

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

04015415 Lake Superior tributary at West 9th Street in Duluth, Minn.

Peak-flow information:

Number of systematic peak flows in record	11
Systematic period begins	2001
Systematic period ends	2011
Length of systematic record	11
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
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:

	Standard		
Mean	deviation	Skewness	
1.9664	0.2468	-1.512	

Outlier criteria and number of peak flows exceeding:

Low	28.3	1
High	216.5	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.0052	0.1636	-0.265

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	NA	NA	NA
0.9900	NA	NA	NA
0.9500	NA	NA	NA
0.9000	61.9	42.8	76.6
0.8000	74.1	55.5	89.8
0.6667	87.3	69.1	105.0
0.5000	103.0	84.4	126.0
0.4292	110.0	90.8	137.0
0.2000	140.0	115.0	187.0
0.1000	162.0	131.0	232.0
0.0400	189.0	149.0	290.0
0.0200	208.0	161.0	335.0
0.0100	226.0	172.0	380.0
0.0050	243.0	183.0	426.0
0.0020	265.0	195.0	487.0

Peak-flow data used in the analysis:

Explanation of symbols and codes

K Peak affected by regulation

* Less than low-outlier threshold

Water	Peak	Peak-flow
year	flow	code
2001	122	K
2002	64	K
2003	132	K
2004	23	K *
2005	71	K
2006	106	K
2007	73	K
2008	153	K
2009	90	K
2010	175	K
2011	136	K