

## Annual Peak-Flow Frequency Analysis

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

### Streamgauge number and name:

04011370 Little Devil Track River near Grand Marais, Minn.

### Peak-flow information:

Number of systematic peak flows in record	22
Systematic period begins	1961
Systematic period ends	1982
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	Weighted
Generalized skew	0.5
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
2.1606	0.2812	-0.377

#### Low-outlier information:

Number of low outliers	1
Low-outlier threshold	51

**Final analysis results:**

**Moments of the common logarithms of the peak flows:**

	Standard		
Mean	deviation	Skewness	
2.1631	0.2751	0.187	

**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	31.8	10.6	49.0	--	--	--
0.9900	36.4	14.1	53.8	--	--	--
0.9500	53.2	29.4	72.9	--	--	--
0.9000	65.5	41.4	87.9	--	--	--
0.8000	85.0	59.6	112.0	--	--	--
0.6667	109.0	80.4	144.0	--	--	--
0.5000	143.0	108.0	192.0	143	111	185
0.4292	160.0	121.0	218.0	--	--	--
0.2000	246.0	184.0	377.0	247	183	335
0.1000	332.0	239.0	593.0	334	234	476
0.0400	459.0	315.0	1,070.0	465	302	715
0.0200	569.0	373.0	1,680.0	580	355	948
0.0100	693.0	432.0	2,600.0	711	411	1,230
0.0050	832.0	492.0	4,010.0	--	--	--
0.0020	1,040.0	574.0	6,420.0	1,090	552	2,160

**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
1961	156	--
1962	74	--
1963	19	*
1964	260	--
1965	137	--
1966	129	--
1967	390	--
1968	92	--
1969	341	--
1970	188	--
1971	273	--
1972	138	--
1973	51	--
1974	250	--
1975	56	--
1976	213	--
1977	388	--
1978	120	--
1979	162	--
1980	115	--
1981	101	--
1982	155	--