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

Streamgage number and name:

04015330 Knife River near Two Harbors, Minn.

Peak-flow information:

Number of systematic peak flows in record	37
Systematic period begins	1975
Systematic period ends	2011
Length of systematic record	37
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	0.5
Standard error of generalized skew	0.426
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
3.4213	0.2043	0.709

Outlier criteria and number of peak flows exceeding:

Low	758.3	0
High	9177.8	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.4213	0.2043	0.600

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	1,020	781	1,240	−−	−−	−−
0.9900	1,090	844	1,310	−−	−−	−−
0.9500	1,330	1,070	1,560	−−	−−	−−
0.9000	1,500	1,240	1,740	−−	−−	−−
0.8000	1,760	1,490	2,020	−−	−−	−−
0.6667	2,080	1,800	2,370	−−	−−	−−
0.5000	2,520	2,210	2,860	2,520	2,160	2,940
0.4292	2,740	2,410	3,120	−−	−−	−−
0.2000	3,840	3,360	4,530	3,850	3,160	4,710
0.1000	4,930	4,220	6,050	4,960	3,860	6,380
0.0400	6,570	5,440	8,520	6,660	4,790	9,240
0.0200	8,000	6,460	10,800	8,170	5,530	12,100
0.0100	9,640	7,580	13,600	9,920	6,320	15,600
0.0050	11,500	8,820	16,900	−−	−−	−−
0.0020	14,400	10,700	22,200	15,100	8,360	27,100

Peak-flow data used in the analysis:

Explanation of symbols and codes

−− none

Water year	Peak flow	Peak-flow code
1975	2,860	−−
1976	1,520	−−
1977	4,320	−−
1978	3,750	−−
1979	7,440	−−
1980	3,450	−−
1981	2,430	−−
1982	3,270	−−
1983	2,580	−−
1984	2,630	−−
1985	2,400	−−
1986	3,380	−−
1987	2,450	−−
1988	2,510	−−
1989	1,430	−−
1990	1,580	−−
1991	5,440	−−
1992	3,140	−−
1993	4,580	−−
1994	2,000	−−
1995	3,510	−−
1996	2,810	−−
1997	5,780	−−
1998	1,950	−−
1999	9,100	−−
2000	2,050	−−
2001	3,240	−−
2002	2,390	−−
2003	1,780	−−
2004	1,790	−−
2005	1,760	−−
2006	1,410	−−
2007	1,760	−−
2008	2,480	−−
2009	1,200	−−
2010	1,490	−−
2011	2,270	−−