

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05137000 Winter Road River near Baudette, Minn.

Peak-flow information:

Number of systematic peak flows in record	26
Systematic period begins	1986
Systematic period ends	2011
Length of systematic record	26
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	Weighted
Generalized skew	-0.43
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:

	Standard	
Mean	deviation	Skewness
2.8855	0.4512	-0.051

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	100

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.8840	0.4552	-0.280

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	39.1	2.90	91.6	--	--	--
0.9900	54.0	5.47	116.0	--	--	--
0.9500	126.0	33.80	224.0	--	--	--
0.9000	194.0	74.90	323.0	--	--	--
0.8000	322.0	165.00	508.0	--	--	--
0.6667	508.0	300.00	779.0	--	--	--
0.5000	804.0	510.00	1,230.0	711	505	1,000
0.4292	967.0	624.00	1,490.0	--	--	--
0.2000	1,870.0	1,230.00	3,110.0	1,580	1,110	2,240
0.1000	2,830.0	1,830.00	5,360.0	2,290	1,560	3,370
0.0400	4,320.0	2,660.00	10,300.0	3,310	2,110	5,190
0.0200	5,620.0	3,300.00	16,200.0	4,100	2,470	6,780
0.0100	7,060.0	3,920.00	24,700.0	4,910	2,810	8,600
0.0050	8,650.0	4,500.00	37,000.0	--	--	--
0.0020	11,000.0	5,210.00	61,300.0	6,830	3,440	13,600

Peak-flow data used in the analysis:

Explanation of symbols and codes

-- none

* Less than low-outlier threshold

Water	Peak	Peak-flow
year	flow	code
1986	1,860	--
1987	336	--
1988	100	--
1989	370	--
1990	25	*
1991	450	--
1992	575	--
1993	390	--
1994	700	--
1995	675	--
1996	2,420	--
1997	1,140	--
1998	665	--
1999	1,170	--
2000	831	--
2001	2,940	--
2002	9,900	--
2003	268	--
2004	2,390	--
2005	661	--
2006	944	--
2007	720	--
2008	435	--
2009	1,500	--
2010	777	--
2011	1,900	--