

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

Station - 04087000 MILWAUKEE RIVER AT MILWAUKEE, WI
 2002 MAR 13 09:02:42

I N P U T D A T A S U M M A R Y

Number of peaks in record	=	86
Peaks not used in analysis	=	0
Systematic peaks in analysis	=	86
Historic peaks in analysis	=	0
Years of historic record	=	0
Generalized skew	=	-0.395
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. *****

WCF134I-NO SYSTEMATIC PEAKS WERE BELOW GAGE BASE.		0.0
WCF198I-LOW OUTLIERS BELOW FLOOD BASE WERE DROPPED.	1	1050.0
WCF163I-NO HIGH OUTLIERS OR HISTORIC PEAKS EXCEEDED HHBASE.		20877.8

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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	3.6710	0.2191	-0.160
BULL.17B ESTIMATE	1050.0	0.9884	3.6759	0.2079	0.044

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	--	1185.0	--	--	--
0.9900	--	1367.0	--	--	--
0.9500	2171.0	2000.0	2142.0	1879.0	2445.0
0.9000	2573.0	2436.0	2552.0	2269.0	2862.0
0.8000	3166.0	3080.0	3153.0	2846.0	3477.0
0.5000	4725.0	4751.0	4725.0	4338.0	5147.0
0.2000	7087.0	7192.0	7117.0	6455.0	7883.0
0.1000	8776.0	8866.0	8853.0	7890.0	9959.0
0.0400	11040.0	11020.0	11220.0	9749.0	12850.0
0.0200	12820.0	12640.0	13100.0	11170.0	15180.0
0.0100	14660.0	14280.0	15100.0	12620.0	17670.0
0.0050	16590.0	15940.0	17230.0	14110.0	20310.0
0.0020	19290.0	18160.0	20260.0	16170.0	24080.0
0.6667	3848.5	(1.50-year flood)			
0.4292	5145.3	(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
1915	5460.0		1958	2440.0	
1916	4410.0		1959	8780.0	
1917	5310.0		1960	9300.0	
1918	15100.0		1961	3740.0	
1919	5310.0		1962	5400.0	
1920	7050.0		1963	2980.0	
1921	4470.0		1964	4690.0	
1922	4310.0		1965	5740.0	
1923	7060.0		1966	5380.0	
1924	15100.0		1967	3470.0	
1925	3350.0		1968	4960.0	
1926	4740.0		1969	4060.0	
1927	3940.0		1970	3450.0	
1928	5350.0		1971	4130.0	
1929	11000.0		1972	5090.0	
1930	4180.0		1973	12600.0	
1931	945.0		1974	6190.0	
1932	2200.0		1975	8100.0	
1933	6370.0		1976	6050.0	
1934	2260.0		1977	5650.0	
1935	3300.0		1978	7920.0	
1936	2990.0		1979	5550.0	
1937	6640.0		1980	3600.0	
1938	7360.0		1981	5160.0	
1939	2440.0		1982	4630.0	
1940	6570.0		1983	4720.0	
1941	2500.0		1984	5880.0	
1942	2360.0		1985	3310.0	
1943	5860.0		1986	5920.0	
1944	2030.0		1987	3260.0	
1945	1840.0		1988	3560.0	
1946	6330.0		1989	4980.0	
1947	2500.0		1990	4490.0	
1948	8080.0		1991	3260.0	
1949	1620.0		1992	3120.0	
1950	5540.0		1993	7080.0	
1951	5740.0		1994	2320.0	
1952	7010.0		1995	4550.0	
1953	6580.0		1996	6240.0	
1954	4030.0		1997	16500.0	
1955	4590.0		1998	8600.0	
1956	3940.0		1999	5250.0	
1957	2040.0		2000	4580.0	

Explanation of peak discharge qualification codes

PEAKFQ WATSTORE

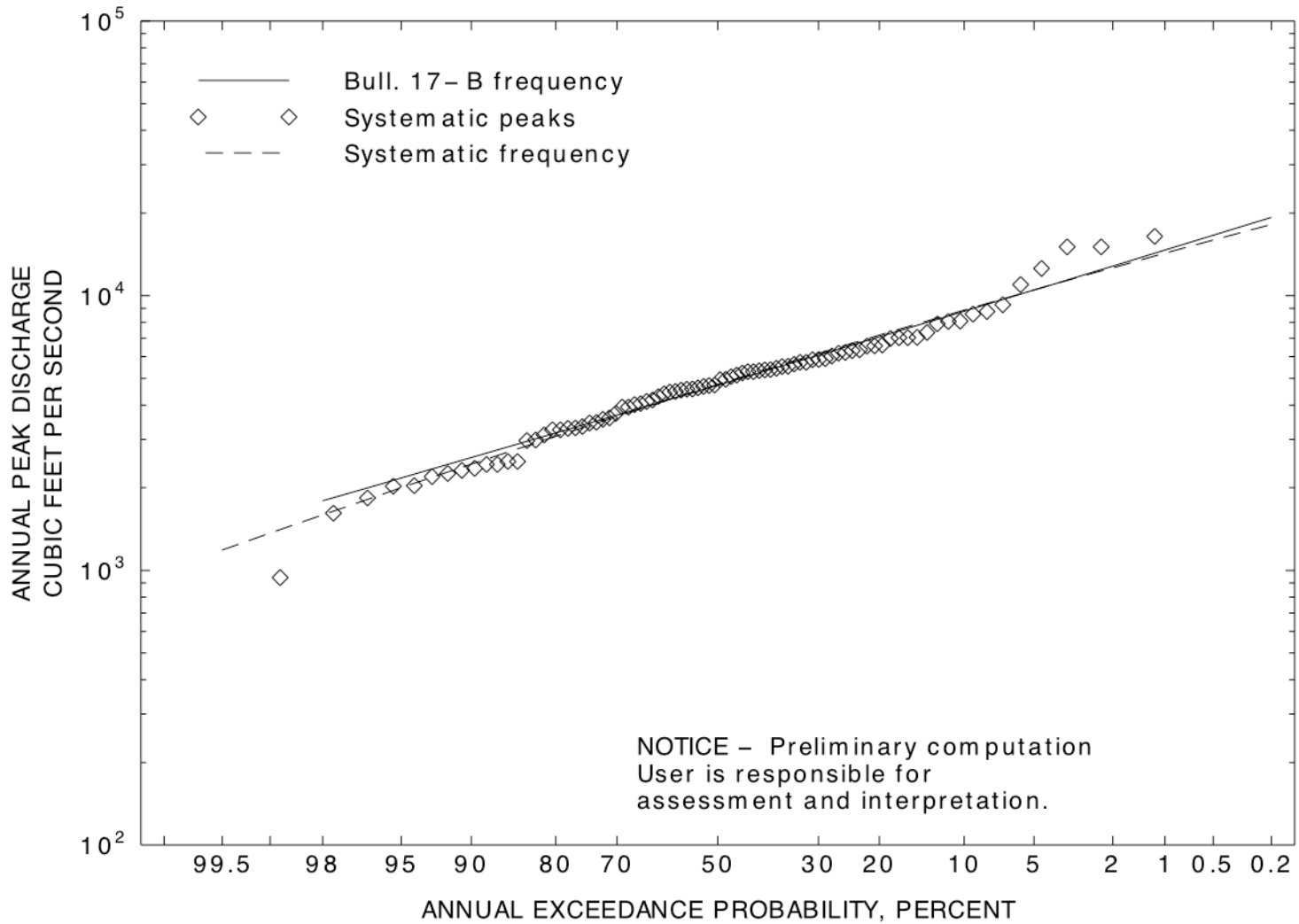
CODE	CODE	DEFINITION
D	3	Dam failure, non-recurrent flow anomaly
G	8	Discharge greater than stated value
X	3+8	Both of the above
L	4	Discharge less than stated value
K	6 OR C	Known effect of regulation or urbanization
H	7	Historic peak

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EMPIRICAL FREQUENCY CURVES -- WEIBULL PLOTTING POSITIONS

WATER YEAR	RANKED DISCHARGE	SYSTEMATIC RECORD	BULL.17B ESTIMATE
1997	16500.0	0.0115	0.0115
1918	15100.0	0.0230	0.0230
1924	15100.0	0.0345	0.0345
1973	12600.0	0.0460	0.0460
1929	11000.0	0.0575	0.0575
1960	9300.0	0.0690	0.0690
1959	8780.0	0.0805	0.0805
1998	8600.0	0.0920	0.0920
1975	8100.0	0.1034	0.1034
1948	8080.0	0.1149	0.1149
1978	7920.0	0.1264	0.1264
1938	7360.0	0.1379	0.1379
1993	7080.0	0.1494	0.1494
1923	7060.0	0.1609	0.1609
1920	7050.0	0.1724	0.1724
1952	7010.0	0.1839	0.1839
1937	6640.0	0.1954	0.1954
1953	6580.0	0.2069	0.2069
1940	6570.0	0.2184	0.2184
1933	6370.0	0.2299	0.2299
1946	6330.0	0.2414	0.2414
1996	6240.0	0.2529	0.2529
1974	6190.0	0.2644	0.2644
1976	6050.0	0.2759	0.2759
1986	5920.0	0.2874	0.2874
1984	5880.0	0.2989	0.2989
1943	5860.0	0.3103	0.3103
1951	5740.0	0.3218	0.3218
1965	5740.0	0.3333	0.3333
1977	5650.0	0.3448	0.3448
1979	5550.0	0.3563	0.3563
1950	5540.0	0.3678	0.3678
1915	5460.0	0.3793	0.3793
1962	5400.0	0.3908	0.3908
1966	5380.0	0.4023	0.4023
1928	5350.0	0.4138	0.4138
1917	5310.0	0.4253	0.4253
1919	5310.0	0.4368	0.4368
1999	5250.0	0.4483	0.4483
1981	5160.0	0.4598	0.4598
1972	5090.0	0.4713	0.4713
1989	4980.0	0.4828	0.4828
1968	4960.0	0.4943	0.4943
1926	4740.0	0.5057	0.5057
1983	4720.0	0.5172	0.5172
1964	4690.0	0.5287	0.5287
1982	4630.0	0.5402	0.5402
1955	4590.0	0.5517	0.5517

2000	4580.0	0.5632	0.5632
1995	4550.0	0.5747	0.5747
1990	4490.0	0.5862	0.5862
1921	4470.0	0.5977	0.5977
1916	4410.0	0.6092	0.6092
1922	4310.0	0.6207	0.6207
1930	4180.0	0.6322	0.6322
1971	4130.0	0.6437	0.6437
1969	4060.0	0.6552	0.6552
1954	4030.0	0.6667	0.6667
1927	3940.0	0.6782	0.6782
1956	3940.0	0.6897	0.6897
1961	3740.0	0.7011	0.7011
1980	3600.0	0.7126	0.7126
1988	3560.0	0.7241	0.7241
1967	3470.0	0.7356	0.7356
1970	3450.0	0.7471	0.7471
1925	3350.0	0.7586	0.7586
1985	3310.0	0.7701	0.7701
1935	3300.0	0.7816	0.7816
1987	3260.0	0.7931	0.7931
1991	3260.0	0.8046	0.8046
1992	3120.0	0.8161	0.8161
1936	2990.0	0.8276	0.8276
1963	2980.0	0.8391	0.8391
1941	2500.0	0.8506	0.8506
1947	2500.0	0.8621	0.8621
1939	2440.0	0.8736	0.8736
1958	2440.0	0.8851	0.8851
1942	2360.0	0.8966	0.8966
1994	2320.0	0.9080	0.9080
1934	2260.0	0.9195	0.9195
1932	2200.0	0.9310	0.9310
1957	2040.0	0.9425	0.9425
1944	2030.0	0.9540	0.9540
1945	1840.0	0.9655	0.9655
1949	1620.0	0.9770	0.9770
1931	945.0	0.9885	0.9885



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