

Water Resources Data for Wisconsin Water Year 1977



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT WI-77-1

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

CALENDAR FOR WATER YEAR 1977

1976

OCTOBER

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

NOVEMBER

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

DECEMBER

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

1977

JANUARY

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

FEBRUARY

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

MARCH

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

APRIL

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

MAY

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

JUNE

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

JULY

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

AUGUST

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

SEPTEMBER

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

Water Resources Data for Wisconsin Water Year 1977



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CALENDAR FOR WATER YEAR 1977

1976

OCTOBER

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

NOVEMBER

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

DECEMBER

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

1977

JANUARY

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

FEBRUARY

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

MARCH

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

APRIL

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

MAY

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

JUNE

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

JULY

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

AUGUST

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

SEPTEMBER

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

HYDROLOGIC CONDITIONS

Streamflow for 1977 water year was below average throughout Wisconsin. It ranged from 10 percent of average in the extreme southeast to 90 percent of average in the northwest. Runoff of streams in the western and northwestern areas was the highest in the State, yet ranged from only 70 to 90 percent of normal (see figure 1). In an area in the center of Wisconsin and another small area in the southeast, runoff for the year was less than 30 percent of normal. Runoff of the Yellow River at the Babcock gaging station was 26 percent of the average for the past 33 years.

Runoff of major rivers was also low, indicating the general severity of the recent drought and resultant low river flows. Flow data for ten major Wisconsin rivers are tabulated below:

| <u>River</u> | <u>Gaging station</u> | <u>Years of record</u> | <u>Average discharge (cfs)</u> | <u>1977 discharge (cfs)</u> | <u>Percent of average</u> |
|----------------|-----------------------|------------------------|--------------------------------|-----------------------------|---------------------------|
| Bad | Odanah | 37 | 611 | 429 | 70 |
| Menominee | Koss | 65 | 3,134 | 1,923 | 61 |
| Fox | Wrightstown | 81 | 4,156 | 1,919 | 46 |
| Milwaukee | Milwaukee | 63 | 396 | 223 | 56 |
| St. Croix | St. Croix Falls | 75 | 4,172 | 2,695 | 65 |
| Chippewa | Durand | 49 | 7,469 | 4,858 | 65 |
| Black | Galesville | 45 | 1,661 | 699 | 42 |
| Wisconsin | Muscoda | 64 | 8,554 | 4,127 | 48 |
| Rock | Afton | 63 | 1,733 | 806 | 47 |
| Fox (Illinois) | Wilmot | 38 | 499 | 229 | 46 |

Runoff was record low for many streams October through December, and continued deficient through February. Some increase in runoff occurred in March and April but was still in the low normal or below normal range. Summer flows were below normal over most of the State. July thunderstorms in the northwest caused runoff in the Chippewa River basin to rise to the normal range. In the south, runoff increased in July and August to normal range.

At the Chippewa River at Chippewa Falls, where continuous record is available since 1886, the following unusual flow events were recorded this water year:

1. Lowest October flow since record began
2. Lowest November flow since 1896
3. Lowest December flow since 1896
4. January, February flows deficient (among lowest 25 percent)
5. March, April runoff below normal
6. June was 14th consecutive month of below-normal flow
7. Lake summer flows normal to above normal

By September 1977, Fox River near Wrightstown flow had been below normal for 15 of the previous 16 months. By August, Wisconsin River flow as measured at Muscoda had been below normal for 15 consecutive months, lowest for period of record (64 years) in October, November, December, second lowest in May. See figure 2 for comparison of 1977 flows and median discharge at other gaging stations.

Lake levels fluctuated seasonally and were generally below normal. However, no significant lows of record were observed at gaged lakes (see figure 3).

With most major rivers of the State experiencing normal to above normal flow at year's end, with many lakes back up to late spring 1977 levels, and with ground-water levels holding near constant or even showing a slight upward trend in some shallow aquifers, it appeared that the drought effect on most of Wisconsin's water levels had, at least temporarily, ended.

Hydrographs of annual maximum and minimum ground-water levels for 10 wells reflect long-term statewide trends (see figure 4). These graphs represent water-level trends throughout the State in different aquifers. All of the graphs except that for Ra-5 show a decline from 1976 to 1977; this was due to the wide-spread drought. The water level in Ra-5 also declined, but it was caused by continued pumping of high-capacity wells.

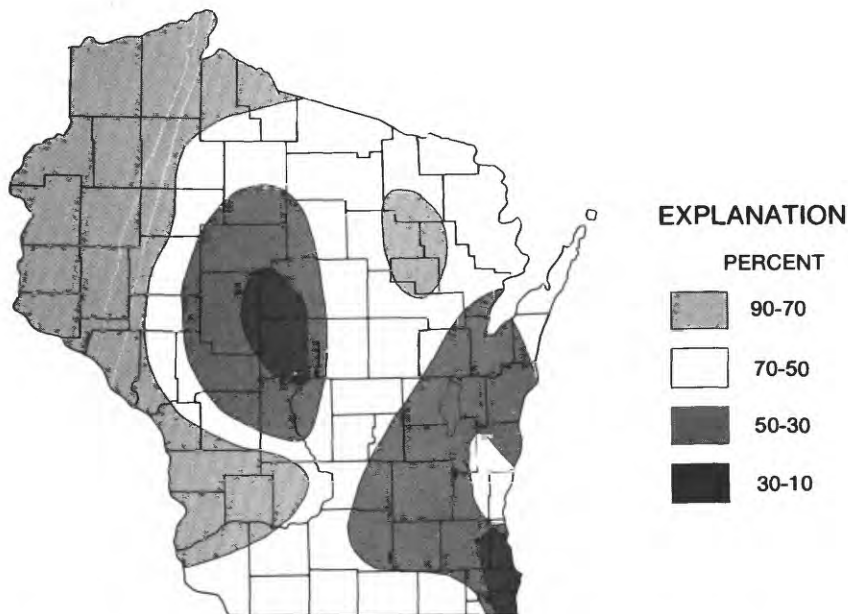


Figure 1. 1977 runoff as percent of long-term average runoff.

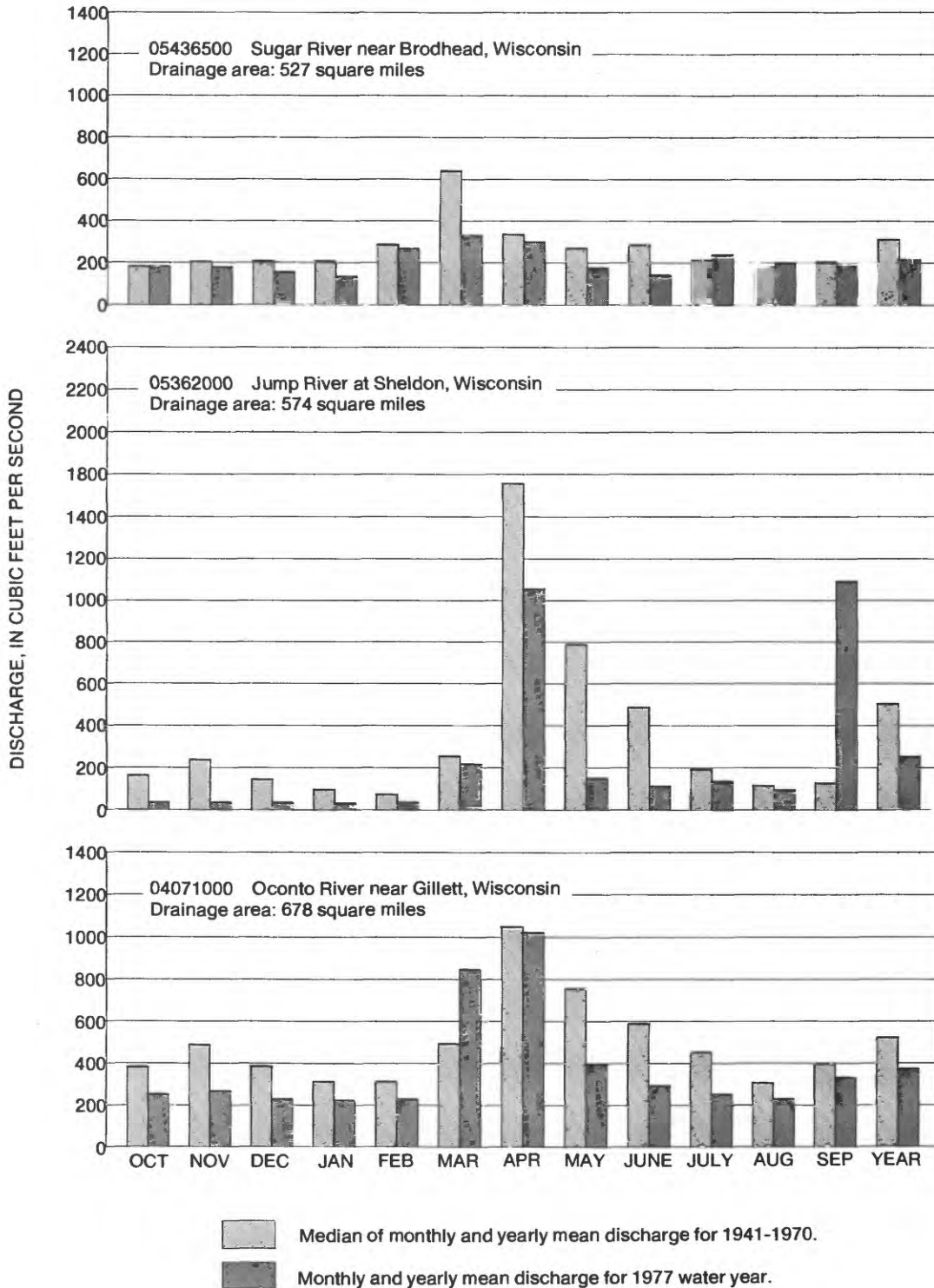


Figure 2. Comparison of discharge at representative gaging stations during 1977 water year with median discharge for 1941-70.

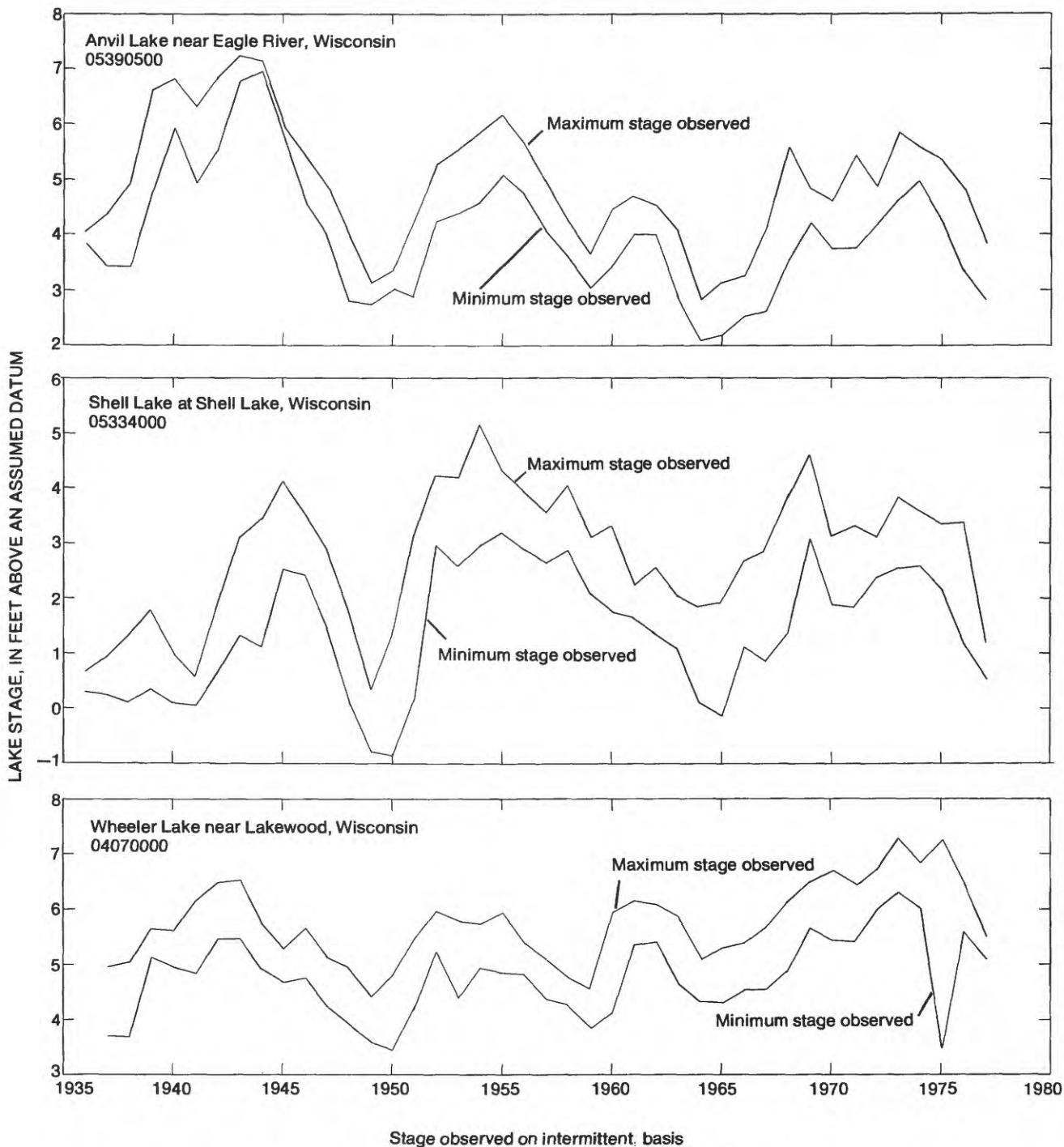


Figure 3. A comparison of extremes of stage of three northern lakes with no surface outlet for each year since 1935.

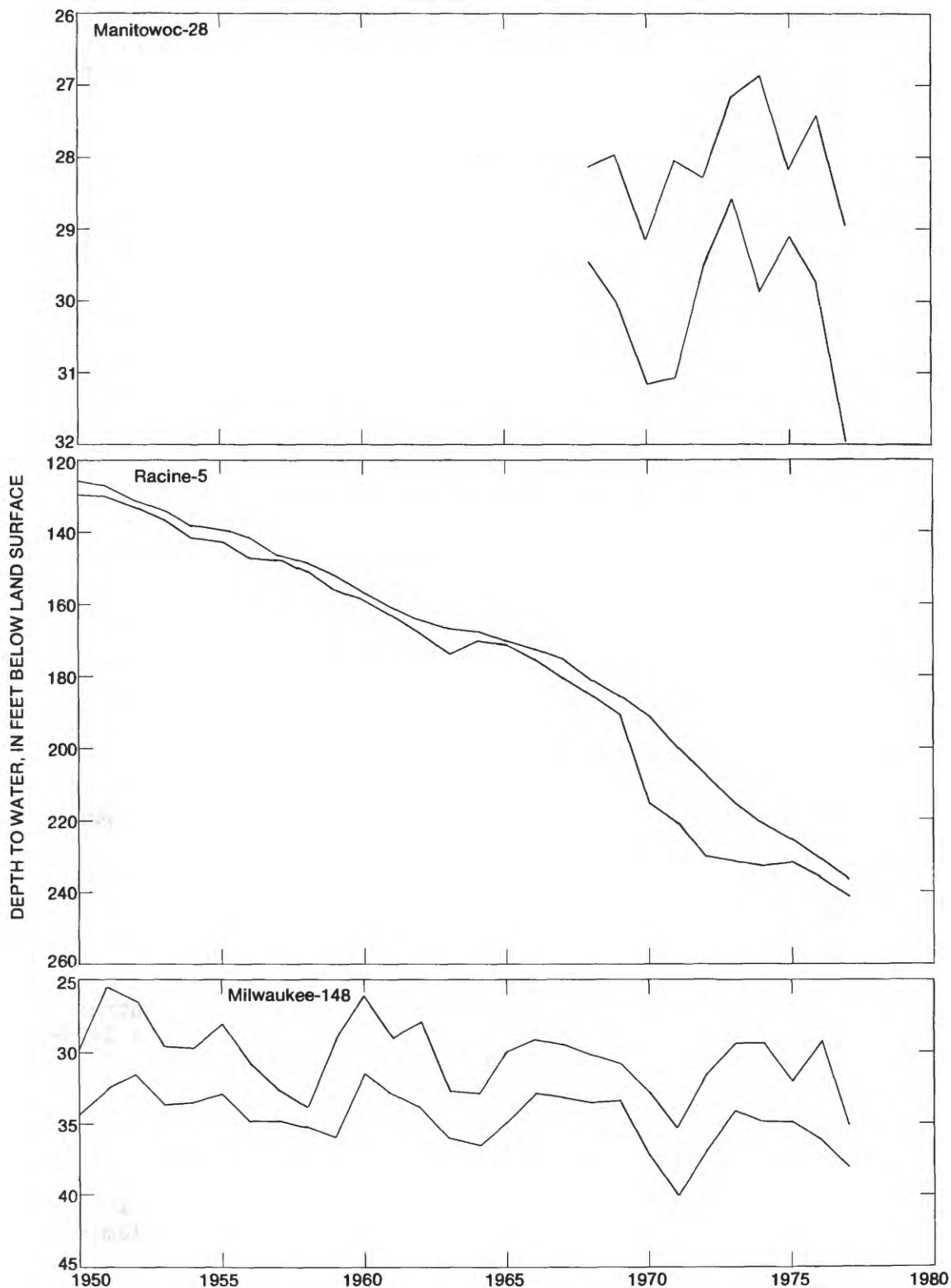


Figure 8. Long-term ground-water level fluctuations in Eastern Wisconsin.

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

1977 WATER YEAR

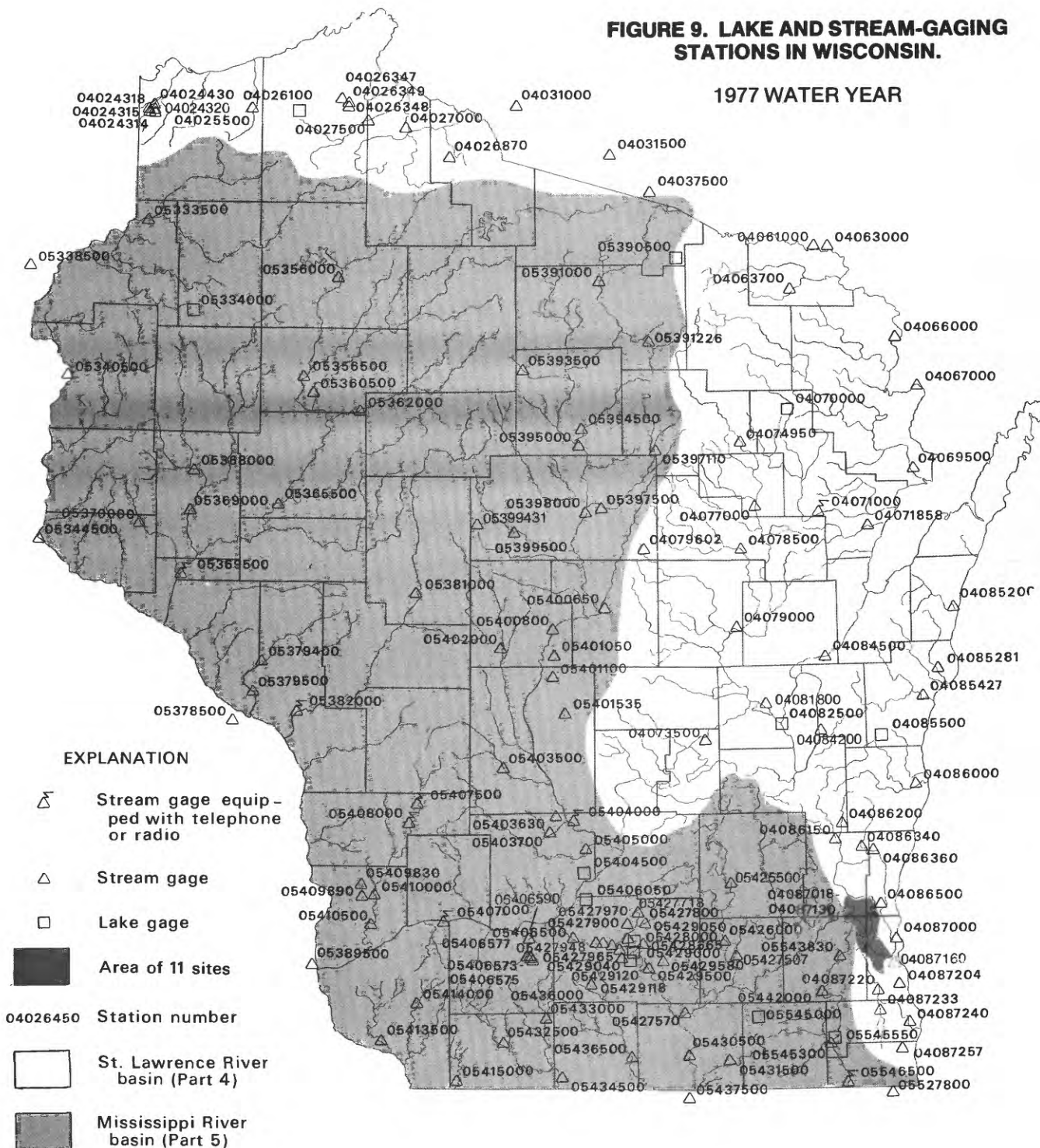
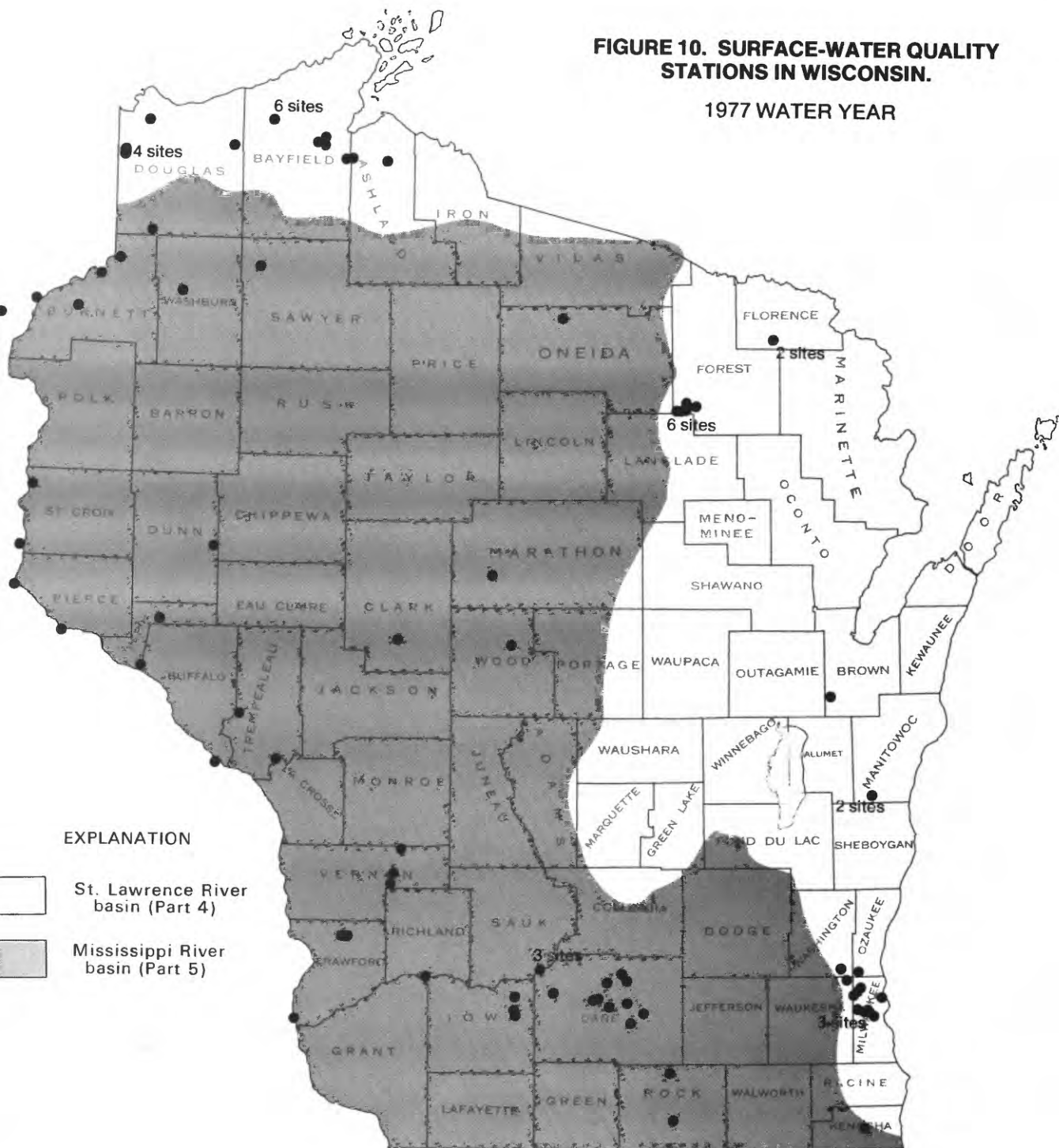


FIGURE 10. SURFACE-WATER QUALITY STATIONS IN WISCONSIN.

1977 WATER YEAR



STREAMS TRIBUTARY TO LAKE SUPERIOR

04024314 LITTLE BALSAM CREEK AT PATZAU, WI

LOCATION.--LAT 46°29'43", LONG 92°13'47", IN NE 1/4 SW 1/4 SEC.3, T.46 N., R.15 W., DOUGLAS COUNTY, HYDROLOGIC UNIT 04010301, NEAR LEFT BANK, 20 FT (6 M) UPSTREAM FROM SEVERSON ROAD, AT PATZAU, AND 1.2 MI (1.9 KM) UPSTREAM FROM MOUTH.

DRAINAGE AREA.--5.00 MI² (12.95 KM²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--JANUARY 1976 TO CURRENT YEAR.

GAGE.--NONRECORDING GAGE AND CREST-STAGE GAGE. ALTITUDE OF GAGE IS 900 FT (274 M), FROM TOPOGRAPHIC MAP.

REMARKS.--RECORDS GOOD EXCEPT THOSE FOR WINTER PERIOD AND THOSE BELOW 2.0 FT³/S (0.056 M³/S), WHICH ARE FAIR.

EXTREMES FOR PERIOD OF RECORD.--MAXIMUM DISCHARGE, 80 FT³/S (2.27 M³/S) SEPT. 24, 1977, GAGE HEIGHT, 6.88 FT (2.097 M); MINIMUM DAILY, 0.64 FT³/S (0.018 M³/S) JULY 15, 1977.

EXTREMES FOR CURRENT YEAR.--MAXIMUM DISCHARGE, 80 FT³/S (2.27 M³/S) SEPT. 24, GAGE HEIGHT, 6.88 FT (2.097 M); MINIMUM DAILY, 0.64 FT³/S (0.018 M³/S) JULY 15.

RATING TABLES (GAGE HEIGHT, IN FEET, AND DISCHARGE, IN CUBIC FEET PER SECOND).
(SHIFTING-CONTROL METHOD USED SEPT. 5-17; STAGE-DISCHARGE RELATION AFFECTED BY
ICE OCT. 27, NOV. 8 TO MAR. 4.)

OCT. 1 TO MAR. 28

MAR. 29 TO SEPT. 30

3.98 .72 4.5 6.1
4.1 1.4 5.0 16
4.3 3.2

4.03 .64 5.5 27
4.2 2.0 6.0 43
4.5 5.6 7.0 83
4.9 13

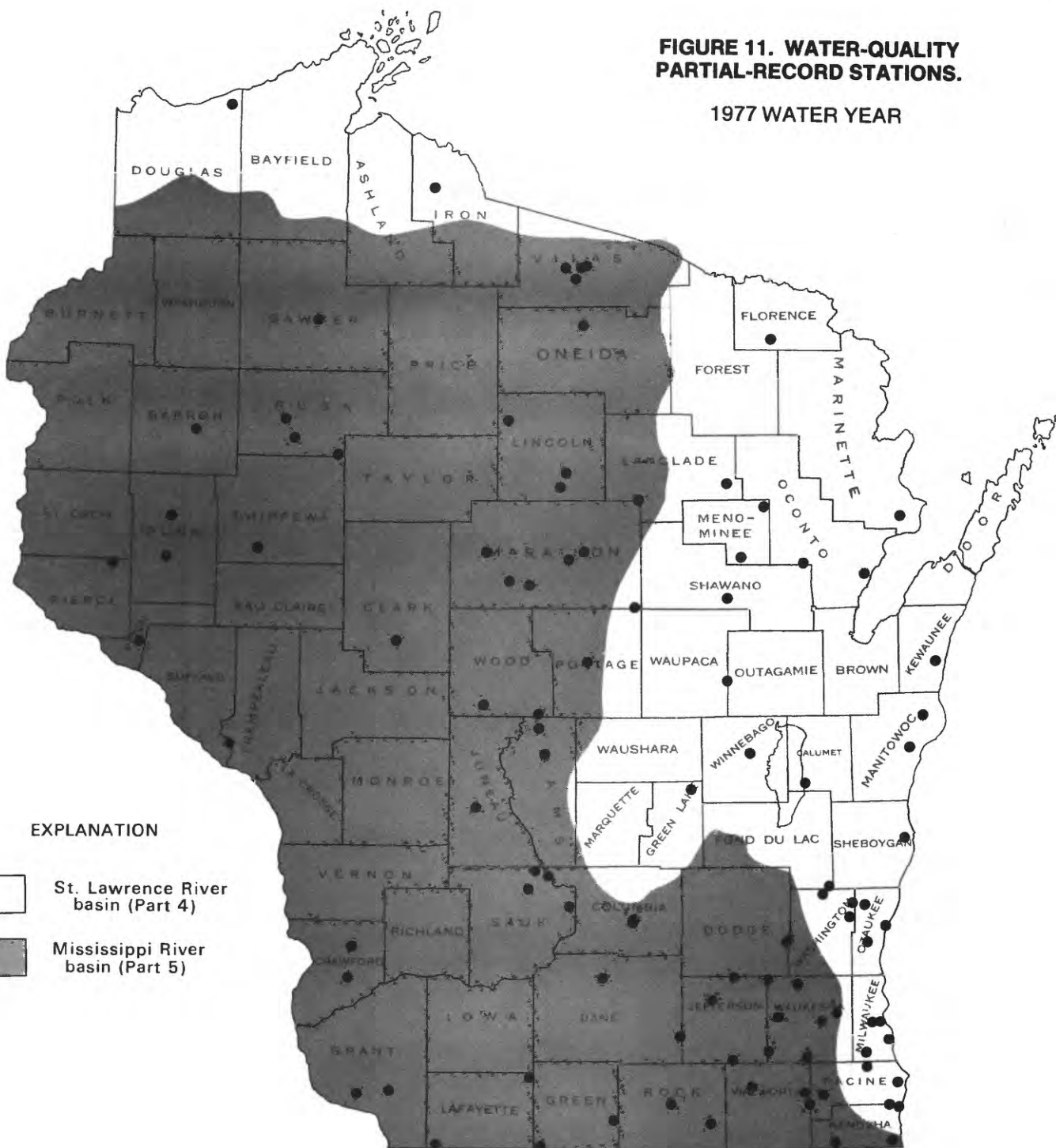
DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977
MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|-------|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|-------|
| 1 | .80 | .92 | .84 | .80 | .72 | .80 | 5.1 | 1.8 | 8.5 | 2.1 | 1.4 | 3.4 |
| 2 | .80 | .92 | .84 | .80 | .72 | .80 | 4.8 | 1.8 | 7.5 | 1.4 | 1.2 | 2.4 |
| 3 | .80 | .92 | .84 | .78 | .72 | .80 | 4.3 | 1.5 | 4.7 | 4.0 | 1.1 | 2.3 |
| 4 | .80 | .92 | .84 | .78 | .74 | .80 | 3.3 | 1.4 | 4.6 | 4.8 | 1.0 | 11 |
| 5 | .80 | .92 | .82 | .76 | .74 | .80 | 2.5 | 1.6 | 3.1 | 5.8 | .96 | 7.2 |
| 6 | .80 | .92 | .82 | .76 | .74 | .80 | 2.5 | 1.6 | 2.2 | 3.4 | .88 | 20 |
| 7 | .80 | .92 | .82 | .76 | .74 | .80 | 2.0 | 1.4 | 1.9 | 2.3 | .88 | 15 |
| 8 | .80 | .92 | .82 | .74 | .76 | .86 | 1.8 | 1.4 | 1.7 | 1.5 | .80 | 9.0 |
| 9 | .80 | .92 | .82 | .74 | .78 | .92 | 1.8 | 1.2 | 1.5 | 1.3 | .80 | 7.0 |
| 10 | .80 | .92 | .82 | .72 | .80 | .92 | 2.7 | 1.2 | 1.4 | 1.2 | .72 | 5.1 |
| 11 | .80 | .92 | .82 | .72 | .80 | 1.6 | 2.6 | 1.2 | 1.4 | 1.2 | .72 | 5.0 |
| 12 | .80 | .92 | .82 | .72 | .80 | 11 | 3.4 | 1.2 | 1.3 | 1.1 | .72 | 4.2 |
| 13 | .80 | .92 | .82 | .72 | .80 | 4.5 | 4.0 | 1.2 | 1.2 | .88 | .72 | 3.6 |
| 14 | .80 | .92 | .82 | .72 | .80 | 3.6 | 3.1 | 1.2 | 1.0 | .72 | .80 | 3.0 |
| 15 | .80 | .92 | .82 | .72 | .80 | 3.3 | 2.9 | 4.3 | 1.1 | .64 | .80 | 2.9 |
| 16 | .80 | .92 | .84 | .72 | .80 | 2.0 | 4.0 | 4.7 | 1.3 | 1.5 | .80 | 2.7 |
| 17 | .80 | .92 | .84 | .72 | .78 | 1.0 | 5.5 | 4.0 | 1.4 | 2.2 | .72 | 2.5 |
| 18 | .80 | .92 | .84 | .72 | .78 | .98 | 3.6 | 4.8 | 1.7 | 1.1 | .88 | 2.4 |
| 19 | .80 | .92 | .84 | .72 | .78 | 1.1 | 6.1 | 3.6 | 1.7 | .88 | .88 | 2.6 |
| 20 | .80 | .90 | .84 | .72 | .80 | 1.3 | 6.6 | 2.7 | 1.9 | .80 | .72 | 2.3 |
| 21 | .86 | .90 | .86 | .72 | .80 | 2.0 | 11 | 2.9 | 1.5 | .72 | .72 | 2.2 |
| 22 | .86 | .90 | .86 | .72 | .80 | 1.6 | 8.2 | 5.0 | 1.3 | .72 | .72 | 4.2 |
| 23 | .86 | .88 | .86 | .72 | .80 | 1.6 | 5.8 | 4.8 | 1.8 | .72 | .72 | 7.8 |
| 24 | .86 | .88 | .86 | .72 | .80 | 1.6 | 4.3 | 3.4 | 1.8 | .80 | .72 | 56 |
| 25 | .86 | .88 | .86 | .72 | .80 | 1.6 | 3.4 | 2.5 | 1.4 | .80 | .72 | 36 |
| 26 | .86 | .88 | .86 | .72 | .80 | 1.6 | 3.0 | 2.0 | 1.2 | .72 | .88 | 19 |
| 27 | .86 | .88 | .86 | .72 | .80 | 9.2 | 2.7 | 1.7 | 1.5 | .72 | 5.0 | 10 |
| 28 | .86 | .86 | .86 | .72 | .80 | 9.6 | 2.4 | 1.4 | 1.4 | .72 | 6.4 | 7.0 |
| 29 | .86 | .86 | .86 | .72 | --- | 13 | 2.2 | 1.2 | 1.4 | .80 | 3.9 | 6.6 |
| 30 | .86 | .84 | .84 | .72 | --- | 11 | 2.0 | 1.2 | 2.3 | 2.2 | 2.8 | 5.2 |
| 31 | .86 | --- | .82 | .72 | --- | 5.6 | --- | 5.2 | --- | 2.3 | 5.1 | --- |
| TOTAL | 25.46 | 27.14 | 25.98 | 22.76 | 21.80 | 97.08 | 117.6 | 75.1 | 66.7 | 50.04 | 45.18 | 267.6 |
| MEAN | .82 | .90 | .84 | .73 | .78 | 3.13 | 3.92 | 2.42 | 2.22 | 1.61 | 1.46 | 8.92 |
| MAX | .86 | .92 | .86 | .80 | .80 | 13 | 11 | 5.2 | 8.5 | 5.8 | 6.4 | 56 |
| MIN | .80 | .84 | .82 | .72 | .72 | .80 | 1.8 | 1.2 | 1.0 | .64 | .72 | 2.2 |
| CFSM | .16 | .18 | .17 | .15 | .16 | .63 | .78 | .48 | .44 | .32 | .29 | 1.78 |
| IN. | .19 | .20 | .19 | .17 | .16 | .72 | .87 | .56 | .50 | .37 | .34 | 1.99 |

CAL YR 1976 TOTAL 1252.80 MEAN 3.42 MAX 61 MIN .75 CFSM .68 IN 9.32
WTR YR 1977 TOTAL 842.44 MEAN 2.31 MAX 56 MIN .64 CFSM .46 IN 6.27

**FIGURE 11. WATER-QUALITY
PARTIAL-RECORD STATIONS.**

1977 WATER YEAR



WATER-QUALITY PARTIAL-RECORD STATIONS

MISCELLANEOUS WATER QUALITY DATA, WATER YEAR OCTOBER 1976 TO SEPTEMBER 1977

STREAMS TRIBUTARY TO LAKE SUPERIOR

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) | TEMPER- ATURE (DEG C) | SUS- PENDE SEDI- MENT (MG/L) | SUS- PENDE SEDI- MENT DIS- CHARGE (T/OAY) |
|------|------|---|--|-----------------------------|--|---|
|------|------|---|--|-----------------------------|--|---|

0402600S - BOIS BRULE RIVER NEAR LAKE SUPERIOR, WI (LAT 46 42 20 LONG 091 36 07)

| | | | | | | |
|------------|------|-----|-----|------|----|-----|
| DEC , 1976 | | | | | | |
| 28... | 1715 | 130 | 160 | .0 | 20 | 7.0 |
| FEB , 1977 | | | | | | |
| 09... | 1520 | 146 | 140 | .5 | 5 | 2.0 |
| MAR | | | | | | |
| 25... | 1015 | 102 | 160 | 4.0 | 9 | 4.4 |
| MAY | | | | | | |
| 04... | 1530 | 103 | 210 | 13.5 | 10 | 4.9 |
| JUN | | | | | | |
| 08... | 1400 | 193 | 125 | 16.0 | 16 | 8.3 |
| JUL | | | | | | |
| 20... | 1325 | 145 | 140 | 24.0 | 6 | 2.3 |
| AUG | | | | | | |
| 30... | 1345 | 207 | 120 | 17.5 | 9 | 5.0 |

04026870 - ALDER CREEK NEAR UPSON, WI (LAT 46 23 09 LONG 090 24 30)

| | | | | | | |
|------------|------|-----|-----|------|----|-----|
| DEC , 1976 | | | | | | |
| 30... | 1205 | 1.4 | 265 | .0 | 12 | .05 |
| FEB , 1977 | | | | | | |
| 08... | 1440 | 1.4 | 225 | .0 | 4 | .02 |
| MAR | | | | | | |
| 23... | 1615 | 29 | 140 | 1.0 | 2 | .16 |
| MAY | | | | | | |
| 03... | 1630 | 11 | 90 | 17.0 | 9 | .27 |
| JUN | | | | | | |
| 09... | 1350 | 2.7 | 200 | 17.0 | 13 | .09 |
| JUL | | | | | | |
| 18... | 1650 | 5.5 | 110 | 27.5 | 1 | .01 |

STREAMS TRIBUTARY TO LAKE MICHIGAN

| DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) | TEMPER- ATURE (DEG C) | DATE | TIME | INSTAN- TANEOUS DIS- CHARGE (CFS) | SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS) | TEMPER- ATURE (DEG C) |
|------|------|---|--|-----------------------------|------|------|---|--|-----------------------------|
|------|------|---|--|-----------------------------|------|------|---|--|-----------------------------|

04066000 - MENOMINEE RIVER NEAR PEMBINE, WI (LAT 45 35 56 LONG 087 46 32)

| | | | | | | | | | |
|------------|------|------|-----|------|------------|------|------|-----|------|
| APR , 1977 | | | | | JUL , 1977 | | | | |
| 20... | 1510 | 5150 | 180 | 12.0 | 21... | 1300 | 1070 | 240 | 21.0 |
| JUN | | | | | SEP | | | | |
| 10... | 1105 | 1700 | 230 | 12.0 | 01... | 1515 | 2160 | 180 | 19.0 |

04069500 - PESHTIGO RIVER AT PESHTIGO, WI (LAT 45 02 49 LONG 087 44 40)

| | | | | | | | | | |
|------------|------|------|-----|------|------------|------|-----|-----|------|
| OCT , 1976 | | | | | JUN , 1977 | | | | |
| 04... | 1440 | 87 | 200 | 10.0 | 13... | 1500 | 418 | 300 | 19.0 |
| 26... | 1200 | 436 | -- | 4.5 | JUL | | | | |
| DEC | | | | | 21... | 1730 | 511 | 190 | 23.0 |
| 29... | 1105 | 103 | -- | .5 | SEP | | | | |
| FEB , 1977 | | | | | 01... | 1000 | 26 | 200 | 19.5 |
| 08... | 1335 | 569 | 320 | 1.0 | | | | | |
| APR | | | | | | | | | |
| 20... | 1030 | 1740 | 200 | 12.0 | | | | | |

04071000 - OCONTO RIVER NEAR GILLET, WI (LAT 44 51 53 LONG 088 18 00)

| | | | | | | | | | |
|------------|------|------|-----|-----|------------|------|-----|-----|------|
| OCT , 1976 | | | | | APR , 1977 | | | | |
| 26... | 1755 | 245 | 300 | 4.5 | 29... | 1030 | 701 | 220 | 12.0 |
| NOV | | | | | JUN | | | | |
| 30... | 1345 | 256 | 180 | .0 | 14... | 1100 | 284 | 250 | 19.0 |
| DEC | | | | | 28... | 1345 | 272 | 230 | 26.5 |
| 28... | 1300 | 230 | 300 | .5 | JUL | | | | |
| JAN , 1977 | | | | | 27... | 1020 | 196 | 300 | 16.5 |
| 31... | 1200 | 214 | 350 | .0 | AUG | | | | |
| FEB | | | | | 29... | 1300 | 215 | 270 | 23.0 |
| 28... | 1230 | 272 | 320 | .5 | SEP | | | | |
| MAR | | | | | 29... | 1130 | 488 | 230 | 15.0 |
| 30... | 1230 | 1046 | 210 | 6.0 | | | | | |

FACTORS FOR CONVERTING U.S. CUSTOMARY UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

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

| Multiply U.S. customary units | By | To obtain SI units |
|--|------------------------|--|
| <i>Length</i> | | |
| 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) |
| <i>Area</i> | | |
| 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) |
| <i>Volume</i> | | |
| 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) |
| <i>Flow</i> | | |
| 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) |
| <i>Mass</i> | | |
| tons (short) | 9.072×10^{-1} | megagrams (Mg) or metric tons |

U.S. DEPARTMENT OF THE INTERIOR
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1815 University Avenue, Room 200
Madison WI 53706

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