

Annual Peak-Flow Frequency Analysis

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

Streamgauge number and name:

05077700 Ruffy Brook near Gonvick, Minn.

Peak-flow information:

Number of systematic peak flows in record	51
Systematic period begins	1961
Systematic period ends	2011
Length of systematic record	51
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	-0.41
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
2.2893	0.2566	-1.020

Low-outlier information:

Number of low outliers	1
Low-outlier threshold	47

Final analysis results:

Moments of the common logarithms of the peak flows:

	Standard	
Mean	deviation	Skewness
2.2901	0.2540	-0.702

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	29.6	7.11	47.6	--	--	--
0.9900	37.4	11.50	56.5	--	--	--
0.9500	67.3	35.70	89.4	--	--	--
0.9000	89.4	57.70	113.0	--	--	--
0.8000	123.0	92.10	150.0	--	--	--
0.6667	161.0	130.00	192.0	--	--	--
0.5000	209.0	174.00	246.0	211	180	248
0.4292	231.0	194.00	271.0	--	--	--
0.2000	322.0	276.00	378.0	332	287	385
0.1000	390.0	335.00	470.0	407	348	476
0.0400	466.0	394.00	595.0	498	411	603
0.0200	516.0	425.00	691.0	567	452	711
0.0100	561.0	447.00	790.0	637	488	830
0.0050	601.0	463.00	894.0	--	--	--
0.0020	649.0	478.00	1,040.0	804	562	1,150

Peak-flow data used in the analysis:

Explanation of symbols and codes

- < Less than
- none
- * Less than low-outlier threshold

Water	Peak	Peak-flow	Water	Peak	Peak-flow
year	flow	code	year	flow	code
1961	66	--	1987	395	--
1962	364	--	1988	165	--
1963	225	--	1989	178	--
1964	134	--	1990	30	*
1965	412	--	1991	66	--
1966	265	--	1992	98	--
1967	453	--	1993	169	--
1968	76	--	1994	112	--
1969	232	--	1995	200	--
1970	279	--	1996	455	--
1971	176	--	1997	390	--
1972	237	--	1998	137	--
1973	156	--	1999	210	--
1974	268	--	2000	157	--
1975	364	--	2001	278	--
1976	147	--	2002	407	--
1977	47	--	2003	137	--
1978	357	--	2004	180	--
1979	284	--	2005	258	--
1980	137	--	2006	310	--
1981	<192	--	2007	126	--
1982	249	--	2008	206	--
1983	175	--	2009	380	--
1984	195	--	2010	211	--
1985	281	--	2011	312	--
1986	190	--			