

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05314900 Redwood River at Ruthton, Minn.

Peak-flow information:

Number of systematic peak flows in record	23
Systematic period begins	1959
Systematic period ends	1981
Length of systematic record	23
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	-0.27
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
1.9972	0.5538	-1.118

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	8.8

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.0022	0.5379	-0.529

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	2.25	0.05	7.33	--	--	--
0.9900	3.52	0.13	10.10	--	--	--
0.9500	11.10	1.28	24.00	--	--	--
0.9000	19.50	4.37	38.20	--	--	--
0.8000	37.00	13.80	66.40	--	--	--
0.6667	64.90	31.30	110.00	--	--	--
0.5000	112.00	61.80	187.00	108	68.5	169
0.4292	139.00	79.20	232.00	--	--	--
0.2000	290.00	175.00	521.00	269	176.0	414
0.1000	451.00	272.00	922.00	411	262.0	646
0.0400	690.00	402.00	1,780.00	621	374.0	1,030
0.0200	890.00	493.00	2,770.00	799	454.0	1,400
0.0100	1,100.00	574.00	4,140.00	993	536.0	1,840
0.0050	1,320.00	643.00	6,040.00	--	--	--
0.0020	1,630.00	716.00	9,700.00	1,510	709.0	3,220

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

* Less than low-outlier threshold

Water	Peak	Peak-flow
year	flow	code
1959	19.0	--
1960	228.0	--
1961	71.0	--
1962	472.0	--
1963	204.0	--
1964	126.0	--
1965	330.0	--
1966	142.0	--
1967	338.0	--
1968	187.0	--
1969	728.0	--
1970	191.0	--
1971	230.0	--
1972	82.0	--
1973	109.0	--
1974	8.8	--
1975	38.0	--
1976	28.0	--
1977	148.0	--
1978	86.0	--
1979	120.0	--
1980	56.0	--
1981	1.0	*