

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05270300 Sauk River tributary at Spring Hill, Minn.

Peak-flow information:

Number of systematic peak flows in record	41
Systematic period begins	1960
Systematic period ends	2000
Length of systematic record	41
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	-0.13
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
2.2182	0.3794	0.652

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	28

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard		
Mean	deviation	Skewness	
2.2167	0.3830	0.228	

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	20.5	7.79	33.4	--	--	--
0.9900	24.6	10.70	37.8	--	--	--
0.9500	41.0	24.10	57.0	--	--	--
0.9000	54.5	35.90	73.7	--	--	--
0.8000	77.8	55.80	104.0	--	--	--
0.6667	110.0	81.50	146.0	--	--	--
0.5000	159.0	120.00	214.0	139	108	180
0.4292	187.0	140.00	254.0	--	--	--
0.2000	342.0	251.00	512.0	293	216	396
0.1000	520.0	367.00	897.0	425	298	606
0.0400	825.0	545.00	1,830.0	621	401	959
0.0200	1,120.0	697.00	3,090.0	780	475	1,280
0.0100	1,480.0	866.00	5,160.0	965	551	1,690
0.0050	1,930.0	1,050.00	8,520.0	--	--	--
0.0020	2,660.0	1,320.00	16,300.0	1,450	724	2,920

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
1960	116.0	--	1981	123.0	--
1961	157.0	--	1982	200.0	--
1962	160.0	--	1983	330.0	--
1963	8.5	*	1984	1,200.0	--
1964	75.0	--	1985	122.0	--
1965	268.0	--	1986	700.0	--
1966	225.0	--	1987	245.0	--
1967	277.0	--	1988	80.0	--
1968	82.0	--	1989	117.0	--
1969	364.0	--	1990	110.0	--
1970	190.0	--	1991	152.0	--
1971	134.0	--	1992	1,400.0	--
1972	280.0	--	1993	125.0	--
1973	74.0	--	1994	110.0	--
1974	260.0	--	1995	142.0	--
1975	153.0	--	1996	153.0	--
1976	127.0	--	1997	360.0	--
1977	81.0	--	1998	28.0	--
1978	1,440.0	--	1999	101.0	--
1979	153.0	--	2000	54.0	--
1980	93.0	--			