 SW 1/4 sec.35, T.1 N., R.12 E., Rock County, at bridge on Shirland Avenue, in Beloit.	--	--	12-15-88	1,350

## WATER-QUALITY PARTIAL-RECORD STATIONS

Water-quality partial-record stations are particular sites where chemical-quality, biological, physical, and/or sediment data are collected systematically over a period of years for use in hydrologic analyses.

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)									
NOV 1988					MAY 1989				
11...	1132	1250	120	3.0	25...	1730	1380	115	16.5
JAN 1989					JUL				
17...	1355	80	140	0.0	10...	1410	60	275	27.5
FEB					SEP				
15...	1140	67	190	0.0	13...	1100	176	160	15.5
04025500 BOIS BRULE RIVER AT BRULE, WI (LAT 46 32 16N LONG 091 35 43W)									
NOV 1988					MAY 1989				
17...	0950	225	95	2.5	25...	1335	329	100	14.0
FEB 1989					JUL				
15...	1450	150	110	0.0	10...	1600	127	118	24.0
APR					SEP				
12...	1415	252	95	2.5	13...	1320	127	115	12.5
04027500 WHITE RIVER NEAR ASHLAND, WI (LAT 46 29 50N LONG 090 54 15W)									
NOV 1988					MAY 1989				
16...	1400	826	113	5.0	24...	1655	306	165	15.5
JAN 1989					JUL				
03...	1540	184	210	0.0	12...	1930	146	175	22.0
FEB					SEP				
15...	1755	191	210	0.5	13...	1535	160	180	16.5
APR									
13...	0831	345	175	3.0					
STREAMS TRIBUTARY TO LAKE MICHIGAN									
04066003 MENOMINEE RIVER BELOW PEMENE CRK NR PEMBINE, WI (LAT 45 34 46N LONG 087 47 13W)									
OCT 1988					JUN 1989				
06...	1200	1210	260	10.0	21...	1140	4330	185	20.0
APR 1989					AUG				
20...	1115	3260	230	6.5	09...	1500	1270	265	24.0
04067500 MENOMINEE RIVER NEAR MCALLISTER, WI (LAT 45 19 20N LONG 087 39 40W)									
OCT 1988									
18...	1145	1660	260	8.5					
04071000 OCONTO RIVER NEAR GILLET, WI (LAT 44 51 53N LONG 088 18 00W)									
OCT 1988					APR 1989				
27...	1625	391	290	3.5	26...	1405	539	230	15.0
DEC					JUN				
06...	1320	576	250	1.0	27...	0945	372	260	21.0
JAN 1989					AUG				
18...	1315	290	300	0.5	08...	1140	210	280	20.5
MAR									
15...	1645	367	270	0.0					
04071765 OCONTO RIVER NEAR OCONTO, WI (LAT 44 51 38N LONG 087 59 02W)									
MAR 1989					JUN 1989				
12...	1435	3710	173	1.5	01...	1300	1250	265	18.0
30...	1115	2920	157	2.0					
04071858 PENSANKEE RIVER NEAR PENSANKEE, WI (LAT 44 49 08N LONG 087 57 12W)									
OCT 1988					APR 1989				
28...	1020	6.1	525	2.5	26...	0930	34	558	13.5
DEC					JUN				
07...	1145	18	620	1.0	22...	1455	17	530	23.0
JAN 1989					AUG				
17...	1620	6.4	690	0.0	08...	1815	7.2	410	23.0
MAR									
28...	1745	1620	163	2.0					

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANALYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	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)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED												
04072013 DUCK CREEK AT STINGE ROAD NEAR BLACK CREEK, WI (LAT 44 25 49N LONG 088 23 40W)												
MAY 1989 11...	1015	80020	1.8	690	6.80	10.0	100	27	5.6	4.7	129	200
04072015 DUCK CREEK AT FRITSCH ROAD NEAR FREEDOM, WI (LAT 44 23 44N LONG 088 20 04W)												
MAY 1989 17...	1215	80020	3.1	775	8.70	21.5	110	33	10	5.9	178	200
04072024 DUCK CREEK AT VINE ROAD NEAR FREEDOM, WI (LAT 44 22 32N LONG 088 18 44W)												
MAY 1989 10...	1730	80020	4.4	865	8.30	15.0	80	37	9.7	2.7	236	97
040720305 DUCK CREEK 0.3 MI DS FREEDOM STP NR FREEDOM, WI (LAT 44 23 50N LONG 088 16 55W)												
MAY 1989 10...	1400	80020	5.8	895	8.70	17.0	110	38	28	7.5	201	190
AUG 09...	1200	80020	0.2	2100	8.90	22.0	87	46	320	20	269	130
04072033 DUCK CREEK AT COUNTY HIGHWAY J NEAR FREEDOM, WI (LAT 44 24 54N LONG 088 15 37W)												
MAY 1989 17...	1115	80020	3.1	910	8.60	20.0	110	39	32	7.1	204	190
04072036 DUCK CREEK AT HILLSIDE PARK NEAR ONEIDA, WI (LAT 44 25 55N LONG 088 14 45W)												
MAY 1989 10...	1000	80020	6.5	910	8.10	11.0	110	39	26	7.5	215	190
AUG 09...	1630	80020	0.1	1150	--	23.0	78	36	110	7.2	271	59
04072042 DUCK CREEK AT COUNTY HIGHWAY EE NEAR ONEIDA, WI (LAT 44 26 41N LONG 088 13 55W)												
MAY 1989 17...	1015	80020	3.2	905	8.00	16.5	100	39	31	7.5	218	170
040720432 DUCK CREEK AT FISH CREEK ROAD NEAR ONEIDA, WI (LAT 44 27 32N LONG 088 13 18W)												
MAY 1989 16...	0845	80020	5.7	880	8.20	18.0	98	40	30	7.3	216	160
AUG 09...	1415	80020	0.1	755	8.30	22.5	76	34	32	5.7	273	42
040720445 DUCK CREEK TRIBUTARY AT RANCH ROAD NR ONEIDA, WI (LAT 44 28 23N LONG 088 13 27W)												
MAY 1989 16...	1145	80020	0.3	1050	8.10	17.0	99	46	49	8.1	234	160
04072051 DUCK CREEK 0.7 MI DS 2ND RIDGE RD NR ONEIDA, WI (LAT 44 28 18N LONG 088 12 30W)												
MAY 1989 16...	1045	80020	5.7	875	8.60	16.5	98	41	30	7.2	218	160
04072053 DUCK CREEK 0.5 MI US HWY 54 BRIDGE NR ONEIDA, WI (LAT 44 29 35N LONG 088 11 15W)												
MAY 1989 15...	1700	80020	7.4	860	9.00	19.0	95	40	29	8.3	214	160
04072060 DUCK CREEK AT OVERLAND ROAD NEAR ONEIDA, WI (LAT 44 30 42N LONG 088 10 12W)												
MAY 1989 15...	1315	80020	5.6	830	8.90	17.5	96	41	31	13	218	170
AUG 08...	1300	80020	0.0	655	7.80	22.5	50	36	26	9.7	182	63

## WATER-QUALITY PARTIAL-RECORD STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	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)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED											
04072013	DUCK CREEK AT STINGE ROAD NEAR BLACK CREEK, WI (LAT 44 25 49N LONG 088 23 40W)										
MAY 1989 11...	17	0.10	0.48	<0.010	1.40	0.070	0.020	2.5	0.030	0.020	<0.010
04072015	DUCK CREEK AT FRITSCH ROAD NEAR FREEDOM, WI (LAT 44 23 44N LONG 088 20 04W)										
MAY 1989 17...	30	0.10	0.56	0.020	<0.100	0.090	0.070	2.7	0.060	0.050	0.020
04072024	DUCK CREEK AT VINE ROAD NEAR FREEDOM, WI (LAT 44 22 32N LONG 088 18 44W)										
MAY 1989 10...	24	0.10	1.8	<0.010	0.360	0.040	<0.010	0.80	0.070	0.070	<0.010
040720305	DUCK CREEK 0.3 MI DS FREEDOM STP NR FREEDOM, WI (LAT 44 23 50N LONG 088 16 55W)										
MAY 1989 10...	6.2	0.20	0.49	<0.010	1.80	0.050	0.020	1.8	0.130	0.120	0.060
AUG 09...	460	0.70	7.6	0.100	16.0	0.060	0.080	1.4	2.10	2.00	1.40
04072033	DUCK CREEK AT COUNTY HIGHWAY J NEAR FREEDOM, WI (LAT 44 24 54N LONG 088 15 37W)										
MAY 1989 17...	70	0.20	0.50	0.020	0.220	0.090	0.060	2.3	0.180	0.150	0.120
04072036	DUCK CREEK AT HILLSIDE PARK NEAR ONEIDA, WI (LAT 44 25 55N LONG 088 14 45W)										
MAY 1989 10...	61	0.10	0.29	0.020	1.60	0.050	0.050	2.0	0.090	0.070	0.050
AUG 09...	190	0.20	3.7	<0.010	<0.100	0.130	0.100	1.4	0.490	0.440	0.420
04072042	DUCK CREEK AT COUNTY HIGHWAY EE NEAR ONEIDA, WI (LAT 44 26 41N LONG 088 13 55W)										
MAY 1989 17...	64	0.20	0.52	0.020	0.120	0.060	0.060	1.7	0.130	0.110	0.080
040720432	DUCK CREEK AT FISH CREEK ROAD NEAR ONEIDA, WI (LAT 44 27 32N LONG 088 13 18W)										
MAY 1989 16...	62	0.20	0.73	0.020	0.190	0.060	0.050	2.0	0.110	0.110	0.110
AUG 09...	63	0.10	6.7	<0.010	<0.100	0.110	0.090	1.2	0.270	0.240	0.210
040720445	DUCK CREEK TRIBUTARY AT RANCH ROAD NR ONEIDA, WI (LAT 44 28 23N LONG 088 13 27W)										
MAY 1989 16...	110	0.10	0.52	<0.010	<0.100	0.040	0.030	1.1	0.050	0.030	0.010
04072051	DUCK CREEK 0.7 MI DS 2ND RIDGE RD NR ONEIDA, WI (LAT 44 28 18N LONG 088 12 30W)										
MAY 1989 16...	63	0.10	0.34	0.010	<0.100	0.050	0.040	1.7	0.090	0.060	0.040
04072053	DUCK CREEK 0.5 MI US HWY 54 BRIDGE NR ONEIDA, WI (LAT 44 29 35N LONG 088 11 15W)										
MAY 1989 15...	66	0.10	0.22	<0.010	<0.100	0.060	0.060	1.3	0.070	0.050	0.020
04072060	DUCK CREEK AT OVERLAND ROAD NEAR ONEIDA, WI (LAT 44 30 42N LONG 088 10 12W)										
MAY 1989 15...	70	0.10	0.30	0.040	0.280	0.050	0.050	1.6	0.070	0.040	0.010
AUG 08...	60	0.20	1.2	<0.010	<0.100	0.040	0.070	1.8	0.080	0.060	0.050



## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39251)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39333)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39343)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39351)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39363)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39368)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39373)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39383)
STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED										
04072013	DUCK CREEK AT STINGE ROAD NEAR BLACK CREEK, WI (LAT 44 25 49N LONG 088 23 40W)									
MAY 1989 11...	80020	1.8	<1.0	<0.1	<0.1	<1.0	<0.1	0.2	<0.1	<0.1
04072024	DUCK CREEK AT VINE ROAD NEAR FREEDOM, WI (LAT 44 22 32N LONG 088 18 44W)									
MAY 1989 10...	80020	4.4	<1.0	<0.1	<0.1	<1.0	<0.1	0.3	<0.1	<0.1
AUG 09...	80020	0.0	<1.0	<0.1	<0.1	<1.0	<0.1	0.2	<0.1	<0.1
040720305	DUCK CREEK 0.3 MI DS FREEDOM STP NR FREEDOM, WI (LAT 44 23 50N LONG 088 16 55W)									
MAY 1989 10...	80020	5.8	<1.0	<0.1	<0.1	<1.0	0.6	<0.1	0.2	<0.1
AUG 09...	80020	0.25	<1.0	<1.0	<0.1	<1.0	0.2	0.6	<0.1	0.1
04072036	DUCK CREEK AT HILLSIDE PARK NEAR ONEIDA, WI (LAT 44 25 55N LONG 088 14 45W)									
MAY 1989 10...	80020	6.5	<1.0	<0.1	<0.1	<1.0	<0.1	0.5	<0.1	0.1
AUG 09...	80020	0.10	<1.0	<0.1	<0.1	1.0	0.1	0.3	<0.1	<0.1
040720432	DUCK CREEK AT FISH CREEK ROAD NEAR ONEIDA, WI (LAT 44 27 32N LONG 088 13 18W)									
MAY 1989 16...	80020	5.7	<1.0	<0.1	<0.1	<1.0	<0.1	<0.1	<0.1	<0.1
AUG 09...	80020	0.10	<1.0	<0.1	<0.1	<1.0	<0.1	0.2	0.1	<0.1
04072053	DUCK CREEK 0.5 MI US HWY 54 BRIDGE NR ONEIDA, WI (LAT 44 29 35N LONG 088 11 15W)									
MAY 1989 15...	80020	7.4	<1.0	<0.1	<0.1	<1.0	<0.1	<0.1	<0.1	<0.1
AUG 08...	80020	0.0	<1.0	<0.1	<0.1	<1.0	0.2	0.3	<0.1	<0.1
04072058	DUCK CREEK 0.25 MI DS HW 54 BRIDGE NR ONEIDA, WI (LAT 44 30 06N LONG 088 10 54W)									
AUG 1989 10...	80020	0.0	<1.0	<1.0	<0.1	<1.0	0.4	0.4	<0.1	<0.1
04072060	DUCK CREEK AT OVERLAND ROAD NEAR ONEIDA, WI (LAT 44 30 42N LONG 088 10 12W)									
MAY 1989 15...	80020	5.6	<1.0	<0.1	0.2	<1.0	0.7	0.6	<0.1	0.3
AUG 08...	80020	0.00	<1.0	<0.1	<0.1	1.0	0.2	0.3	0.1	<0.1
04072165	TROUT CREEK AT MELANIE DRIVE NEAR ONEIDA, WI (LAT 44 32 40N LONG 088 09 12W)									
MAY 1989 09...	80020	2.0	<1.0	<0.1	<0.1	<1.0	<0.1	0.4	<0.1	<0.1
04072186	TROUT CREEK AT MOUTH NEAR ONEIDA, WI (LAT 44 32 05N LONG 088 07 41W)									
MAY 1989 08...	80020	3.0	<1.0	<0.1	<0.1	<1.0	<0.1	0.2	<0.1	<0.1
AUG 10...	80020	0.50	<1.0	<0.1	<0.1	<1.0	<0.1	0.2	<0.1	<0.1

## WATER-QUALITY PARTIAL-RECORD STATIONS

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	ENDO-SULFAN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39389)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39393)	TOXA-PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39403)	HEPTA-CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39413)	HEPTA-CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	METH-OXY- CHLOR, TOT. IN BOTTOM MATL. (UG/KG) (39481)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39519)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG) (39758)	PER-THANE IN BOT- TOM MA- TERIAL (UG/KG) (81886)
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## STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

04072013	DUCK CREEK AT STINGE ROAD NEAR BLACK CREEK, WI (LAT 44 25 49N LONG 088 23 40W)								
MAY 1989									
11...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
04072024	DUCK CREEK AT VINE ROAD NEAR FREEDOM, WI (LAT 44 22 32N LONG 088 18 44W)								
MAY 1989									
10...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
AUG 09...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
040720305	DUCK CREEK 0.3 MI DS FREEDOM STP NR FREEDOM, WI (LAT 44 23 50N LONG 088 16 55W)								
MAY 1989									
10...	<0.1	<0.1	<10	<0.1	0.1	<0.1	<1	<0.1	<1.00
AUG 09...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	1	<0.1	<1.00
04072036	DUCK CREEK AT HILLSIDE PARK NEAR ONEIDA, WI (LAT 44 25 55N LONG 088 14 45W)								
MAY 1989									
10...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
AUG 09...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
040720432	DUCK CREEK AT FISH CREEK ROAD NEAR ONEIDA, WI (LAT 44 27 32N LONG 088 13 18W)								
MAY 1989									
16...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
AUG 09...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
04072053	DUCK CREEK 0.5 MI US HWY 54 BRIDGE NR ONEIDA, WI (LAT 44 29 35N LONG 088 11 15W)								
MAY 1989									
15...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
AUG 08...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
04072058	DUCK CREEK 0.25 MI DS HW 54 BRIDGE NR ONEIDA, WI (LAT 44 30 06N LONG 088 10 54W)								
AUG 1989									
10...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	2	<0.1	<1.00
04072060	DUCK CREEK AT OVERLAND ROAD NEAR ONEIDA, WI (LAT 44 30 42N LONG 088 10 12W)								
MAY 1989									
15...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
AUG 08...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	1	<0.1	<1.00
04072165	TROUT CREEK AT MELANIE DRIVE NEAR ONEIDA, WI (LAT 44 32 40N LONG 088 09 12W)								
MAY 1989									
09...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
04072186	TROUT CREEK AT MOUTH NEAR ONEIDA, WI (LAT 44 32 05N LONG 088 07 41W)								
MAY 1989									
08...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00
AUG 10...	<0.1	<0.1	<10	<0.1	<0.1	<0.1	<1	<0.1	<1.00

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (000028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	PH (STAND- ARD UNITS) (000400)	TEMPER- ATURE WATER (DEG C) (000010)	CALCIUM DIS- SOLVED (MG/L AS CA) (000915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (000925)	SODIUM, DIS- SOLVED (MG/L AS NA) (000930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (000935)	ALKA- LITY LAB (MG/L AS CACO3) (90410)	SULFATE DIS- SOLVED (MG/L AS SO4) (000945)
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## STREAMS TRIBUTARY TO LAKE MICHIGAN--CONTINUED

## 04072165 TROUT CREEK AT MELANIE DRIVE NEAR ONEIDA, WI (LAT 44 32 40N LONG 088 09 12W)

MAY 1989												
09...	1730	80020	2.0	705	8.40	15.0	89	36	9.1	3.1	244	110
AUG												
10...	0945	80020	0.7	710	8.30	17.0	85	36	8.5	2.3	292	48

## 04072186 TROUT CREEK AT MOUTH NEAR ONEIDA, WI (LAT 44 32 05N LONG 088 07 41W)

MAY 1989												
08...	1415	80020	3.0	640	8.80	10.0	110	37	17	8.6	200	190
AUG												
10...	0825	80020	0.5	650	8.10	18.0	74	36	9.3	4.2	281	40

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (000940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (000950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (000955)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (000613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (000631)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (000610)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (000608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (000625)	PHOS- PHOROUS TOTAL (MG/L AS P) (000665)	PHOS- PHOROUS DIS- SOLVED (MG/L AS P) (000666)	PHOS- PHOROUS ORTHO, DIS- SOLVED (MG/L AS P) (000671)
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## 04072165 TROUT CREEK AT MELANIE DRIVE NEAR ONEIDA, WI (LAT 44 32 40N LONG 088 09 12W)

MAY 1989												
09...	24	0.10	5.1	0.020	1.60	0.050	0.050	1.6	0.110	0.060	0.040	
AUG												
10...	21	0.10	11	0.010	3.20	0.050	0.050	0.50	0.150	0.120	0.110	

## 04072186 TROUT CREEK AT MOUTH NEAR ONEIDA, WI (LAT 44 32 05N LONG 088 07 41W)

MAY 1989												
08...	46	0.10	0.13	<0.010	1.30	0.070	0.040	1.9	0.050	0.050	0.010	
AUG												
10...	22	0.10	6.4	<0.010	0.450	0.050	0.060	0.80	0.340	0.360	0.340	

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	TEMPER- ATURE WATER (DEG C) (000010)	DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (000061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (000095)	TEMPER- ATURE WATER (DEG C) (000010)
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## 04073500 FOX RIVER AT BERLIN, WI (LAT 43 57 14N LONG 088 57 08W)

OCT 1988					MAR 1989				
13...	0948	716	360	8.5	22...	1035	967	360	0.0
NOV					28...	1450	3030	255	6.0
29...	1220	1130	675	1.5	MAY				
JAN 1989					23...	1115	802	360	21.5
13...	1145	584	520	0.0	JUL				
FEB					28...	1120	623	340	26.0
20...	1245	576	395	0.0					

## 04077400 WOLF RIVER NEAR SHAWANO, WI (LAT 44 50 09N LONG 088 37 30W)

OCT 1988					APR 1989				
27...	1345	643	250	2.0	26...	1700	782	217	14.5
DEC					JUN				
08...	1325	553	--	0.0	27...	1235	548	268	22.0
JAN 1989					AUG				
18...	1010	445	238	--	08...	0915	345	280	20.0
MAR									
16...	1630	444	307	0.0					

## WATER-QUALITY PARTIAL-RECORD STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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									
04079000 WOLF RIVER AT NEW LONDON, WI (LAT 44 23 32N LONG 088 44 25W)									
OCT 1988					JUN 1989				
19...	1715	692	345	9.5	12...	1620	2610	335	19.0
JAN 1989					JUL				
19...	1430	800	340	0.5	31...	1450	588	373	22.5
APR					SEP				
27...	1455	1800	380	16.5	18...	1630	523	368	18.5
04085200 KEWAUNEE RIVER NEAR KEWAUNEE, WI (LAT 44 27 30N LONG 087 33 23W)									
OCT 1988					MAR 1989				
26...	1100	25	660	4.5	28...	1530	731	300	4.5
DEC					JUL				
01...	1120	50	670	0.5	14...	0935	14	640	19.5
JAN 1989					SEP				
10...	0940	13	540	0.5	07...	0855	9.3	590	21.0
FEB									
22...	0900	7.3	360	0.0					
04085281 EAST TWIN RIVER AT MISHICOT, WI (LAT 44 14 16N LONG 087 38 11W)									
OCT 1988					MAR 1989				
26...	0905	--	620	4.5	29...	0905	--	230	1.5
DEC					JUL				
01...	0915	--	620	0.5	13...	1630	--	620	24.0
JAN 1989					SEP				
10...	1130	--	590	0.5	06...	1605	--	610	21.0
FEB									
22...	1100	--	590	0.5					
04087088 UNDERWOOD CREEK AT WAUWATOSA, WI (LAT 43 03 17N LONG 088 02 46W)									
NOV 1988					APR 1989				
09...	1205	5.4	1380	9.5	24...	1055	5.2	1560	11.5
JAN 1989					JUN				
30...	1205	12	1070	5.0	21...	1605	5.7	1000	32.0
MAR					SEP				
14...	1110	16	1280	2.5	26...	1150	6.9	1130	16.0
04087120 MENOMONEE RIVER AT WAUWATOSA, WI (LAT 43 02 44N LONG 087 59 59W)									
NOV 1988					JUN 1989				
09...	1435	44	1040	7.5	20...	1028	25	1220	21.5
DEC					JUL				
19...	1342	23	1580	0.5	18...	1402	35	1020	21.0
JAN 1989					AUG				
30...	1435	98	990	3.0	11...	1322	55	1120	23.0
MAR					SEP				
13...	1520	232	1020	1.0	26...	1415	32	1080	13.0
APR									
24...	1305	33	1100	14.0					
04087159 KINNICKINNIC R AT S. 11TH ST AT MILWAUKEE, WI (LAT 42 59 51N LONG 087 55 35W)									
NOV 1988					JUN 1989				
09...	1624	21	580	9.5	20...	1655	7.3	750	29.5
JAN 1989					AUG				
30...	1710	14	1350	6.0	11...	1520	12	910	27.5
MAR					SEP				
13...	1740	32	1950	6.0	26...	1612	7.8	930	17.5
APR									
24...	1645	6.7	1060	20.0					
04087204 OAK CREEK AT SOUTH MILWAUKEE, WI (LAT 42 55 30N LONG 087 52 12W)									
NOV 1988					JUN 1989				
10...	1300	113	580	8.5	21...	0755	2.1	1700	19.0
DEC					JUL				
20...	1240	6.1	2050	3.0	18...	1120	2.0	1220	21.0
JAN 1989					AUG				
31...	1345	18	1380	3.0	17...	1408	7.6	1140	22.0
MAR					SEP				
14...	0845	29	1480	0.0	27...	0953	5.4	1320	10.0
APR									
25...	1429	52	1020	16.0					

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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									
04087220 ROOT RIVER NEAR FRANKLIN, WI (LAT 42 52 25N LONG 087 59 45W)									
NOV 1988					JUN 1989				
10...	1150	146	600	8.5	21...	1030	3.4	1470	21.5
DEC 20...	1020	8.9	1430	0.5	JUL 18...	0940	4.4	1030	21.5
JAN 1989					AUG 14...	1210	26	760	21.0
31...	1133	40	910	0.0	SEP 27...	1305	6.4	1130	11.0
MAR 13...	0935	71	870	0.0					
APR 25...	1200	81	1040	14.0					
04087233 ROOT RIVER CANAL NEAR FRANKLIN, WI (LAT 42 48 55N LONG 087 59 40W)									
DEC 1988					JUL 1989				
20...	0845	14	1000	1.0	18...	0820	1.8	1210	20.5
JAN 1989					AUG 14...	0930	32	820	20.5
31...	0930	44	820	3.0	SEP 27...	1520	14	940	12.5
MAR 13...	1135	95	620	2.0					
APR 25...	0915	14	920	14.0					
04087240 ROOT RIVER AT RACINE, WI (LAT 42 45 05N LONG 087 49 25W)									
OCT 1988					JUN 1989				
26...	0750	45	1190	6.0	07...	1832	22	1010	21.5
JAN 1989					JUL 06...	1215	4.4	1140	28.0
19...	1335	37	1050	2.5	10...	1100	10	990	27.0
MAR 01...	1715	17	1320	1.0	SEP 10...	1100	10	990	27.0
22...	1230	119	985	0.5	13...	0825	303	685	16.5
APR 11...	0750	83	985	3.5					
04087257 PIKE RIVER NEAR RACINE, WI (LAT 42 30 49N LONG 087 51 30W)									
OCT 1988					APR 1989				
25...	1555	7.4	580	7.5	10...	1620	13	830	5.5
DEC 07...	1550	13	790	5.5	JUN 07...	1622	7.5	520	24.0
JAN 1989					JUL 06...	1000	5.8	445	22.0
19...	1140	11	1060	3.0	SEP 12...	1535	22	820	17.5
MAR 01...	1528	6.1	620	1.0					
ST. CROIX RIVER BASIN									
05333500 ST. CROIX RIVER NEAR DANBURY, WI (LAT 46 04 28N LONG 092 14 50W)									
NOV 1988					APR 1989				
17...	1555	1450	130	3.0	11...	1325	2980	80	3.0
JAN 1989					MAY 22...	1510	1680	110	16.5
04...	1300	826	120	0.0	JUL 07...	1245	1030	110	26.0
FEB 14...	1410	875	94	0.0					
MAR 31...	1150	2000	145	0.0					
05340500 ST. CROIX RIVER AT ST. CROIX FALLS, WI (LAT 45 24 25N LONG 092 38 49W)									
NOV 1988					APR 1989				
14...	1150	3310	220	3.0	24...	1230	7500	121	12.0
JAN 1989					MAY 31...	1210	9730	117	15.0
03...	1030	2620	130	1.0	JUL 11...	1220	1690	170	27.0
FEB 13...	1005	3390	120	0.5	AUG 28...	0940	1750	190	22.0
MAR 13...	1305	977	262	1.0					

## WATER-QUALITY PARTIAL-RECORD STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
CHIPPEWA RIVER BASIN									
05356000 CHIPPEWA RIVER AT BISHOPS BRIDGE NEAR WINTER, WI (LAT 45 50 57N LONG 091 04 44W)									
NOV 1988					MAY 1989				
14...	1615	262	84	4.5	23...	1040	501	78	15.0
JAN 1989					JUL				
05...	1308	720	70	0.5	13...	1400	797	75	24.0
MAR					SEP				
21...	1321	271	140	4.5	22...	1103	276	70	14.5
DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)									
PH (STAND- ARD UNITS) (00400)									
TEMPER- ATURE WATER (DEG C) (00010)									
OXYGEN, DIS- SOLVED (MG/L) (00300)									
PHOS- PHOROUS TOTAL (MG/L AS P) (00665)									
454657091300600 BIG SISSABAGAMA TRIBUTARY NEAR STONE LAKE, WI (LAT 45 46 57N LONG 091 30 06W)									
APR 1989									
25...	1320	0.0	7.47	7.0	10.5	0.030			
JUN									
13...	1230	0.0	7.60	17.5	8.8	<0.020			
JUL									
11...	1250	0.0	7.40	25.0	8.3	--			
AUG									
22...	1225	0.0	6.50	19.0	7.9	0.330			
DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)									
SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)									
TEMPER- ATURE WATER (DEG C) (00010)									
DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)									
SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)									
TEMPER- ATURE WATER (DEG C) (00010)									
05356500 CHIPPEWA RIVER NEAR BRUCE, WI (LAT 45 27 08N LONG 091 15 39W)									
OCT 1988					MAY 1989				
06...	1130	634	125	9.5	12...	1530	1200	82	17.0
NOV					JUL				
23...	1450	886	134	0.0	05...	1000	981	93	24.5
JAN 1989					AUG				
05...	1630	866	134	0.0	31...	1231	586	100	18.5
27...	1400	822	--	0.0					
05360500 FLAMBEAU RIVER NEAR BRUCE, WI (LAT 45 22 21N LONG 091 12 34W)									
OCT 1988					MAY 1989				
06...	0920	568	153	7.0	12...	1320	1510	95	16.0
NOV					JUN				
23...	1330	1570	140	1.0	21...	1240	921	121	23.5
JAN 1989					JUL				
06...	1415	958	145	0.5	05...	1200	1230	100	24.0
FEB					AUG				
16...	1200	830	222	0.0	31...	0910	626	120	18.5
APR									
04...	1230	2290	130	2.0					
05362000 JUMP RIVER AT SHELDON, WI (LAT 45 18 29N LONG 090 57 23W)									
OCT 1988					APR 1989				
05...	1500	40	222	10.0	17...	1400	582	98	10.0
NOV					MAY				
23...	1140	287	190	0.5	12...	1010	346	120	15.0
JAN 1989					JUL				
06...	1130	67	200	0.0	05...	1235	301	96	26.5
FEB					SEP				
15...	1415	50	210	0.0	07...	1010	115	142	22.5
MAR									
30...	1745	2640	85	0.5					

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
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## CHIPPEWA RIVER BASIN--CONTINUED

05365500 CHIPPEWA RIVER AT CHIPPEWA FALLS, WI (LAT 44 55 37N LONG 091 24 33W)

OCT 1988					MAY 1989				
04...	1010	2720	172	13.0	16...	0930	5420	120	13.0
NOV					17...	1230	5010	110	13.0
22...	1030	6180	164	2.5	JUN				
JAN 1989					07...	1100	4770	140	19.0
04...	0900	3400	140	1.0	JUL				
FEB					06...	1235	2710	160	24.5
14...	1015	5780	183	1.0	AUG				
MAR					30...	1245	3440	140	22.0
24...	1045	5590	180	1.0					

05365707 NORTH FORK EAU CLAIRE RIVER NEAR THORP, WI (LAT 44 58 25N LONG 090 50 57W)

OCT 1988					APR 1989				
04...	1530	1.0	252	9.0	28...	1440	28	204	10.0
NOV					JUN				
22...	1415	9.8	360	1.0	15...	1230	288	110	13.5
JAN 1989					JUL				
04...	1415	1.4	--	0.5	26...	1325	0.97	197	29.5
FEB					SEP				
15...	1120	1.7	340	0.5	14...	1305	1.6	368	16.5
MAR									
30...	1505	268	125	1.0					

05368000 HAY RIVER AT WHEELER, WI (LAT 45 02 52N LONG 091 54 39W)

OCT 1988					MAR 1989				
03...	1015	207	390	8.5	24...	1015	206	386	3.0
NOV					28...	1525	7730	76	2.0
16...	0845	300	340	3.0	MAY				
JAN 1989					11...	1230	282	338	13.5
10...	1315	184	380	0.0	JUN				
FEB					29...	1030	228	450	18.0
14...	1430	158	438	0.5	AUG				
					23...	1020	574	180	23.0

05369000 RED CEDAR RIVER AT MENOMONIE, WI (LAT 44 53 02N LONG 091 55 57W)

OCT 1988					MAR 1989				
04...	0900	641	232	13.0	24...	0950	2680	280	0.5
JAN 1989					30...	0825	11900	125	0.5
10...	1035	1340	300	0.5	MAY				
FEB					05...	1416	614	208	11.0
13...	1650	708	310	1.0	AUG				
					29...	1135	1530	210	22.0

05369945 EAU GALLE R A LOW-WTR BRIDGE A SPRING VALLEY, WI (LAT 44 52 02N LONG 092 15 07W)

OCT 1988					APR 1989				
03...	1445	8.5	465	9.5	19...	1052	14	442	6.5
NOV					MAY				
15...	1000	7.5	475	4.5	11...	1340	13	375	13.0
JAN 1989					JUN				
18...	1210	7.6	520	0.5	29...	1340	9.6	423	17.0
FEB					AUG				
13...	1315	7.6	500	0.5	29...	0745	9.0	414	16.0
MAR									
29...	1140	216	150	1.5					

## TREMPEALEAU RIVER BASIN

05379500 TREMPEALEAU RIVER AT DODGE, WI (LAT 44 07 55N LONG 091 33 14W)

OCT 1988					APR 1989				
05...	1210	280	312	8.5	25...	1445	528	318	14.5
NOV					MAY				
30...	1205	372	326	1.0	30...	1550	810	242	18.0
JAN 1989					AUG				
17...	1540	245	345	0.0	22...	1435	271	281	24.5
MAR									
14...	1530	800	250	0.0					

## WATER-QUALITY PARTIAL-RECORD STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
BLACK RIVER BASIN									
05381000 BLACK RIVER AT NEILLSVILLE, WI (LAT 44 33 35N LONG 090 36 54W)									
OCT 1988					APR 1989				
06...	1255	42	235	9.5	28...	0940	462	140	12.0
DEC					JUN				
01...	1240	237	223	0.0	23...	0945	204	120	23.5
JAN 1989					AUG				
20...	1052	53	320	0.0	24...	1015	110	153	22.0
MAR									
16...	0905	152	250	0.0					
053813595 BLACK RIVER DS STH 64 AT BLACK RIVER FALLS, WI (LAT 44 17 37N LONG 090 50 47W)									
OCT 1988					APR 1989				
06...	0950	207	123	12.5	27...	1525	657	87	13.0
DEC					JUN				
01...	1020	845	130	1.0	21...	1700	522	70	22.0
JAN 1989					AUG				
18...	1330	174	155	0.5	23...	1017	250	96	23.0
MAR									
15...	1610	592	165	0.0					
WISCONSIN RIVER BASIN									
05391000 WISCONSIN R AT RAINBOW LK NEAR LAKE TOMAHAWK, WI (LAT 45 49 58N LONG 089 32 51W)									
OCT 1988					AUG 1989				
03...	1705	343	75	12.0	10...	1230	352	95	21.5
APR 1989					29...	1300	334	87	21.0
04...	1555	374	94	5.0	SEP				
27...	1530	205	85	10.5	18...	1515	306	88	18.5
JUN									
20...	1310	458	90	22.0					
05393500 SPIRIT RIVER AT SPIRIT FALLS, WI (LAT 45 26 58N LONG 089 58 47W)									
OCT 1988					MAY 1989				
18...	1455	8.3	160	8.0	03...	1100	131	70	9.0
DEC					25...	1345	1680	50	16.0
08...	1140	27	125	0.5	JUN				
JAN 1989					02...	1200	194	72	17.5
17...	1145	13	135	0.0	JUL				
MAR					25...	1440	9.5	125	26.0
21...	1425	18	165	0.0					
APR									
06...	1600	473	70	1.5					
05394500 PRAIRIE RIVER NEAR MERRILL, WI (LAT 45 14 09N LONG 089 38 59W)									
OCT 1988					MAY 1989				
18...	1115	82	185	7.0	01...	1540	232	87	8.0
DEC					JUN				
02...	1530	176	135	0.5	20...	1025	89	170	20.0
JAN 1989					JUL				
16...	1200	81	190	0.5	25...	1300	59	190	24.5
MAR									
22...	1235	69	200	1.0					
30...	1115	609	85	0.5					
05397500 EAU CLAIRE RIVER AT KELLY, WI (LAT 44 55 06N LONG 089 33 00W)									
OCT 1988					APR 1989				
19...	1250	75	280	8.5	06...	1615	1020	85	3.5
JAN 1989					27...	1750	226	151	14.0
16...	1500	72	290	0.0	JUN				
MAR					21...	1240	153	185	25.0
20...	1250	71	280	0.0	AUG				
29...	1130	3300	78	0.5	09...	1200	44	220	21.5



## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
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## WISCONSIN RIVER BASIN--CONTINUED

## 05399500 BIG EAU PLEINE RIVER NEAR STRATFORD, WI (LAT 44 49 19N LONG 090 04 46W)

OCT 1988					MAY 1989				
20...	1130	6.1	300	7.5	04...	1005	81	205	10.0
DEC					JUN				
09...	1500	16	345	0.0	22...	1310	30	175	24.5
JAN 1989					AUG				
17...	1540	6.1	430	0.5	09...	1410	2.1	225	25.0
MAR									
17...	1510	14	335	0.0					
29...	1610	2030	95	1.0					

## 05401050 TENMILE CREEK NEAR NEKOOSA, WI (LAT 44 15 44N LONG 089 48 38W)

OCT 1988					APR 1989				
19...	1245	26	220	7.5	26...	1650	57	330	11.5
DEC					MAY				
07...	1030	40	332	0.5	03...	1238	51	330	12.0
JAN 1989					JUN				
19...	0855	20	262	2.5	22...	1110	69	323	16.5
FEB					AUG				
28...	1430	20	221	4.5	02...	0940	32	265	16.0
28...	1450	18	--	4.5	23...	1855	26	248	16.0

## 05402000 YELLOW RIVER AT BABCOCK, WI (LAT 44 18 05N LONG 090 07 15W)

OCT 1988					APR 1989				
20...	0900	6.3	130	7.0	27...	1250	52	133	13.0
DEC					JUN				
07...	1415	35	229	1.0	22...	1930	34	122	23.5
JAN 1989					AUG				
19...	1255	9.0	404	0.0	23...	1535	6.5	117	20.5
FEB									
28...	1230	6.5	--	0.5					

## 05404000 WISCONSIN RIVER NEAR WISCONSIN DELLS, WI (LAT 43 36 22N LONG 089 45 25W)

OCT 1988					SEP 1989				
11...	1250	2510	250	10.5	07...	1335	3120	200	22.0

## 05404116 SOUTH BRANCH BARABOO RIVER AT HILLSBORO, WI (LAT 43 39 10N LONG 090 20 09W)

OCT 1988					MAR 1989				
12...	1330	7.9	440	10.5	01...	0845	3.8	460	0.5
28...	1045	7.4	200	4.0	15...	0950	58	180	0.0
NOV					APR				
16...	0955	38	430	5.0	04...	1205	9.7	350	6.0
DEC					MAY				
01...	1325	11	470	2.0	03...	0945	8.8	430	12.0
JAN 1989					JUN				
06...	1120	9.0	500	1.5	02...	0850	9.5	365	18.5
FEB					AUG				
03...	0815	7.8	300	0.5	01...	1305	6.0	405	25.0

## 05405000 BARABOO RIVER NEAR BARABOO, WI (LAT 43 28 51N LONG 089 38 09W)

OCT 1988					APR 1989				
11...	0915	165	420	10.5	17...	1520	227	340	11.5
NOV					JUN				
22...	1320	231	380	3.0	08...	1130	197	390	21.5
JAN 1989					AUG				
05...	1210	171	410	0.5	03...	1315	204	345	24.0
FEB									
20...	1325	173	420	0.0					

## WATER-QUALITY PARTIAL-RECORD STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
WISCONSIN RIVER BASIN--CONTINUED									
05406500 BLACK EARTH CREEK AT BLACK EARTH, WI (LAT 43 08 03N LONG 089 43 56W)									
OCT 1988					APR 1989				
11...	1525	26	625	11.0	19...	1115	30	590	10.5
27...	1150	28	235	8.0	MAY				
NOV					03...	1415	30	520	13.5
21...	1510	28	560	5.0	JUN				
JAN 1989					05...	1215	27	580	18.0
04...	1425	26	610	2.5	30...	0800	21	640	16.5
FEB					JUL				
03...	1430	28	550	1.5	27...	1130	24	605	20.0
21...	1245	26	570	5.0					
MAR									
13...	1535	63	430	5.5					
05408000 KICKAPOO RIVER AT LA FARGE, WI (LAT 43 34 27N LONG 090 38 35W)									
OCT 1988					APR 1989				
12...	0930	94	500	6.0	18...	1045	123	440	10.0
DEC					JUN				
01...	1130	125	470	0.5	14...	1045	109	455	17.5
JAN 1989					AUG				
06...	0955	109	530	0.0	03...	1015	86	430	22.5
FEB									
03...	1145	106	420	0.0					
21...	1000	103	430	0.0					
05410490 KICKAPOO RIVER AT STEUBEN, WI (LAT 43 10 58N LONG 090 51 30W)									
OCT 1988					MAR 1989				
25...	0915	323	470	5.0	15...	1422	1840	230	1.0
DEC					JUN				
05...	0757	304	470	0.0	07...	1005	311	490	19.5
JAN 1989					JUL				
17...	0823	289	480	0.0	18...	0842	240	460	21.5
FEB					AUG				
27...	0912	312	490	0.0	28...	0945	348	430	20.5
PLATTE RIVER BASIN									
05414000 PLATTE RIVER NEAR ROCKVILLE, WI (LAT 42 43 52N LONG 090 38 25W)									
OCT 1988					APR 1989				
25...	1450	48	630	6.5	12...	1610	43	490	11.0
DEC					JUN				
05...	1230	47	600	2.0	08...	0845	35	590	20.5
JAN 1989					JUL				
17...	1315	47	600	0.0	18...	1415	39	515	23.5
FEB					AUG				
27...	1445	36	590	0.0	28...	1435	38	550	22.5
GALENA RIVER BASIN									
05415000 GALENA RIVER AT BUNCOMBE, WI (LAT 42 30 49N LONG 090 22 40W)									
OCT 1988					APR 1989				
25...	1730	36	920	7.0	12...	1918	33	800	11.0
DEC					JUN				
05...	1510	38	910	2.5	08...	1210	21	830	22.5
JAN 1989					JUL				
07...	1620	37	880	0.0	18...	1720	21	840	26.5
17...	1620	37	880	0.0	AUG				
FEB					28...	1755	27	830	25.5
27...	1720	33	890	0.0					

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
ROCK RIVER BASIN									
05423500 SOUTH BRANCH ROCK RIVER AT WAUPUN, WI (LAT 43 38 30N LONG 088 43 15W)									
NOV 1988					MAY 1989				
17...	1145	30	880	4.0	31...	1735	289	400	17.0
FEB 1989					JUL				
01...	1038	49	580	0.0	05...	1355	9.0	880	28.0
MAR					AUG				
01...	1255	--	1170	0.0	02...	1345	8.6	915	24.5
APR					30...	1320	10	980	23.0
03...	1337	57	560	7.0					
28...	0942	32	835	11.0					
05425500 ROCK RIVER AT WATERTOWN, WI (LAT 43 11 25N LONG 088 43 35W)									
OCT 1988					FEB 1989				
21...	1230	62	645	10.0	24...	1225	130	500	0.0
NOV					JUL				
28...	1225	402	650	4.0	05...	1240	97	680	29.0
JAN 1989									
12...	1210	238	735	0.5					
05425912 BEAVERDAM RIVER AT BEAVER DAM, WI (LAT 43 26 57N LONG 088 50 21W)									
NOV 1988					APR 1989				
17...	1422	14	570	4.0	03...	1152	144	510	7.0
JAN 1989					28...	1220	7.4	480	12.0
04...	1310	63	580	3.5	MAY				
FEB					31...	1810	4.5	490	20.0
01...	1300	19	580	3.5	JUL				
MAR					05...	0715	5.3	540	23.0
01...	1155	33	660	3.0	AUG				
					02...	1008	15	500	24.5
					30...	1640	61	520	23.5
05426000 CRAWFISH RIVER AT MILFORD, WI (LAT 43 06 00N LONG 088 50 58W)									
OCT 1988					FEB 1989				
21...	1035	75	615	9.5	24...	0955	84	510	0.0
NOV					JUL				
28...	1015	269	650	3.0	05...	1035	75	680	26.5
JAN 1989					SEP				
12...	1005	158	685	0.5	11...	1310	292	700	21.0
05426031 ROCK RIVER AT JEFFERSON, WI (LAT 42 59 46N LONG 088 48 26W)									
OCT 1988					JUL 1989				
31...	1110	--	560	6.0	12...	1100	315	610	27.5
05426250 BARK RIVER NEAR ROME, WI (LAT 42 57 39N LONG 088 40 09W)									
OCT 1988					APR 1989				
26...	1220	30	1280	4.0	11...	1235	80	630	5.0
DEC					JUN				
08...	1155	68	670	1.0	08...	1008	38	680	23.5
JAN 1989					SEP				
20...	0908	34	685	0.5	13...	1307	74	640	16.0
MAR									
02...	1110	28	530	0.5					
05427570 ROCK RIVER AT INDIANFORD, WI (LAT 42 48 15N LONG 089 05 25W)									
OCT 1988					JUL 1989				
06...	1305	412	605	13.5	11...	1115	402	600	29.0
JAN 1989					AUG				
18...	1405	723	720	3.5	07...	0925	712	590	23.0
JUN									
02...	1235	305	680	24.0					

## WATER-QUALITY PARTIAL-RECORD STATIONS

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
ROCK RIVER BASIN--CONTINUED									
05430150 BADFISH CREEK NEAR COOKSVILLE, WI (LAT 42 50 00N LONG 089 11 48W)									
OCT 1988					JUN 1989				
24...	1115	90	1440	9.5	06...	1045	84	1470	20.0
DEC					AUG				
05...	1215	84	1190	7.5	08...	1108	80	1230	19.0
JAN 1989					21...	1145	81	1240	21.5
17...	1125	83	1210	5.5	SEP				
MAR					14...	1300	82	1550	17.5
14...	0930	196	685	4.5					
APR									
13...	0940	91	1430	8.0					
05430175 YAHARA RIVER NEAR FULTON, WI (LAT 42 49 50N LONG 089 10 09W)									
OCT 1988					APR 1989				
24...	1300	362	1080	9.0	13...	0710	410	1070	7.5
28...	1300	362	1080	9.0	AUG				
DEC					03...	1135	128	1260	24.5
06...	0828	409	955	5.5	SEP				
JAN 1989					18...	1153	454	950	19.0
16...	1125	388	950	2.5					
MAR									
13...	1300	513	750	5.0					
05430500 ROCK RIVER AT AFTON, WI (LAT 42 36 33N LONG 089 04 14W)									
OCT 1988					APR 1989				
06...	1005	668	730	12.5	12...	0930	3640	500	5.5
27...	1020	724	720	7.5	JUN				
NOV					05...	0845	944	765	20.5
03...	1015	617	780	7.0	JUL				
DEC					11...	0855	545	800	26.0
06...	1400	1860	700	3.5	19...	1110	678	665	21.0
JAN 1989					SEP				
18...	1100	1140	730	3.0	11...	1000	2110	660	20.5
MAR									
13...	1000	1720	560	3.5					
05431486 TURTLE CREEK AT CARVERS ROCK ROAD NR CLINTON, WI (LAT 42 35 50N LONG 088 49 45W)									
OCT 1988					APR 1989				
27...	1250	59	760	7.5	10...	1026	100	695	3.5
DEC					JUN				
07...	1030	75	745	2.5	07...	0935	46	820	21.0
JAN 1989					JUL				
18...	1000	62	780	0.5	31...	1245	100	610	23.0
MAR					SEP				
01...	1025	22	835	0.5	12...	1020	193	685	18.0
05432500 PECATONICA RIVER AT DARLINGTON, WI (LAT 42 40 40N LONG 090 07 07W)									
OCT 1988					APR 1989				
26...	1055	77	700	4.0	10...	1138	82	600	4.0
DEC					JUN				
06...	1455	78	700	2.0	08...	1410	50	705	20.5
JAN 1989					JUL				
16...	1517	81	650	0.5	19...	1600	94	520	21.0
FEB					AUG				
08...	1600	80	520	0.0	28...	1718	82	610	23.0
28...	1705	68	700	0.0					

## MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

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)
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## ROCK RIVER BASIN--CONTINUED

05434500 PECATONICA RIVER AT MARTINTOWN, WI (LAT 42 30 34N LONG 089 47 58W)

OCT 1988					APR 1989				
24...	1520	387	630	8.0	11...	1330	381	610	6.0
DEC					JUN				
06...	0955	352	620	1.0	06...	1410	326	605	22.5
JAN 1989					JUL				
18...	1450	341	580	0.0	19...	1110	302	550	21.5
FEB					AUG				
28...	1040	306	640	0.0	29...	1112	304	580	22.5
MAR									
15...	1312	4450	260	1.0					

05436500 SUGAR RIVER NEAR BRODHEAD, WI (LAT 42 36 42N LONG 089 23 53W)

OCT 1988					APR 1989				
24...	1235	221	580	7.5	11...	1000	270	580	4.5
DEC					JUN				
06...	0740	251	580	1.5	06...	1025	219	570	22.5
JAN 1989					JUL				
18...	1140	232	580	1.5	19...	0820	150	510	21.5
FEB					AUG				
28...	0805	203	600	0.0	29...	0750	168	560	22.5
MAR									
15...	1210	1870	280	0.0					

## ILLINOIS RIVER BASIN

05543830 FOX RIVER AT WAUKESHA, WI (LAT 43 00 17N LONG 088 14 37W)

NOV 1988					JUN 1989				
09...	0828	44	1150	7.0	21...	1725	32	1470	28.0
DEC					JUL				
19...	0855	35	1060	0.0	10...	1215	105	780	26.0
JAN 1989					AUG				
30...	0856	90	1010	2.0	11...	0800	102	950	20.5
MAR					SEP				
14...	1310	197	720	1.0	26...	0830	57	1070	12.0
APR									
20...	0930	70	1070	10.0					
24...	0805	58	1070	12.0					

05544200 MUKWONAGO RIVER AT MUKWONAGO, WI (LAT 42 51 24N LONG 088 19 40W)

OCT 1988					APR 1989				
26...	1030	32	530	3.0	11...	1040	53	530	4.5
DEC					JUN				
08...	1045	37	520	1.5	08...	0726	35	535	24.0
JAN 1989					SEP				
19...	1550	32	595	3.5	12...	1030	60	475	19.0
MAR					13...	1030	60	475	19.0
02...	0905	27	660	2.0					

## WATER-QUALITY PARTIAL-RECORD STATIONS

MISCELLANEOUS WATER-QUALITY DATA, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	TIME	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE WATER (DEG C) (00010)	PHOS- PHOROUS TOTAL (MG/L AS P) (00665)
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## ILLINOIS RIVER BASIN--CONTINUED

05544388 UNNAMED TRIB TO MUSKEGO CANAL NEAR WIND LAKE, WI (LAT 42 51 01N LONG 088 08 21W)

DEC 1988						
09...	1230	80020	7.4	--	--	0.050
28...	1210	80020	4.5	--	--	0.050
JAN 1989						
12...	1015	80020	2.0	--	--	0.040
FEB						
01...	0920	80020	4.6	615	1.0	0.060
MAR						
01...	1330	85543	3.8	--	--	0.020
23...	1050	80020	3.2	740	4.0	0.060
24...	1050	1028	E3.2	740	4.0	--
29...	1508	80020	E35	--	--	0.140
APR						
01...	0914	80020	--	--	--	0.080
06...	1255	80020	22	585	6.5	0.070
12...	1110	85543	E3.6	--	--	0.040
MAY						
09...	1240	85543	1.7	--	--	0.070
AUG						
05...	1545	80020	E3.0	--	--	0.710
06...	1949	80020	E11	--	--	0.130
09...	1340	85543	11	--	--	0.180
21...	1550	85543	1.7	--	--	0.200
SEP						
13...	1215	85543	21	--	--	E0.160
14...	1843	80020	E5.0	--	--	0.140
15...	1908	80020	5.2	--	--	0.110

05544410 WIND LAKE DRAINAGE CANAL AT WIND LAKE, WI (LAT 42 48 46N LONG 088 08 31W)

NOV 1988						
22...	0930	80020	0.0	--	--	0.030
DEC						
09...	0935	80020	16	525	1.0	0.040
28...	0915	80020	E15	--	--	0.040
JAN 1989						
12...	1150	80020	E15	--	--	0.040
FEB						
01...	1245	80020	E6.0	510	3.0	0.100
17...	1030	80020	E6.0	--	--	0.060
MAR						
01...	1115	85543	E6.0	--	--	0.050
23...	1005	80020	65	650	4.5	0.030
29...	1523	80020	3.1	--	--	0.040
APR						
01...	1030	80020	4.3	--	--	0.060
06...	1045	80020	136	605	7.5	0.060
AUG						
09...	1220	85543	6.6	--	--	0.090

E Estimated.

GROUND-WATER RECORDS

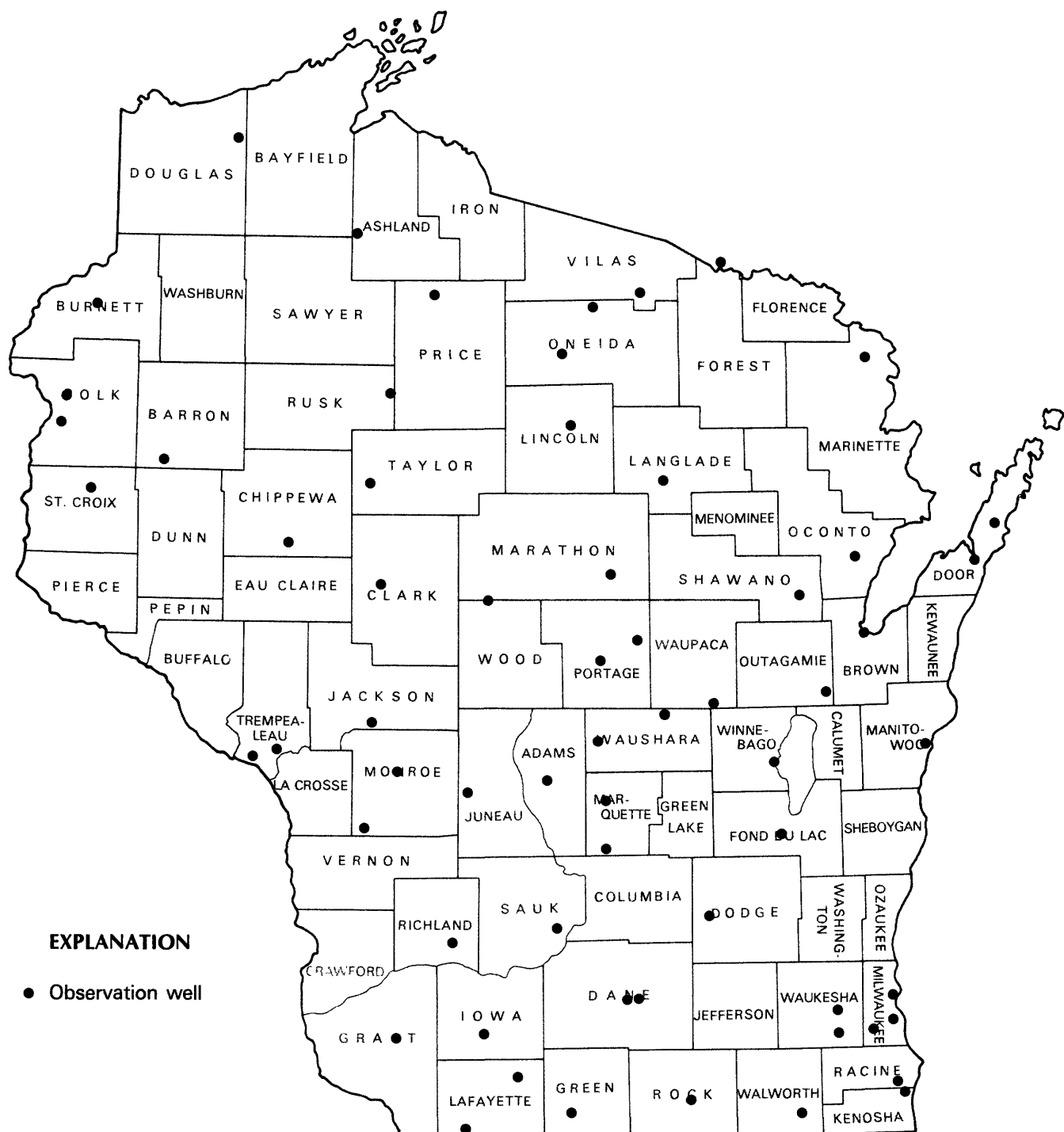


Figure 7. Location of observation wells in Wisconsin.



## 383

435759089490001. Local number. AD-17/06E/08-0076.

LOCATION.--Lat 43°57'59", long 89°49'00", Hydrologic Unit 07070003. Owner: Wis. Dept. of Natural Resources.

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.

DATUM.--Altitude of land-surface is 955 ft above National Geodetic Vertical Datum of 1929. 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, 9.61 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 1988 TO SEPTEMBER 1989

DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL		DATE		WATER LEVEL					
OCT	3	15.67	DEC	5	15.79	FEB	6	16.64	APR	10	16.24	JUN	12	13.10	AUG	8	15.10		
	10	15.85		16	15.96		14	16.80		17	16.17		19	13.35		15	15.45		
	18	15.86		19	15.90		20	16.80		24	16.17		26	13.75		21	15.75		
	24	15.79		28	16.10		27	16.80		MAY	1	16.20		JUL	4	14.44		29	15.60
	31	15.91	JAN	3	16.17	MAR	6	17.04			9	16.14		10	14.50	SEP	5	15.50	
NOV	7	15.80		9	16.38		13	17.03			15	16.18		17	14.90		12	15.59	
	15	15.98		16	16.42		20	16.88			23	16.17		24	14.70		18	15.69	
	21	15.92		23	16.45		27	16.62			30	16.16		31	14.98		25	15.62	
	28	15.90		30	16.55	APR	4	16.20		JUN	5	12.90							

**ASHLAND COUNTY**

460936090531701. Local number, AS-43/04W/32-0006.

LOCATION.--Lat 46°09'36", long 90°53'17", Hydrologic Unit 07050001. Owner: U.S. Forest Service.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 5 in, depth 89 ft.

DATUM.--Altitude of land-surface datum is 1,470 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 31	31.30	JAN 27	31.30	MAR 30	31.30	MAY 19	31.50	AUG 24	30.70	SEP 18	30.70
NOV 23	31.20	FEB 27	30.80	APR 28	31.70	JUN 23	32.20				

**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.

DATUM.--Altitude of land-surface is 1,115 ft above National Geodetic Vertical Datum of 1929. Measuring point:  
top of casing, 2.00 ft above land-surface datum.

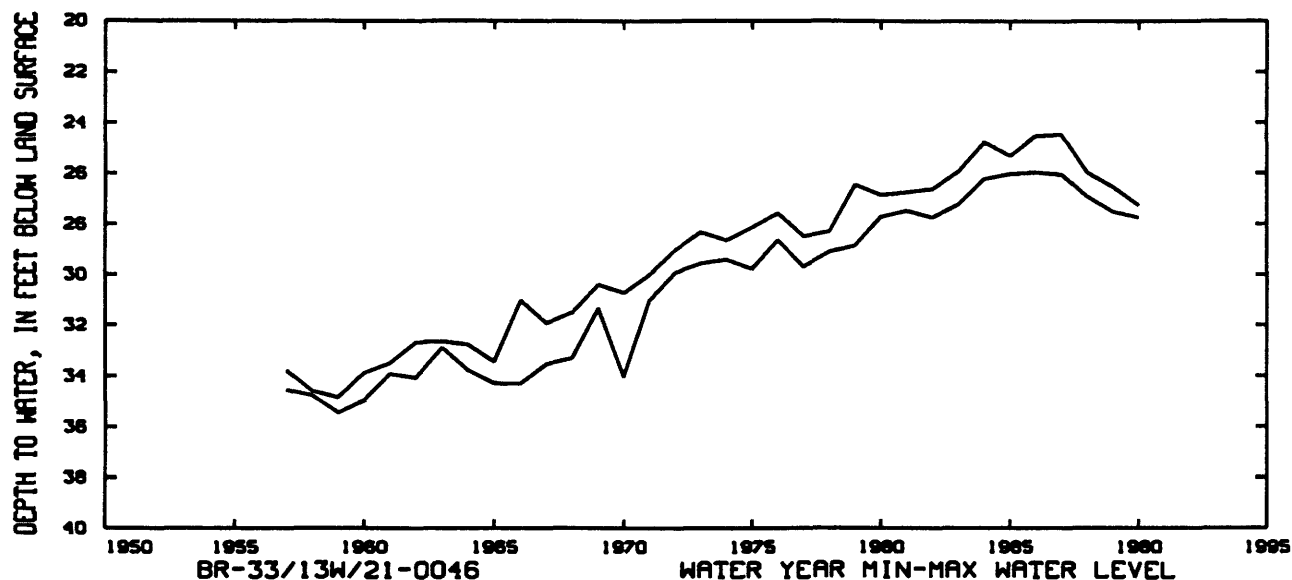
PERIOD OF RECORD.--October 1956 to current year.

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 1988 TO SEPTEMBER 1989

DATE		WATER LEVEL	DATE		WATER LEVEL	DATE		WATER LEVEL	DATE		WATER LEVEL	DATE		WATER LEVEL			
OCT	7	26.91	DEC	8	27.21	FEB	11	27.30	APR	13	27.26	JUN	13	27.30	AUG	10	27.49
	14	26.85		18	27.01		18	27.24		22	27.28		21	27.30		14	27.48
	22	26.88		23	27.03		25	27.27		28	27.30		29	27.49		23	27.49
	27	26.80		30	26.54		MAR	5		27.49	MAY		6	27.39		JUL	10
NOV	3	26.81	JAN	3	27.17	11		27.48	13	27.33		15	27.40	8	27.39		
	12	26.94		10	27.27	13		27.34	19	27.30		21	27.45	17	27.38		
	18	27.13		20	27.35	23		27.46	26	27.46		26	27.48	22	27.38		
	25	27.06		26	27.32	APR	7	27.25	JUN	4	27.35	AUG	3	27.30	30	27.27	
	DEC	2		27.06	FEB		4	27.32									

GROUND-WATER LEVELS  
BARRON COUNTY



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.

DATUM.--Altitude of land-surface is 590 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	122.08	DEC 6	97.98	FEB 7	92.60	APR 11	86.90	JUN 22	93.40	AUG 8	110.12
11	110.70	14	97.40	14	92.20	18	86.40	27	93.90	15	113.19
18	109.02	20	96.66	21	91.50	25	86.15	JUL 6	97.26	22	114.68
25	106.90	JAN 3	94.00	28	90.50	MAY 16	87.57	11	104.08	SEP 5	115.45
NOV 2	106.17	10	94.26	MAR 7	90.43	23	89.70	18	107.09	12	116.98
8	103.87	17	93.40	23	88.50	JUN 1	92.16	25	106.97	19	115.57
18	101.95	24	93.46	28	87.50	9	93.30	AUG 1	108.50	26	114.60
29	99.20	31	92.54	APR 3	87.30	13	93.55				

## 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.

DATUM.--Altitude of land-surface is 981 ft above National Geodetic Vertical Datum of 1929. 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, 37.32 ft below land-surface datum, Mar. 3, 1938.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	33.29	DEC 9	33.35	FEB 10	33.42	APR 14	33.49	JUN 16	33.56	AUG 11	33.63
14	33.22	16	33.30	17	33.37	21	33.54	23	33.52	18	33.62
21	33.21	23	33.20	24	33.42	28	33.56	30	33.54	25	33.66
28	33.17	30	33.28	MAR 3	33.46	MAY 5	33.44	JUL 7	33.45	SEP 1	33.61
NOV 4	33.21	JAN 6	33.36	10	33.44	12	33.61	14	33.55	8	33.64
11	33.31	13	33.40	17	33.54	19	33.55	21	33.54	15	33.65
18	33.34	20	33.43	24	33.51	26	33.56	28	33.57	22	33.64
25	33.38	27	33.37	31	33.57	JUN 2	33.57	AUG 4	33.52	29	33.66
DEC 2	33.38	FEB 3	33.46	APR 7	33.61	9	33.54				

## CHIPPEWA COUNTY

445544091155701. Local number, CH-28/07W/17-0142.

LOCATION.--Lat 44°55'44", long 91°15'57", Hydrologic Unit 07050005. Owner: Wis. Dept. of Transportation.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in, depth 60 ft, cased to 39 ft, open end.

DATUM.--Altitude of land-surface is 965 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	29.21	DEC 6	29.28	FEB 6	29.83	APR 10	30.64	JUN 12	30.07	AUG 7	30.60
10	28.95	12	29.25	13	29.92	18	30.54	19	30.50	15	30.31
18	29.36	19	29.12	20	29.77	24	30.30	26	30.20	20	30.32
24	29.19	27	29.62	27	29.91	MAY 1	30.64	JUL 5	30.27	28	30.41
NOV 1	29.28	JAN 3	29.54	MAR 6	30.24	9	30.65	10	30.41	SEP 5	30.57
7	29.47	9	29.78	14	29.89	16	30.42	18	30.14	11	30.60
14	29.60	16	29.66	20	30.23	22	30.35	24	30.51	19	30.53
21	29.71	23	29.56	27	30.09	30	30.35	31	30.47	27	29.60
28	29.71	30	29.64	APR 3	30.02	JUN 5	30.28				

## CLARK COUNTY

444525090443201. Local number, CK-26/03W/04-0001.

LOCATION.--Lat 44°45'25", long 90°44'32", Hydrologic Unit 07050006. Owner: Wis. Dept. of Natural Resources.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled domestic artesian well, diameter 6 in, depth 150 ft cased to 53 ft, open end.

DATUM.--Altitude of land-surface is 1,210 ft above National Geodetic Vertical Datum of 1929. 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, 51.93 ft below land-surface datum Dec. 18, 1986; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 31	56.48	JAN 30	57.20	MAR 28	57.83	JUN 1	58.30	JUL 14	58.48	SEP 21	59.17
DEC 1	56.87	FEB 28	57.46	MAY 2	58.07	JUL 13	58.53				

## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 930 ft above National Geodetic Vertical Datum of 1929. 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, 83.37 ft below land-surface datum, Jan. 2, 1961; lowest water level measured, 120.50 ft below land-surface datum, Nov. 6, 1985.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	94.70	DEC 12	89.67	FEB 1	89.09	APR 3	89.99	MAY 30	96.35	AUG 7	97.30
10	92.70	19	90.16	13	89.06	11	89.40	JUN 6	97.22	14	98.49
17	95.43	27	85.91	20	89.30	17	89.19	12	98.82	21	98.72
24	93.31	JAN 3	86.94	27	90.17	24	93.60	26	98.77	28	100.53
31	90.47	9	88.56	MAR 6	90.48	28	93.44	JUL 5	101.61	SEP 5	97.77
NOV 7	89.95	19	89.53	13	89.93	MAY 8	92.44	10	103.94	11	98.47
14	89.99	23	88.80	20	89.77	15	92.05	24	101.38	18	94.37
28	89.24	30	89.10	27	88.18	22	97.12	31	96.36	25	97.29
DEC 5	91.15										

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.

DATUM.--Altitude of land-surface is 870 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	26.25	26.24	25.84	25.57	26.26	26.53	26.01	26.24	26.74	30.96	27.08	26.77
10	26.14	26.31	25.95	25.15	26.27	26.62	26.83	26.26	27.22	30.96	27.47	26.48
15	26.54	26.12	26.22	25.85	26.43	26.31	26.30	26.83	26.90	29.30	27.28	26.53
20	26.22	25.76	26.19	26.31	26.32	25.94	26.30	26.62	29.56	27.94	27.54	26.70
25	26.30	25.66	25.90	26.12	26.26	25.68	26.59	27.57	30.38	27.79	27.40	26.64
EOY	26.14	25.77	25.57	26.07	26.70	25.81	26.01	26.78	30.04	27.21	27.15	26.76

WTR YEAR 1989 MAX 31.93 JUL 7 MIN 24.01 NOV 30

## 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.

DATUM.--Altitude of land-surface is 880 ft above National Geodetic Vertical Datum of 1929. 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, 15.94 ft below land-surface datum, Sept. 30, 1986; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	25.78	JAN 31	20.83	APR 11	20.83	MAY 9	21.13	JUL 3	21.78	SEP 1	20.52
DEC 8	22.65	FEB 28	21.29	MAY 5	20.78	JUN 2	21.20	31	21.78	29	21.00
JAN 4	21.22	MAR 28	20.90								

## 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.

DATUM.--Altitude of land-surface is 725 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 8	27.19	JAN 11	42.43	APR 19	32.74	JUL 19	46.29	AUG 23	46.34	SEP 22	46.30
DEC 14	40.02	FEB 15	44.61	MAY 16	46.24						

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.

DATUM.--Altitude of land-surface is 616 ft above National Geodetic Vertical Datum of 1929. 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, 1.57 ft above land-surface datum, June 18, 1974; lowest water level, 35.33 ft below land-surface datum, Feb. 1, 1977.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	30.90	29.82				30.61		19.34	13.48	18.43	25.13	29.96
10	30.73	27.93		25.60		31.40		20.78	15.25	18.47	27.26	28.73
15	31.49	26.29		25.79	29.29	27.44		22.71	15.74	20.77	29.07	30.77
20	31.29	24.15			29.15	28.09	15.83	21.43	12.68	20.33	27.78	30.88
25	30.39	23.10			29.77	26.40	16.66	22.08	14.53	23.34	28.32	31.41
EOM	30.54	23.37			30.24	14.44	17.77	19.10	16.12	24.00	28.85	32.05

WTR YEAR 1989 MAX 32.60 SEP 29 MIN 10.40 JUN 21

## 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.

DATUM.--Altitude of land-surface is 980 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	7.61	NOV 21	0.98	JAN 9	2.51	FEB 27	4.04	APR 17	0.04	JUN 5	1.38
10	7.87	28	0.23	17	2.62	MAR 6	4.34	25	0.18	12	2.15
17	8.21	DEC 5	1.25	23	2.69	13	4.80	MAY 1	0.13	19	2.41
24	8.44	12	1.47	30	2.76	20	5.11	8	0.31	26	2.97
31	8.39	19	1.83	FEB 6	2.99	29	2.06	15	0.86	JUL 3	3.29
NOV 7	8.98	27	2.09	13	3.31	APR 3	1.49	22	1.15	25	4.49
14	9.27	JAN 3	2.33	20	3.68	10	0.24	30	0.11		

## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 835 ft above National Geodetic Vertical Datum of 1928. Measuring point: hole in pump base, 1.50 ft above land-surface datum.

PERIOD OF RECORD.--October 16, 1967, to current year.

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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	26.96	NOV 8	26.73	JAN 5	22.47	FEB 17	24.12	MAY 16	22.71	AUG 3	20.34
18	26.73	23	24.97	31	22.85	APR 11	23.16	JUN 23	19.82	SEP 12	19.79
28	26.46	DEC 14	22.79	FEB 2	23.23	MAY 4	21.53	JUL 21	20.68		

## 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.

DATUM.--Land-surface datum is 1,552 ft above National Geodetic Vertical Datum of 1929. 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, 11.89 ft below land-surface datum, Aug. 13, 1968.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	11.43	DEC 29	10.83	FEB 27	10.80	APR 27	10.66	JUL 5	11.39	AUG 31	11.61
DEC 2	10.93	JAN 30	10.67	MAR 30	10.57	JUN 5	11.22	31	11.54	SEP 29	11.74

## 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.

DATUM.--Altitude of land-surface is 980 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of pump base, 0.50 ft above land-surface datum.

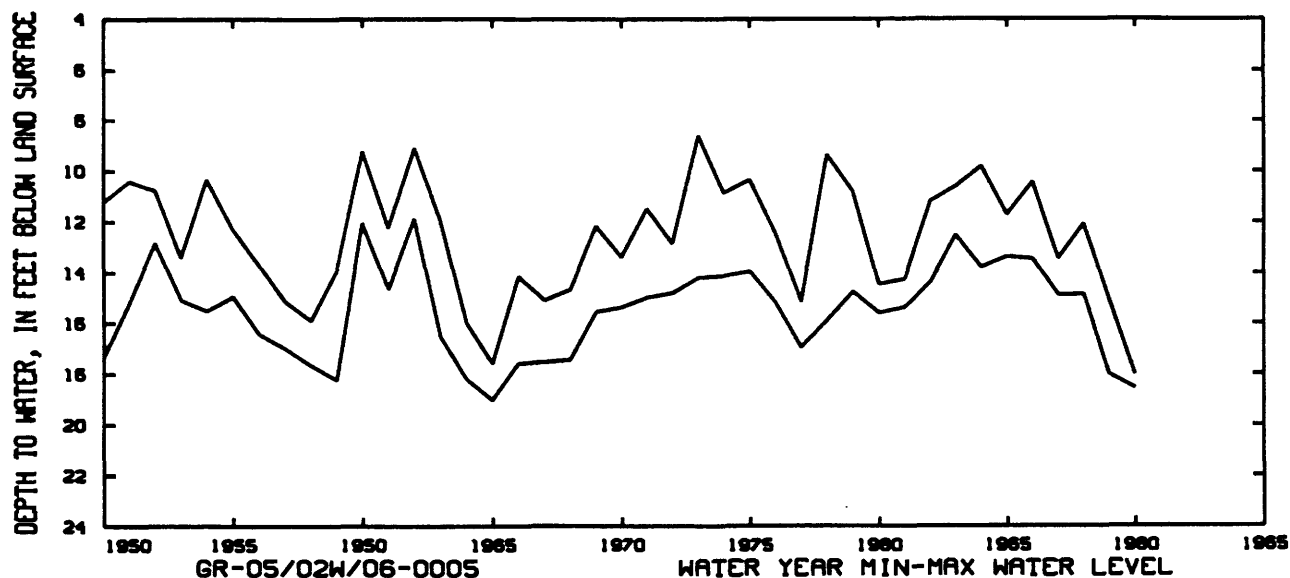
PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.60 ft below land-surface datum, May 22, 1973; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	15.10	DEC 21	15.39	FEB 15	15.67	APR 26	15.57	JUN 20	16.63	AUG 29	17.69
NOV 18	15.08	JAN 19	15.53	MAR 15	15.38	MAY 23	16.02	JUL 25	17.37	SEP 27	18.00

## GRANT COUNTY



## 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.

DATUM.--Altitude of land-surface is 995 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	62.82	DEC 6	62.89	FEB 20	61.33	MAY 3	62.32	JUN 27	63.74	AUG 8	63.32
NOV 2	62.69	JAN 2	62.22	APR 6	61.63	JUN 14	63.19	JUL 6	64.17	SEP 7	62.96
30	62.70	FEB 15	59.40								

## 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.

DATUM.--Altitude of land-surface is 1,200 ft above National Geodetic Vertical Datum of 1929. 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, 39.40 ft below land-surface datum, May 17, 1960; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	59.49	JAN 13	61.94	MAR 10	61.78	MAY 23	62.57	JUN 28	62.76	AUG 29	63.27
25	59.65	16	61.18	23	61.89	24	62.49	JUL 10	62.86	SEP 20	63.35
NOV 18	60.29	FEB 16	61.84	APR 10	62.24	JUN 7	62.70	20	62.89	25	63.30
DEC 6	60.19	27	61.60	28	62.16						

## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 845 ft above National Geodetic Vertical Datum of 1929. 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, 15.53 ft below land-surface datum, May 22, 1973; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	20.99	DEC 10	20.94	APR 12	19.99	MAY 24	20.34	JUL 14	19.03	SEP 19	19.94
NOV 13	20.96	MAR 11	20.00	MAY 13	19.99	JUN 29	18.99				

## 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.

DATUM.--Altitude of land-surface is 930 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 1	13.02	APR 27	12.87	JUN 6	12.18	AUG 15	12.95	SEP 19	13.21	SEP 28	13.31
JAN 24	13.19	MAY 24	13.14	JUL 14	12.57						

## 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.

DATUM.--Altitude of land-surface is 639 ft above National Geodetic Vertical Datum of 1929. 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, 209.05 ft below land-surface datum, Aug. 1, 1989.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	206.42	DEC 7	206.52	MAR 1	206.90	MAY 25	202.46	AUG 1	209.05



## 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.

DATUM.--Altitude of land-surface is 1,000 ft above National Geodetic Vertical Datum of 1929. 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, 22.74 ft below land-surface datum, Nov. 8, 1986; lowest water level, 130.99 ft below land-surface datum, Nov. 6, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	39.73	39.23	40.59	40.78	41.76	42.09	42.18	42.35	42.84		43.46	44.10
10	39.26	40.27	40.85	41.39	41.67	42.06	42.53	42.79	43.15	43.21	43.83	44.10
15	39.29	40.02	41.13	41.19	42.10	41.99	42.20	42.64	43.04	43.49	43.70	44.20
20	39.70	40.47	40.84	41.67	41.47	42.16	42.37	42.70	43.15	43.35	43.67	44.24
25	39.64	40.08	41.18	41.46	41.61	42.01	42.21	42.45		43.70	43.90	44.28
EOM	40.02	40.50	40.99	40.92	41.85	42.12	42.66	42.86		43.64	43.91	44.33

WTR YEAR 1989 MAX 44.65 SEP 27 MIN 39.03 OCT 1

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.

DATUM.--Altitude of land-surface is 850 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	17.14	DEC 6	16.93	FEB 28	17.57	APR 10	17.74	JUN 8	17.54	AUG 29	18.19
NOV 18	17.18	JAN 16	17.30	MAR 23	17.57	MAY 23	17.35	JUL 10	18.06	SEP 25	18.21

## 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.

DATUM.--Land-surface datum is 1,508 ft above National Geodetic Vertical Datum of 1929. 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, 10.16 ft below land-surface datum, June 4, 1973; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	15.02	DEC 12	14.70	FEB 20	15.30	APR 10	14.03	JUN 19	13.70	AUG 7	14.29
10	15.10	JAN 3	14.86	27	15.37	17	13.89	26	13.78	14	14.30
15	15.20	9	14.95	MAR 6	15.46	MAY 1	13.88	JUL 3	13.85	21	14.34
25	15.20	23	15.05	13	15.45	8	13.95	10	13.93	28	14.41
NOV 1	15.17	30	15.13	20	15.50	17	14.01	17	14.30	SEP 11	14.53
21	14.87	FEB 6	15.18	27	15.33	22	14.09	24	14.12	20	14.61
DEC 5	14.70	13	15.25	APR 3	14.45	JUN 2	13.87	AUG 1	14.20	25	14.69

## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 1,435 ft above National Geodetic Vertical Datum of 1929. 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, 5.79 ft below land-surface datum, Oct. 9, 1985; lowest water level measured, 10.38 ft below land-surface datum, Jan. 17, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	9.40	OCT 29	9.20	NOV 23	8.58	DEC 24	9.20	APR 14	8.50	MAY 6	8.33
8	9.40	NOV 5	9.10	DEC 2	8.20	31	9.00	21	8.45	12	8.37
15	9.40	12	9.00	10	8.58	JAN 7	9.00	28	8.30	JUN 3	8.38
22	9.29	19	8.68	17	8.78	14	9.06				

## 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.

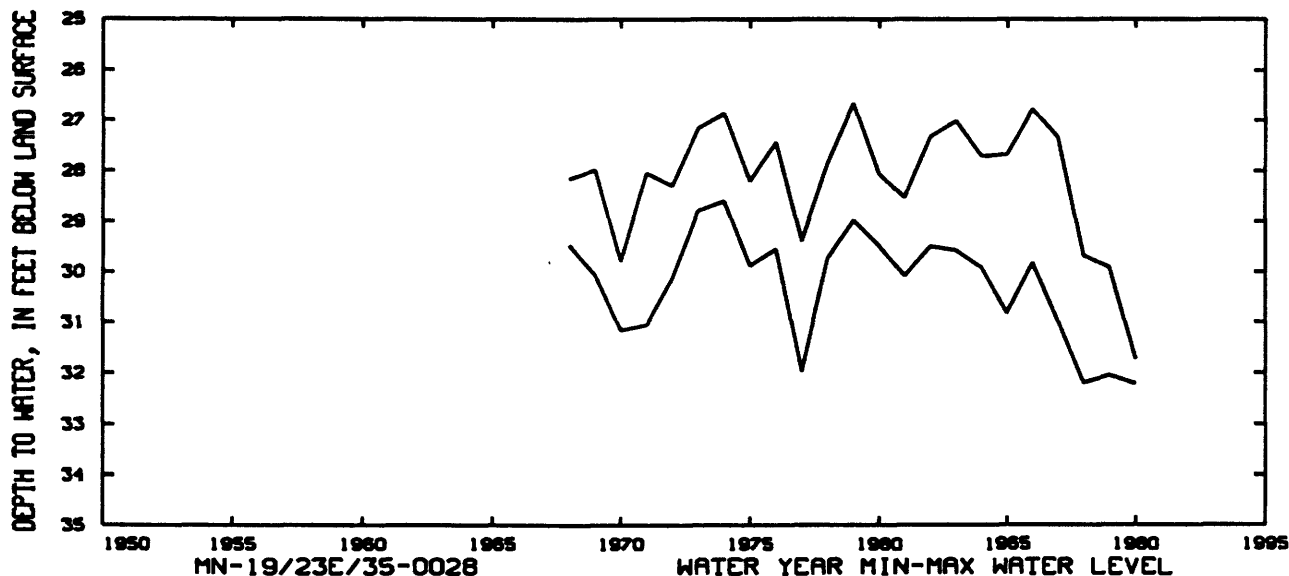
DATUM.--Altitude of land-surface is 670 ft above National Geodetic Vertical Datum of 1929. Measuring point: 1/4-in hole in pump base, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 26.66 ft below land-surface datum, June 11, 1979; lowest water level measured, 32.20 ft below land-surface datum, Aug. 2, 1988.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	31.57	DEC 12	29.98	FEB 23	30.66	APR 17	30.18	JUN 12	30.37	AUG 14	31.33
18	31.51	JAN 9	30.14	MAR 2	30.64	26	30.34	20	30.55	22	31.57
25	31.30	12	30.02	7	30.74	MAY 2	30.31	26	30.67	29	31.83
27	31.22	19	30.54	14	30.58	11	30.64	JUL 6	31.14	SEP 5	32.05
NOV 8	30.99	26	30.82	21	30.66	16	30.58	13	31.08	12	31.62
22	30.60	FEB 1	30.90	30	30.06	23	30.57	18	31.37	18	31.75
30	30.30	7	30.83	APR 6	29.92	30	30.31	24	31.44	22	31.73
DEC 2	30.30	14	30.92	11	29.98	JUN 6	30.20	AUG 1	31.35	26	31.7
6	30.14										



## MARATHON COUNTY

44470989265301. 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.

DATUM.--Altitude of land-surface is 1,229 ft above National Geodetic Vertical Datum of 1929. 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, 12.77 ft below land-surface datum, July 21, 1973; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 2	19.90	DEC 4	20.52	FEB 4	20.99	APR 9	21.01	JUN 11	21.59	AUG 6	21.90
9	19.94	11	20.55	12	20.90	16	21.11	18	21.62	13	21.93
16	20.02	17	20.59	19	21.28	23	21.21	25	21.67	20	21.92
23	20.04	25	20.70	26	21.32	30	21.29	JUL 1	21.71	27	21.92
30	20.14	JAN 1	20.74	MAR 5	21.37	MAY 7	21.37	9	21.72	SEP 3	22.01
NOV 6	19.24	8	20.75	12	21.46	14	21.47	16	21.78	10	22.01
13	19.27	15	20.95	19	21.46	21	21.52	23	21.79	17	22.03
20	19.33	22	20.97	26	21.53	28	21.56	30	21.81	24	22.03
27	20.43	29	21.05	APR 2	21.01	JUN 4	21.56				

## 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.

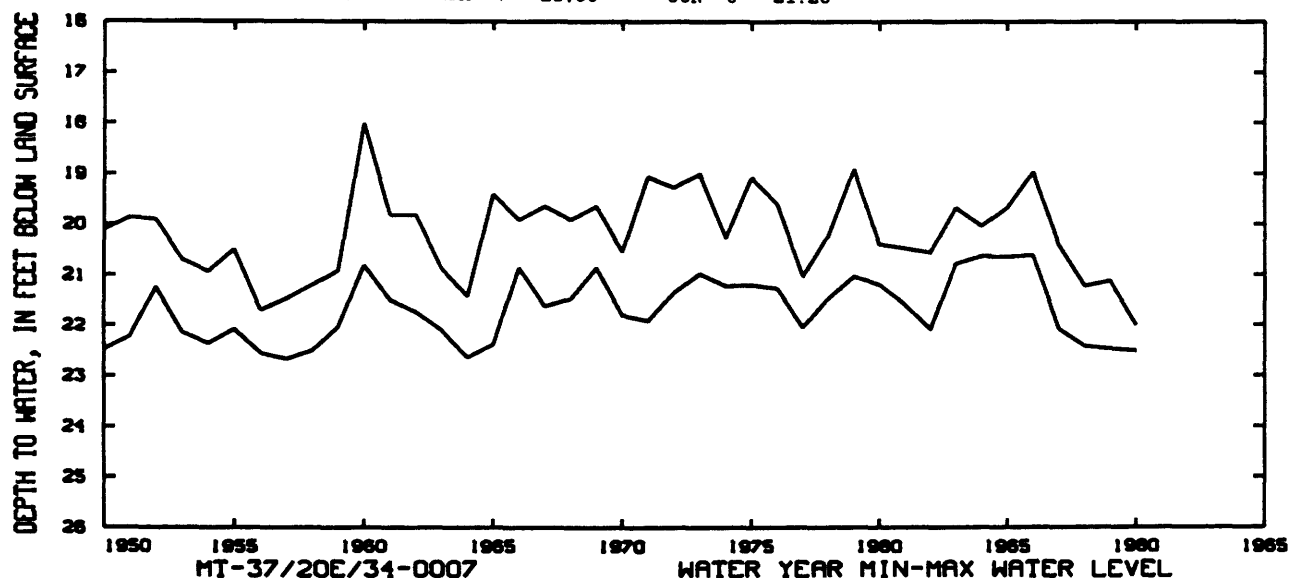
DATUM.--Altitude of land-surface is 980 ft above National Geodetic Vertical Datum of 1929. Measuring point: pointer on float gage, 4.00 ft above land-surface datum.

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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 4	22.40	DEC 6	21.77	FEB 7	22.12	APR 11	21.29	JUN 13	21.17	AUG 8	21.63
11	22.45	13	21.79	14	22.17	18	21.30	20	21.13	15	21.70
18	22.47	20	21.85	FEB 21	22.21	25	21.30	27	21.14	22	21.75
25	22.41	27	21.91	28	22.26	MAY 2	21.32	JUL 4	21.23	29	21.75
NOV 1	22.30	JAN 3	21.91	MAR 7	22.26	9	21.39	11	21.35	SEP 5	21.86
8	22.21	10	21.97	14	22.28	16	21.43	18	21.45	12	21.93
15	22.08	17	21.99	21	22.28	23	21.52	25	21.54	19	21.96
22	21.92	24	22.05	28	22.02	30	21.40	AUG 1	21.57	26	22.01
29	21.85	31	22.09	APR 4	21.50	JUN 6	21.28				



## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 880 ft above National Geodetic Vertical Datum of 1929. 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, 12.89 ft below land-surface datum, Oct. 24, 1986; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	15.38	MAR 1	15.74	APR 28	15.74	JUN 23	15.31	AUG 16	15.43	SEP 13	15.64
28	15.39	APR 18	15.74	MAY 25	15.85	JUL 18	15.36	18	15.53	29	15.86
JAN 26	15.64	24	15.66								

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.

DATUM.--Altitude of land-surface is 800 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	17.94	FEB 6	17.89	APR 18	17.36	MAY 25	17.47	JUL 18	17.52	AUG 18	17.83
28	17.49	MAR 28	17.62	28	17.33	JUN 23	16.87	AUG 16	17.71	SEP 13	18.14
JAN 26	17.86										

## 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.

DATUM.--Altitude of land-surface is 705 ft above National Geodetic Vertical Datum of 1929. 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, 314.73 ft below land-surface datum, Sept. 27, 1989.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5				309.99	310.37			310.27	309.38	311.43	311.96	313.02
10				310.19	310.27			310.40	309.91	311.60	312.47	313.17
15				309.87	310.78			309.99	310.06	312.04	312.46	313.60
20				310.18	310.39			309.70	310.52	312.05	312.60	313.99
25				309.99	310.51		310.81	309.38	310.80	312.34	312.74	314.39
EOM		310.84		309.49			310.96	309.28	311.18	312.36	312.75	314.53

WTR YEAR 1989 MAX 314.73 SEP 27 MIN 309.10 MAY 31

## MILWAUKEE COUNTY

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.

DATUM.--Altitude of land-surface is 685 ft above National Geodetic Vertical Datum of 1929. 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, 54.67 ft below land-surface datum, Mar. 19, 1986; lowest water level, 121.40 ft below land-surface datum, Sept. 27, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

LOWEST VALUE												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	1 6.54	110.18		113.42	115.62			117.81	118.88	119.73	119.89	120.86
10	1 7.19	110.40		113.88	116.25			118.42	119.20	119.61	120.43	120.87
15	1 7.84	110.61	111.40	114.18	116.91			118.34	119.15	119.95	120.35	
20	1 8.47	110.81	111.92	114.46	116.59			118.35	119.36	119.84	120.38	
25	1 9.09	111.02	112.44	114.17	117.04		117.60	118.17	119.50	120.25	120.63	
EOM	1 9.84	110.88	112.70	113.74	117.07		118.10	118.73	119.76	120.25	120.66	
WTR YEAR 1989 MAX 121.40 SEP 27 MIN 105.88 OCT 1												

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.

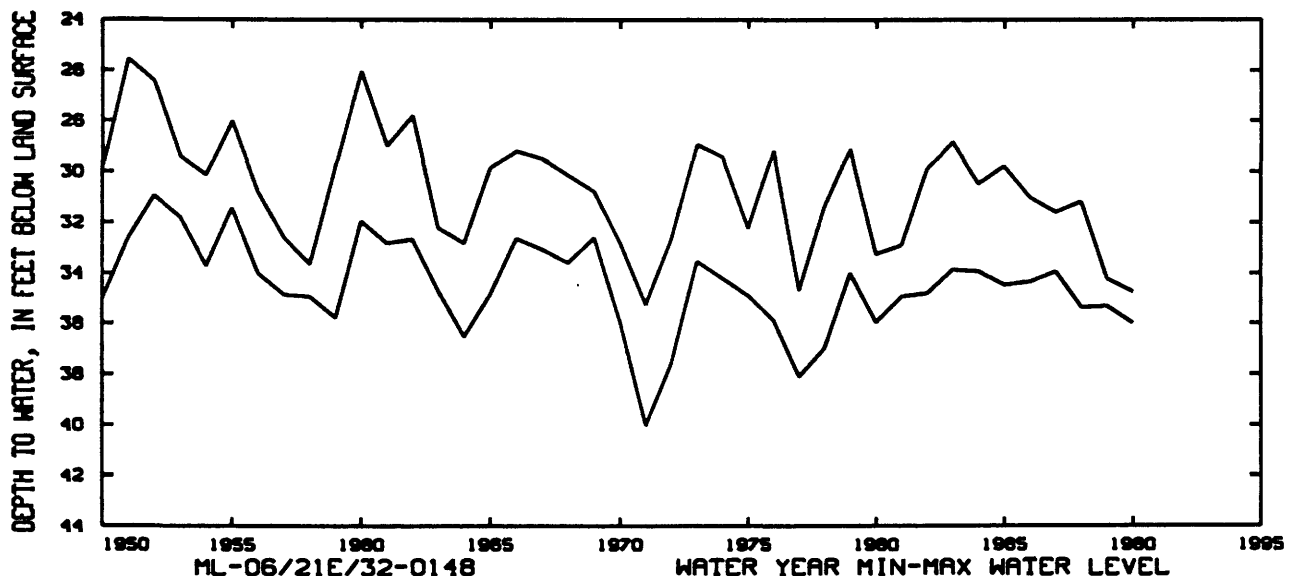
DATUM.--Altitude of land-surface is 774 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of 1/4-inch pipe, at land-surface datum.

PERIOD OF RECORD.--September 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 25.44 ft below land-surface datum, May 3, 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 31	34.99	DEC 21	34.96	FEB 27	34.39	MAY 31	34.88	JUL 26	34.98	SEP 14	34.29
NOV 29	34.60	JAN 31	34.62	APR 25	34.22	JUN 29	35.31	AUG 30	34.71		



## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 1,100 ft above National Geodetic Vertical Datum of 1929. 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, 4.66 ft below land-surface datum, Mar. 19, 1986; lowest water level measured, 18.23 ft below land-surface datum, Mar. 27, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	7.40	7.60	7.63	7.62	7.79	7.96	6.57	7.54	7.80	8.08	8.25	7.79
10	7.44	7.64	7.67	7.69	7.85	7.95	6.79	7.58	7.84	8.14	8.20	7.87
15	7.51	7.60	7.62	7.70	7.88	6.88	7.00	7.61	7.87	8.20	8.32	7.95
20	7.57	7.35	7.56	7.75	7.82	7.55	7.21	7.66	7.92	8.16	8.40	8.13
25	7.58	7.47	7.56	7.76	7.88	5.86	7.40	7.71	7.95	8.25	8.43	
EOM	7.65	7.55	7.58	7.75	7.90	6.35	7.49	7.75	7.99	8.31	8.45	
WTR YEAR 1989 MAX			8.46	SEP 30	MIN	4.83	MAR 26					

## MONROE COUNTY

440026090390101. Local number, MO-18/02W/29-0017.

LOCATION.--Lat 44°00'26", long 90°39'01", Hydrologic Unit 07040006. Owner: U.S. Army.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 9 in, depth 192 ft, cased to 109 ft, open end.

DATUM.--Altitude of land-surface is 909 ft above National Geodetic Vertical Datum of 1929. 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, 0.43 ft below land-surface datum, May 8, 1973; lowest water level, 8.25 ft below land-surface datum, Sept. 20, 1988.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	7.18	7.62	7.18	7.52	7.85	8.01	7.23	7.44	5.76	6.16	6.89	7.45
10	7.21	7.69	7.23	7.65	7.86	8.05	7.23	7.48	5.72	6.32	7.00	7.49
15	7.30	7.71	7.30	7.67	7.90	7.61	7.26	7.50	5.77	6.44	7.09	7.55
20	7.39	7.47	7.31	7.73	7.91	7.65	7.28	7.51	5.71	6.55	7.19	7.61
25	7.49	7.24	7.36	7.76	7.95	7.49	7.34	7.35	5.81	6.69	7.31	7.68
EOM	7.57	7.19	7.43	7.78	7.98	7.28	7.39	6.03	5.98	6.81	7.40	7.71
WTR YEAR 1989 MAX			8.05	MAR 10	MIN	5.69	JUN 8					

## OCONTO COUNTY

445054088025201. Local number, OC-27/20E/03-0020.

LOCATION.--Lat 44°50'54", long 88°02'52", Hydrologic Unit 04030104. Owner: Wis. Dept. of Transportation.

AQUIFER.--Prairie du Chien.

WELL CHARACTERISTICS.--Drilled domestic water-table well, diameter 6 in, depth 100 ft, cased to 88 ft, open end.

DATUM.--Altitude of land-surface is 640 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	10.76	DEC 16	10.42	JAN 17	10.39	APR 20	10.13	JUL 12	10.49	AUG 24	10.85
NOV 9	10.56	JAN 12	10.30	MAR 1	10.64	JUN 21	10.17	20	10.24	SEP 21	11.66

## GROUND-WATER LEVELS

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## ONEIDA COUNTY

455213089323501. Local number, ON-39/08E/18-0022.

LOCATION.--Lat 45°52'13", long 89°32'35", Hydrologic Unit 07070001. Owner: Wisconsin Valley Improvement Co.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Jettied unused water-table well, diameter 6 in, depth 27 ft, cased to 27 ft, open end.

DATUM.--Altitude of land-surface is 1,607 ft above National Geodetic Vertical Datum of 1929. 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, 12.29 ft below land-surface datum, May 28, 1973; lowest water level, 19.29 ft below land-surface datum, Apr. 9, 1949.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	17.97	17.93	17.80	17.71	17.83	18.07	18.29	17.97	17.39	17.10	17.25	17.53
10	17.99	17.93	17.79	17.71	17.86	18.11	18.28	17.88	17.32	17.11	17.36	17.54
15	18.00	17.90	17.79	17.71	17.92	18.17	18.24	17.78	17.26	17.13	17.41	17.57
20	18.00	17.90	17.75	17.74	17.95	18.21	18.20	17.69	17.20	17.13	17.43	17.64
25	17.99	17.87	17.76	17.75	17.99	18.25	18.14	17.58	17.18	17.15	17.46	17.68
EOM	17.98	17.85	17.74	17.78	18.03	18.30	18.07	17.46	17.14	17.21	17.52	17.72

WTR YEAR 1989 MAX 18.30 MAR 31 MIN 17.10 JUL 5

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.

DATUM.--Altitude of land-surface is 1,529 ft above National Geodetic Vertical Datum of 1929. 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, 33.67 ft below land-surface datum, Apr. 15, 1965.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	31.26	NOV 28	31.87	JAN 29	32.32	APR 2	32.14	MAY 31	32.84	JUL 31	33.01
11	31.31	DEC 5	31.93	FEB 7	32.21	11	32.09	JUN 5	32.94	AUG 7	33.06
17	31.54	11	32.04	13	32.42	16	32.79	13	32.88	16	33.08
20	31.76	19	32.12	19	32.49	23	32.74	20	32.90	21	33.09
24	31.92	27	32.14	27	32.63	29	32.82	27	32.96	29	33.12
30	31.26	JAN 3	32.18	MAR 5	32.41	MAY 8	32.78	JUL 3	32.54	SEP 5	33.08
NOV 7	31.72	9	32.22	14	32.70	15	32.86	17	32.97	11	32.78
14	31.89	17	32.28	20	32.71	23	32.83	24	32.97	25	33.33
21	31.52	23	32.30	27	32.37						

## 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.

DATUM.--Altitude of land-surface is 660 ft above National Geodetic Vertical Datum of 1929. 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, 83.59 ft below land-surface datum, Aug. 25, 1988.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	82.52	DEC 15	76.97	FEB 16	74.52	MAY 17	72.98	JUL 20	77.79	SEP 21	82.55
NOV 9	80.31	JAN 11	75.78	APR 20	72.93	JUN 21	74.54	AUG 24	81.58		

## 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.

DATUM.--Altitude of land-surface is 1,250 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 27	37.27	DEC 30	37.67	FEB 13	37.96	APR 13	37.95	JUN 13	37.47	AUG 8	37.34
NOV 14	37.56	JAN 26	37.84	MAR 13	38.13	MAY 19	37.66	JUL 11	37.45	SEP 30	37.11

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.

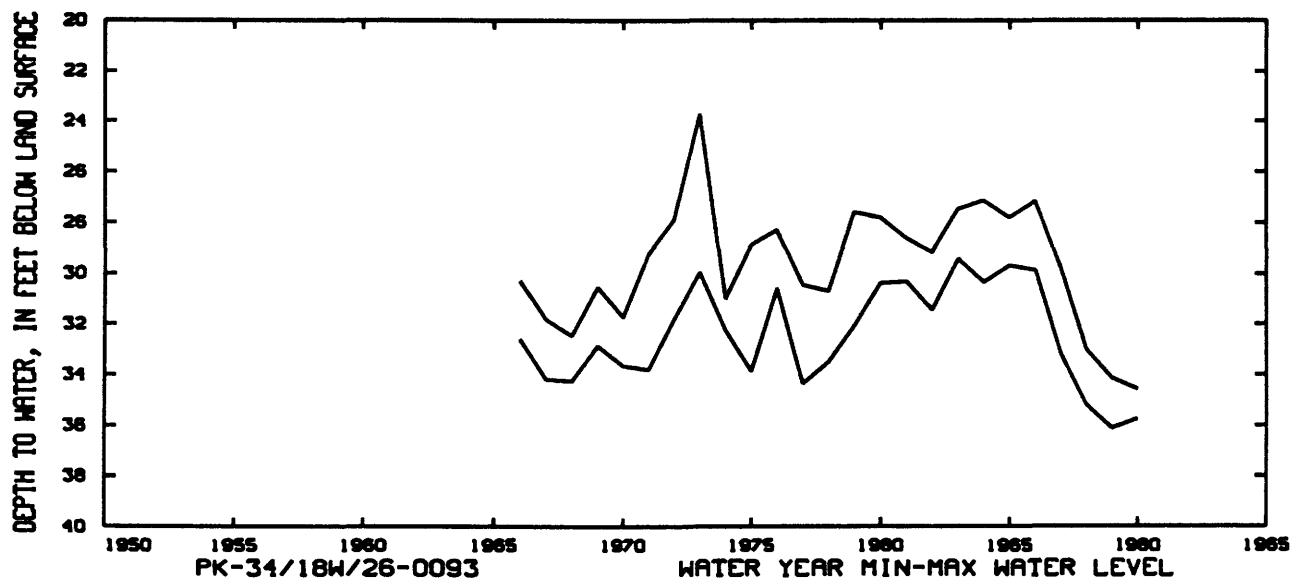
DATUM.--Altitude of land-surface is 1,140 ft above National Geodetic Vertical Datum of 1929. Measuring point: hole in pump base, 2.00 ft above land-surface datum.

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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 5	35.30	DEC 7	35.58	FEB 9	35.86	APR 12	34.80	JUN 9	34.24	AUG 8	34.45
12	35.30	14	35.60	15	35.94	21	34.50	14	34.20	16	34.50
19	35.30	22	35.60	22	35.98	25	34.49	21	34.15	25	34.55
26	35.40	28	35.67	MAR 1	36.00	MAY 3	34.40	28	34.22	30	34.57
NOV 2	35.39	JAN 5	35.70	9	36.05	9	34.38	JUL 5	34.19	SEP 8	34.50
8	35.45	13	35.73	16	36.12	16	34.34	12	34.26	14	34.48
15	35.45	18	35.75	22	36.13	23	34.27	18	34.26	20	34.48
25	35.50	25	35.80	30	35.35	31	34.27	26	34.37	27	34.53
30	35.53	FEB 1	35.86	APR 6	35.00						





## 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.

DATUM.--Altitude of land-surface is 1,133 ft above National Geodetic Vertical Datum of 1929. 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 8	32.24	DEC 17	32.59	FEB 25	32.90	APR 22	33.09	JUN 17	33.19	AUG 12	33.25
22	32.30	31	32.62	MAR 11	32.97	MAY 6	33.12	JUL 1	33.20	26	33.28
NOV 5	32.37	JAN 14	32.69	25	33.06	20	33.14	15	33.22	SEP 9	33.30
19	32.41	28	32.76	APR 8	33.06	JUN 13	33.18	29	33.24	23	33.34
DEC 3	32.49	FEB 11	32.83								

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.

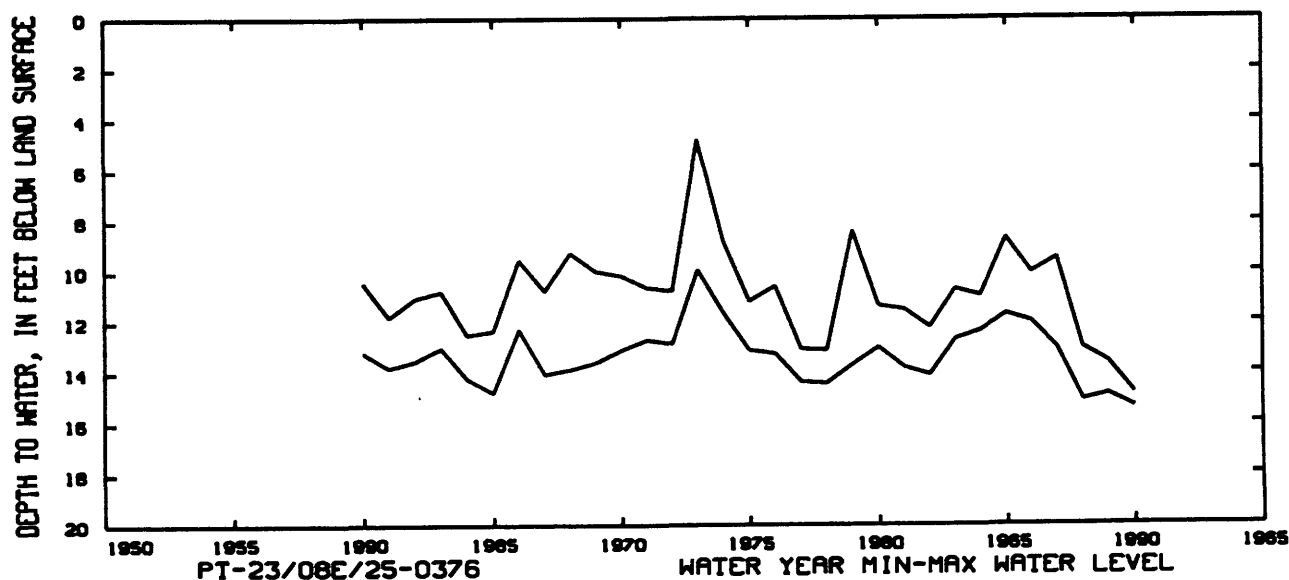
DATUM.--Altitude of land-surface is 1,099 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of casing, 4.20 ft above land-surface datum.

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, 15.12 ft below sand-surface datum. Sept. 2, 1988.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	14.64	DEC 31	14.69	FEB 16	14.80	APR 28	14.09	JUN 23	13.60	AUG 16	14.44
NOV 10	14.78	JAN 17	14.85	MAR 14	14.80	MAY 25	14.29	JUL 13	13.92	SEP 20	14.60
23	14.89	26	14.82								



## 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.--Jettied unused water-table well, diameter 8 in, depth 13 ft, cased to 13 ft.

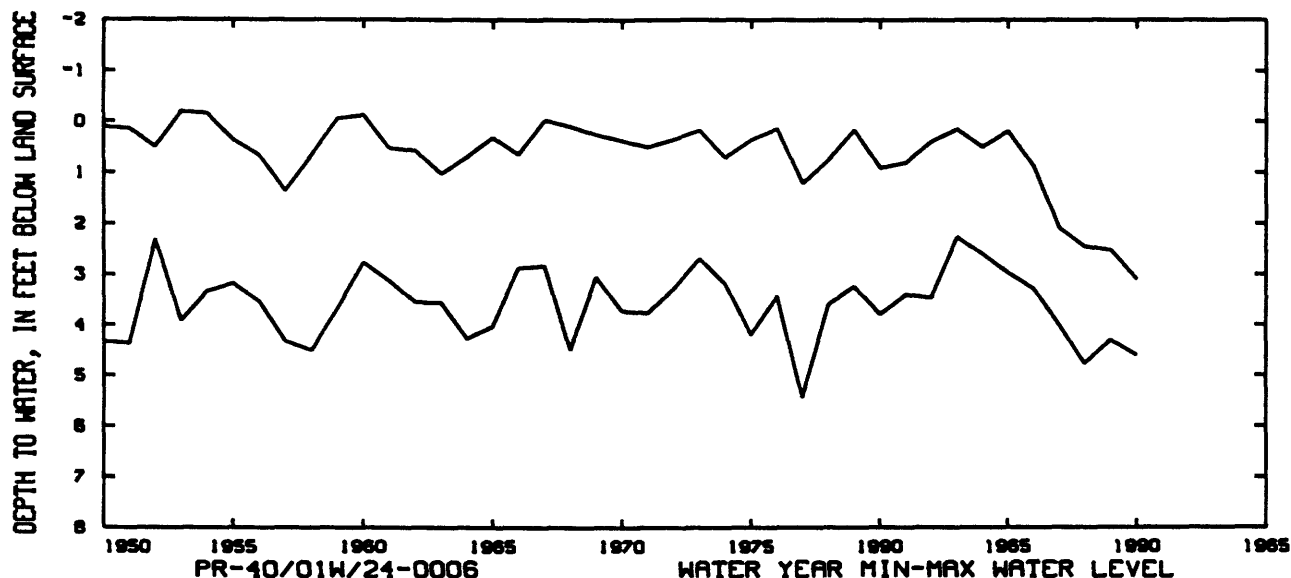
DATUM.--Altitude of land-surface is 1,510 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of casing, 5.00 ft above land-surface datum.

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, 1948.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	3.52	DEC 6	3.15	FEB 10	3.80	APR 14	2.72	JUN 16	2.70	AUG 18	4.25
14	3.53	16	3.38	17	3.91	21	2.78	23	2.70	25	4.01
21	3.46	23	3.45	24	4.00	28	2.54	30	2.61	31	3.63
28	3.39	30	3.53	MAR 1	4.00	MAY 5	2.60	JUL 7	2.53	SEP 1	3.63
NOV 4	3.44	JAN 3	3.53	10	4.05	12	2.70	14	2.92	8	3.43
11	3.23	13	3.10	17	3.85	19	2.62	21	3.34	15	3.73
18	2.75	20	3.30	24	3.25	26	2.59	28	3.58	22	4.17
25	3.10	27	3.69	31	2.88	JUN 2	2.63	AUG 4	3.76	29	4.30
DEC 1	2.85	FEB 3	3.72	APR 7	2.70	9	2.66	11	3.96		



## 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.

DATUM.--Altitude of land-surface is 730 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of casing, 1.00 ft above land-surface datum.

REMARKS.--Water level affected by regional pumping of wells.

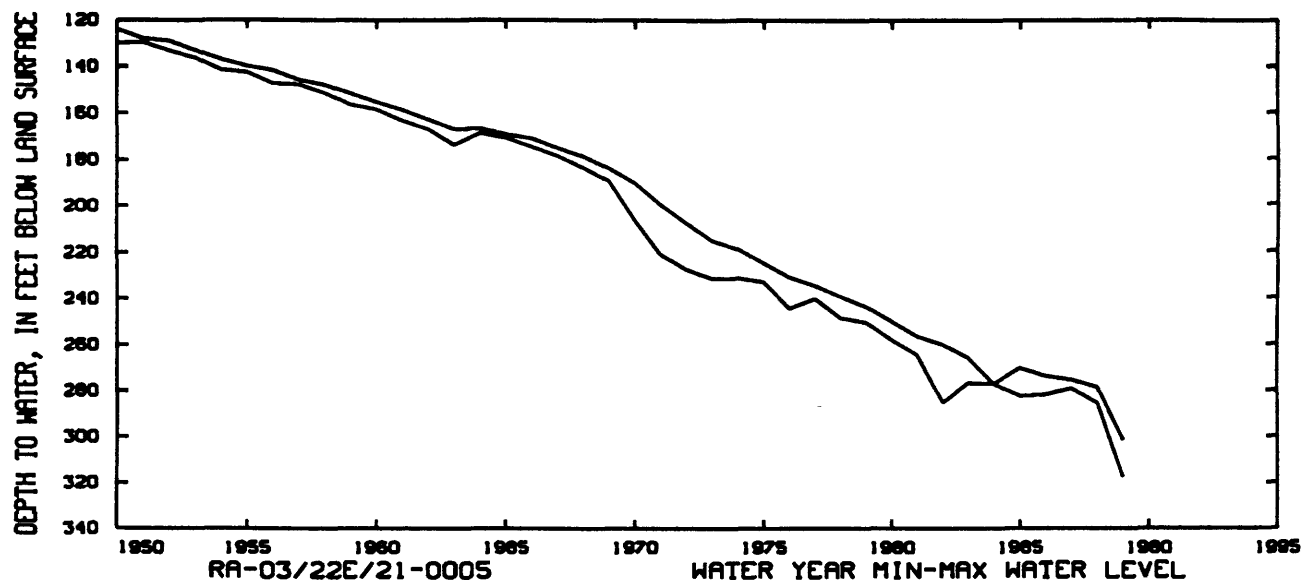
PERIOD OF RECORD.--July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 109.00 ft below land-surface datum, July 29, 1946; lowest water level measured, 317.52 ft below land-surface datum, July 29, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	301.50	NOV 21	312.12	JAN 31	303.39	JUL 29	317.52	AUG 29	316.50

## RACINE COUNTY



## 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.

DATUM.--Altitude of land-surface is 725 ft above National Geodetic Vertical Datum of 1929. 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, 15.70 ft below land-surface datum, Dec. 13, 1977.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 3	14.99	JAN 12	14.28	MAR 9	14.98	MAY 23	14.53	JUL 19	14.76	SEP 20	14.87
DEC 6	15.49	FEB 15	14.61	APR 27	14.39	JUN 27	14.72	AUG 24	15.44		

## 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.

DATUM.--Altitude of land-surface is 824 ft above National Geodetic Vertical Datum of 1929. 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, 61.34 ft below land-surface datum, Jan. 20, 1989.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 6	60.10	DEC 20	61.03	FEB 9	59.34	APR 6	53.59	JUN 15	58.16	AUG 8	55.58
20	60.79	22	61.14	16	56.56	13	53.40	22	59.28	10	56.99
27	61.01	29	61.13	MAR 2	55.11	20	53.63	28	60.02	24	55.39
NOV 10	61.21	JAN 5	60.97	9	54.45	MAY 4	53.59	JUL 7	58.81	31	54.96
17	60.59	12	61.27	16	54.05	11	53.66	13	57.30	SEP 7	54.76
DEC 1	61.19	20	61.34	23	53.84	JUN 1	57.50	27	58.35	14	55.61
8	61.27	26	61.23	30	53.64						

## GROUND-WATER LEVELS

## 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.

DATUM.--Altitude of land-surface is 1,380 ft above National Geodetic Vertical Datum of 1929. 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, 7.38 ft below land-surface datum, Oct. 1, 1986; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 14	16.56	JAN 23	16.66	MAR 18	17.19	MAY 20	15.31	JUL 12	13.31	SEP 18	13.76
NOV 18	16.79	FEB 14	16.96	APR 19	16.47	JUN 20	13.94	AUG 16	13.59	27	14.02
DEC 28	16.49										

## 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.

DATUM.--Altitude of land-surface is 1,059 ft above National Geodetic Vertical Datum of 1929. 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, 28.29 ft below land-surface datum, Sept. 24, 1973; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	32.25	NOV 28	32.53	MAR 10	32.82	MAY 1	32.60	JUL 13	32.70	SEP 7	32.67
NOV 2	32.43	JAN 10	32.65	APR 6	32.50	JUN 9	32.60	AUG 5	32.75		

## 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.

DATUM.--Altitude of land-surface is 884 ft above National Geodetic Vertical Datum of 1929. Measuring point: hole in platform, at land-surface datum.

REMARKS.--Water level affected by pumping of nearby wells.

PERIOD OF RECORD.--March to September 1989.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 78.89 ft below land-surface datum, May 24, 1989; lowest water level, 82.70 ft below land-surface datum, Feb. 22, 1989.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5									79.26	79.86	80.08	80.72
10								79.18	79.48	79.85	80.37	80.82
15								79.15	79.47	80.00	81.26	80.84
20								79.18	79.54	79.96	80.80	80.90
25								79.11	79.67	80.11	80.80	80.94
EOB								79.26	79.73	80.19	80.66	80.97
WTR YR 1989	MAX	82.70	FEB 22	MIN	78.89	MAY 24						

## 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.

DATUM.--Altitude of land-surface is 917 ft above National Geodetic Vertical Datum of 1929. 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, 52.75 ft below land-surface datum, Oct. 15, 1986; lowest water level measured, 64.60 ft below land-surface datum, Jan. 11, 1956.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	62.17	DEC 16	61.79	FEB 16	62.20	MAY 12	61.59	JUL 12	62.04	AUG 24	63.57
NOV 10	62.52	JAN 12	61.87	APR 21	61.52	JUN 20	61.49	26	62.78	SEP 20	64.04
DEC 9	61.56	FEB 1	62.02	MAY 4	61.67						

## 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.

DATUM.--Altitude of land-surface is 1,200 ft above National Geodetic Vertical Datum of 1929. 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, 3.93 ft below land-surface datum, Apr. 18, 1982; lowest water level, 13.11 ft below land-surface datum, Oct. 15, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	10.24	10.06	9.48	9.68	9.68			8.64	8.33	9.04	10.17	
10	10.21	10.07	9.55	9.66	9.68		8.04	8.46	9.22	9.40	10.24	
15	10.20	9.98	9.69	9.64	9.64		8.81	8.91	8.61	9.56	9.89	9.74
20	10.14	9.56	9.74	9.63	9.65		8.79	9.15	9.04	9.68		9.87
25	10.04	9.55	9.70	9.57	9.62		8.95	8.01	9.14	9.90		10.03
EQM	10.03	9.44	9.65	9.71	9.67		8.82	7.30	9.34	10.02		10.06

WTR YEAR 1989 MAX 10.26 AUG 11 MIN 7.22 MAY 30

## 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.

DATUM.--Altitude of land-surface is 820 ft above National Geodetic Vertical Datum of 1929. 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, 133.18 ft below land-surface datum, Jan. 13, 1955; lowest water level measured, 144.95 ft below land-surface datum, Oct. 27, 1966.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 7	140.53	DEC 19	139.35	FEB 9	140.48	APR 7	138.61	JUN 8	138.33	AUG 4	140.34
NOV 22	140.36	JAN 13	140.54	MAR 8	140.54	MAY 8	138.48	JUL 18	140.04	SEP 15	141.18

## GROUND-WATER LEVELS

## TREMPEALEAU COUNTY

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.

DATUM.--Altitude of land-surface is 740 ft above National Geodetic Vertical Datum of 1929. 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, 44.26 ft below land-surface datum, Nov. 9, 1987; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	45.39	DEC 12	48.18	FEB 7	48.51	APR 10	48.40	JUN 12	48.59	AUG 9	48.92
NOV 10	48.00	JAN 10	48.36	MAR 13	46.59	MAY 9	48.41	JUL 10	48.74	SEP 5	49.00

## 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.

DATUM.--Altitude of land-surface is 1,640 ft above National Geodetic Vertical Datum of 1929. 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, 10.60 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	13.44	FEB 3	13.31	AUG 20	13.30	SEP 10	13.35	SEP 27	13.47

## 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.

DATUM.--Altitude of land-surface is 860 ft above National Geodetic Vertical Datum of 1929. 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, 213.98 ft below land-surface datum, Aug. 16, 1989.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	211.39	DEC 30	210.63	FEB 12	210.64	APR 19	210.17	JUN 15	212.67	AUG 16	213.98
NOV 30	211.46	JAN 25	209.90	MAR 27	209.98	MAY 12	211.42	JUL 27	211.51	SEP 28	213.87

## GROUND-WATER LEVELS

405

## WAUKESHA COUNTY

430049088131301. Local number, WK-06/19E/02-0014.

LOCATION.--Lat 43°00'49", long 88°13'13", Hydrologic Unit 07120006. Owner: New Tribes Mission, Waukesha.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in, depth 1,300 ft.

DATUM.--Altitude of land-surface is 875 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of casing, at land-surface datum.

REMARKS.--Water level affected by pumping of nearby municipal wells.

PERIOD OF RECORD.--September 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 249.86 ft below land-surface datum, July 6, 1947;  
lowest water level, 502.48 ft below land-surface datum, Sept. 3, 1988.WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	0.68	497.24	488.00	488.22	490.93			485.47	487.84	490.16	488.60	486.74
10	498.83	495.31	491.61	486.94	491.73			484.41	491.28	494.08	484.17	485.95
15	0.68	495.03		490.83	491.15			486.98	490.02		486.64	485.26
20		492.12		492.21	488.77			489.11	489.20		486.74	483.91
25		491.06		491.50			480.82	488.57	493.80		488.91	486.14
ECM		488.83	484.12	489.30			483.12	488.08	493.11	487.21	488.90	486.43

WTR YEAR 1989 MAX 501.64 OCT 7 MIN 478.12 APR 25

425535088131701. Local number, WK-05/19E/02-0031.

LOCATION.--Lat 42°55'35", long 88°13'17", Hydrologic Unit 07120006. Owner: William M. Foss.

AQUIFER.--Silurian dolomite.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 6 in, depth 508 ft, cased to 434 ft, open end.

DATUM.--Altitude of land-surface is 962 ft above National Geodetic Vertical Datum of 1929. 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, 126.28 ft below land-surface datum, June 10, 1974;  
lowest water level, 138.14 ft below land-surface datum, Feb. 2, 1959.WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	134.11	134.01	134.31	134.49	134.68	134.80	135.20	135.46	135.80	136.62	135.67	135.87
10	134.06	134.28	134.32	134.46	134.63	134.86	135.27	135.51	135.85	136.62	135.71	135.75
15	134.09	134.29	134.33	134.54	134.65	134.91	135.33	135.57	135.91	136.33	135.66	135.72
20	134.11	134.30	134.34	134.61	134.70	135.01	135.35	135.63	135.96	136.04	135.70	135.74
25	134.12	134.16	134.34	134.69	134.76	135.10	135.37	135.68	136.01	135.96	135.92	135.78
ECM	134.14	134.20	134.34	134.58	134.77	135.16	135.41	135.73	136.01	135.75	135.84	135.87

WTR YEAR 1989 MAX 136.76 JUL 9 MIN 133.83 OCT 2

## WAUPACA COUNTY

441545088522901. Local number, WP-21/13E/25-0002.

LOCATION.--Lat 44°15'45", long 88°52'29", Hydrologic Unit 04030202. Owner: Village of Fremont.

AQUIFER.--Sandstone.

WELL CHARACTERISTICS.--Drilled unused artesian well, diameter 8 in, depth 205 ft, cased to 109 ft, open end.

DATUM.--Altitude of land-surface is 764 ft above National Geodetic Vertical Datum of 1929. Measuring point: hole in cap, 1.00 ft above land-surface datum.

PERIOD OF RECORD.--August 1950 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.65 ft below land-surface datum, Apr. 7, 1979;  
lowest water level measured, 15.91 ft below land-surface datum, Feb. 23, 1954.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 1	14.33	DEC 3	14.09	FEB 4	14.55	APR 8	13.07	JUN 10	12.97	AUG 12	14.17
8	14.39	10	14.17	11	14.53	15	13.42	17	13.07	19	14.25
15	14.47	17	14.12	18	14.57	22	13.60	24	13.00	26	14.30
22	14.50	24	14.22	25	14.79	29	13.95	JUL 1	13.63	SEP 2	14.34
29	14.79	31	14.27	MAR 4	14.76	MAY 6	13.60	10	13.72	9	14.38
NOV 5	14.45	JAN 7	14.25	11	14.87	13	13.66	15	13.93	16	14.50
12	14.42	14	14.22	18	14.83	20	13.69	22	13.94	23	14.65
19	14.41	21	14.18	25	14.41	27	13.66	29	14.03	30	14.67
26	14.13	28	14.33	APR 1	13.48	JUN 3	13.15	AUG 5	14.13		

## GROUND-WATER LEVELS

## WAUSHARA COUNTY

440713089320801. Local number, WS-19/08E/15-0008.

LOCATION.--Lat 44°07'13", long 89°32'08", Hydrologic Unit 07070003. Owner: University of Wisconsin Experiment Farm, Hancock.

AQUIFER.--Sand and gravel.

DATUM.--Altitude of land-surface is 1,080 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of casing, 1.00 ft above land-surface datum.

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

EXTREMES FOR PERIOD OF RECORD.--Highest water level, 5.88 ft below land-surface datum, July 5, 1973; lowest water level, 15.71 ft below land-surface datum, June 10, 1959.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

## LOWEST VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	11.09	11.03	11.14	11.09	11.30	11.51	10.54	11.15	10.60	10.53	11.08	11.53
10	11.03	11.12	11.11	11.15	11.32	11.53	10.76	11.23	10.39	10.60	11.16	11.56
15	11.00	11.16	11.09	11.17	11.37	11.44	10.86	11.27	10.28	10.74	11.26	11.59
20	10.96	11.18	11.04	11.22	11.41	11.23	10.93	11.33	10.23	10.80	11.31	11.63
25	10.96	11.15	11.06	11.25	11.45	11.12	11.01	11.36	10.31	10.93	11.37	11.65
EOM	11.03	11.14	11.06	11.27	11.47	10.22	11.10	11.04	10.43	11.04	11.47	11.67

WTR YEAR 1989 MAX 11.67 SEP 30 MIN 8.50 MAR 26

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.

DATUM.--Altitude of land-surface is 923 ft above National Geodetic Vertical Datum of 1929. 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, 32.78 ft below land-surface datum, Oct. 18, 1986; 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 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	36.12	DEC 16	36.20	FEB 16	36.58	APR 12	36.94	JUN 17	35.50	AUG 20	36.36
NOV 16	36.21	JAN 16	36.31	MAR 15	37.19	MAY 16	36.12	JUL 15	35.70	SEP 18	36.64

## 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.

DATUM.--Altitude of land-surface is 765 ft above National Geodetic Vertical Datum of 1929. 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, 17.20 ft below land-surface datum, Apr. 26, 1979; lowest water level measured, 39.75 ft below land-surface datum, Sept. 1, 1960.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	20.83	DEC 29	19.19	FEB 28	20.31	MAY 1	19.53	JUN 30	20.18	AUG 30	21.71
NOV 30	19.15	JAN 27	19.85	MAR 29	19.86	31	18.93	JUL 31	20.95	SEP 29	21.70



## WOOD COUNTY

444106090085801. Local number, WD-25/03E/04-0528.

LOCATION.--Lat 44°41'06", long 90°08'58", Hydrologic Unit 07070002. Owner: U.S. Geological Survey.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 3 in, depth 44 ft, cased to 30 ft, screened 30-44 ft.

DATUM.--Altitude of land-surface is 1,180 ft above National Geodetic Vertical Datum of 1929. Measuring point: top of casing, 2.00 ft above land-surface datum.

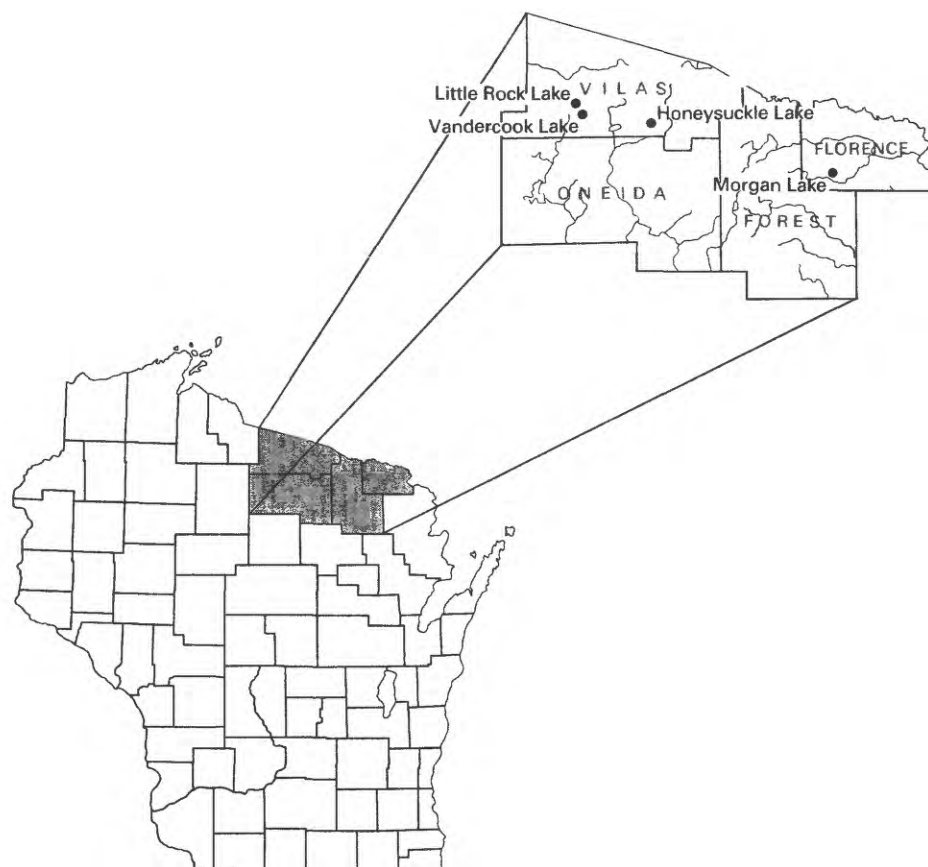
PERIOD OF RECORD.--August 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.72 ft below land-surface datum, Oct. 26, 1987; lowest water level measured, 27.23 ft below land-surface datum, June 23, 1988.

## WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

LOWEST VALUE												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
5	24.98	24.67	23.91	23.96	23.82	23.76	23.77	24.20			24.40	24.56
10	24.91	24.60	24.05	23.99	23.77	23.73	23.79	24.25			24.40	24.58
15	24.84	24.55	24.11	23.94	23.82	23.51	23.86	24.25		24.34	24.42	24.60
20	24.77	24.50	24.07	23.94	23.74	23.74	23.80	24.29		24.36	24.45	24.62
25	24.71	24.40	24.03	23.90	23.74	23.44	23.86	23.90		24.38	24.48	24.64
EOM	24.74	23.94	24.00	23.78	23.75	23.69	24.10			24.39	24.53	24.66
WTR YEAR 1989 MAX			24.66	SEP 30	MIN	21.99	MAR 26					

## ACID-DEPOSITION RECORDS



**Figure 8.** Location of acid-deposition sites in Wisconsin.

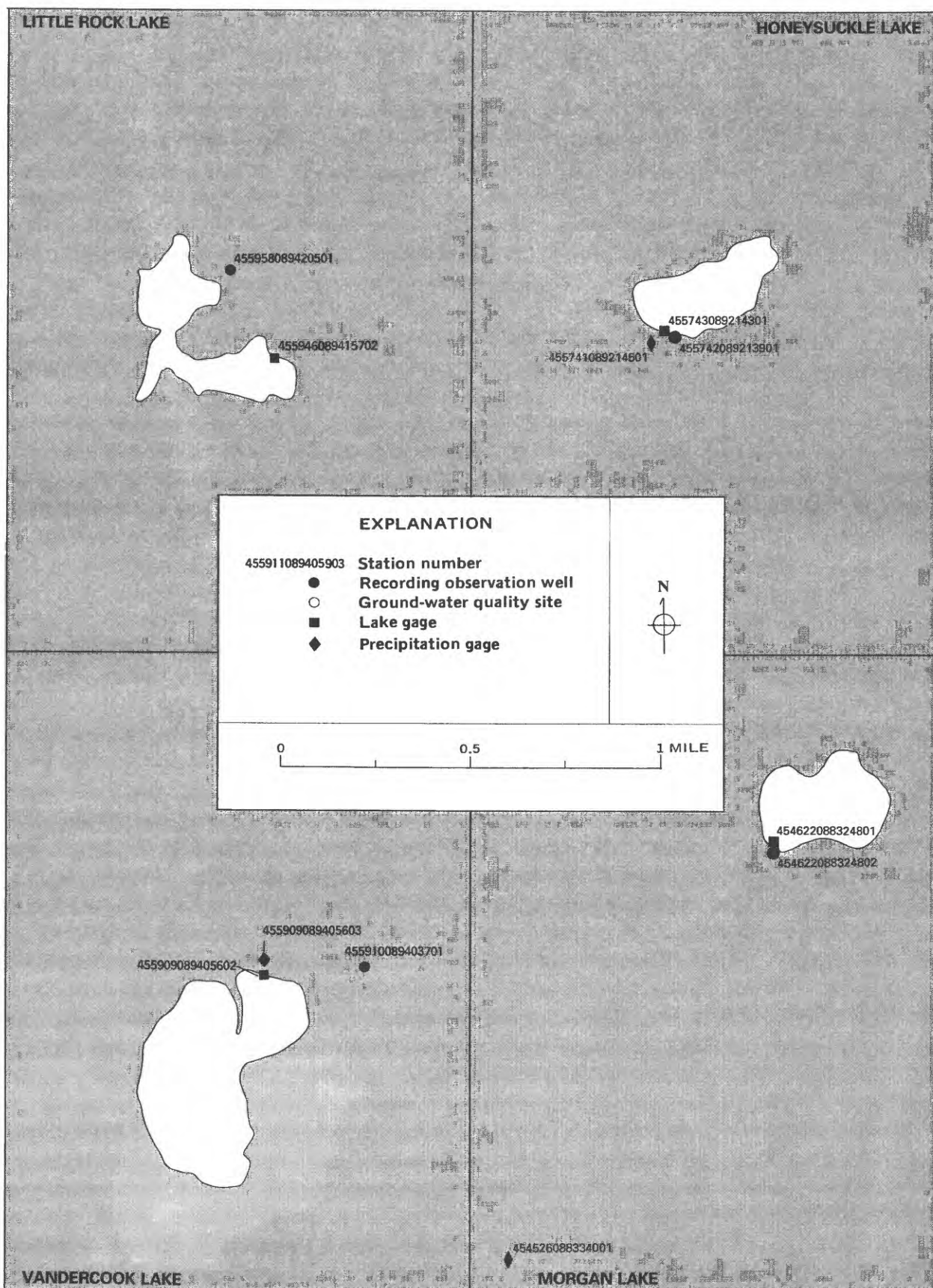


Figure 9. Location of data-collection sites at acid-deposition sites in Wisconsin.

Lake stages, precipitation quantity, ground-water levels, and water quality for acid deposition investigations in northern Wisconsin.

## STAGE RECORDS

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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for periods of missing record, Dec. 14 to Jan. 10 and Aug. 6 to Sept. 6. Lake does not have surface inlet or outlet.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, 65.17 ft, Apr. 7-9, 11-13, 1988; minimum observed gage height, 63.75 ft Sept. 29-30, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 64.65 ft, Apr. 6-11 and 15-18; minimum observed gage height, 63.75 ft, Sept. 29-30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64.09	64.14	e64.52	---	64.55	64.50	64.63	64.58	64.59	64.50	64.13	---
2	64.07	64.14	e64.51	---	64.55	64.49	64.63	64.57	64.57	64.49	64.11	---
3	64.06	64.14	e64.50	---	64.55	64.52	64.63	64.57	64.57	64.47	64.09	---
4	64.05	64.17	64.50	---	64.54	64.56	64.63	64.57	64.56	64.46	64.08	---
5	64.04	64.26	64.50	---	64.54	64.56	64.64	64.57	64.54	64.44	64.08	---
6	64.03	64.28	64.48	---	64.54	64.55	64.65	64.56	64.53	64.43	---	---
7	64.03	64.29	64.46	---	64.55	64.56	64.65	64.55	64.53	64.41	---	63.99
8	64.02	64.30	64.45	---	64.55	64.55	64.65	64.55	64.59	64.38	---	63.98
9	64.02	64.30	64.45	---	64.53	64.55	64.65	64.55	64.60	64.36	---	63.95
10	64.01	64.31	64.44	---	64.55	64.54	64.65	64.55	64.60	64.35	---	63.95
11	64.00	64.30	64.43	64.58	64.54	64.53	64.65	64.54	64.59	64.33	---	63.93
12	63.99	64.31	64.42	64.56	64.54	64.53	64.64	64.53	64.59	64.30	---	63.91
13	63.98	64.32	64.43	64.56	64.54	64.53	64.64	64.50	64.60	64.29	---	63.89
14	63.98	64.32	---	64.56	64.53	64.55	64.64	64.50	64.62	64.27	---	63.89
15	63.97	64.33	---	64.56	64.52	64.60	64.65	64.52	64.63	64.25	---	63.87
16	63.99	64.40	---	64.56	64.52	64.60	64.65	64.50	64.64	64.24	---	63.87
17	64.01	64.39	---	64.56	64.52	64.58	64.65	64.50	64.64	64.23	---	63.86
18	64.02	64.39	---	64.57	64.51	64.57	64.65	64.49	64.62	64.20	---	63.87
19	64.02	64.39	---	64.57	64.52	64.56	64.64	64.50	64.62	64.18	---	63.85
20	64.01	64.40	---	64.57	64.51	64.56	64.63	64.50	64.62	64.15	---	63.85
21	64.02	64.39	---	64.57	64.50	64.55	64.63	64.49	64.61	64.11	---	63.83
22	64.01	64.39	---	64.56	64.50	64.55	64.62	64.47	64.59	64.10	---	63.82
23	64.05	64.39	---	64.57	64.51	64.54	64.62	64.46	64.58	64.09	---	63.83
24	64.10	64.39	---	64.56	64.51	64.56	64.61	64.47	64.58	64.08	---	63.82
25	64.11	64.39	---	64.56	64.50	64.59	64.61	64.52	64.57	64.06	---	63.81
26	64.10	64.42	---	64.56	64.51	64.60	64.60	64.51	64.56	64.05	---	63.79
27	64.12	e64.46	---	64.57	64.50	64.61	64.61	64.48	64.57	64.13	---	63.77
28	64.14	e64.50	---	64.56	64.50	64.63	64.60	64.47	64.54	64.15	---	63.76
29	64.13	e64.51	---	64.56	---	64.63	64.59	64.46	64.52	64.14	---	63.75
30	64.13	e64.52	---	64.55	---	64.63	64.58	64.47	64.51	64.14	---	63.75
31	64.13	---	---	64.55	---	64.63	---	64.58	---	64.14	---	---
MEAN	64.05	64.34	---	---	64.53	64.56	64.63	64.52	64.58	64.26	---	---
MAX	64.14	64.52	---	---	64.55	64.63	64.65	64.58	64.64	64.50	---	---
MIN	63.97	64.14	---	---	64.50	64.49	64.58	64.46	64.51	64.05	---	---

e Estimated

## ACID DEPOSITION RECORDS

413

## PRECIPITATION QUANTITY

454526088334001 MORGAN LAKE RAIN GAGE NEAR FENCE, WI

LOCATION.--Lat 45 45'26", long 88 33'40", in NW 1/4 NW 1/4 SE 1/4 sec.24, T.38 N., R.15 E., Florence County,  
Hydrologic Unit 04030108, at end of dirt road off Forest Service Road 2159, 6 mi west northwest of Fence.

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

GAGE.--Water-stage recorder.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 1.55 in., Sept. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.30 in., Aug. 13.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	.03	.00	.00	.03
2	---	---	---	---	---	---	---	---	.02	.00	.00	.00
3	---	---	---	---	---	---	---	---	.02	.02	.00	.00
4	---	---	---	---	---	---	---	---	.00	.00	.08	.22
5	---	---	---	---	---	---	---	---	.10	.00	.00	.00
6	.00	---	---	---	---	---	.07	---	.00	.00	.02	.00
7	.00	---	---	---	---	---	.02	---	.56	.00	.00	.00
8	.00	---	---	---	---	---	.02	---	.68	.00	.00	---
9	.00	---	---	---	---	---	.00	---	.07	.00	.00	---
10	.03	---	---	---	---	---	.00	---	.00	.00	.00	---
11	.00	---	---	---	---	---	.05	---	.00	.00	.15	---
12	.02	---	---	---	---	---	.00	---	.20	.00	.29	---
13	.00	---	---	---	---	---	.00	---	.35	.00	1.30	---
14	.00	---	---	---	---	---	.05	---	.56	.00	.98	---
15	.00	---	---	---	---	---	.00	---	.00	.00	.00	---
16	.42	---	---	---	---	---	.08	---	.00	.37	.00	---
17	.24	---	---	---	---	---	.08	.00	.00	.00	.00	---
18	.07	---	---	---	---	---	.02	.17	.00	.24	.00	---
19	.03	---	---	---	---	---	.00	.00	.00	.12	.00	---
20	.05	---	---	---	---	---	.00	.15	.00	.00	.14	---
21	.15	---	---	---	---	---	.00	.00	.00	.00	.00	---
22	.00	---	---	---	---	---	.00	.00	.05	.00	.22	---
23	.39	---	---	---	---	---	---	.14	.00	.00	.00	---
24	.64	---	---	---	---	---	---	.95	.00	.00	.00	---
25	---	---	---	---	---	---	---	.02	.00	.00	.00	---
26	---	---	---	---	---	---	---	.00	.22	.12	.00	---
27	---	---	---	---	---	---	---	.02	.00	.56	.00	---
28	---	---	---	---	---	---	---	.00	.00	.00	.00	---
29	---	---	---	---	---	---	---	.29	.00	.35	.00	---
30	---	---	---	---	---	---	---	1.03	.00	.03	.00	---
31	---	---	---	---	---	---	---	.44	---	.00	.35	---
TOTAL	---	---	---	---	---	---	---	---	2.86	1.81	3.53	---

## ACID DEPOSITION RECORDS

## GROUND-WATER LEVELS

454622088324802 WELL FL-38/15E/18-0093

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 Morgan Lake, 6 mi west northwest of Fence.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Augered water-table observation well, diameter 3 in.

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

GAGE.--Water-stage recorder. Datum of gage is approximately 1,400.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for period of missing record, Aug. 4 to Sept. 6..

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, water level, 63.77 ft, Apr. 6, 1988; minimum observed water level, 62.41 ft, Sept. 30, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum observed water level, 63.25 ft, June 18-20; minimum observed water level, 62.41 ft, Sept. 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62.49	62.52	62.85	62.83	62.79	62.77	63.12	63.06	63.21	63.16	62.87	---
2	62.48	62.51	62.85	62.83	62.78	62.77	63.12	63.06	63.21	63.14	62.85	---
3	62.48	62.50	62.85	62.83	62.78	62.77	63.12	63.06	63.21	63.13	62.83	---
4	62.47	62.51	62.85	62.82	62.78	62.78	63.12	63.06	63.21	63.11	---	---
5	62.47	62.66	62.85	62.82	62.78	62.78	63.10	63.06	63.21	63.09	---	---
6	62.48	62.70	62.85	62.82	62.78	62.78	63.05	63.06	63.20	63.08	---	---
7	62.47	62.70	62.84	62.82	62.78	62.78	63.06	63.06	63.20	63.07	---	62.62
8	62.47	62.69	62.84	62.82	62.77	62.78	63.07	63.06	63.20	63.06	---	62.62
9	62.46	62.69	62.84	62.82	62.76	62.78	63.07	63.05	63.23	63.04	---	62.61
10	62.46	62.69	62.84	62.82	62.76	62.78	63.07	63.05	63.24	63.03	---	62.60
11	62.45	62.69	62.84	62.82	62.76	62.78	63.06	63.05	63.24	63.01	---	62.59
12	62.45	62.70	62.83	62.82	62.75	62.78	63.06	63.05	63.24	63.02	---	62.58
13	62.45	62.70	62.83	62.82	62.75	62.78	63.05	63.05	63.24	63.03	---	62.58
14	62.44	62.69	62.83	62.82	62.74	62.78	63.05	63.05	63.24	63.02	---	62.57
15	62.44	62.69	62.83	62.81	62.74	62.79	63.08	63.05	63.24	63.00	---	62.55
16	62.43	62.78	62.83	62.81	62.73	62.79	63.11	63.05	63.24	62.98	---	62.54
17	62.43	62.81	62.83	62.81	62.73	62.79	63.16	63.05	63.24	62.97	---	62.53
18	62.43	62.82	62.82	62.81	62.73	62.79	63.17	63.04	63.25	62.96	---	62.52
19	62.43	62.82	62.82	62.81	62.73	62.79	63.17	63.02	63.25	62.96	---	62.51
20	62.43	62.82	62.82	62.80	62.74	62.79	63.16	63.02	63.25	62.95	---	62.50
21	62.43	62.81	62.82	62.80	62.77	62.79	63.14	63.02	63.24	62.94	---	62.49
22	62.43	62.81	62.82	62.80	62.77	62.79	63.13	63.02	63.23	62.93	---	62.48
23	62.43	62.81	62.84	62.80	62.77	62.79	63.12	63.02	63.22	62.91	---	62.47
24	62.46	62.80	62.84	62.80	62.77	62.80	63.10	63.02	63.22	62.90	---	62.47
25	62.50	62.79	62.83	62.79	62.77	62.82	63.09	63.04	63.22	62.89	---	62.46
26	62.51	62.79	62.83	62.79	62.77	62.84	63.08	63.06	63.22	62.88	---	62.45
27	62.52	62.82	62.83	62.79	62.77	62.92	63.08	63.06	63.22	62.88	---	62.44
28	62.55	62.84	62.83	62.79	62.77	63.07	63.07	63.06	63.17	62.89	---	62.43
29	62.55	62.84	62.83	62.79	---	63.12	63.07	63.06	63.17	62.88	---	62.42
30	62.54	62.85	62.83	62.79	---	63.12	63.07	63.06	63.16	62.88	---	62.41
31	62.53	---	62.83	62.79	---	63.12	---	63.19	---	62.88	---	---
MEAN	62.47	62.73	62.83	62.81	62.76	62.83	63.10	63.05	63.22	62.99	---	---
MAX	62.55	62.85	62.85	62.83	62.79	63.12	63.17	63.19	63.25	63.16	---	---
MIN	62.43	62.50	62.82	62.79	62.73	62.77	63.05	63.02	63.16	62.88	---	---

CAL YR 1988 MEAN 62.96 MAX 63.77 MIN 62.43

## 415

455743089214301 HONEYSUCKLE LAKE NEAR EAGLE RIVER. WI

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 46.32 ft, Apr. 17-21, May 25, June 1-2; minimum observed gage height, 45.44 ft, Sept. 30.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.72	45.71	46.04	46.12	46.16	46.12	46.23	46.31	46.32	46.17	45.76	45.72
2	45.71	45.71	46.03	46.12	46.16	46.11	46.25	46.31	46.32	46.17	45.76	45.71
3	45.70	45.70	46.02	46.13	46.16	46.13	46.26	46.31	46.31	46.15	45.74	45.69
4	45.70	45.71	46.01	46.13	46.15	46.16	46.28	46.30	46.30	46.14	45.73	45.70
5	45.69	45.77	46.01	46.13	46.14	46.16	46.29	46.31	46.29	46.12	45.71	45.71
6	45.69	45.78	46.02	46.13	46.16	46.16	46.30	46.30	46.28	46.10	45.68	45.70
7	45.68	45.78	46.01	46.13	46.16	46.16	46.30	46.30	46.28	46.08	45.65	45.70
8	45.67	45.79	46.02	46.16	46.15	46.16	46.30	46.29	46.31	46.05	45.63	45.72
9	45.67	45.79	46.02	46.16	46.15	46.16	46.30	46.29	46.31	46.03	45.61	45.71
10	45.66	45.80	46.02	46.16	46.15	46.16	46.30	46.28	46.31	46.02	45.60	45.69
11	45.65	45.80	46.01	46.16	46.15	46.16	46.30	46.26	46.30	46.00	45.60	45.68
12	45.64	45.80	46.01	46.16	46.15	46.15	46.31	46.25	46.29	46.01	45.63	45.66
13	45.64	45.82	46.02	46.16	46.15	46.15	46.30	46.24	46.30	45.99	45.67	45.65
14	45.63	45.81	46.04	46.16	46.15	46.18	46.30	46.23	46.30	45.97	45.76	45.64
15	45.63	45.83	46.05	46.16	46.15	46.21	46.31	46.24	46.30	45.95	45.77	45.63
16	45.63	45.94	46.04	46.16	46.13	46.20	46.31	46.23	46.29	45.93	45.75	45.62
17	45.64	45.95	46.05	46.16	46.13	46.20	46.32	46.22	46.29	45.92	45.74	45.61
18	45.63	45.95	46.06	46.17	46.13	46.20	46.32	46.21	46.27	45.90	45.73	45.60
19	45.63	45.96	46.06	46.17	46.14	46.20	46.32	46.23	46.27	45.90	45.72	45.59
20	45.63	45.96	46.09	46.17	46.13	46.21	46.32	46.25	46.26	45.88	45.73	45.58
21	45.63	45.96	46.10	46.17	46.12	46.21	46.32	46.25	46.24	45.87	45.72	45.57
22	45.63	45.96	46.10	46.17	46.10	46.20	46.31	46.24	46.23	45.85	45.74	45.56
23	45.65	45.96	46.12	46.17	46.10	46.20	46.30	46.24	46.24	45.84	45.73	45.53
24	45.69	45.96	46.12	46.16	46.10	46.20	46.30	46.26	46.24	45.82	45.71	45.51
25	45.69	45.97	46.11	46.16	46.11	46.21	46.30	46.32	46.22	45.81	45.70	45.50
26	45.68	45.97	46.11	46.17	46.11	46.21	46.31	46.30	46.22	45.79	45.69	45.48
27	45.70	46.01	46.13	46.17	46.11	46.22	46.31	46.29	46.21	45.81	45.68	45.47
28	45.71	46.02	46.13	46.17	46.12	46.23	46.30	46.28	46.18	45.79	45.67	45.46
29	45.70	46.02	46.13	46.17	---	46.23	46.30	46.28	46.16	45.78	45.65	45.45
30	45.70	46.03	46.13	46.17	---	46.23	46.31	46.30	46.16	45.79	45.63	45.44
31	45.70	---	46.13	46.16	---	46.23	---	46.31	---	45.78	45.70	



## ACID DEPOSITION RECORDS

## PRECIPITATION QUANTITY

455741089214501 HONEYSUCKLE LAKE RAIN GAGE NEAR EAGLE RIVER, WI

LOCATION.--Lat 45 57'41", long 89 21'45", in NW 1/4 NW 1/4 SW 1/4 sec.10, T.40 N., R.9 E., Vilas County,  
Hydrologic Unit 07070001, at southwest end of Honeysuckle Lake, about 6 mi northwest of Eagle River.

PERIOD OF RECORD.--October 1987 to September 1989 (discontinued).

GAGE.--Water-stage recorder.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.38 in., Sept. 3, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.57 in., Aug. 13.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	---	---	---	---	---	---	.00	.16	.03	.00	.01
2	.00	---	---	---	---	---	---	.03	.08	.00	.00	.03
3	.04	---	---	---	---	---	---	.00	.04	.00	.00	.00
4	.10	---	---	---	---	---	---	.09	.01	.00	.00	.44
5	.01	---	---	---	---	---	.05	.16	.07	.00	.00	.02
6	.04	---	---	---	---	---	.02	.02	.09	.00	.00	.00
7	.00	---	---	---	---	---	.05	.00	.67	.00	.00	.34
8	.00	---	---	---	---	---	.03	.00	.24	.00	.00	.01
9	.00	---	---	---	---	---	.07	.00	.00	.00	.00	.01
10	.09	---	---	---	---	---	.04	.00	.02	.00	.00	.01
11	.01	---	---	---	---	---	.11	.00	.00	.05	.79	.01
12	.00	---	---	---	---	---	.00	.00	.35	.00	.40	.00
13	.01	---	---	---	---	---	.00	.01	.11	.00	1.57	.00
14	.00	---	---	---	---	---	.11	.20	.20	.00	.17	.00
15	.00	---	---	---	---	---	.00	.05	.01	.00	.03	.00
16	.16	---	---	---	---	---	.00	.02	.00	.00	.00	.01
17	.06	---	---	---	---	---	.12	.05	.00	.00	.00	.00
18	.07	---	---	---	---	---	.00	.34	.00	.11	.01	.00
19	.03	---	---	---	---	---	.00	.23	.00	.26	.10	.00
20	.04	---	---	---	---	---	.01	.36	.00	.00	.30	.00
21	.16	---	---	---	---	---	.01	.00	.00	.00	.00	.00
22	.01	---	---	---	---	---	.00	.01	.32	.00	.33	.02
23	.25	---	---	---	---	---	.00	.25	.09	.00	.00	.00
24	.53	---	---	---	---	---	.00	.93	.05	.00	.00	.01
25	.03	---	---	---	---	---	.12	.10	.00	.00	.00	.00
26	---	---	---	---	---	---	.03	.08	.03	.00	.02	.00
27	---	---	---	---	---	---	.00	.00	.00	.51	.01	.00
28	---	---	---	---	---	---	.04	.00	.00	.00	.00	.01
29	---	---	---	---	---	---	.14	.46	.00	.47	.00	.00
30	---	---	---	---	---	---	.07	.22	.41	.04	.00	.00
31	---	---	---	---	---	---	---	.09	---	.00	1.51	---
TOTAL	---	---	---	---	---	---	---	3.70	2.95	1.47	5.24	0.93

## ACID DEPOSITION RECORDS

417

## GROUND-WATER LEVELS

455742089213901 WELL VI-40/09E/10-0960

LOCATION.--Lat 45 57'42", long 89 21'39", in NE 1/4 NW 1/4 SW 1/4 sec.10, T.40 N., R.9 E., Vilas County, Hydrologic Unit 07070001, at southwest end of Honeysuckle Lake, about 6 mi northwest of Eagle River.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Augered water-table observation well, diameter 3 in., depth 6 ft, cased to 3 ft, well screened 3-6 ft.

PERIOD OF RECORD.--March 1988 to September 1989 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is approximately 1,600 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good, except for period of missing record, Nov. 19 to Dec. 11, Dec. 13 to Jan. 11, and Apr. 27 to May 9.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed water level, 46.24 ft, May 11, 1988; minimum observed water level, 44.67 ft, July 31, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum observed water level, 46.08 ft, June 14; minimum observed water level, 45.00 ft, Sept. 29-30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.29	45.39	---	---	45.78	45.46	45.66	---	45.98	45.84	45.33	45.49
2	45.27	45.39	---	---	45.78	45.43	45.66	---	45.96	45.78	45.27	45.39
3	45.25	45.39	---	---	45.76	45.42	45.66	---	45.94	45.74	45.24	45.34
4	45.25	45.40	---	---	45.73	45.42	45.66	---	45.91	45.71	45.23	45.38
5	45.24	45.56	---	---	45.70	45.42	45.66	---	45.89	45.67	45.17	45.40
6	45.23	45.60	---	---	45.69	45.42	45.66	---	45.87	45.63	45.14	45.34
7	45.22	45.60	---	---	45.68	45.43	45.66	---	45.84	45.61	45.11	45.34
8	45.21	45.60	---	---	45.66	45.43	45.66	---	45.95	45.58	45.08	45.41
9	45.20	45.60	---	---	45.65	45.45	45.66	---	45.97	45.56	45.05	45.34
10	45.19	45.60	---	---	45.64	45.47	45.67	45.86	45.92	45.51	45.02	45.31
11	45.18	45.60	---	---	45.64	45.50	45.67	45.85	45.88	45.51	45.05	45.28
12	45.16	45.60	45.85	45.74	45.64	45.51	45.67	45.85	45.89	45.53	45.26	45.26
13	45.16	45.60	---	45.73	45.66	45.54	45.67	45.84	46.01	45.48	45.41	45.25
14	45.16	45.60	---	45.74	45.66	45.59	45.67	45.84	46.08	45.43	45.63	45.23
15	45.15	45.60	---	45.73	45.67	45.64	45.70	45.85	46.07	45.40	45.54	45.22
16	45.15	45.60	---	45.74	45.64	45.65	45.78	45.84	46.03	45.36	45.46	45.20
17	45.17	45.60	---	45.74	45.61	45.66	45.85	45.82	46.00	45.33	45.38	45.19
18	45.18	45.63	---	45.76	45.59	45.66	45.86	45.82	45.97	45.35	45.34	45.17
19	45.18	---	---	45.78	45.57	45.66	45.86	45.87	45.95	45.34	45.31	45.14
20	45.17	---	---	45.77	45.54	45.66	45.86	45.92	45.93	45.27	45.38	45.12
21	45.18	---	---	45.78	45.53	45.66	45.87	45.90	45.90	45.24	45.33	45.12
22	45.19	---	---	45.78	45.50	45.66	45.87	45.87	45.90	45.20	45.38	45.11
23	45.22	---	---	45.77	45.46	45.66	45.87	45.88	45.94	45.18	45.35	45.10
24	45.41	---	---	45.77	45.46	45.66	45.88	45.93	45.91	45.15	45.31	45.09
25	45.44	---	---	45.78	45.46	45.66	45.88	46.06	45.89	45.13	45.28	45.06
26	45.41	---	---	45.79	45.47	45.66	45.91	46.02	45.89	45.10	45.27	45.04
27	45.43	---	---	45.79	45.49	45.66	---	45.97	45.85	45.21	45.25	45.05
28	45.47	---	---	45.79	45.47	45.66	---	45.94	45.82	45.17	45.23	45.02
29	45.44	---	---	45.79	---	45.66	---	45.90	45.79	45.21	45.20	45.00
30	45.40	---	---	45.80	---	45.66	---	45.95	45.81	45.30	45.15	45.00
31	45.40	---	---	45.80	---	45.66	---	46.02	---	45.33	45.55	---
MEAN	45.26	---	---	---	45.61	45.57	---	---	45.92	45.41	45.28	45.21
MAX	45.47	---	---	---	45.78	45.66	---	---	46.08	45.84	45.63	45.49
MIN	45.15	---	---	---	45.46	45.42	---	---	45.79	45.10	45.02	45.00

## STAGE RECORDS

455909089405602 VANDERCOOK LAKE NEAR WOODRUFF, WI

LOCATION.--Lat 45 59'09", long 89 40'56", in SW 1/4 NE 1/4 SE 1/4 sec.36, T.41 N., R.6 E., Vilas County, Hydrologic Unit 07070001, at north end of lake on dirt road off County Trunk Highway M, 6.1 mi north of Woodruff.

DRAINAGE AREA.--1.11 mi . Area of lake, 0.17 mi .

PERIOD OF RECORD.--November 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1.600.00 ft above National Geodetic Vertical Datum of 1929.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum observed gage height, 32.26 ft, Apr. 8-10, 1986; minimum observed gage height, 29.11 ft, Sept. 30, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 30.10 ft, Apr. 4-7, 26-27; minimum observed gage height, 29.11 ft, Sept. 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29.75	29.66	29.93	30.01	30.02	29.99	30.06	30.09	30.04	30.01	29.59	29.45
2	29.74	29.66	29.93	30.01	30.02	29.98	30.07	30.09	30.05	30.00	29.58	29.45
3	29.72	29.65	29.92	30.02	30.02	30.00	30.07	30.09	30.03	29.99	29.57	29.43
4	29.72	29.66	29.92	30.01	30.02	30.03	30.10	30.08	30.02	29.98	29.56	29.43
5	29.70	29.73	29.92	30.02	30.02	30.03	30.10	30.08	30.00	29.96	29.54	29.45
6	29.70	29.74	29.92	30.02	30.02	30.03	30.10	30.06	30.00	29.95	29.49	29.44
7	29.69	29.74	29.91	30.02	30.02	30.02	30.10	30.06	29.99	29.93	29.47	29.43
8	29.68	29.75	29.91	30.04	30.01	30.02	30.09	30.06	30.01	29.90	29.45	29.44
9	29.68	29.75	29.90	30.05	30.01	30.02	30.08	30.05	30.00	29.89	29.44	29.42
10	29.68	29.74	29.90	30.05	30.01	30.02	30.09	30.04	29.99	29.87	29.43	29.41
11	29.66	29.75	29.89	30.04	30.01	30.02	30.09	30.03	29.97	29.85	29.42	29.39
12	29.64	29.75	29.90	30.04	30.00	30.01	30.09	30.02	29.98	29.85	29.42	29.36
13	29.63	29.75	29.92	30.04	30.00	30.01	30.09	30.01	30.00	29.82	29.42	29.35
14	29.63	29.75	29.94	30.04	30.00	30.04	30.09	30.01	30.00	29.80	29.44	29.34
15	29.62	29.76	29.94	30.04	29.99	30.08	30.08	30.01	29.99	29.79	29.42	29.33
16	29.63	29.90	29.93	30.03	29.99	30.07	30.08	30.01	29.98	29.78	29.41	29.31
17	29.63	29.90	29.94	30.04	29.99	30.07	30.09	30.00	29.97	29.78	29.39	29.31
18	29.62	29.89	29.95	30.05	29.98	30.07	30.08	29.99	29.96	29.77	29.38	29.30
19	29.62	29.90	29.95	30.05	29.98	30.06	30.08	30.00	29.95	29.77	29.37	29.28
20	29.62	29.89	29.98	30.05	29.97	30.06	30.07	30.03	29.94	29.75	29.41	29.28
21	29.62	29.89	29.99	30.05	29.98	30.06	30.07	30.03	29.93	29.74	29.40	29.27
22	29.62	29.88	29.99	30.05	29.98	30.05	30.07	30.01	29.94	29.73	29.42	29.24
23	29.64	29.88	30.01	30.05	29.98	30.06	30.06	30.01	30.01	29.72	29.41	29.21
24	29.67	29.88	30.01	30.04	29.97	30.05	30.06	30.02	30.01	29.70	29.40	29.20
25	29.67	29.88	30.00	30.04	29.98	30.06	30.07	30.07	30.00	29.69	29.38	29.18
26	29.68	29.89	30.00	30.05	29.98	30.06	30.10	30.04	30.01	29.67	29.37	29.16
27	29.67	29.92	30.02	30.05	29.98	30.06	30.10	30.03	30.02	29.65	29.37	29.15
28	29.67	29.94	30.02	30.05	29.99	30.07	30.08	30.02	29.99	29.63	29.35	29.13
29	29.66	29.94	30.01	30.04	---	30.06	30.08	30.01	29.97	29.61	29.34	29.12
30	29.65	29.94	30.02	30.04	---	30.06	30.09	30.03	29.99	29.61	29.32	29.11
31	29.65	---	30.02	30.04	---	30.06	---	30.04	---	29.60	29.42	---
MEAN	29.66	29.81	29.95	30.04	30.00	30.04	30.08	30.04	29.99	29.80	29.43	29.31
MAX	29.75	29.94	30.02	30.05	30.02	30.08	30.10	30.09	30.05	30.01	29.59	29.45
MIN	29.62	29.65	29.89	30.01	29.97	29.98	30.06	29.99	29.93	29.60	29.32	29.11
CAL YR 1988	MEAN 30.27		MAX 30.91	MIN 29.62								
WTR YR 1989	MEAN 29.85		MAX 30.10	MIN 29.11								

## ACID DEPOSITION RECORDS

419

## PRECIPITATION QUANTITY

455909089405603 VANDERCOOK LAKE RAIN GAGE NEAR WOODRUFF, WI

LOCATION.--Lat 45 59'09", long 89 40'56", in SW 1/4 NE 1/4 SE 1/4 sec.36, T.41 N., R.6 E., Vilas County,  
Hydrologic Unit 07070001, at north end of lake on dirt road off County Trunk Highway M, 6.1 mi north of  
Woodruff.

PERIOD OF RECORD.--March 1981 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Records good.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily rainfall, 2.98 in., Aug. 10, 1983.

EXTREMES FOR CURRENT YEAR.--Maximum daily rainfall, 1.87 in., Aug. 31.

RAINFALL ACCUMULATED (INCHES), WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	---	---	---	---	---	---	---	.26	.01	.00	.03
2	.01	---	---	---	---	---	---	---	.05	.01	.00	.00
3	.05	---	---	---	---	---	---	---	.00	.00	.01	.02
4	.07	---	---	---	---	---	---	---	.00	.01	.00	.39
5	.00	---	---	---	---	---	---	---	.06	.00	.00	.00
6	.00	---	---	---	---	---	---	---	.01	.00	.01	.00
7	.01	---	---	---	---	---	---	---	.52	.00	.00	.13
8	.00	---	---	---	---	---	---	---	.35	.00	.00	.00
9	.00	---	---	---	---	---	---	---	.02	.00	.00	.00
10	.06	---	---	---	---	---	---	.00	.00	.00	.00	.01
11	.00	---	---	---	---	---	---	.00	.00	.08	.14	.00
12	---	---	---	---	---	---	---	.00	.50	.00	.02	.01
13	---	---	---	---	---	---	---	.07	.14	.00	.41	.00
14	---	---	---	---	---	---	---	.03	.13	.00	.03	.00
15	---	---	---	---	---	---	---	.00	.00	.00	.06	.00
16	---	---	---	---	---	---	---	.00	.00	.21	.00	.00
17	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
18	---	---	---	---	---	---	---	.28	.00	.23	.00	.00
19	---	---	---	---	---	---	---	.00	.00	.01	.50	.00
20	---	---	---	---	---	---	---	.57	.00	.00	.07	.01
21	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
22	---	---	---	---	---	---	---	.00	1.14	.00	.44	.02
23	---	---	---	---	---	---	---	.31	.22	.00	.00	.00
24	---	---	---	---	---	---	---	.77	.01	.00	.00	.00
25	---	---	---	---	---	---	---	.02	.07	.00	.00	.00
26	---	---	---	---	---	---	---	.03	.34	.00	.04	.00
27	---	---	---	---	---	---	---	.00	.00	.08	.01	.00
28	---	---	---	---	---	---	---	.00	.00	.00	.00	.00
29	---	---	---	---	---	---	---	.63	.00	.30	.00	.00
30	---	---	---	---	---	---	---	.23	.64	.00	.04	.00
31	---	---	---	---	---	---	---	.05	---	.00	1.87	---
TOTAL	---	---	---	---	---	---	---	---	4.46	0.94	3.65	0.62

## ACID DEPOSITION RECORDS

## GROUND-WATER LEVELS

455910089403701 WELL VI-41/07E/31-0085

LOCATION.--Lat 45 59'10", long 89 40'37", in SW 1/4 NW 1/4 SW 1/4 sec.31, T.41 N., R.7 E., Vilas County, Hydrologic Unit 07070001, 0.25 mi northeast of Vandercook Lake, about 6.1 mi north of Woodruff.

AQUIFER.--Sand and gravel.

WELL CHARACTERISTICS.--Augured 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.

GAGE.--Water-stage recorder. Datum of gage is 1,600.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Daily stages estimated: Dec. 2-14, 1988. Records good, except for periods of missing record, July 13-18 and July 20 to Aug. 8, 1989.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed water level, 33.83 ft, Apr. 14, 1986; minimum observed water level, 30.09 ft, Sept. 29-30, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum observed water level, 30.44 ft, Oct. 1-3; minimum observed water level, 30.09 ft, Sept. 29-30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30.44	30.34	30.32	30.23	30.11	29.98	29.85	30.23	30.21	30.28	---	30.21
2	30.44	30.34	30.33	30.23	30.11	29.98	29.85	30.23	30.21	30.28	---	30.21
3	30.44	30.34	30.32	30.22	30.11	29.98	29.85	30.22	30.21	30.28	---	30.21
4	30.42	30.34	30.32	30.21	30.10	29.97	29.85	30.21	30.21	30.29	---	30.21
5	30.42	30.34	30.32	30.21	30.10	29.96	29.85	30.21	30.21	30.29	---	30.20
6	30.42	30.34	30.31	30.20	30.09	29.96	29.85	30.21	30.21	30.29	---	30.20
7	30.42	30.34	30.31	30.20	30.09	29.95	29.85	30.21	30.22	30.28	---	30.20
8	30.42	30.34	30.31	30.20	30.07	29.95	29.85	30.20	30.23	30.29	---	30.20
9	30.42	30.33	30.31	30.20	30.07	29.94	29.85	30.19	30.23	30.31	30.29	30.20
10	30.41	30.33	30.30	30.19	30.06	29.94	29.85	30.19	30.23	30.31	30.29	30.20
11	30.40	30.33	30.30	30.19	30.06	29.93	29.86	30.19	30.23	30.31	30.29	30.20
12	30.39	30.33	30.31	30.18	30.05	29.93	29.86	30.19	30.23	30.31	30.29	30.21
13	30.39	30.32	30.31	30.18	30.05	29.93	29.86	30.19	30.22	---	30.29	30.21
14	30.40	30.31	30.30	30.18	30.04	29.93	29.87	30.19	30.22	---	30.29	30.20
15	30.40	30.31	30.30	30.17	30.03	29.91	29.86	30.19	30.22	---	30.29	30.18
16	30.40	30.32	30.30	30.17	30.03	29.91	29.86	30.19	30.22	---	30.29	30.18
17	30.39	30.33	30.28	30.17	30.03	29.91	29.87	30.19	30.23	---	30.29	30.18
18	30.38	30.33	30.29	30.17	30.03	29.90	29.90	30.19	30.23	---	30.29	30.17
19	30.38	30.33	30.28	30.16	30.03	29.90	29.92	30.19	30.23	30.31	30.29	30.17
20	30.38	30.33	30.27	30.15	30.03	29.90	29.95	30.19	30.23	---	30.28	30.15
21	30.39	30.33	30.26	30.15	30.03	29.89	29.99	30.19	30.23	---	30.28	30.15
22	30.38	30.34	30.27	30.15	30.02	29.88	30.03	30.19	30.24	---	30.28	30.14
23	30.38	30.34	30.27	30.14	30.02	29.88	30.07	30.19	30.25	---	30.27	30.12
24	30.38	30.34	30.26	30.14	30.02	29.88	30.10	30.20	30.25	---	30.27	30.12
25	30.37	30.32	30.27	30.14	30.02	29.86	30.12	30.22	30.25	---	30.26	30.12
26	30.37	30.31	30.26	30.14	30.02	29.86	30.15	30.22	30.27	---	30.26	30.10
27	30.37	30.31	30.27	30.14	30.01	29.86	30.17	30.22	30.28	---	30.25	30.10
28	30.36	30.30	30.25	30.14	30.00	29.86	30.19	30.22	30.28	---	30.25	30.10
29	30.35	30.31	30.25	30.14	---	29.85	30.19	30.22	30.28	---	30.25	30.09
30	30.34	30.31	30.25	30.13	---	29.86	30.23	30.21	30.28	---	30.23	30.09
31	30.34	---	30.24	30.13	---	29.86	---	30.21	---	---	30.21	---
MEAN	30.39	30.33	30.29	30.17	30.05	29.91	29.95	30.20	30.23	---	---	30.17
MAX	30.44	30.34	30.33	30.23	30.11	29.98	30.23	30.23	30.28	---	---	30.21
MIN	30.34	30.30	30.24	30.13	30.00	29.85	29.85	30.19	30.21	---	---	30.09

CAL YR 1988 MEAN 30.68 MAX 31.12 MIN 30.24

## 421

455946089415702 LITTLE ROCK LAKE NEAR WOODRUFF, WI

EXTREMES FOR CURRENT YEAR.--Maximum observed gage height, 26.18 ft, June 23-27; minimum observed gage height, 25.27 ft, Sept. 30.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25.84	25.74	26.03	26.08	26.07	26.01	26.09	26.17	26.15	26.16	25.74	25.60
2	25.84	25.75	26.03	26.08	26.06	26.01	26.10	26.17	26.17	26.16	25.72	25.59
3	25.82	25.74	26.02	26.08	26.06	26.02	26.11	26.17	26.17	26.15	25.71	25.58
4	25.81	25.75	26.02	26.08	26.06	26.05	26.14	26.16	26.15	26.14	25.70	25.58
5	25.79	25.84	26.02	26.08	26.06	26.05	26.14	26.16	26.13	26.12	25.68	25.59
6	25.77	25.88	26.01	26.08	26.06	26.04	26.15	26.15	26.12	26.10	25.64	25.59
7	25.76	25.89	26.01	26.08	26.05	26.04	26.15	26.15	26.12	26.08	25.62	25.59
8	25.75	25.88	26.00	26.10	26.05	26.04	26.15	26.14	26.16	26.06	25.60	25.59
9	25.75	25.88	26.00	26.10	26.04	26.04	26.14	26.13	26.17	26.05	25.58	25.58
10	25.75	25.87	25.99	26.10	26.04	26.04	26.14	26.13	26.15	26.04	25.57	25.56
11	25.74	25.86	25.98	26.10	26.04	26.03	26.14	26.12	26.14	26.01	25.56	25.54
12	25.71	25.85	25.98	26.10	26.04	26.03	26.14	26.10	26.15	26.00	25.55	25.52
13	25.71	25.85	25.99	26.09	26.04	26.03	26.14	26.09	26.16	25.98	25.55	25.51
14	25.71	25.86	26.02	26.09	26.03	26.05	26.14	26.09	26.17	25.96	25.56	25.49
15	25.71	25.98	26.03	26.09	26.03	26.08	26.15	26.09	26.17	25.94	25.56	25.48
16	25.70	25.98	26.01	26.09	26.02	26.08	26.15	26.09	26.15	25.93	25.55	25.47
17	25.70	25.99	26.02	26.09	26.02	26.08	26.17	26.08	26.14	25.93	25.54	25.46
18	25.70	25.99	26.02	26.10	26.01	26.07	26.16	26.07	26.13	25.91	25.52	25.45
19	25.70	25.99	26.02	26.10	26.01	26.06	26.16	26.07	26.13	25.91	25.51	25.44
20	25.70	25.99	26.07	26.10	26.01	26.06	26.16	26.10	26.11	25.90	25.54	25.43
21	25.70	25.99	26.08	26.10	26.01	26.05	26.16	26.10	26.10	25.89	25.54	25.43
22	25.70	25.98	26.07	26.10	26.00	26.05	26.17	26.08	26.10	25.87	25.56	25.41
23	25.70	25.98	26.09	26.10	25.99	26.05	26.16	26.09	26.18	25.86	25.56	25.37
24	25.74	25.98	26.09	26.09	25.99	26.05	26.16	26.10	26.18	25.84	25.54	25.36
25	25.74	25.98	26.08	26.08	26.00	26.05	26.16	26.16	26.18	25.83	25.53	25.34
26	25.74	25.98	26.08	26.09	26.01	26.05	26.17	26.14	26.18	25.82	25.52	25.33
27	25.75	26.02	26.10	26.09	26.01	26.07	26.17	26.12	26.18	25.80	25.51	25.31
28	25.76	26.04	26.09	26.09	26.01	26.10	26.16	26.11	26.16	25.78	25.50	25.29
29	25.75	26.04	26.09	26.08	---	26.10	26.16	26.11	26.14	25.75	25.48	25.28
30	25.74	26.03	26.08	26.08	---	26.10	26.17	26.14	26.14	25.75	25.46	25.27
31	25.74	---	26.08	26.08	---	26.10	---	26.15	---	25.75	25.55	



## DISCONTINUED STATIONS

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The following streamflow stations have been discontinued in Wisconsin. Continuous daily streamflow records were collected and published for the period of record shown for each station.

Station number	Station name	Drainage area (sq mi)	Period of record
04024314	Little Balsam Creek at Patzau, WI	5.00	1976-78
04024315	Little Balsam Creek near Patzau, WI	5.18	1975-78
04024318	Little Balsam Creek Tributary near Patzau, WI	0.54	1976-78
04024320	Little Balsam Creek near Foxboro, WI	6.27	1977-78
04025000	Ammicon River near Poplar (Ammicon Falls), WI	112	1914-16
04026000	Bois Brule (Brule) River near Brule, WI	153	1914-17
04026300	Sioux River near Washburn, WI	14.9	1964-66
04026347	Pine Creek at Moquah, WI	5.90	1975-78
04026348	Pine Creek Tributary at Moquah, WI	0.57	1976-78
04026349	Pine Creek near Moquah, WI	21.5	1975-78
04026450	Bad River near Mellen, WI	83.4	1970-75
04026500	Bad River at Mellen, WI	101	1948-55
04026870	Alder Creek near Upton, WI	22.3	1972-77
04028500	Montreal River near Kimball, WI	109	1924-25
04029000	West Fork Montreal River at Gile, WI	78	1918-25, 1942-47
04029500	West Fork Montreal River near Kimball, WI	96	1924-25
04063640	North Branch Pine River at Windsor Dam nr Alvin, WI	29.4	1966-68
04064000	Pine River near Florence, WI	500	1913-23
04064500	Pine River below Pine River Powerplant near Florence, WI	528	1923-75
04066500	Pike River at Amberg, WI	253	1914-70
04067000	Menominee River below Koss, WI	3,730	1907-09, 1913-81
04068000	Peshtigo River at High Falls near Crivitz, WI	554	1912-57
04072000	Suamico River at Suamico, WI	57.0	1951-52
04072750	Lawrence Creek near Westfield, WI	16.0	1967-73
04073050	Grand River near Kingston, WI	73.7	1968-75
04073405	West Branch White River near Wautoma, WI	43	1963-65
04073462	White Creek at Forest Glen Beach near Green Lake, WI	3.05	1981-88
04074538	Swamp Creek above Rice Lake at Mole Lake, WI	46.3	1977-83, 1984-86
04074548	Swamp Creek below Rice Lake at Mole Lake, WI	56.8	1977-79, 1982-85
04075000	Wolf River near White Lake, WI	482	1935-37
04075200	Evergreen Creek near Langlade, WI	8.0	1964-73
04075500	Wolf River above West Branch Wolf River, WI	633	1927-62
04076000	West Branch Wolf River at Neopit, WI	108	1911-17
04076500	West Branch Wolf River near Keshena, WI	170	1928-31
04078500	Embarrass River near Embarrass, WI	384	1919-85
04079602	Little Wolf River near Galloway, WI	22.5	1973-79
04079700	Spaulding Creek near Big Falls, WI	4.9	1964-66
04080000	Little Wolf River at Royalton, WI	507	1914-70, 1982-85
04080950	Emmons Creek near Rural, WI	27	1968-74
04080976	Storm Sewer to Mirror Lake at Waupaca, WI	0.04	1971-74
04081000	Waupaca River near Waupaca, WI	265	1916-66, 1982-85
04081800	Daggets Creek at Butte Des Morts, WI	10.3	1976-77
04083000	West Branch Fond du Lac River at Fond du Lac, WI	84.5	1939-54
04083500	East Branch Fond du Lac River near Fond du Lac, WI	77.9	1939-54
04084200	Brothertown Creek at Brothertown, WI	5.59	1976-77
04085813	Onion River at Hingham, WI	37.2	1978-80
04085845	Onion River near Sheboygan Falls, WI	94.1	1978-82
04086150	Milwaukee River at Kewaskum, WI	138	1968-81
04086200	East Branch Milwaukee River near New Fane, WI	54.1	1968-81
04086340	North Branch Milwaukee River near Fillmore, WI	148	1968-81
04086360	Milwaukee River at Waubeka, WI	432	1968-81
04086488	Mud Lake Outlet near Decker Corner, WI	7.36	1982-84
04086500	Cedar Creek near Cedarburg, WI	120	1930-70, 1973-81, 1983-87
04087010	Milwaukee River above North Avenue Dam at Milwaukee, WI	702	1982-84
04087018	Menomonee River at Germantown, WI	19.0	1974-77
04087019	Jefferson Park Drainageway at Germantown, WI	1.82	1976-78
04087040	Menomonee River at Butler, WI	60.6	1974-79
04087060	Noyes Creek at Milwaukee, WI	1.94	1974-79
04087070	Little Menomonee River at Milwaukee, WI	19.7	1974-77
04087119	Honey Creek at Wauwatosa, WI	10.3	1974-81
04087125	Schoonmaker Creek at Wauwatosa, WI	1.94	1974-79
04087130	Hawley Road Storm Sewer at Milwaukee, WI	1.83	1975-77
04087138	Menomonee River at Milwaukee, WI	134	1981-84
04087160	Kinnickinnic River at Milwaukee, WI	20.4	1976-82
05332000	Namekagon River at Trego, WI	460	1914-27
05335010	Loon Creek near Danbury, WI	16.9	1970-71
05335380	Bashaw Brook near Shell Lake, WI	24.9	1964-66
05335500	Clam River near Webster, WI	364	1940-42
05336000	St. Croix River near Grantsburg, WI	2,820	1923-70



## LIST OF DISCONTINUED STATIONS--CONTINUED

Station number	Station name	Drainage area (sq mi)	Period of record
05339000	Wood River near Grantsburg, WI	190	1939
05342000	Kinnickinnic River near River Falls, WI	167	1916-21
05355500	West Fork Chippewa River at Lessards, nr Winter, WI	577	1911-16
05356121	Couderay River near Couderay, WI	169	1981-83
05357500	Flambeau River at Flambeau Flowage (Flambeau Reservoir), WI	666	1927-61
05358000	Flambeau River near Butternut, WI	737	1914-38
05358300	Pine Creek near Oxbo, WI	37.8	1970-75
05358500	Flambeau River at Babbs Island near Winter, WI	1,000	1929-75
05359500	South Fork Flambeau River near Phillips, WI	615	1929-75
05359600	Price Creek near Phillips, WI	14.7	1964-66
05360000	Flambeau River near (at) Ladysmith, WI	1,823	1903-06, 1914-61
05361000	Chippewa River near Holcombe, WI	3,790	1944-49
05361500	South Fork Jump River near Ogema, WI	328	1944-54
05362500	Chippewa River at Holcombe, WI	4,700	1942-49
05363000	Fisher River at (near) Holcombe, WI	76	1944-45
05363500	O'Neil Creek near Chippewa Falls, WI	67.1	1944-45
05363700	Yellow River near Hannibal, WI	91.2	1962-63
05364000	Yellow River at Cadott, WI	351	1942-61
05364500	Duncan Creek at Bloomer, WI	49.2	1943-51
05365000	Duncan Creek at Chippewa Falls, WI	114	1942-55
05366000	Eau Claire River near Augusta, WI	500	1914-26
05366300	Bridge Creek at Augusta, WI	34.5	1979-80
05366500	Eau Claire River near Fall Creek, WI	758	1942-55
05367000	Chippewa River at (near) Eau Claire, WI	6,630	1902-09, 1944-54
05367425	Red Cedar River near Cameron, WI	450	1966-70
05367426	Red Cedar River near Cameron, WI	453	1971-73
05367500	Red Cedar River near Colfax, WI	1,100	1914-61
05369900	Eau Galle River near Woodville, WI	39.4	1978-83
05369955	French Creek near Spring Valley, WI	6.03	1980-83
05369970	Lousy Creek near Spring Valley, WI	5.97	1980-83
05369985	Lohn Creek near Spring Valley, WI	2.53	1980-83
05370500	Eau Galle River at Elmwood, WI	91.9	1942-53
05372000	Buffalo River near Tell, WI	406	1932-51
05379288	Bruce Valley Creek near Pleasantville, WI	10.1	1979-80
05379305	Elk Creek near Independence, WI	99.7	1979-80
05379400	Trempealeau River at Arcadia, WI	552	1960-77
05380000	Trempealeau River near Trempealeau, WI	722	1931-34
05380806	Black River at Medford, WI	47.9	1984-87
05380900	Poplar River near Owen, WI	157	1964-66
05382500	Little LaCrosse River near Leon, WI	77.4	1934-61, 1978-81
05383000	LaCrosse River near West Salem, WI	398	1913-70
05386490	Spring Coulee Creek near Coon Valley, WI	8.93	1978-81
05386500	Coon Creek at Coon Valley, WI	78.3	1934-40, 1978-81
05386999	Coon Creek near Stoddard, WI	120	1934-40, 1979-81
05387100	North Fork Bad Axe River near Genoa, WI	68.8	1964-66
05390180	Wisconsin River at Conover, WI	176	1966-71
05391226	Pelican River near Rhinelander, WI	101	1976-79
05392000	Wisconsin River at Whirlpool Rapids, near Rhinelander, WI	1,200	1905-61
05392350	Bearskin Creek near Harshaw, WI	27.8	1964-66
05392400	Tomahawk River near Bradley, WI	422	1914-27, 1928-29
05393000	Tomahawk River at Bradley, WI	545	1930-73
05394000	New Wood River near Merrill, WI	83.1	1952-61
05396000	Rib River at Rib Falls, WI	309	1925-57
05396500	Little Rib River near Wausau, WI	76	1914-16
05397000	East Branch Eau Claire River near Antigo, WI	75	1949-55
05397110	Eau Claire River near Antigo, WI	200	1974-81
05398500	Bull Junior Creek (Bull Creek Junior) near Rothschild, WI	26.4	1944-51
05399000	Big Eau Pleine River near Colby, WI	79	1941-54
05399431	Hamann Creek near Stratford, WI	11.3	1976-79
05400000	Wisconsin River at Knowlton, WI	4,520	1920-42
05400500	Plover River near Stevens Point, WI	136	1914-19, 1944-51
05400600	Little Plover River near Arnott, WI	1.5	1959-75
05400650	Little Plover River at Plover, WI	19.0	1959-87
05400840	Fourmile Creek near Kellner, WI	51	1964-67
05400853	Buena Vista Creek near Kellner, WI	44	1964-67
05401020	Tenmile Creek Ditch 5 near Bancroft, WI	8.8	1964-73
05401100	Fourteenmile Creek near New Rome, WI	91.9	1964-79
05401510	Big Roche a Cri Creek near Hancock, WI	9.5	1963-67
05401535	Big Roche a Cri Creek near Adams, WI	52.8	1963-78
05402500	Yellow River at Sprague, WI	420	1926-40

## LIST OF DISCONTINUED STATIONS--CONTINUED

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Station number	Station name	Drainage area (sq mi)	Period of record
05403000	Yellow River at Necedah, WI	526	1940-57
05403630	Hulbert Creek near Wisconsin Dells, WI	11.2	1970-77
05401500	Wisconsin River near Necedah, WI	5,860	1902-14, 1944-50
05403500	Lemonweir River at New Lisbon, WI	507	1944-87
05403700	Dell Creek near Lake Delton, WI	44.9	1957-1965, 1970-80
05404200	Narrows Creek at Loganville, WI	40.0	1964-66
05406000	Wisconsin River at Prairie du Sac, WI	9,180	1946-53
05406460	Black Earth Creek at Cross Plains, WI	14.6	1984-86
05406470	Brewery Creek at Cross Plains, WI	10.5	1984-86
05406491	Garfoot Creek near Cross Plains, WI	5.39	1984-86
05406573	Trout Creek at Confluence with Arneson Creek near Barneveld, WI	8.37	1975-79
05406574	Trout Creek at Twin Parks Dam 8 nr Barneveld, WI	9.02	1975-79
05406575	Trout Creek at County Highway T nr Barneveld, WI	12.1	1975-79
05406577	Trout Creek near Ridgeway, WI	13.5	1975-79
05406590	Knight Hollow Creek near Arena, WI	7.57	1976-77
05406640	Otter Creek near Highland, WI	16.6	1968-69, 1970-75
05407500	Kickapoo River at Ontario, WI	151	1938-39, 1973-77
05408500	Knapp Creek near Bloomingdale, WI	8.47	1954-69
05409000	West Fork Kickapoo River near Readstown, WI	106	1938-39
05409500	Kickapoo River at Soldiers Grove, WI	530	1938-39
05409830	North Fork Nederlo Creek near Gays Mills, WI	2.21	1967-79
05409890	Nederlo Creek near Gays Mills, WI	9.46	1967-80
05410000	Kickapoo River at Gays Mills, WI	617	1913-34, 1964-77
05413400	Pigeon Creek near Lancaster, WI	6.81	1964-66
05414894	Fats Creek near Belmont, WI	5.42	1980-82
05414915	Madden Branch Tributary near Belmont, WI	2.83	1980-82
05414920	Madden Branch near Meekers Grove, WI	15.1	1980-82
05418731	Apple River near Shullsburg, WI	9.34	1980-82
05423000	West Branch Rock River near Waupun, WI	40.7	1949-70, 1978-81
05423100	West Branch Rock River at County Trunk Highway D near Waupun, WI	43.9	1978-81
05424000	East Branch Rock River near Mayville, WI	179	1949-70
05424082	Rock River at Hustisford, WI	511	1978-85
05425537	Johnson Creek near Johnson Creek, WI	1.13	1978-79
05425539	Johnson Creek near Johnson Creek, WI	13.3	1978-79
05425928	Pratt Creek near Juneau, WI	3.54	1978-80
05426500	Whitewater Creek near Whitewater, WI	7.2	1926-28, 1946-54
05426900	Whitewater Creek at Millis Road near Whitewater, WI	20.6	1978-81
05427000	Whitewater Creek at Whitewater, WI	22.7	1926-28, 1946-54
05427507	Koshkonong Creek near Rockdale, WI	150	1976-82
05427718	Yahara River at Windsor, WI	73.6	1976-81
05427800	Token Creek near Madison, WI	24.3	1975-80
05427900	Sixmile Creek near Waunakee, WI	41.1	1976-81
05427943	Pheasant Branch at Airport Road near Middleton, WI	9.61	1977-81
05427945	South Fork Pheasant Branch at Highway 14 near Middleton, WI	5.74	1977-81
05427950	Pheasant Branch at Century Avenue at Middleton, WI	20.8	1977-81
05427952	Pheasant Branch at mouth at Middleton, WI	24.5	1978-81
05427970	Willow Creek at Madison, WI	3.15	1973-83
05428665	Olbrich Park Storm Ditch at Madison, WI	2.57	1976-80
05429040	Manitou Way Storm Sewer at Madison, WI	0.22	1970-77
05429050	Nakoma Storm Sewer at Madison, WI	2.35	1971-77
05429118	Lake Wingra at Madison, WI	6.08	1970-79
05429120	Lake Wingra Outlet at Madison, WI	6.08	1970-77
05429580	Door Creek near Cottage Grove, WI	15.3	1975-79
05430000	Yahara River near Edgerton, WI	459	1916-17
05430030	Oregon Branch at Oregon, WI	9.93	1979-81
05430095	Badfish Creek at County Highway A near Stoughton, WI	41.9	1956-66, 1985-88
05430100	Badfish Creek near Stoughton, WI	43.5	1956-66
05433500	Yellowstone River near Blanchardville, WI	28.5	1954-65, 1977-79
05434000	Pecatonica River at Dill, WI	951	1914-19
05433510	Steiner Branch near Waldwick, WI	5.9	1977-79
05434235	Skinner Creek at Skinner Hollow Road near Monroe, WI	32.6	1978-81
05434240	Skinner Creek at Klondyke Road near Monroe, WI	35.0	1978-81
05435980	West Branch Sugar River near Mount Vernon, WI	32.7	1979-80
05436000	Mount Vernon Creek near Mount Vernon, WI	16.4	1954-65, 1975-80
05545300	White River near Burlington, WI	110	1973-82

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.

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## FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
cfs-days	$2.447 \times 10^3$	cubic meters (m <sup>3</sup> )
	$2.447 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons

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