

U. S. GEOLOGICAL SURVEY  
 ANNUAL PEAK FLOW FREQUENCY ANALYSIS  
 Following Bulletin 17-B Guidelines  
 Program peakfq  
 (Version 4.0, December, 2000)

Station - 05430500 ROCK RIVER AT AFTON, WI  
 2002 MAR 13 09:03:23

I N P U T   D A T A   S U M M A R Y

Number of peaks in record	=	87
Peaks not used in analysis	=	3
Systematic peaks in analysis	=	84
Historic peaks in analysis	=	0
Years of historic record	=	0
Generalized skew	=	-0.400
Standard error of generalized skew	=	0.550
Skew option	=	WEIGHTED
Gage base discharge	=	0.0
User supplied high outlier threshold	=	--
User supplied low outlier criterion	=	--
Plotting position parameter	=	0.00

\*\*\*\*\* NOTICE -- Preliminary machine computations. \*\*\*\*\*  
 \*\*\*\*\* User responsible for assessment and interpretation. \*\*\*\*\*

**WCF109W-PEAKS WITH MINUS-FLAGGED DISCHARGES WERE BYPASSED.		3
**WCF113W-NUMBER OF SYSTEMATIC PEAKS HAS BEEN REDUCED TO NSYS =	=	84
WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE.		0.0
WCF198I-LOW OUTLIERS BELOW FLOOD BASE WERE DROPPED.	1	1715.1
WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE.		20288.7
WCF002J-CALCS COMPLETED. RETURN CODE = 2		

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ANNUAL FREQUENCY CURVE PARAMETERS -- LOG-PEARSON TYPE III

	FLOOD BASE		LOGARITHMIC		
	DISCHARGE	EXCEEDANCE PROBABILITY	MEAN	STANDARD DEVIATION	SKEW
SYSTEMATIC RECORD	0.0	1.0000	3.7867	0.1868	-0.691
BULL.17B ESTIMATE	1715.1	0.9881	3.7917	0.1747	-0.374

ANNUAL FREQUENCY CURVE -- DISCHARGES AT SELECTED EXCEEDANCE PROBABILITIES

ANNUAL EXCEEDANCE PROBABILITY	BULL.17B ESTIMATE	SYSTEMATIC RECORD	'EXPECTED PROBABILITY' ESTIMATE	95-PCT CONFIDENCE LIMITS FOR BULL. 17B ESTIMATES	
				LOWER	UPPER
0.9950	--	1535.0	--	--	--
0.9900	--	1821.0	--	--	--
0.9500	3069.0	2801.0	3026.0	2700.0	3409.0
0.9000	3648.0	3449.0	3616.0	3271.0	3996.0
0.8000	4454.0	4354.0	4435.0	4071.0	4819.0
0.5000	6346.0	6427.0	6346.0	5903.0	6829.0
0.2000	8728.0	8846.0	8756.0	8060.0	9560.0
0.1000	10170.0	10190.0	10230.0	9305.0	11300.0
0.0400	11850.0	11630.0	11980.0	10720.0	13390.0
0.0200	13020.0	12540.0	13200.0	11680.0	14870.0
0.0100	14110.0	13350.0	14360.0	12570.0	16280.0
0.0050	15150.0	14060.0	15470.0	13410.0	17630.0
0.0020	16450.0	14890.0	16890.0	14440.0	19350.0
0.6667	5316.8	( 1.50-year flood )			
0.4292	6819.4	( 2.33-year flood )			

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I N P U T   D A T A   L I S T I N G

WATER YEAR	DISCHARGE	CODES	WATER YEAR	DISCHARGE	CODES
1929	-13000.0	H	1958	2230.0	
1914	7050.0		1959	12100.0	
1915	10500.0		1960	8840.0	
1916	9270.0		1961	6050.0	
1917	9050.0		1962	9060.0	
1918	12700.0		1963	4070.0	
1919	3560.0		1964	2530.0	
1920	10100.0		1965	5990.0	
1921	8200.0		1966	5200.0	
1922	8640.0		1967	5060.0	
1923	10400.0		1968	5050.0	
1924	7100.0		1969	4740.0	
1925	4720.0		1970	3010.0	
1926	5180.0		1971	5910.0	
1927	5750.0		1972	5170.0	
1928	6670.0		1973	9680.0	
1930	4620.0		1974	8180.0	
1931	1380.0		1975	10400.0	
1932	4380.0		1976	6760.0	
1933	8990.0		1977	2600.0	
1934	2890.0		1978	6420.0	
1935	6350.0		1979	11500.0	
1936	4600.0		1980	5820.0	
1937	8510.0		1981	5790.0	
1938	9190.0		1982	8040.0	
1939	5800.0		1983	6230.0	
1940	10700.0		1984	5340.0	
1941	4990.0		1985	7730.0	
1942	3300.0		1986	9290.0	
1943	11100.0		1987	9560.0	
1944	7620.0		1988	4210.0	
1945	3830.0		1989	4060.0	
1946	10000.0		1990	5980.0	
1947	4490.0		1991	5380.0	
1948	9390.0		1992	4490.0	
1949	5520.0		1993	10700.0	
1950	6350.0		1994	5830.0	
1951	7850.0		1995	3770.0	
1952	9810.0		1996	8500.0	
1953	6200.0		1997	6330.0	
1954	4620.0		1998	7220.0	
1955	4480.0		1999	-7120.0	K
1956	4460.0		2000	-9540.0	K
1957	3460.0				

Explanation of peak discharge qualification codes

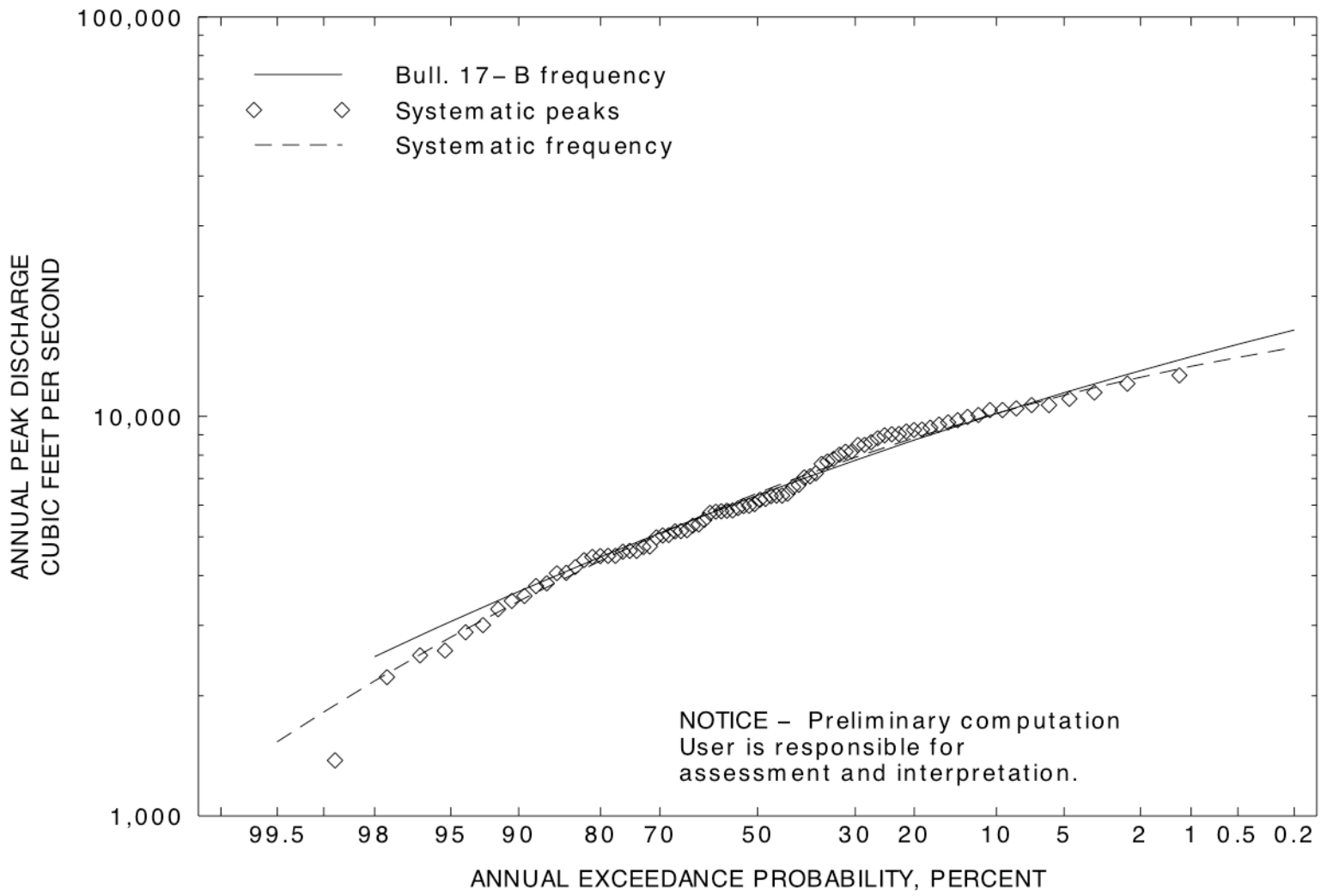
PEAKFQ	WATSTORE	
CODE	CODE	DEFINITION
D	3	Dam failure, non-recurrent flow anomaly
G	8	Discharge greater than stated value
X	3+8	Both of the above
L	4	Discharge less than stated value
K	6 OR C	Known effect of regulation or urbanization
H	7	Historic peak

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EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	BULL.17B ESTIMATE
1918	12700.0	0.0118	0.0118
1959	12100.0	0.0235	0.0235
1979	11500.0	0.0353	0.0353
1943	11100.0	0.0471	0.0471
1940	10700.0	0.0588	0.0588
1993	10700.0	0.0706	0.0706
1915	10500.0	0.0824	0.0824
1923	10400.0	0.0941	0.0941
1975	10400.0	0.1059	0.1059
1920	10100.0	0.1176	0.1176
1946	10000.0	0.1294	0.1294
1952	9810.0	0.1412	0.1412
1973	9680.0	0.1529	0.1529
1987	9560.0	0.1647	0.1647
1948	9390.0	0.1765	0.1765
1986	9290.0	0.1882	0.1882
1916	9270.0	0.2000	0.2000
1938	9190.0	0.2118	0.2118
1962	9060.0	0.2235	0.2235
1917	9050.0	0.2353	0.2353
1933	8990.0	0.2471	0.2471
1960	8840.0	0.2588	0.2588
1922	8640.0	0.2706	0.2706
1937	8510.0	0.2824	0.2824
1996	8500.0	0.2941	0.2941
1921	8200.0	0.3059	0.3059
1974	8180.0	0.3176	0.3176
1982	8040.0	0.3294	0.3294
1951	7850.0	0.3412	0.3412
1985	7730.0	0.3529	0.3529
1944	7620.0	0.3647	0.3647
1998	7220.0	0.3765	0.3765
1924	7100.0	0.3882	0.3882
1914	7050.0	0.4000	0.4000
1976	6760.0	0.4118	0.4118
1928	6670.0	0.4235	0.4235
1978	6420.0	0.4353	0.4353
1935	6350.0	0.4471	0.4471
1950	6350.0	0.4588	0.4588
1997	6330.0	0.4706	0.4706
1983	6230.0	0.4824	0.4824
1953	6200.0	0.4941	0.4941
1961	6050.0	0.5059	0.5059
1965	5990.0	0.5176	0.5176
1990	5980.0	0.5294	0.5294
1971	5910.0	0.5412	0.5412
1994	5830.0	0.5529	0.5529
1980	5820.0	0.5647	0.5647

1939	5800.0	0.5765	0.5765
1981	5790.0	0.5882	0.5882
1927	5750.0	0.6000	0.6000
1949	5520.0	0.6118	0.6118
1991	5380.0	0.6235	0.6235
1984	5340.0	0.6353	0.6353
1966	5200.0	0.6471	0.6471
1926	5180.0	0.6588	0.6588
1972	5170.0	0.6706	0.6706
1967	5060.0	0.6824	0.6824
1968	5050.0	0.6941	0.6941
1941	4990.0	0.7059	0.7059
1969	4740.0	0.7176	0.7176
1925	4720.0	0.7294	0.7294
1930	4620.0	0.7412	0.7412
1954	4620.0	0.7529	0.7529
1936	4600.0	0.7647	0.7647
1947	4490.0	0.7765	0.7765
1992	4490.0	0.7882	0.7882
1955	4480.0	0.8000	0.8000
1956	4460.0	0.8118	0.8118
1932	4380.0	0.8235	0.8235
1988	4210.0	0.8353	0.8353
1963	4070.0	0.8471	0.8471
1989	4060.0	0.8588	0.8588
1945	3830.0	0.8706	0.8706
1995	3770.0	0.8824	0.8824
1919	3560.0	0.8941	0.8941
1957	3460.0	0.9059	0.9059
1942	3300.0	0.9176	0.9176
1970	3010.0	0.9294	0.9294
1934	2890.0	0.9412	0.9412
1977	2600.0	0.9529	0.9529
1964	2530.0	0.9647	0.9647
1958	2230.0	0.9765	0.9765
1931	1380.0	0.9882	0.9882
1999	-7120.0	--	--
2000	-9540.0	--	--
1929	-13000.0	--	--



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ANNUAL EXCEEDANCE PROBABILITY, PERCENT  
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