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

Streamgage number and name:
    05385000 Root River near Houston, Minn.

Peak-flow information:

Number of systematic peak flows in record	88
Systematic period begins	1910
Systematic period ends	2011
Length of systematic record	102
Years without information	14
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.18
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:

Mean	Standard deviation	Skewness
3.9890	0.3087	-0.471

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	1,600

Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.9891	0.3082	-0.372

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	1,230	519	1,840	−−	−−	−−
0.9900	1,550	756	2,200	−−	−−	−−
0.9500	2,830	1,880	3,610	−−	−−	−−
0.9000	3,840	2,840	4,720	−−	−−	−−
0.8000	5,460	4,390	6,510	−−	−−	−−
0.6667	7,460	6,230	8,780	−−	−−	−−
0.5000	10,200	8,660	11,900	10,100	8,710	11,800
0.4292	11,500	9,850	13,500	−−	−−	−−
0.2000	17,900	15,300	21,100	17,800	15,300	20,600
0.1000	23,400	20,000	28,500	23,300	19,800	27,400
0.0400	30,700	25,500	39,900	30,600	25,200	37,100
0.0200	36,200	29,200	49,800	36,200	28,900	45,200
0.0100	41,800	32,500	60,900	41,900	32,300	54,400
0.0050	47,400	35,400	73,400	−−	−−	−−
0.0020	54,800	38,700	92,200	55,700	39,100	79,300

Peak-flow data used in the analysis:

Explanation of symbols and codes

−−   none

∗   Less than low-outlier threshold

Water year	Peak flow	Peak-flow code	Water year	Peak flow	Peak-flow code
1910	2,500	−−	1958	9,600	−−
1911	15,200	−−	1959	10,100	−−
1912	10,600	−−	1960	8,800	−−
1913	10,000	−−	1961	31,400	−−
1914	11,700	−−	1962	29,500	−−
1915	7,330	−−	1963	10,700	−−
1916	7,970	−−	1964	1,110	∗
1917	17,000	−−	1965	31,000	−−
Gap in systematic record			1966	18,500	−−
1930	5,100	−−	1967	14,200	−−
1931	4,580	−−	1968	3,210	−−
1932	6,900	−−	1969	8,280	−−
1933	26,600	−−	1970	2,250	−−
1934	19,000	−−	1971	8,970	−−
1935	11,700	−−	1972	10,200	−−
1936	14,000	−−	1973	11,700	−−
1937	14,500	−−	1974	19,800	−−
1938	15,600	−−	1975	9,430	−−
1939	6,620	−−	1976	19,800	−−
1940	7,860	−−	1977	2,290	−−
1941	6,280	−−	1978	12,200	−−
1942	23,700	−−	1979	10,400	−−
1943	10,600	−−	1980	16,400	−−
1944	6,120	−−	1981	12,600	−−
1945	23,900	−−	1982	4,460	−−
1946	13,700	−−	1983	9,500	−−
1947	9,300	−−	Gap in systematic record		
1948	11,700	−−	1985	8,780	−−
1949	8,450	−−	1986	13,600	−−
1950	31,000	−−	1987	10,900	−−
1951	14,800	−−	1988	1,600	−−
1952	37,000	−−	1989	4,890	−−
1953	10,400	−−	1990	9,520	−−
1954	5,370	−−	1991	4,940	−−
1955	3,760	−−	1992	5,760	−−
1956	9,660	−−	1993	15,800	−−
1957	2,230	−−	1994	4,780	−−

Water year	Peak flow	Peak-flow code
1995	6,240	––
1996	8,710	––
1997	7,750	––
1998	7,590	––
1999	8,000	––
2000	34,600	––
2001	16,700	––
2002	4,660	––
2003	2,650	––
2004	23,800	––
2005	9,770	––
2006	7,890	––
2007	46,000	––
2008	16,100	––
2009	4,070	––
2010	13,900	––
2011	12,000	––