

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05063500 South Branch Wild Rice River near Borup, Minn.

Peak-flow information:

Number of systematic peak flows in record	19
Systematic period begins	1944
Systematic period ends	1984
Length of systematic record	41
Years without information	22
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.39
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:

	Standard	
Mean	deviation	Skewness
2.9581	0.3630	-0.057

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	250

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard		
Mean	deviation	Skewness	
2.9566	0.3665	-0.278	

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	82.6	7.54	176	--	--	--
0.9900	107.0	12.80	212	--	--	--
0.9500	212.0	55.10	358	--	--	--
0.9000	300.0	114.00	480	--	--	--
0.8000	451.0	230.00	688	--	--	--
0.6667	650.0	387.00	969	--	--	--
0.5000	941.0	608.00	1,400	928	670	1,290
0.4292	1,090.0	719.00	1,640	--	--	--
0.2000	1,860.0	1,250.00	3,060	1,900	1,360	2,650
0.1000	2,590.0	1,730.00	4,900	2,690	1,860	3,900
0.0400	3,650.0	2,340.00	8,640	3,840	2,500	5,930
0.0200	4,500.0	2,770.00	12,900	4,800	2,960	7,790
0.0100	5,420.0	3,190.00	18,900	5,860	3,430	10,000
0.0050	6,380.0	3,570.00	27,100	--	--	--
0.0020	7,740.0	4,020.00	42,700	8,560	4,450	16,500

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

* Less than low-outlier threshold

Water	Peak	Peak-flow
year	flow	code
1944	852	--
1945	792	--
1946	984	--
1947	1,150	--
1948	500	--
1949	319	--
Gap in systematic record		
1972	950	--
1973	250	--
1974	1,100	--
1975	3,700	--
1976	760	--
1977	60	*
1978	2,980	--
1979	3,040	--
1980	527	--
1981	1,360	--
1982	860	--
1983	690	--
1984	2,700	--