

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05064000 Wild Rice River at Hendrum, Minn.

Peak-flow information:

Number of systematic peak flows in record	68
Systematic period begins	1944
Systematic period ends	2011
Length of systematic record	68
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.41
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
3.4809	0.3428	-0.459

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	540

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
3.4810	0.3427	-0.438

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	287	86.3	479	--	--	--
0.9900	376	138.0	588	--	--	--
0.9500	755	429.0	1,030	--	--	--
0.9000	1,070	710.0	1,390	--	--	--
0.8000	1,590	1,190.0	1,990	--	--	--
0.6667	2,260	1,790.0	2,780	--	--	--
0.5000	3,210	2,610.0	3,900	3,130	2,600	3,780
0.4292	3,680	3,010.0	4,470	--	--	--
0.2000	5,950	4,910.0	7,300	5,830	4,860	7,010
0.1000	7,960	6,530.0	10,200	7,810	6,400	9,540
0.0400	10,600	8,490.0	14,700	10,400	8,160	13,300
0.0200	12,600	9,780.0	18,700	12,400	9,280	16,400
0.0100	14,700	10,900.0	23,300	14,300	10,300	20,000
0.0050	16,700	11,800.0	28,600	--	--	--
0.0020	19,400	12,800.0	36,700	18,900	12,100	29,400

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
1944	2,260	--	1978	9,350	--
1945	2,200	--	1979	8,800	--
1946	2,600	--	1980	1,800	--
1947	4,200	--	1981	1,840	--
1948	2,200	--	1982	3,280	--
1949	738	--	1983	2,290	--
1950	3,000	--	1984	5,400	--
1951	2,570	--	1985	5,230	--
1952	2,860	--	1986	3,850	--
1953	1,650	--	1987	1,500	--
1954	1,940	--	1988	1,190	--
1955	1,850	--	1989	5,480	--
1956	4,660	--	1990	1,100	--
1957	1,250	--	1991	952	--
1958	633	--	1992	1,950	--
1959	540	--	1993	3,670	--
1960	1,600	--	1994	2,600	--
1961	1,080	--	1995	3,200	--
1962	3,680	--	1996	5,750	--
1963	1,670	--	1997	10,600	--
1964	2,690	--	1998	6,550	--
1965	6,800	--	1999	4,080	--
1966	4,120	--	2000	8,040	--
1967	3,250	--	2001	9,720	--
1968	726	--	2002	8,690	--
1969	8,300	--	2003	3,060	--
1970	3,940	--	2004	4,800	--
1971	1,500	--	2005	4,490	--
1972	4,550	--	2006	10,000	--
1973	1,630	--	2007	4,990	--
1974	5,590	--	2008	3,370	--
1975	7,660	--	2009	9,440	--
1976	2,120	--	2010	8,100	--
1977	245	*	2011	7,700	--