Annual Peak-Flow Frequency Analysis
For more information on the contents of this documentation, see Kessler and others (2013).

**Streamgage number and name:**

05379000 Gilmore Creek at Winona, Minn.

**Peak-flow information:**

| | | |
|---|---|---|
| Number of systematic peak flows in record | 26 | |
| Systematic period begins | 1940 | |
| Systematic period ends | 1991 | |
| Length of systematic record | 52 | |
| Years without information | 26 | |
| Number of historical peak flows in record | 1 | 1991 |

**Frequency analysis options:**

| | |
|---|---|
| Method | Expected moments algorithm (EMA) |
| Skew option | Weighted |
| Generalized skew | -0.18 |
| Standard error of generalized skew | 0.4266 |
| Low-outlier method | Single Grubbs-Beck test |

**EMA systematic record analysis results:**

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

| Mean | Standard deviation | Skewness |
|---|---|---|
| 2.4971 | 0.6091 | -0.406 |

**Low-outlier information:**

| | |
|---|---|
| Number of low outliers | 1 |
| Low-outlier threshold | 22 |

**Final analysis results:**

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

| Mean | Standard deviation | Skewness |
|---|---|---|
| 2.4914 | 0.5972 | -0.244 |

**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 | 6.55 | 0.23 | 19.6 | –– | –– | –– |
| 0.9900 | 9.90 | 0.51 | 26.4 | –– | –– | –– |
| 0.9500 | 29.50 | 5.20 | 61.9 | –– | –– | –– |
| 0.9000 | 51.50 | 14.70 | 99.4 | –– | –– | –– |
| 0.8000 | 99.40 | 41.50 | 179.0 | –– | –– | –– |
| 0.6667 | 180.00 | 91.00 | 310.0 | –– | –– | –– |
| 0.5000 | 328.00 | 182.00 | 551.0 | 369 | 238 | 573 |
| 0.4292 | 418.00 | 238.00 | 699.0 | –– | –– | –– |
| 0.2000 | 999.00 | 581.00 | 1,670.0 | 1,050 | 709 | 1,560 |
| 0.1000 | 1,740.00 | 989.00 | 3,000.0 | 1,710 | 1,160 | 2,520 |
| 0.0400 | 3,050.00 | 1,670.00 | 5,890.0 | 2,780 | 1,860 | 4,140 |
| 0.0200 | 4,350.00 | 2,280.00 | 9,530.0 | 3,740 | 2,440 | 5,730 |
| 0.0100 | 5,920.00 | 2,940.00 | 15,200.0 | 4,890 | 3,030 | 7,880 |
| 0.0050 | 7,810.00 | 3,640.00 | 23,900.0 | –– | –– | –– |
| 0.0020 | 10,800.00 | 4,580.00 | 42,400.0 | 8,240 | 4,520 | 15,000 |

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

Explanation of symbols and codes

| | |
|---|---|
| −− | none |
| H | Historic, outside of systematic record |
| ∗ | Less than low-outlier threshold |

| Water year | Peak flow | Peak-flow code |
|---|---|---|
| 1940 | 137.0 | −− |
| 1941 | 169.0 | −− |
| 1942 | 2,200.0 | −− |
| 1943 | 835.0 | −− |
| 1944 | 820.0 | −− |
| 1945 | 1,370.0 | −− |
| 1946 | 1,070.0 | −− |
| 1947 | 2,460.0 | −− |
| 1948 | 131.0 | −− |
| 1949 | 333.0 | −− |
| 1950 | 330.0 | −− |
| 1951 | 5,360.0 | −− |
| 1952 | 156.0 | −− |
| 1953 | 7.3 | ∗ |
| 1954 | 53.0 | −− |
| 1955 | 318.0 | −− |
| 1956 | 73.0 | −− |
| 1957 | 198.0 | −− |
| 1958 | 22.0 | −− |
| 1959 | 585.0 | −− |
| 1960 | 201.0 | −− |
| 1961 | 425.0 | −− |
| 1962 | 436.0 | −− |
| 1963 | 638.0 | −− |
| 1964 | 114.0 | −− |
| 1965 | 436.0 | −− |
| Gap in systematic record | | |
| 1991 | 4,400.0 | H |