

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05061000 Buffalo River near Hawley, Minn.

Peak-flow information:

Number of systematic peak flows in record	67
Systematic period begins	1921
Systematic period ends	2011
Length of systematic record	91
Years without information	24
Number of historical peak flows in record	1 1921

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.31
Standard error of generalized skew	0.4266
Low-outlier method	Fixed Threshold

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.8627	0.3400	-0.577

Low-outlier information:

Number of low outliers	0
Low-outlier threshold	1.5

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard		
Mean	deviation	Skewness	
2.8617	0.3391	-0.465	

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	69.4	21.2	116	--	--	--
0.9900	91.1	34.0	143	--	--	--
0.9500	183.0	105.0	251	--	--	--
0.9000	259.0	173.0	338	--	--	--
0.8000	386.0	289.0	484	--	--	--
0.6667	548.0	433.0	673	--	--	--
0.5000	772.0	629.0	940	769	639	927
0.4292	885.0	725.0	1,070	--	--	--
0.2000	1,420.0	1,180.0	1,720	1,410	1,180	1,690
0.1000	1,890.0	1,560.0	2,330	1,880	1,550	2,290
0.0400	2,500.0	2,020.0	3,280	2,500	1,960	3,170
0.0200	2,960.0	2,320.0	4,100	2,960	2,230	3,920
0.0100	3,420.0	2,580.0	5,030	3,430	2,470	4,750
0.0050	3,870.0	2,790.0	6,070	--	--	--
0.0020	4,460.0	3,020.0	7,640	4,530	2,930	7,010

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

H Historic, outside of systematic record

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1921	3,000	H	1978	2,000	--
Gap in systematic record			1979	980	--
1945	894	--	1980	619	--
1946	452	--	1981	74	--
1947	878	--	1982	468	--
1948	297	--	1983	1,080	--
1949	256	--	1984	846	--
1950	841	--	1985	1,060	--
1951	792	--	1986	866	--
1952	880	--	1987	330	--
1953	598	--	1988	350	--
1954	630	--	1989	1,510	--
1955	1,590	--	1990	562	--
1956	1,020	--	1991	248	--
1957	456	--	1992	237	--
1958	195	--	1993	2,010	--
1959	551	--	1994	540	--
1960	660	--	1995	900	--
1961	246	--	1996	1,350	--
1962	1,430	--	1997	2,360	--
1963	253	--	1998	1,520	--
1964	1,000	--	1999	799	--
1965	1,250	--	2000	2,200	--
1966	1,520	--	2001	1,820	--
1967	669	--	2002	963	--
1968	202	--	2003	431	--
1969	1,880	--	2004	790	--
1970	498	--	2005	658	--
1971	382	--	2006	2,420	--
1972	1,310	--	2007	845	--
1973	172	--	2008	633	--
1974	1,280	--	2009	2,270	--
1975	2,050	--	2010	1,580	--
1976	408	--	2011	1,160	--
1977	121	--			