

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

04015370 Talmadge River at Duluth, Minn.

Peak-flow information:

Number of systematic peak flows in record	37
Systematic period begins	1964
Systematic period ends	2000
Length of systematic record	37
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	0.5
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:

	Mean	Standard deviation	Skewness
	2.4410	0.3066	0.463

Outlier criteria and number of peak flows exceeding:

Low	42.5	0
High	1793.1	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.4410	0.3066	0.481

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	61.5	40.5	83.1	--	--	--
0.9900	68.7	46.3	91.6	--	--	--
0.9500	95.9	69.0	123.0	--	--	--
0.9000	117.0	87.0	146.0	--	--	--
0.8000	151.0	117.0	185.0	--	--	--
0.6667	195.0	157.0	237.0	--	--	--
0.5000	261.0	214.0	316.0	261	208	327
0.4292	296.0	244.0	361.0	--	--	--
0.2000	489.0	399.0	627.0	487	367	646
0.1000	702.0	556.0	954.0	696	492	983
0.0400	1,060.0	800.0	1,560.0	1,040	670	1,610
0.0200	1,400.0	1,020.0	2,190.0	1,360	818	2,260
0.0100	1,820.0	1,280.0	3,010.0	1,740	980	3,090
0.0050	2,330.0	1,580.0	4,070.0	--	--	--
0.0020	3,190.0	2,060.0	5,960.0	2,940	1,420	6,040

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow
year	flow	code
1964	609	--
1965	187	--
1966	150	--
1967	371	--
1968	335	--
1969	224	--
1970	139	--
1971	358	--
1972	1,020	--
1973	152	--
1974	470	--
1975	252	--
1976	140	--
1977	415	--
1978	544	--
1979	1,180	--
1980	415	--
1981	235	--
1982	168	--
1983	465	--
1984	200	--
1985	153	--
1986	223	--
1987	120	--
1988	70	--
1989	187	--
1990	126	--
1991	232	--
1992	200	--
1993	420	--
1994	196	--
1995	295	--
1996	645	--
1997	610	--
1998	86	--
1999	1,470	--
2000	222	--