Annual Peak-Flow Frequency Analysis
For more information on the contents of this documentation, see Kessler and others (2013).

Streamgage number and name:

05227500 Mississippi River at Aitkin, Minn.

Peak-flow information:

Number of systematic peak flows in record	110	
Systematic period begins	1888	
Systematic period ends	2011	
Length of systematic record	124	
Years without information	14	
Number of historical peak flows in record	2	1888, 1899

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Streamgage
Low-outlier method	Single Grubbs-Beck test

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.8603	0.1769	-0.436

Low-outlier information:

Number of low outliers	0
Low-outlier threshold	2,460

Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.8603	0.1769	-0.436

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	2,150	1,240	2,710
0.9900	2,470	1,580	3,020
0.9500	3,540	2,800	4,040
0.9000	4,240	3,600	4,720
0.8000	5,200	4,650	5,700
0.6667	6,240	5,690	6,790
0.5000	7,470	6,870	8,100
0.4292	8,020	7,390	8,690
0.2000	10,300	9,510	11,100
0.1000	11,900	11,100	13,100
0.0400	13,900	12,700	15,700
0.0200	15,200	13,600	17,700
0.0100	16,400	14,300	19,600
0.0050	17,500	14,900	21,600
0.0020	18,900	15,500	24,400

Peak-flow data used in the analysis:

Explanation of symbols and codes

H Historic, outside of systematic record

K Peak affected by regulation

Water year	Peak flow	Peak-flow code	Water year	Peak flow	Peak-flow code
1888	13,100	K H	1935	4,040	K
Gap in systematic record			1936	7,200	K
1899	10,900	K H	1937	6,360	K
Gap in systematic record			1938	12,000	K
1902	7,990	K	1939	7,780	K
1903	7,720	K	1940	3,340	K
1904	7,990	K	1941	9,430	K
1905	12,400	K	1942	6,740	K
1906	9,920	K	1943	9,920	K
1907	7,990	K	1944	12,600	K
1908	10,300	K	1945	9,220	K
1909	5,960	K	1946	6,680	K
1910	4,800	K	1947	7,780	K
1911	3,990	K	1948	12,000	K
1912	4,360	K	1949	4,770	K
1913	4,520	K	1950	20,000	K
1914	7,720	K	1951	8,600	K
1915	7,000	K	1952	10,100	K
1916	12,000	K	1953	10,800	K
1917	5,700	K	1954	9,480	K
1918	4,920	K	1955	7,890	K
1919	5,220	K	1956	9,850	K
1920	7,660	K	1957	9,340	K
1921	7,260	K	1958	3,110	K
1922	7,460	K	1959	7,180	K
1923	4,580	K	1960	8,650	K
1924	2,460	K	1961	5,980	K
1925	2,550	K	1962	9,300	K
1926	2,700	K	1963	6,860	K
1927	6,880	K	1964	8,990	K
1928	6,550	K	1965	13,400	K
1929	4,980	K	1966	12,600	K
1930	5,640	K	1967	8,520	K
1931	4,740	K	1968	5,850	K
1932	3,990	K	1969	14,400	K
1933	6,030	K	1970	9,380	K
1934	2,990	K	1971	12,200	K

Water year	Peak flow	Peak-flow code
1972	10,500	K
1973	6,980	K
1974	11,000	K
1975	14,500	K
1976	7,150	K
1977	3,980	K
1978	8,840	K
1979	13,300	K
1980	4,340	K
1981	6,100	K
1982	12,200	K
1983	7,180	K
1984	9,020	K
1985	9,370	K
1986	10,700	K
1987	6,120	K
1988	4,980	K
1989	8,810	K
1990	6,660	K
1991	7,430	K
1992	5,840	K
1993	9,780	K
1994	7,960	K
1995	6,980	K
1996	11,800	K
1997	12,000	K
1998	6,250	K
1999	9,690	K
2000	6,010	K
2001	14,200	K
2002	7,610	K
2003	4,080	K
2004	4,770	K
2005	8,420	K
2006	7,020	K
2007	4,060	K
2008	9,430	K
2009	7,800	K
2010	5,010	K
2011	7,830	K