

Annual Peak-Flow Frequency Analysis

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

**Streamgauge number and name:**

05040500 Pelican River near Fergus Falls, Minn.

**Peak-flow information:**

|   |      |
|---|------|
| Number of systematic peak flows in record | 41   |
| Systematic period begins                  | 1910 |
| Systematic period ends                    | 1980 |
| Length of systematic record               | 71   |
| Years without information                 | 30   |
| Number of historical peak flows in record | 0    |

**Frequency analysis options:**

|                                    |                               |
|------------------------------------|-------------------------------|
| Method                             | Bulletin 17B                  |
| Skew option                        | Weighted                      |
| Generalized skew                   | -0.172                        |
| 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 |
| 2.4729 | 0.2362    | 0.264    |

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

|      |        |   |
|------|--------|---|
| Low  | 68.7   | 0 |
| High | 1284.5 | 0 |

**Bulletin 17B Final analysis results:**

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

|        | Standard  |          |
|--------|-----------|----------|
| Mean   | deviation | Skewness |
| 2.4729 | 0.2362    | 0.072    |

**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                 | 75.9          | 53.8           | 97.3           | --           | --                 | --                 |
| 0.9900                 | 86.3          | 62.8           | 109.0          | --           | --                 | --                 |
| 0.9500                 | 123.0         | 95.5           | 148.0          | --           | --                 | --                 |
| 0.9000                 | 149.0         | 120.0          | 176.0          | --           | --                 | --                 |
| 0.8000                 | 188.0         | 156.0          | 218.0          | --           | --                 | --                 |
| 0.6667                 | 234.0         | 200.0          | 269.0          | --           | --                 | --                 |
| 0.5000                 | 295.0         | 256.0          | 340.0          | 307          | 259                | 363                |
| 0.4292                 | 325.0         | 283.0          | 377.0          | --           | --                 | --                 |
| 0.2000                 | 469.0         | 403.0          | 562.0          | 489          | 404                | 591                |
| 0.1000                 | 599.0         | 505.0          | 746.0          | 634          | 507                | 792                |
| 0.0400                 | 780.0         | 640.0          | 1,020.0        | 843          | 639                | 1,110              |
| 0.0200                 | 927.0         | 744.0          | 1,250.0        | 1,020        | 737                | 1,400              |
| 0.0100                 | 1,080.0       | 853.0          | 1,510.0        | 1,210        | 835                | 1,750              |
| 0.0050                 | 1,250.0       | 966.0          | 1,790.0        | --           | --                 | --                 |
| 0.0020                 | 1,490.0       | 1,120.0        | 2,210.0        | 1,720        | 1,060              | 2,780              |

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

Explanation of symbols and codes

-- none

| Water                    | Peak | Peak-flow | Water | Peak | Peak-flow |
|--------------------------|------|-----------|-------|------|-----------|
| year                     | flow | code      | year  | flow | code      |
| 1910                     | 303  | --        | 1960  | 206  | --        |
| 1911                     | 124  | --        | 1961  | 135  | --        |
| 1912                     | 230  | --        | 1962  | 365  | --        |
| Gap in systematic record |      |           | 1963  | 230  | --        |
| 1943                     | 756  | --        | 1964  | 274  | --        |
| 1944                     | 212  | --        | 1965  | 551  | --        |
| 1945                     | 330  | --        | 1966  | 560  | --        |
| 1946                     | 212  | --        | 1967  | 655  | --        |
| 1947                     | 218  | --        | 1968  | 194  | --        |
| 1948                     | 198  | --        | 1969  | 710  | --        |
| 1949                     | 240  | --        | 1970  | 350  | --        |
| 1950                     | 296  | --        | 1971  | 251  | --        |
| 1951                     | 177  | --        | 1972  | 420  | --        |
| 1952                     | 388  | --        | 1973  | 163  | --        |
| 1953                     | 680  | --        | 1974  | 725  | --        |
| 1954                     | 242  | --        | 1975  | 585  | --        |
| 1955                     | 250  | --        | 1976  | 186  | --        |
| 1956                     | 315  | --        | 1977  | 129  | --        |
| 1957                     | 216  | --        | 1978  | 635  | --        |
| 1958                     | 125  | --        | 1979  | 610  | --        |
| 1959                     | 164  | --        | 1980  | 495  | --        |