

## Annual Peak-Flow Frequency Analysis

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

### Streamgauge number and name:

05374500 Zumbro River at Theilman, Minn.

### Peak-flow information:

Number of systematic peak flows in record	19
Systematic period begins	1938
Systematic period ends	1956
Length of systematic record	19
Years without information	0
Number of historical peak flows in record	0

### Frequency analysis options:

Method	Bulletin 17B
Skew option	Weighted
Generalized skew	-0.222
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:

	Standard	
Mean	deviation	Skewness
4.0928	0.2291	-0.191

#### Outlier criteria and number of peak flows exceeding:

Low	3562.9	0
High	43027.1	0

**Bulletin 17B Final analysis results:**

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

	Standard	
Mean	deviation	Skewness
4.0928	0.2291	-0.210

**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	2,870	1,580	4,120	--	--	--
0.9900	3,350	1,940	4,670	--	--	--
0.9500	5,040	3,350	6,570	--	--	--
0.9000	6,230	4,410	7,880	--	--	--
0.8000	7,990	6,040	9,850	--	--	--
0.6667	10,000	7,930	12,200	--	--	--
0.5000	12,600	10,300	15,500	12,400	9,780	15,600
0.4292	13,800	11,300	17,200	--	--	--
0.2000	19,400	15,700	25,700	19,100	15,000	24,400
0.1000	24,000	19,100	33,800	23,900	18,300	31,300
0.0400	30,000	23,100	45,000	30,300	22,100	41,600
0.0200	34,400	25,900	54,100	35,200	24,600	50,400
0.0100	38,900	28,700	63,600	40,300	26,900	60,300
0.0050	43,400	31,400	73,600	--	--	--
0.0020	49,500	35,000	87,700	52,500	31,300	87,800

**Peak-flow data used in the analysis:**

Explanation of symbols and codes

-- none

Water	Peak	Peak-flow
year	flow	code
1938	12,400	--
1939	11,300	--
1940	8,800	--
1941	4,200	--
1942	12,800	--
1943	17,100	--
1944	6,400	--
1945	22,000	--
1946	6,210	--
1947	7,600	--
1948	19,900	--
1949	9,910	--
1950	23,000	--
1951	33,000	--
1952	20,800	--
1953	15,200	--
1954	13,500	--
1955	8,240	--
1956	14,600	--