

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05384000 Root River near Lanesboro, Minn.

Peak-flow information:

Number of systematic peak flows in record	68
Systematic period begins	1910
Systematic period ends	2000
Length of systematic record	91
Years without information	23
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.24
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
3.8654	0.2930	-0.429

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	1,790

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.8655	0.2927	-0.355

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	1,030	403	1,570	--	--	--
0.9900	1,290	586	1,850	--	--	--
0.9500	2,270	1,450	2,940	--	--	--
0.9000	3,030	2,180	3,770	--	--	--
0.8000	4,220	3,320	5,100	--	--	--
0.6667	5,680	4,670	6,760	--	--	--
0.5000	7,630	6,400	9,040	7,540	6,400	8,890
0.4292	8,590	7,240	10,200	--	--	--
0.2000	13,000	11,000	15,600	12,800	10,900	15,100
0.1000	16,900	14,200	21,000	16,600	13,900	19,700
0.0400	21,900	18,000	29,300	21,400	17,400	26,300
0.0200	25,700	20,500	36,600	25,100	19,800	31,900
0.0100	29,500	22,600	44,800	29,000	22,000	38,300
0.0050	33,300	24,500	54,000	--	--	--
0.0020	38,300	26,700	68,100	38,400	26,500	55,500

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

* Less than low-outlier threshold

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1910	2,040	--	1966	16,200	--
1911	13,300	--	1967	12,200	--
1912	7,930	--	1968	1,790	--
1913	11,800	--	1969	7,340	--
1914	9,670	--	1970	2,430	--
Gap in systematic record			1971	7,650	--
1916	5,020	--	1972	8,260	--
1917	12,000	--	1973	11,400	--
Gap in systematic record			1974	17,500	--
1940	5,070	--	1975	7,340	--
1941	5,460	--	1976	14,100	--
1942	15,000	--	1977	1,910	--
1943	8,490	--	1978	14,400	--
1944	5,570	--	1979	8,310	--
1945	13,900	--	1980	6,930	--
1946	10,400	--	1981	7,950	--
1947	7,620	--	1982	3,920	--
1948	7,220	--	1983	8,860	--
1949	6,470	--	1984	3,680	--
1950	20,500	--	1985	4,620	--
1951	16,400	--	1986	10,700	--
1952	20,400	--	1987	8,180	--
1953	8,370	--	1988	4,190	--
1954	4,090	--	1989	6,400	--
1955	4,090	--	1990	9,230	--
1956	5,430	--	1991	3,230	--
1957	4,530	--	1992	3,150	--
1958	17,800	--	1993	14,300	--
1959	9,170	--	1994	2,230	--
1960	8,100	--	1995	4,300	--
1961	19,500	--	1996	2,900	--
1962	22,100	--	1997	6,400	--
1963	7,250	--	1998	3,800	--
1964	409	*	1999	6,630	--
1965	19,000	--	2000	23,000	--