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

Streamgage number and name:

05311000 Minnesota River at Montevideo, Minn.

Peak-flow information:

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

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	STATION SKEW
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
3.5469	0.4985	-0.582

Outlier criteria and number of peak flows exceeding:

Low	109.6	1
High	86666.8	0

Expected moments algorithm (EMA) Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.5559	0.4673	-0.002

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	NA	NA	NA
0.9900	294	131	452
0.9500	612	384	826
0.9000	906	641	1,180
0.8000	1,450	1,120	1,840
0.6667	2,260	2,020	2,530
0.5000	3,600	2,860	4,520
0.4292	4,360	3,470	5,490
0.2000	8,900	7,030	11,600
0.1000	14,300	11,000	20,100
0.0400	23,600	17,300	39,100
0.0200	32,800	22,600	62,500
0.0100	43,900	28,500	97,100
0.0050	57,400	34,700	148,000
0.0020	79,400	43,600	251,000

Peak-flow data used in the analysis:

Explanation of symbols and codes

−−	none
K	Peak affected by regulation
∗	Less than low-outlier threshold

Water year	Peak flow	Peak-flow code	Water year	Peak flow	Peak-flow code
1910	2,470	−−	1946	5,510	K
1911	405	−−	1947	8,500	K
1912	6,300	−−	1948	6,900	K
1913	1,100	−−	1949	1,840	K
1914	3,810	−−	1950	2,910	K
1915	3,160	−−	1951	12,200	K
1916	7,570	−−	1952	24,500	−−
1917	10,200	−−	1953	9,770	K
1918	2,160	−−	1954	2,400	K
1919	22,000	−−	1955	2,180	K
1920	8,930	−−	1956	2,040	K
1921	1,760	−−	1957	5,500	K
1922	6,530	−−	1958	3,050	K
1923	982	−−	1959	1,030	K
1924	759	−−	1960	6,010	K
1925	1,340	−−	1961	1,170	K
1926	1,130	−−	1962	5,790	K
1927	2,180	−−	1963	2,340	K
1928	1,060	−−	1964	2,380	K
1929	3,180	−−	1965	12,900	K
1930	1,200	−−	1966	8,280	K
1931	324	−−	1967	3,990	K
1932	765	−−	1968	829	K
1933	430	−−	1969	35,100	−−
1934	27	∗	1970	2,810	K
1935	662	−−	1971	3,440	K
1936	750	−−	1972	9,170	K
1937	2,440	−−	1973	5,330	K
1938	1,270	K	1974	1,130	K
1939	2,020	K	1975	2,990	K
1940	2,220	K	1976	2,270	K
1941	1,240	K	1977	1,790	K
1942	4,540	K	1978	8,920	K
1943	9,200	K	1979	12,200	K
1944	3,560	K	1980	1,910	K
1945	1,900	K	1981	2,070	K

Water year	Peak flow	Peak-flow code
1982	4,270	K
1983	2,210	K
1984	8,510	K
1985	11,500	K
1986	14,000	K
1987	2,140	K
1988	1,450	K
1989	3,650	K
1990	1,690	K
1991	6,550	K
1992	8,880	K
1993	11,100	K
1994	11,300	K
1995	11,100	K
1996	9,830	K
1997	47,500	−−
1998	8,120	K
1999	3,610	K
2000	1,740	K
2001	33,900	−−
2002	3,650	K
2003	2,540	K
2004	3,010	K
2005	4,400	K
2006	7,180	K
2007	6,750	K
2008	4,110	K
2009	16,800	K
2010	24,400	−−
2011	23,700	−−