

Annual Peak-Flow Frequency Analysis

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

**Streamgauge number and name:**

05336600 Kettle River tributary at Sandstone, Minn.

**Peak-flow information:**

Number of systematic peak flows in record	22
Systematic period begins	1960
Systematic period ends	1981
Length of systematic record	22
Years without information	0
Number of historical peak flows in record	0

**Frequency analysis options:**

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.245
Standard error of generalized skew	0.426
Low-outlier method	Bulletin 17B Grubbs-Beck test

**Bulletin 17B systematic record analysis results:**

**Moments of the common logarithms of the peak flows:**

	Standard	
Mean	deviation	Skewness
1.1926	0.4027	-0.473

**Outlier criteria and number of peak flows exceeding:**

Low	1.6	0
High	148.2	0

**Bulletin 17B Final analysis results:**

**Moments of the common logarithms of the peak flows:**

	Standard	
Mean	deviation	Skewness
1.1926	0.4027	-0.337

**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	1.1	0.4	2.0	--	--	--
0.9900	1.4	0.6	2.5	--	--	--
0.9500	3.1	1.6	4.8	--	--	--
0.9000	4.6	2.6	6.8	--	--	--
0.8000	7.3	4.7	10.2	--	--	--
0.6667	10.9	7.5	15.1	--	--	--
0.5000	16.4	11.8	23.1	18.4	13.1	25.7
0.4292	19.3	13.9	27.6	--	--	--
0.2000	34.4	24.4	54.1	38.2	26.8	54.5
0.1000	49.2	33.7	84.3	55.6	37.7	82.1
0.0400	70.6	46.1	133.0	82.7	52.8	130.0
0.0200	88.2	55.7	177.0	107.0	65.0	176.0
0.0100	107.0	65.5	227.0	134.0	77.1	234.0
0.0050	127.0	75.6	283.0	--	--	--
0.0020	154.0	89.2	367.0	212.0	108.0	416.0

**Peak-flow data used in the analysis:**

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow
year	flow	code
1960	6.7	--
1961	6.3	--
1962	16.0	--
1963	3.1	--
1964	17.0	--
1965	84.0	--
1966	45.0	--
1967	28.0	--
1968	6.5	--
1969	32.0	--
1970	21.0	--
1971	15.0	--
1972	32.0	--
1973	7.8	--
1974	22.0	--
1975	32.0	--
1976	16.0	--
1977	24.0	--
1978	18.0	--
1979	48.0	--
1980	6.0	--
1981	2.0	--