

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05320500 Le Sueur River near Rapidan, Minn.

Peak-flow information:

Number of systematic peak flows in record	69
Systematic period begins	1940
Systematic period ends	2011
Length of systematic record	72
Years without information	3
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.13
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
3.6560	0.3541	-0.383

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	525

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.6562	0.3534	-0.282

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	450	157	728	--	--	--
0.9900	578	240	882	--	--	--
0.9500	1,120	671	1,510	--	--	--
0.9000	1,560	1,070	2,020	--	--	--
0.8000	2,320	1,750	2,900	--	--	--
0.6667	3,300	2,610	4,060	--	--	--
0.5000	4,710	3,820	5,770	4,640	3,810	5,660
0.4292	5,430	4,430	6,660	--	--	--
0.2000	9,070	7,400	11,300	8,910	7,290	10,900
0.1000	12,500	10,100	16,400	12,300	9,810	15,300
0.0400	17,300	13,600	25,000	16,900	12,900	22,200
0.0200	21,300	16,000	33,200	20,700	15,100	28,400
0.0100	25,400	18,300	43,100	24,700	17,200	35,600
0.0050	29,700	20,500	55,000	--	--	--
0.0020	35,800	23,000	74,300	35,000	21,600	56,800

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
1940	1,600	--	1977	1,270	--
1941	2,840	--	1978	2,740	--
1942	1,440	--	1979	6,800	--
1943	5,950	--	1980	3,190	--
1944	4,230	--	1981	4,630	--
1945	4,410	--	1982	3,470	--
Gap in systematic record			1983	7,760	--
1949	83	*	1984	6,310	--
1950	3,100	--	1985	5,810	--
1951	13,200	--	1986	8,410	--
1952	9,640	--	1987	2,500	--
1953	5,120	--	1988	1,770	--
1954	1,610	--	1989	3,770	--
1955	1,760	--	1990	4,360	--
1956	3,990	--	1991	6,780	--
1957	1,790	--	1992	4,700	--
1958	525	--	1993	11,500	--
1959	1,510	--	1994	3,520	--
1960	21,200	--	1995	4,700	--
1961	6,600	--	1996	6,960	--
1962	9,660	--	1997	5,400	--
1963	2,020	--	1998	5,200	--
1964	2,440	--	1999	7,040	--
1965	24,700	--	2000	10,700	--
1966	2,950	--	2001	13,100	--
1967	8,950	--	2002	2,550	--
1968	10,900	--	2003	3,980	--
1969	10,900	--	2004	11,100	--
1970	2,270	--	2005	7,370	--
1971	5,680	--	2006	5,770	--
1972	2,320	--	2007	5,770	--
1973	6,560	--	2008	5,610	--
1974	4,340	--	2009	2,380	--
1975	5,630	--	2010	30,500	--
1976	2,200	--	2011	14,200	--