

**RED RIVER OF THE NORTH BASIN**

**05061500 SOUTH BRANCH BUFFALO RIVER AT SABIN, MN**

LOCATION--Lat 46° 46'20", long 96° 37'40", in SW¼ SW¼ sec. 9, T.138 N., R.47 W., Clay County, Hydrologic Unit 09020106, near center of span on downstream side of highway bridge, 0.3 mi downstream from Stony Creek and 1 mi east of Sabin.

DRAINAGE AREA.--522 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1945 to current year. Water year 1981, annual maximum only. March 1982 to September 1985, no winter records.

REVISED RECORDS.--WSP 1308: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 902.39 ft above mean sea level (levels by Soil Conservation Service). Prior to April 17, 1948, nonrecording gage at site 1 mi downstream at different datum. Aug. 17, 1948 to Oct. 4, 1989, nonrecording gage at present site and datum.

REMARKS.--Records fair except those for estimated daily discharges, which are poor.

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997**

**DAILY MEAN VALUES**

| DAY | OCT | NOV | DEC  | JAN  | FEB  | MAR  | APR   | MAY | JUN |
|-----|-----|-----|------|------|------|------|-------|-----|-----|
| JUL | AUG | SEP |      |      |      |      |       |     |     |
| 1   | 3.7 | 22  | e4.0 | e1.1 | e1.1 | e.93 | e20   | 201 | 54  |
| 125 | 22  | 3.6 |      |      |      |      |       |     |     |
| 2   | 6.2 | 24  | e3.8 | e1.1 | e1.1 | e.93 | e120  | 170 | 47  |
| 154 | 20  | 9.5 |      |      |      |      |       |     |     |
| 3   | 8.6 | 25  | e3.6 | e1.1 | e1.1 | e.93 | e700  | 144 | 43  |
| 233 | 20  | 27  |      |      |      |      |       |     |     |
| 4   | 8.9 | 25  | e3.4 | e1.1 | e1.1 | e.93 | e3000 | 120 | 40  |
| 332 | 17  | 30  |      |      |      |      |       |     |     |
| 5   | 9.2 | 26  | e3.2 | e1.1 | e1.1 | e.93 | e5850 | 99  | 39  |
| 366 | 19  | 27  |      |      |      |      |       |     |     |
| 6   | 10  | 27  | e3.0 | e1.1 | e1.0 | e.93 | e4600 | 98  | 39  |
| 353 | 22  | 27  |      |      |      |      |       |     |     |
| 7   | 8.7 | 25  | e2.9 | e1.1 | e1.0 | e.94 | e3200 | 100 | 37  |
| 325 | 22  | 28  |      |      |      |      |       |     |     |
| 8   | 4.2 | 22  | e2.7 | e1.1 | e1.0 | e.94 | e2600 | 97  | 35  |
| 293 | 24  | 29  |      |      |      |      |       |     |     |
| 9   | 3.2 | 21  | e2.6 | e1.1 | e1.0 | e.94 | e2650 | 93  | 32  |
| 268 | 22  | 25  |      |      |      |      |       |     |     |
| 10  | 2.5 | e20 | e2.4 | e1.1 | e1.0 | e.94 | e2500 | 95  | 29  |
| 266 | 22  | 23  |      |      |      |      |       |     |     |

|       |       |       |      |      |       |       |       |      |      |
|-------|-------|-------|------|------|-------|-------|-------|------|------|
| 11    | 2.5   | e18   | e2.3 | e1.1 | e1.0  | e.94  | e2300 | 92   | 25   |
| 247   | 21    | 21    |      |      |       |       |       |      |      |
| 12    | 2.5   | e17   | e2.2 | e1.1 | e.99  | e.95  | 2110  | 85   | 23   |
| 226   | 19    | 20    |      |      |       |       |       |      |      |
| 13    | 2.2   | e15   | e2.1 | e1.2 | e.99  | e.95  | 2230  | 79   | 23   |
| 201   | 16    | 21    |      |      |       |       |       |      |      |
| 14    | 2.1   | e14   | e2.0 | e1.2 | e.98  | e.96  | 3290  | 70   | 20   |
| 170   | 15    | 23    |      |      |       |       |       |      |      |
| 15    | 2.6   | e13   | e1.9 | e1.2 | e.98  | e.97  | 3670  | 63   | 20   |
| 145   | 14    | 26    |      |      |       |       |       |      |      |
| 16    | 2.9   | e12   | e1.9 | e1.2 | e.98  | e.98  | 2740  | 64   | 18   |
| 129   | 12    | 27    |      |      |       |       |       |      |      |
| 17    | 3.8   | e11   | e1.8 | e1.2 | e.97  | e.99  | 1740  | 61   | 16   |
| 123   | 10    | 26    |      |      |       |       |       |      |      |
| 18    | 6.1   | e10   | e1.7 | e1.2 | e.97  | e1.0  | 1300  | 57   | 15   |
| 124   | 11    | 23    |      |      |       |       |       |      |      |
| 19    | 6.9   | e9.0  | e1.7 | e1.2 | e.97  | e1.0  | 1010  | 51   | 15   |
| 124   | 11    | 20    |      |      |       |       |       |      |      |
| 20    | 8.4   | e8.2  | e1.6 | e1.2 | e.96  | e1.0  | 808   | 47   | 22   |
| 116   | 9.4   | 18    |      |      |       |       |       |      |      |
| 21    | 12    | e7.7  | e1.6 | e1.2 | e.96  | e1.0  | 704   | 44   | 20   |
| 101   | 8.6   | 16    |      |      |       |       |       |      |      |
| 22    | 14    | e7.2  | e1.5 | e1.2 | e.95  | e1.1  | 618   | 51   | 25   |
| 86    | 7.0   | 15    |      |      |       |       |       |      |      |
| 23    | 15    | e6.7  | e1.5 | e1.2 | e.95  | e1.1  | 523   | 63   | 125  |
| 74    | 7.3   | 13    |      |      |       |       |       |      |      |
| 24    | 17    | e6.2  | e1.4 | e1.2 | e.94  | e1.1  | 444   | 75   | 152  |
| 63    | 5.3   | 11    |      |      |       |       |       |      |      |
| 25    | 18    | e5.8  | e1.4 | e1.2 | e.94  | e1.2  | 381   | 150  | 257  |
| 54    | 3.6   | 5.9   |      |      |       |       |       |      |      |
| 26    | 19    | e5.4  | e1.3 | e1.1 | e.94  | e1.2  | 338   | 220  | 302  |
| 46    | 3.1   | 3.6   |      |      |       |       |       |      |      |
| 27    | 20    | e5.0  | e1.3 | e1.1 | e.94  | e1.3  | 298   | 203  | 262  |
| 40    | 2.5   | 2.8   |      |      |       |       |       |      |      |
| 28    | 20    | e4.7  | e1.3 | e1.1 | e.94  | e1.4  | 266   | 159  | 216  |
| 36    | 2.7   | 2.7   |      |      |       |       |       |      |      |
| 29    | 21    | e4.4  | e1.2 | e1.1 | ---   | e1.6  | 248   | 119  | 178  |
| 31    | 2.7   | 2.8   |      |      |       |       |       |      |      |
| 30    | 22    | e4.2  | e1.2 | e1.1 | ---   | e1.9  | 227   | 88   | 144  |
| 27    | 2.3   | 3.0   |      |      |       |       |       |      |      |
| 31    | 21    | ---   | e1.2 | e1.1 | ---   | e2.4  | ---   | 68   | ---  |
| 25    | 2.1   | ---   |      |      |       |       |       |      |      |
| TOTAL | 304.2 | 421.5 | 65.7 | 35.4 | 27.85 | 34.38 | 50485 | 3126 | 2273 |
| 4903  | 395.6 | 529.9 |      |      |       |       |       |      |      |
| MEAN  | 9.81  | 14.1  | 2.12 | 1.14 | .99   | 1.11  | 1683  | 101  | 75.8 |
| 158   | 12.8  | 17.7  |      |      |       |       |       |      |      |
| MAX   | 22    | 27    | 4.0  | 1.2  | 1.1   | 2.4   | 5850  | 220  | 302  |
| 366   | 24    | 30    |      |      |       |       |       |      |      |
| MIN   | 2.1   | 4.2   | 1.2  | 1.1  | .94   | .93   | 20    | 44   | 15   |
| 25    | 2.1   | 2.7   |      |      |       |       |       |      |      |

|       |     |      |     |     |     |     |        |      |      |
|-------|-----|------|-----|-----|-----|-----|--------|------|------|
| AC-FT | 603 | 836  | 130 | 70  | 55  | 68  | 100100 | 6200 | 4510 |
| 9730  | 785 | 1050 |     |     |     |     |        |      |      |
| CFSM  | .02 | .03  | .00 | .00 | .00 | .00 | 3.22   | .19  | .15  |
| .30   | .02 | .03  |     |     |     |     |        |      |      |
| IN.   | .02 | .03  | .00 | .00 | .00 | .00 | 3.60   | .22  | .16  |
| .35   | .03 | .04  |     |     |     |     |        |      |      |

- e Estimated

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1997, BY WATER YEAR (WY)**

|      | OCT  | NOV  | DEC  | JAN  | FEB  | MAR  | APR  | MAY  | JUN  |
|------|------|------|------|------|------|------|------|------|------|
| JUL  | AUG  | SEP  |      |      |      |      |      |      |      |
| MEAN | 15.0 | 14.9 | 5.03 | 1.72 | 1.64 | 105  | 281  | 82.4 | 90.3 |
| 76.6 | 11.8 | 13.6 |      |      |      |      |      |      |      |
| MAX  | 59.2 | 76.7 | 23.5 | 13.1 | 14.0 | 581  | 1683 | 580  | 1068 |
| 1112 | 152  | 174  |      |      |      |      |      |      |      |
| (WY) | 1996 | 1972 | 1978 | 1978 | 1987 | 1966 | 1997 | 1962 | 1962 |
| 1975 | 1993 | 1986 |      |      |      |      |      |      |      |
| MIN  | .023 | 2.05 | .006 | .000 | .000 | .000 | 27.9 | 8.28 | 1.30 |
| .000 | .000 | .000 |      |      |      |      |      |      |      |
| (WY) | 1977 | 1977 | 1961 | 1946 | 1946 | 1951 | 1973 | 1980 | 1976 |
| 1988 | 1976 | 1976 |      |      |      |      |      |      |      |

*SUMMARY STATISTICS FOR 1996 CALENDAR YEAR FOR 1997 WATER YEAR WATER YEARS 1945 - 1997*

|                          |  |          |      |          |  |        |        |  |       |
|--------------------------|--|----------|------|----------|--|--------|--------|--|-------|
| ANNUAL TOTAL             |  | 25667.19 |      | 62601.53 |  |        |        |  |       |
| ANNUAL MEAN              |  | 70.1     |      | 172      |  |        |        |  | 58.7a |
| HIGHEST ANNUAL MEAN      |  |          |      |          |  |        |        |  |       |
| 198                      |  | 1962     |      |          |  |        |        |  |       |
| LOWEST ANNUAL MEAN       |  |          |      |          |  |        |        |  |       |
| 12.2                     |  | 1977     |      |          |  |        |        |  |       |
| HIGHEST DAILY MEAN       |  |          | 1890 | May 20   |  | 5850b  | Apr 5  |  | 8200  |
| Jul 1 1975               |  |          |      |          |  |        |        |  |       |
| LOWEST DAILY MEAN        |  |          | .56  | Sep 21   |  | .93    | Mar 1  |  | .00c  |
| Dec 13 1945              |  |          |      |          |  |        |        |  |       |
| ANNUAL SEVEN-DAY MINIMUM |  |          | .59  | Jan 29   |  | .93    | Feb 28 |  | .00   |
| Dec 13 1945              |  |          |      |          |  |        |        |  |       |
| INSTANTANEOUS PEAK FLOW  |  |          |      |          |  |        |        |  | 8500  |
| Jul 2 1975               |  |          |      |          |  |        |        |  |       |
| INSTANTANEOUS PEAK STAGE |  |          |      |          |  | 19.11d | Apr 6  |  | 19.90 |
| Jul 2 1975               |  |          |      |          |  |        |        |  |       |
| INSTANTANEOUS LOW FLOW   |  |          |      |          |  |        |        |  | .00   |
| Dec 13 1945              |  |          |      |          |  |        |        |  |       |
| ANNUAL RUNOFF (AC-FT)    |  | 50910    |      |          |  | 124200 |        |  | 42530 |
| ANNUAL RUNOFF (INCHES)   |  | 1.83     |      |          |  | 4.46   |        |  | 1.53  |
| 10 PERCENT EXCEEDS       |  | 150      |      |          |  | 252    |        |  | 104   |
| 50 PERCENT EXCEEDS       |  | 4.4      |      |          |  | 13     |        |  | 7.2   |
| 90 PERCENT EXCEEDS       |  | .59      |      |          |  | 1.0    |        |  | .00   |

a Median of annual mean discharges is 42.1 ft<sup>3</sup>/s.

b Estimated, backwater from ice.

c Many days, most years.  
d Backwater from ice.