

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05320000 Blue Earth River near Rapidan, Minn.

Peak-flow information:

Number of systematic peak flows in record	98
Systematic period begins	1910
Systematic period ends	2011
Length of systematic record	102
Years without information	4
Number of historical peak flows in record	1 1910, 1948

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Streamgauge
Low-outlier method	Fixed Threshold

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

	Standard		
	Mean	deviation	Skewness
	3.8016	0.3600	-0.631

Low-outlier information:

Number of low outliers	0
Low-outlier threshold	200

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.8016	0.3600	-0.631

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	461	89.1	805
0.9900	634	168.0	1,020
0.9500	1,420	734.0	1,920
0.9000	2,100	1,370.0	2,690
0.8000	3,270	2,500.0	4,010
0.6667	4,790	3,890.0	5,770
0.5000	6,910	5,760.0	8,270
0.4292	7,960	6,670.0	9,500
0.2000	12,900	10,900.0	15,100
0.1000	17,100	14,600.0	20,500
0.0400	22,200	18,600.0	28,600
0.0200	26,000	20,700.0	35,200
0.0100	29,500	22,200.0	42,500
0.0050	32,900	23,200.0	50,500
0.0020	37,100	24,100.0	62,600

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

H Historic, outside of systematic record

K Peak affected by regulation

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1910	15,600	K H	1946	7,500	K
Gap in systematic record			Gap in systematic record		
1912	1,810	K	1948	11,600	K H
1913	3,190	K	Gap in systematic record		
1914	3,250	K	1950	4,390	K
1915	11,510	K	1951	26,100	K
1916	10,300	K	1952	14,700	K
1917	13,280	K	1953	19,700	K
1918	6,690	K	1954	6,230	K
1919	9,610	K	1955	3,550	K
1920	7,250	K	1956	5,670	K
1921	2,310	K	1957	3,440	K
1922	3,090	K	1958	1,270	K
1923	374	K	1959	3,670	K
1924	1,260	K	1960	16,600	K
1925	4,250	K	1961	11,200	K
1926	1,160	K	1962	16,600	K
1927	4,500	K	1963	11,200	K
1928	1,960	K	1964	5,240	K
1929	11,600	K	1965	43,100	--
1930	2,750	K	1966	4,760	K
1931	210	K	1967	6,300	K
1932	6,000	K	1968	3,160	K
1933	10,800	K	1969	21,100	K
1934	1,600	K	1970	3,460	K
1935	2,200	K	1971	8,580	K
1936	13,600	K	1972	9,200	K
1937	2,500	K	1973	8,380	K
1938	13,900	K	1974	6,220	K
1939	4,700	K	1975	6,460	K
1940	1,710	K	1976	1,240	K
1941	4,390	K	1977	1,500	K
1942	2,790	K	1978	4,920	K
1943	6,940	K	1979	11,100	K
1944	11,000	K	1980	9,170	K
1945	9,500	K	1981	7,100	K

Water year	Peak flow	Peak-flow code
1982	5,760	K
1983	12,800	K
1984	9,810	K
1985	11,100	K
1986	15,200	K
1987	4,300	K
1988	3,570	K
1989	6,890	K
1990	6,170	K
1991	12,800	K
1992	10,500	K
1993	20,300	K
1994	8,450	K
1995	7,310	K
1996	8,700	K
1997	9,440	K
1998	8,780	K
1999	10,100	K
2000	4,870	K
2001	17,200	K
2002	4,010	K
2003	5,660	K
2004	12,200	K
2005	10,600	K
2006	12,600	K
2007	12,500	K
2008	9,180	K
2009	5,580	K
2010	27,000	--
2011	18,600	--