Bill Rose

DEPARTMENT OF THE INTERIOR March 3, 1849

1879 · CENTENNIAL · 1979 U.S. GEOLOGICAL SURVEY

Water Resources Data for Wisconsin

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WI-78-1

WATER YEAR 1978

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

CALENDAR FOR WATER YEAR 1978

1 9 7 7

O C T O B E R

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17	18	19	20	21	22	23
24	25	26	27	28	29	30

HYDROLOGIC CONDITIONS

The outstanding hydrologic event in Wisconsin during the 1978 water year occurred July 1 when the Kickapoo River peaked at LaFarge at a stage that far exceeded all previous peaks during the 40 years of continuous record since October 1938. The peak discharge of 14,300 cfs (cubic feet per second) exceeded by 1.2 times the peak flow expected to occur once in 100 years. The previous recorded peak at LaFarge was 9,910 cfs Feb. 9, 1966. Sixteen counties were declared Federal disaster areas as a result of the heavy rains and resultant flooding throughout the valley and nearby basins.

Streamflow for 1978 water year was above average in Wisconsin except for part of the northeast where runoff was only slightly below average (see figure 1). Highest total runoff for the year, compared to long-term average, occurred in the Big Eau Pleine and Yellow River basins in central Wisconsin and the Upper Rock, Sheboygan, and Milwaukee River basins in the southeast. The year's flow of the Yellow River at Babcock was the second highest in 34 years of record.

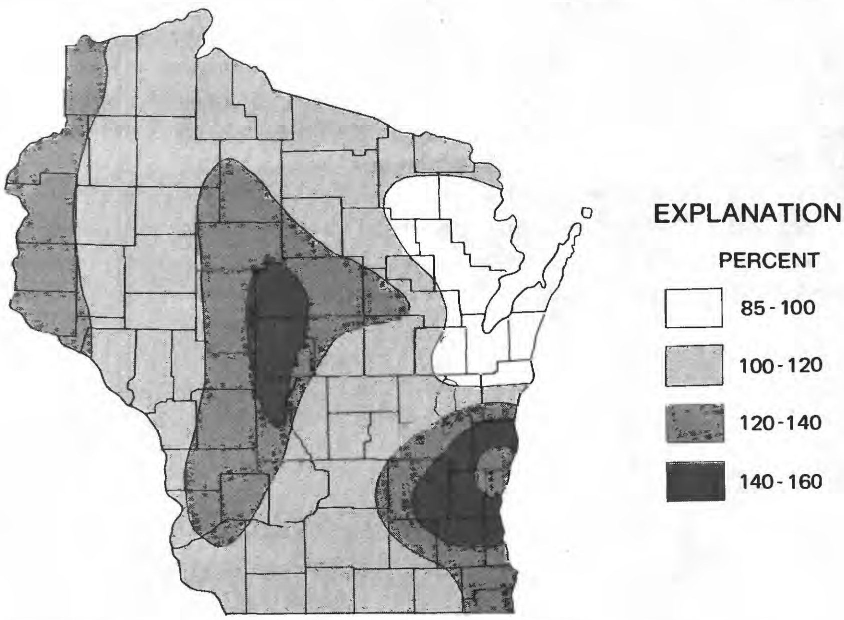


Figure 1. 1978 runoff as percent of long-term average runoff.

Runoff in the fall in Wisconsin was near normal to slightly above normal. Early winter flows were above normal. Because of the late spring, March runoff was mostly below normal. April flows were in the normal range as spring break-up was orderly and moderate. May and June runoff was in the normal range with rises May 13-14, 29-30, June 16-18. A peak flow of 7,410 cfs occurred on May 13 on the Sheboygan River at Sheboygan, the second highest for the 36-year period of record

Runoff was above normal to excessive July through September as frequent rains produced high flows in much of Wisconsin. The greatest flooding occurred in the Kickapoo River valley and nearby basins in southwestern Wisconsin as a result of extremely heavy rains June 30 to July 2. Other significant peaks occurred as the result of several storms in late July, several in late August, and several in mid September. Total runoff for July of Kickapoo River at LaFarge was almost three times the previous highest July runoff. Total rainfall in Wisconsin for the growing season, April 1 to September 30, averaged one-third greater than normal and was the second wettest on record since 1891.

See figure 2 for comparison of 1978 monthly and annual flow with median flow for several Wisconsin rivers.

Lake levels fluctuated seasonally and were generally up from 1977 levels. No extremes of record were noted (see figures 3 and 4).

Hydrographs of annual maximum and minimum ground-water levels for 10 wells reflect long-term statewide trends (see figures 5-8). These graphs represent water-level trends throughout the State in different aquifers. Water levels in most of the wells show an upward trend in 1978. This was in response to increased recharge by rainfall following the drought of 1976. The water levels in Ra-5 continue to decline. It represents conditions in the deep sandstone aquifer in southeast Wisconsin and northeast Illinois where ground-water pumpage exceeds recharge.

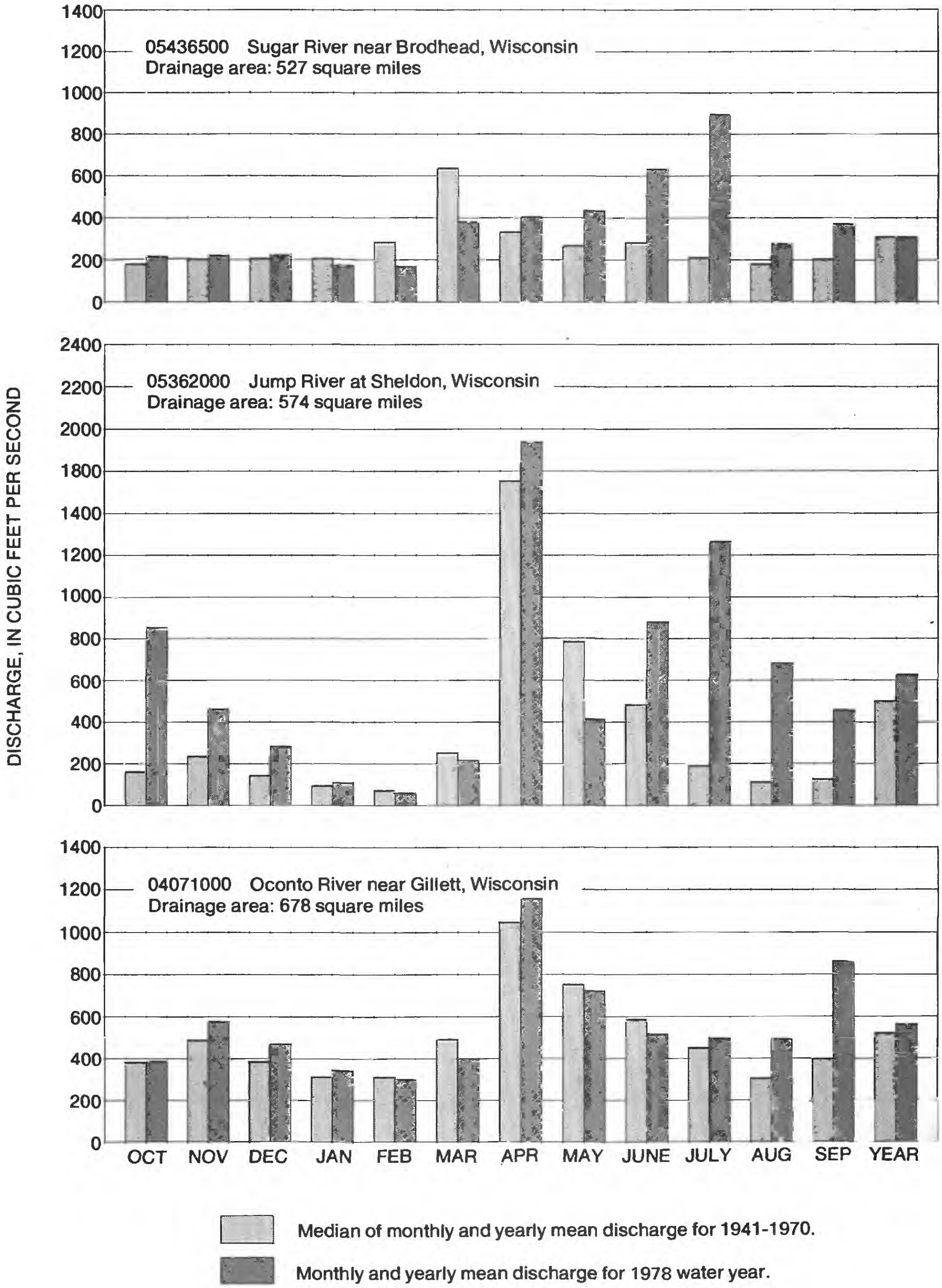


Figure 2. Comparison of discharge at representative gaging stations during 1978 water year with median discharge for 1941-70.

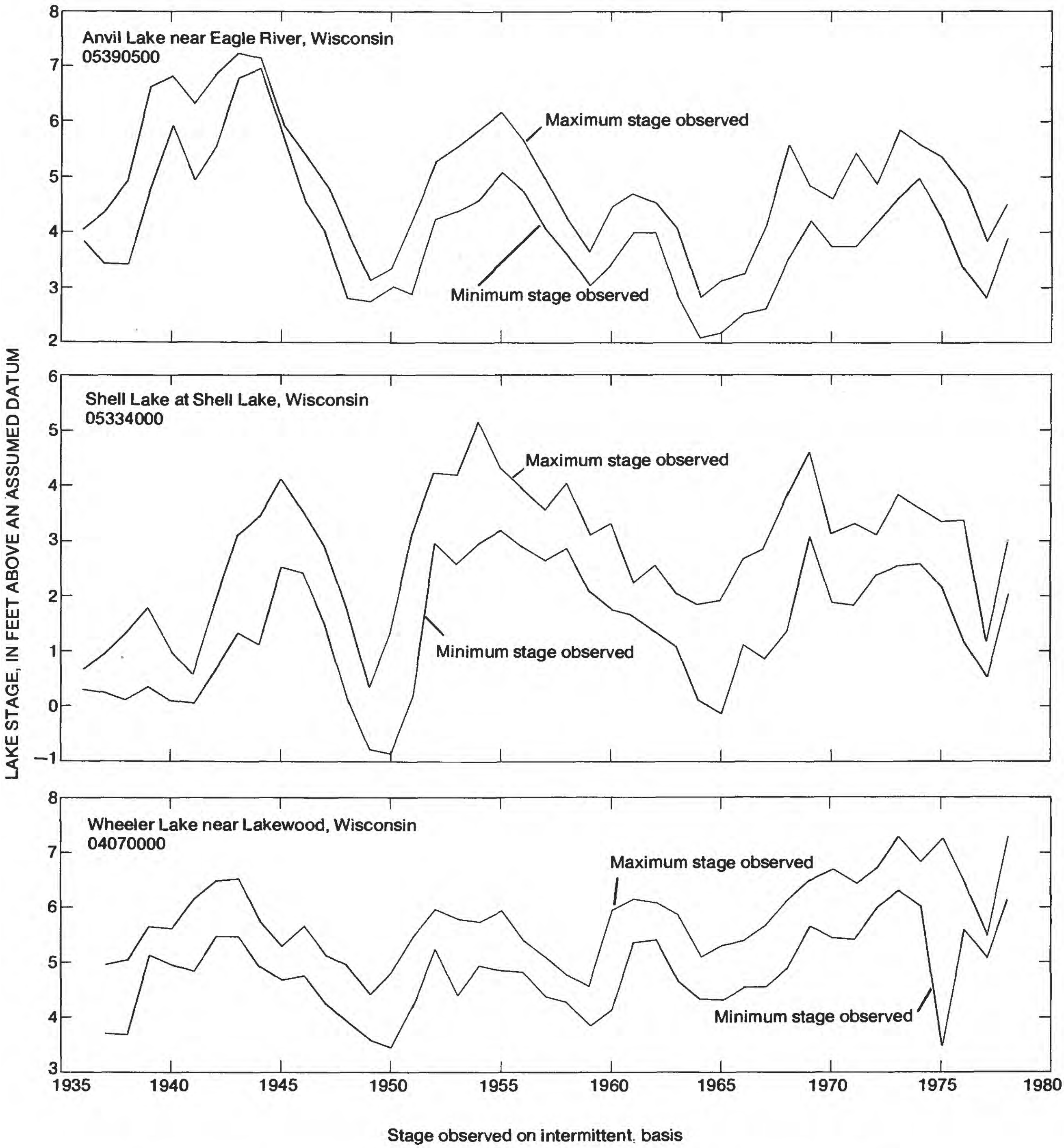


Figure 3. A comparison of extremes of stage of three northern lakes with no surface outlet for each year since 1935.

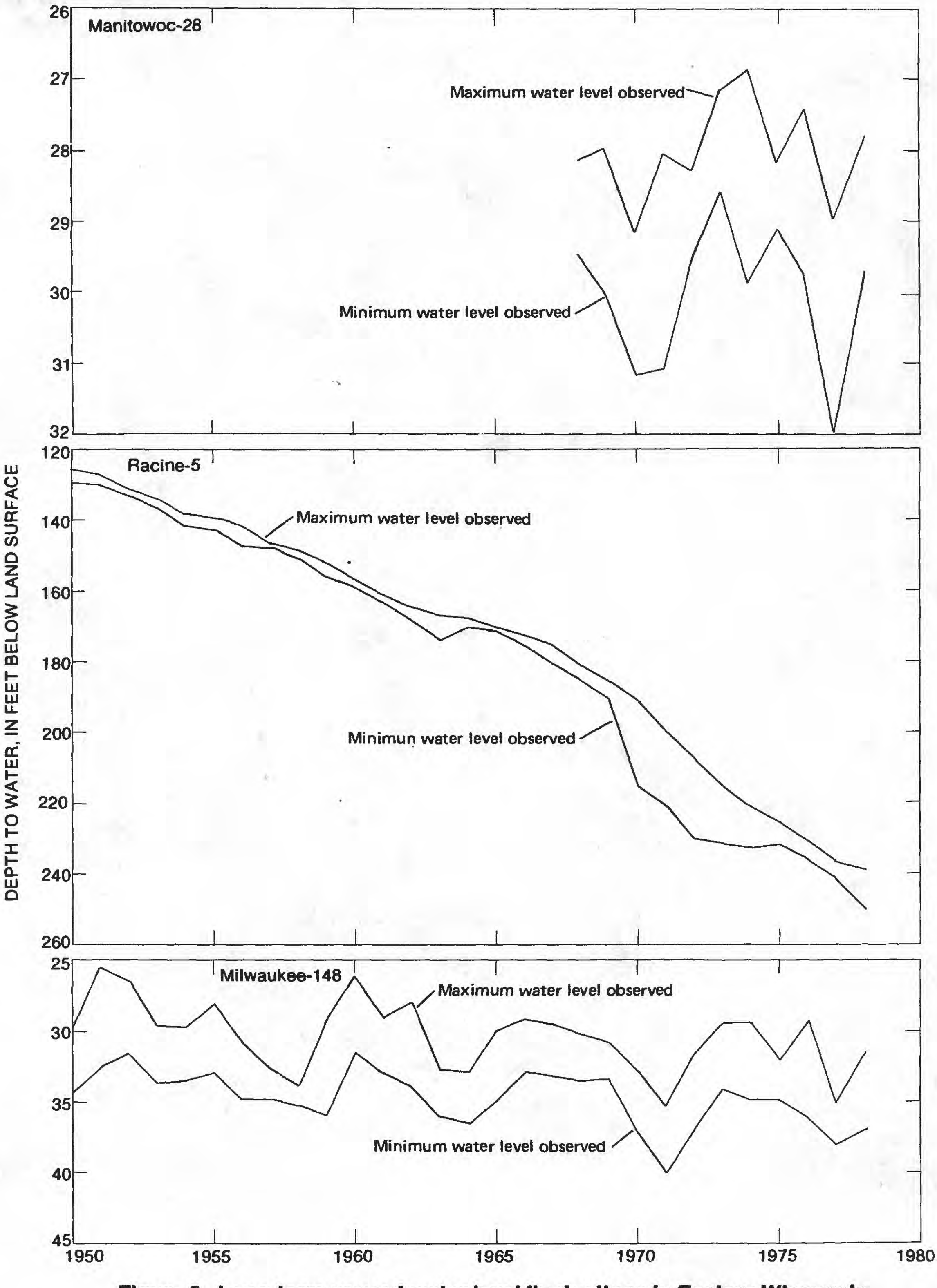


Figure 8. Long-term ground-water level fluctuations in Eastern Wisconsin.

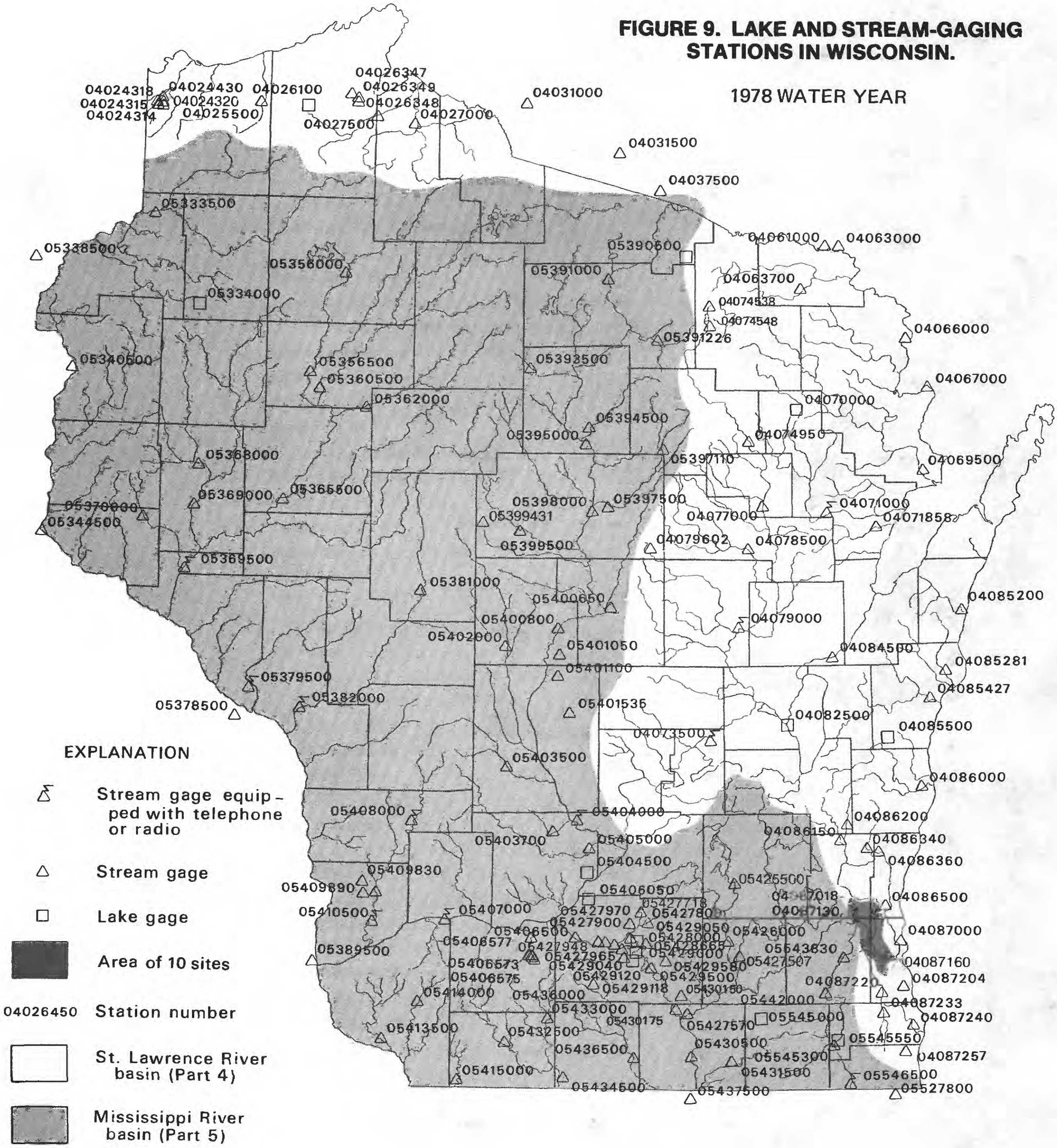
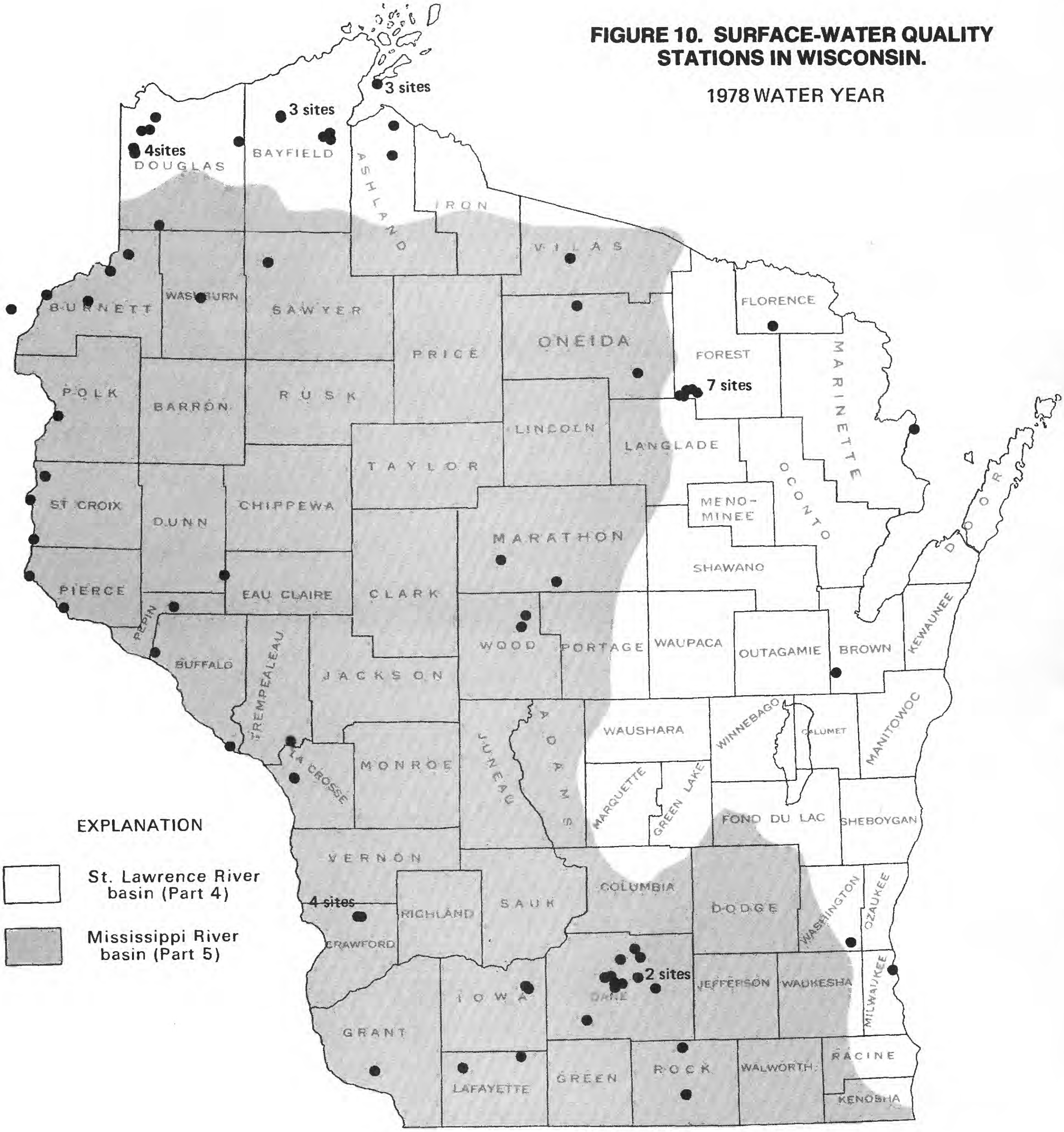


FIGURE 9. LAKE AND STREAM-GAGING STATIONS IN WISCONSIN.

1978 WATER YEAR

FIGURE 10. SURFACE-WATER QUALITY STATIONS IN WISCONSIN.

1978 WATER YEAR



04024290 NEMADJI RIVER NEAR DEWEY, WI

LOCATION.--LAT 46°30'01", LONG 92°14'46", IN NE 1/4 SE 1/4 SEC.16, T.47 N., R.15 W., DOUGLAS COUNTY, HYDROLOGIC UNIT 04010301, AT BRIDGE ON COUNTY TRUNK HIGHWAY W, 1.5 MI (2.4 KM) SOUTH OF DEWEY.

PERIOD OF RECORD.--APRIL TO AUGUST 1978.

WATER-QUALITY DATA, APRIL TO AUGUST 1978

DATE	TIME	TEMPER-ATURE (DEG C)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	NITRO-GEN, NITRITE TOT IN BOT MAT (MG/KG AS N)	NITRO-GEN, NO2+NO3 TOT. IN BOT MAT (MG/KG AS N)	NITRO-GEN,NH4 TOTAL IN BOT. MAT. (MG/KG AS N)	NITRO-GEN,NH4 + ORG. TOT IN BOT MAT (MG/KG AS N)	PHOS-PHORUS, TOTAL IN BOT. MAT. (MG/KG AS P)
JUL , 1978								
08...	0830	--	--	.2	3.3	22	140	38
AUG								
03...	1145	18.5	215	.0	.7	.9	140	44

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	TEMPER-ATURE (DEG C)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
APR , 1978							
10...	1435	1250	90	2.0	574	1940	--
JUL							
07...	1735	--	--	--	2720	--	97
08...	0740	1520	--	--	810	3320	92
AUG							
03...	1145	--	215	18.5	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. FALL DIAM. % FINER THAN .002 MM	SED. SUSP. FALL DIAM. % FINER THAN .004 MM	SED. SUSP. FALL DIAM. % FINER THAN .008 MM
JUL , 1978							
07...	1735	--	2720	--	41	53	67
08...	0740	1520	810	3320	37	49	61

DATE	SED. SUSP. FALL DIAM. % FINER THAN .016 MM	SED. SUSP. FALL DIAM. % FINER THAN .031 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .125 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .250 MM	SED. SUSP. SIEVE DIAM. % FINER THAN .500 MM
JUL , 1978						
07...	81	93	97	99	100	--
08...	74	83	92	95	98	100

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL

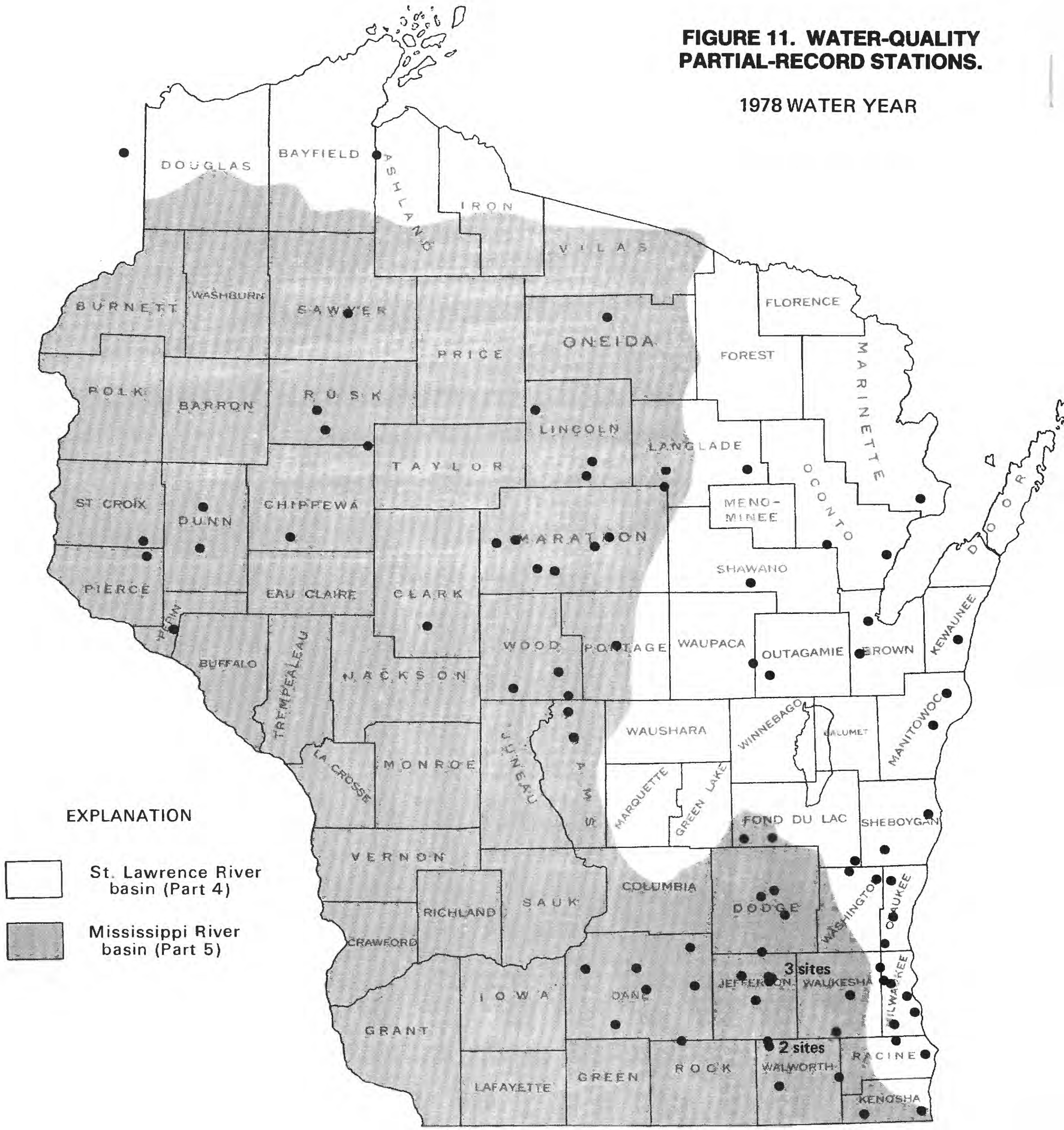
DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM	BED MAT. SIEVE DIAM. % FINER THAN .125 MM	BED MAT. SIEVE DIAM. % FINER THAN .250 MM	BED MAT. SIEVE DIAM. % FINER THAN .500 MM	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM
APR , 1978												
10...	1435	1250	2	6	20	50	73	81	85	91	98	100
JUL												
08...	0740	1520	--	2	17	35	44	52	59	66	77	89

DISCHARGE MEASUREMENTS MADE AT MISCELLANEOUS SITES DURING WATER YEAR 1978

STREAM	TRIBUTARY TO	LOCATION	DRAINAGE AREA (MI^2)	MEASURED PREVIOUSLY (WATER YEARS)	MEASUREMENTS DATE	MEASUREMENTS DISCHARGE (FT^3/S)
		WISCONSIN RIVER BASIN--CONTINUED				
KICKAPOO RIVER	WISCONSIN RIVER	LAT 43°26'41", LONG 90°45'50", IN NW 1/4 SW 1/4 SEC.8, T.11 N., R.3 W., VERNON COUNTY, AT BRIDGE ON U.S. HIGHWAY 14, 5.0 MI (8.0 KM) UPSTREAM FROM MOUTH OF READS CREEK, AT READSTOWN.	485	1960-62 1965 1968	07-03-78	5,530
KICKAPOO RIVER	WISCONSIN RIVER	LAT 43°23'40", LONG 90°46'35", IN SE 1/4 SEC.30, T.11 N., R.3 W., CRAWFORD COUNTY, AT BRIDGE ON STATE HIGHWAY 131, 450 FT (137 M) DOWNSTREAM FROM BAKER CREEK, AT SOLDIERS GROVE.	530	1938-39 1960 1962 1965 1967-68 1971-72 1974	07-02-78	13,000
KICKAPOO RIVER	WISCONSIN RIVER	LAT 43°19'10", LONG 90°51'08", IN NE 1/4 SEC.28, T.10 N., R.4 W., CRAWFORD COUNTY, ON UPSTREAM SIDE OF BRIDGE ON STATE HIGHWAY 171, 300 FT (91 M) DOWNSTREAM FROM DAM IN GAYS MILLS, AND 3.3 MI (5.3 KM) DOWNSTREAM FROM TAINTOR CREEK.	617	--	07-03-78	7,320
KICKAPOO RIVER	WISCONSIN RIVER	LAT 43°05'59", LONG 90°52'05", IN NW 1/4 SEC.9, T.7 N., R.4 W., CRAWFORD COUNTY, AT BRIDGE ON HIGHWAY 60, 1.4 MI (2.3 KM) NORTHEAST OF WAUZEKA, AND 2.8 MI (3.9 KM) UPSTREAM FROM MOUTH.	766	--	07-03-78 07-03-78	18,340 18,500

FIGURE 11. WATER-QUALITY PARTIAL-RECORD STATIONS.

1978 WATER YEAR



EXPLANATION

St. Lawrence River basin (Part 4)

Mississippi River basin (Part 5)

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). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
	Length	
inches (in)	2.54×10^{1}	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^{0}	kilometers (km)
	Area	
acres	4.047×10^{3}	square meters (m^2)
	4.047×10^{-1}	square hectometers (hm^2)
	4.047×10^{-3}	square kilometers (km^2)
square miles (mi^2)	2.590×10^{0}	square kilometers (km^2)
	Volume	
gallons (gal)	3.785×10^{0}	liters (L)
	3.785×10^{0}	cubic decimeters (dm^3)
	3.785×10^{-3}	cubic meters (m^3)
million gallons	3.785×10^{3}	cubic meters (m^3)
	3.785×10^{-3}	cubic hectometers (hm^3)
cubic feet (ft^3)	2.832×10^{1}	cubic decimeters (dm^3)
	2.832×10^{-2}	cubic meters (m^3)
cfs-days	2.447×10^{3}	cubic meters (m^3)
	2.447×10^{-3}	cubic hectometers (hm^3)
acre-feet (acre-ft)	1.233×10^{3}	cubic meters (m^3)
	1.233×10^{-3}	cubic hectometers (hm^3)
	1.233×10^{-6}	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	2.832×10^{1}	liters per second (L/s)
	2.832×10^{1}	cubic decimeters per second (dm^3/s)
	2.832×10^{-2}	cubic meters per second (m^3/s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm^3/s)
	6.309×10^{-5}	cubic meters per second (m^3/s)
million gallons per day	4.381×10^{1}	cubic decimeters per second (dm^3/s)
	4.381×10^{-2}	cubic meters per second (m^3/s)
	Mass	
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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