

Annual Peak-Flow Frequency Analysis

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

Streamgage number and name:

05292000 Minnesota River at Ortonville, Minn.

Peak-flow information:

Number of systematic peak flows in record	74
Systematic period begins	1938
Systematic period ends	2011
Length of systematic record	74
Years without information	0
Number of historical peak flows in record	0

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:

	Standard		
Mean	deviation	Skewness	
2.9787	0.4233	-0.345	

Low-outlier information:

Number of low outliers	0
Low-outlier threshold	57

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.9787	0.4233	-0.345

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	56.5	9.53	104
0.9900	77.3	18.40	131
0.9500	175.0	85.30	251
0.9000	265.0	163.00	359
0.8000	428.0	308.00	558
0.6667	656.0	501.00	843
0.5000	1,010.0	787.00	1,290
0.4292	1,200.0	938.00	1,530
0.2000	2,190.0	1,730.00	2,810
0.1000	3,190.0	2,500.00	4,340
0.0400	4,650.0	3,520.00	7,220
0.0200	5,860.0	4,210.00	10,100
0.0100	7,160.0	4,800.00	13,600
0.0050	8,550.0	5,300.00	18,000
0.0020	10,500.0	5,830.00	25,600

Peak-flow data used in the analysis:

Explanation of symbols and codes

K Peak affected by regulation

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1938	245	K	1975	715	K
1939	385	K	1976	450	K
1940	228	K	1977	292	K
1941	108	K	1978	1,960	K
1942	1,200	K	1979	2,260	K
1943	1,480	K	1980	487	K
1944	1,060	K	1981	57	K
1945	664	K	1982	424	K
1946	1,210	K	1983	927	K
1947	1,660	K	1984	1,570	K
1948	841	K	1985	1,940	K
1949	418	K	1986	2,570	K
1950	930	K	1987	501	K
1951	956	K	1988	207	K
1952	3,060	K	1989	2,780	K
1953	632	K	1990	257	K
1954	905	K	1991	1,880	K
1955	357	K	1992	1,760	K
1956	299	K	1993	2,950	K
1957	939	K	1994	2,740	K
1958	932	K	1995	2,530	K
1959	206	K	1996	2,230	K
1960	618	K	1997	5,070	K
1961	230	K	1998	1,980	K
1962	1,400	K	1999	671	K
1963	753	K	2000	579	K
1964	956	K	2001	4,830	K
1965	1,160	K	2002	1,820	K
1966	1,250	K	2003	1,020	K
1967	898	K	2004	394	K
1968	248	K	2005	2,600	K
1969	2,550	K	2006	2,440	K
1970	394	K	2007	4,590	K
1971	596	K	2008	3,520	K
1972	1,210	K	2009	3,530	K
1973	775	K	2010	5,680	K
1974	388	K	2011	3,840	K