Annual Peak-Flow Frequency Analysis

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

Streamgage number and name:
   05051300 Bois de Sioux River near Doran, Minn.

Peak-flow information:

Number of systematic peak flows in record	22
Systematic period begins	1990
Systematic period ends	2011
Length of systematic record	22
Years without information	0
Number of historical peak flows in record	0

Frequency analysis options:

Method	Expected moments algorithm (EMA)
Skew option	STATION SKEW
Low-outlier method	Multiple Grubbs-Beck test

EMA systematic record analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.4662	0.4548	-1.837

Low-outlier information:

Number of low outliers	2
Low-outlier threshold	1,340

Final analysis results:

Moments of the common logarithms of the peak flows:

Mean	Standard deviation	Skewness
3.5272	0.2969	-0.093

Annual frequency curve at selected exceedance probabilities:

Exceedance probability	Peak estimate	Lower-95 level	Upper-95 level
0.9950	545	44.5	1,000
0.9900	655	78.1	1,100
0.9500	1,070	270.0	1,520
0.9000	1,390	444.0	1,900
0.8000	1,900	902.0	2,600
0.6667	2,530	1,710.0	3,510
0.5000	3,400	2,440.0	4,780
0.4292	3,840	2,780.0	5,440
0.2000	6,000	4,310.0	9,020
0.1000	8,030	5,660.0	15,200
0.0400	10,900	7,520.0	35,400
0.0200	13,200	8,790.0	52,000
0.0100	15,800	9,840.0	77,200
0.0050	18,400	10,700.0	117,000
0.0020	22,300	11,500.0	206,000

Peak-flow data used in the analysis:

Explanation of symbols and codes

−−	none
K	Peak affected by regulation
∗	Less than low-outlier threshold

Water year	Peak flow	Peak-flow code
1990	96	K ∗
1991	2,980	K
1992	436	K ∗
1993	3,660	K
1994	3,100	K
1995	4,290	K
1996	3,640	K
1997	12,300	−−
1998	2,580	K
1999	2,580	K
2000	1,340	K
2001	8,860	K
2002	1,720	K
2003	2,740	K
2004	2,450	K
2005	4,380	K
2006	6,150	K
2007	4,500	K
2008	2,140	K
2009	8,340	−−
2010	4,210	K
2011	7,990	K