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

Streamgage number and name:

05086900 Middle River near Newfolden, Minn.

Peak-flow information:

Number of systematic peak flows in record	34
Systematic period begins	1979
Systematic period ends	2011
Length of systematic record	33
Years without information	-1
Number of historical peak flows in record	0

Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.498
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
2.5745	0.4833	-0.287

Outlier criteria and number of peak flows exceeding:

Low	20.4	0
High	6897.2	0

Bulletin 17B Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
2.5745	0.4833	-0.389

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	14.3	5.8	26.5	––	––	––
0.9900	20.6	9.1	36.4	––	––	––
0.9500	53.7	29.3	83.2	––	––	––
0.9000	86.8	52.2	127.0	––	––	––
0.8000	151.0	100.0	211.0	––	––	––
0.6667	247.0	174.0	339.0	––	––	––
0.5000	403.0	294.0	558.0	396	286	547
0.4292	490.0	358.0	686.0	––	––	––
0.2000	972.0	693.0	1,480.0	904	652	1,250
0.1000	1,480.0	1,020.0	2,420.0	1,330	932	1,900
0.0400	2,250.0	1,480.0	3,990.0	1,930	1,270	2,940
0.0200	2,910.0	1,850.0	5,440.0	2,400	1,500	3,850
0.0100	3,620.0	2,240.0	7,100.0	2,880	1,700	4,880
0.0050	4,390.0	2,650.0	8,990.0	––	––	––
0.0020	5,500.0	3,210.0	11,800.0	3,980	2,060	7,690

Peak-flow data used in the analysis:

Explanation of symbols and codes

−− none

Water year	Peak flow	Peak-flow code
1979	1,000	−−
1980	270	−−
1981	55	−−
1982	270	−−
1983	225	−−
1984	360	−−
1985	610	−−
1986	282	−−
1987	215	−−
1988	100	−−
1989	600	−−
1990	46	−−
1991	74	−−
1992	115	−−
1993	550	−−
1994	50	−−
1995	340	−−
1996	2,300	−−
1997	2,000	−−
1998	450	−−
1999	1,100	−−
2000	350	−−
2001	900	−−
2002	1,700	−−
2003	160	−−
2004	1,130	−−
2005	1,410	−−
2006	1,250	−−
2007	300	−−
2008	95	−−
2009	970	−−
2010	1,000	−−
2011	750	−−