

Annual Peak-Flow Frequency Analysis

For more information on the contents of this documentation, see Kessler and others (2013).

**Streamgauge number and name:**

05047500 Mustinka River above Twelvemile Creek near Charlesville, Minn.

**Peak-flow information:**

|   |      |
|---|------|
| Number of systematic peak flows in record | 12   |
| Systematic period begins                  | 1944 |
| Systematic period ends                    | 1955 |
| Length of systematic record               | 12   |
| Years without information                 | 0    |
| Number of historical peak flows in record | 0    |

**Frequency analysis options:**

|                                    |                               |
|------------------------------------|-------------------------------|
| Method                             | Bulletin 17B                  |
| Skew option                        | Weighted                      |
| Generalized skew                   | -0.24                         |
| Standard error of generalized skew | 0.427                         |
| Low-outlier method                 | Bulletin 17B Grubbs-Beck test |

**Bulletin 17B systematic record analysis results:**

**Moments of the common logarithms of the peak flows:**

|        | Standard  |          |
|--------|-----------|----------|
| Mean   | deviation | Skewness |
| 2.4557 | 0.3414    | 0.490    |

**Outlier criteria and number of peak flows exceeding:**

|      |        |   |
|------|--------|---|
| Low  | 53.3   | 0 |
| High | 1528.9 | 1 |

**Bulletin 17B Final analysis results:**

**Moments of the common logarithms of the peak flows:**

|        | Standard  |          |  |
|--------|-----------|----------|--|
| Mean   | deviation | Skewness |  |
| 2.4557 | 0.3414    | -0.027   |  |

**Annual frequency curve at selected exceedance probabilities:**

[WIE, Weighted independent estimate; --, not computed]

| Exceedance probability | Peak estimate | Lower-95 level | Upper 95 level | WIE estimate | Lower-95 WIE level | Upper 95 WIE level |
|------------------------|---------------|----------------|----------------|--------------|--------------------|--------------------|
| 0.9950                 | 37.0          | 11.2           | 68.9           | --           | --                 | --                 |
| 0.9900                 | 45.2          | 15.1           | 80.6           | --           | --                 | --                 |
| 0.9500                 | 77.9          | 33.7           | 125.0          | --           | --                 | --                 |
| 0.9000                 | 104.0         | 51.2           | 159.0          | --           | --                 | --                 |
| 0.8000                 | 148.0         | 83.3           | 217.0          | --           | --                 | --                 |
| 0.6667                 | 204.0         | 128.0          | 297.0          | --           | --                 | --                 |
| 0.5000                 | 287.0         | 192.0          | 427.0          | 284          | 189                | 427                |
| 0.4292                 | 330.0         | 225.0          | 503.0          | --           | --                 | --                 |
| 0.2000                 | 554.0         | 377.0          | 981.0          | 570          | 369                | 879                |
| 0.1000                 | 780.0         | 510.0          | 1,580.0        | 831          | 516                | 1,340              |
| 0.0400                 | 1,120.0       | 691.0          | 2,680.0        | 1,250        | 730                | 2,140              |
| 0.0200                 | 1,420.0       | 835.0          | 3,780.0        | 1,630        | 896                | 2,950              |
| 0.0100                 | 1,750.0       | 987.0          | 5,170.0        | 2,070        | 1,080              | 3,950              |
| 0.0050                 | 2,120.0       | 1,150.0        | 6,880.0        | --           | --                 | --                 |
| 0.0020                 | 2,680.0       | 1,380.0        | 9,750.0        | 3,300        | 1,520              | 7,200              |

**Peak-flow data used in the analysis:**

Explanation of symbols and codes

-- none

| Water | Peak  | Peak-flow |
|-------|-------|-----------|
| year  | flow  | code      |
| 1944  | 186   | --        |
| 1945  | 180   | --        |
| 1946  | 300   | --        |
| 1947  | 420   | --        |
| 1948  | 130   | --        |
| 1949  | 422   | --        |
| 1950  | 440   | --        |
| 1951  | 534   | --        |
| 1952  | 1,550 | --        |
| 1953  | 77    | --        |
| 1954  | 280   | --        |
| 1955  | 162   | --        |