

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05103000 Roseau River near Malung, Minn.

Peak-flow information:

| | |
|---|------|
| Number of systematic peak flows in record | 17 |
| Systematic period begins | 1929 |
| Systematic period ends | 1946 |
| Length of systematic record | 18 |
| Years without information | 1 |
| Number of historical peak flows in record | 0 |

Frequency analysis options:

| | |
|------------------------------------|-------------------------------|
| Method | Bulletin 17B |
| Skew option | Weighted |
| Generalized skew | -0.501 |
| Standard error of generalized skew | 0.426 |
| 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 |
| 2.6987 | 0.4468 | -0.803 |

Outlier criteria and number of peak flows exceeding:

| | | |
|------|--------|---|
| Low | 46.5 | 0 |
| High | 5373.7 | 0 |

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

| | Standard | |
|--------|-----------|----------|
| Mean | deviation | Skewness |
| 2.6987 | 0.4468 | -0.601 |

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 | 19.9 | 4.9 | 44.9 | -- | -- | -- |
| 0.9900 | 29.4 | 8.3 | 61.3 | -- | -- | -- |
| 0.9500 | 78.7 | 32.0 | 137.0 | -- | -- | -- |
| 0.9000 | 127.0 | 61.0 | 207.0 | -- | -- | -- |
| 0.8000 | 220.0 | 123.0 | 336.0 | -- | -- | -- |
| 0.6667 | 351.0 | 218.0 | 530.0 | -- | -- | -- |
| 0.5000 | 554.0 | 364.0 | 859.0 | 603 | 412 | 882 |
| 0.4292 | 661.0 | 438.0 | 1,050.0 | -- | -- | -- |
| 0.2000 | 1,210.0 | 784.0 | 2,190.0 | 1,260 | 869 | 1,830 |
| 0.1000 | 1,720.0 | 1,080.0 | 3,440.0 | 1,770 | 1,190 | 2,640 |
| 0.0400 | 2,410.0 | 1,440.0 | 5,380.0 | 2,460 | 1,560 | 3,900 |
| 0.0200 | 2,930.0 | 1,700.0 | 7,000.0 | 2,990 | 1,800 | 4,980 |
| 0.0100 | 3,460.0 | 1,950.0 | 8,740.0 | 3,540 | 2,020 | 6,190 |
| 0.0050 | 3,980.0 | 2,190.0 | 10,600.0 | -- | -- | -- |
| 0.0020 | 4,650.0 | 2,500.0 | 13,100.0 | 4,800 | 2,430 | 9,460 |

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

| Water year | Peak flow | Peak-flow code |
|--------------------------|--------------|-------------------|
| 1929 | 348 | -- |
| 1930 | 332 | -- |
| 1931 | 65 | -- |
| 1932 | 468 | -- |
| 1933 | 244 | -- |
| 1934 | 62 | -- |
| 1935 | 178 | -- |
| 1936 | 676 | -- |
| 1937 | 630 | -- |
| 1938 | 1,780 | -- |
| Gap in systematic record | | |
| 1940 | 413 | -- |
| 1941 | 1,750 | -- |
| 1942 | 1,410 | -- |
| 1943 | 1,310 | -- |
| 1944 | 1,060 | -- |
| 1945 | 841 | -- |
| 1946 | 885 | -- |