

RAINY RIVER BASIN--Continued

05127000 KAWISHIWI RIVER NEAR WINTON, MN

LOCATION.--Lat 47°56'05", long 91°45'50", in NE¹/₄NW¹/₄ sec. 20, T.63 N., R.11 W., Lake County, Hydrologic Unit 09030001, Superior National Forest, at power plant of Minnesota Power Co., just upstream from Fall Lake, and 1.8 mi east of Winton.

DRAINAGE AREA.--1,229 mi².

PERIOD OF RECORD.--June 1905 to June 1907, October 1912 to September 1919 (fragmentary), September 1923 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WDR MN-77-1: Drainage area.

REMARKS.--No estimated daily discharges. Records good. Daily discharge computed from power plant records. Flow regulated by power plant and by Camp Six, Bald Eagle, Gabbro, Little Gabbro, Birch, White Iron, South Farm, and Garden Lakes.

COOPERATION.--Records collected by Minnesota Power Co., under general supervision of the Geological Survey, in connection with a Federal Energy Regulatory Commission project.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	60	1840	901	794	483	339	823	2650	2000	839	1410	491
2	60	1190	901	794	463	324	884	2260	1720	858	1400	372
3	60	794	902	794	409	295	840	2030	1630	898	1030	349
4	60	794	902	794	398	280	786	2030	1630	1240	794	689
5	60	795	902	774	398	280	798	2030	1630	2560	859	889
6	60	794	902	687	398	271	842	2030	1630	3260	900	888
7	237	702	981	655	398	245	902	2030	1630	4020	900	888
8	429	696	1170	656	398	231	1070	2030	1640	4370	900	824
9	428	591	1290	656	392	136	1420	2020	1640	4680	900	647
10	335	235	1410	656	320	214	1640	1910	1640	5620	900	563
11	60	656	1410	656	254	254	1640	1630	1630	5600	900	618
12	60	814	1410	626	273	226	1890	1890	1630	5630	1120	797
13	60	841	1410	607	303	264	2030	2140	1630	5680	1410	796
14	61	831	1410	607	311	282	2030	2210	1630	5420	1400	868
15	61	669	1410	578	330	282	2160	2260	1630	5270	1400	1070
16	188	305	1410	558	330	498	2450	2440	1200	5720	1090	1640
17	403	637	1120	558	330	795	2450	2720	898	5380	508	1430
18	490	607	904	558	330	794	2660	2800	898	4820	468	1280
19	458	858	904	566	330	615	2750	2790	899	4470	588	1280
20	449	902	904	558	330	313	2820	2780	898	4090	796	1040
21	470	902	903	558	342	235	2960	2600	898	3570	796	913
22	715	902	903	485	332	264	2950	2280	898	2850	576	1160
23	905	1050	903	507	339	299	2900	2480	898	2490	711	1160
24	905	1240	903	507	339	310	2970	2780	884	2780	586	1160
25	1470	1080	903	507	339	321	2980	2780	784	2760	523	1140
26	1850	1080	903	503	339	335	3090	2780	701	2580	597	1120
27	1830	1080	903	485	339	335	3190	2780	796	2100	545	1930
28	1830	1080	903	485	339	416	3170	2780	796	1370	612	2280
29	1830	1080	903	485	---	458	3010	2770	796	1360	589	2250
30	1840	969	845	485	---	458	2720	2770	802	1290	622	2300
31	1840	---	793	384	---	574	---	2510	---	1280	595	---
TOTAL	19564	26014	32318	18523	9886	10943	62825	73990	37986	104855	26425	32832
MEAN	631	867	1043	598	353	353	2094	2387	1266	3382	852	1094
MAX	1850	1840	1410	794	483	795	3190	2800	2000	5720	1410	2300
MIN	60	235	793	384	254	136	786	1630	701	839	468	349
AC-FT	38810	51600	64100	36740	19610	21710	124600	146800	75350	208000	52410	65120
CFSM	.51	.71	.85	.49	.29	.29	1.70	1.94	1.03	2.75	.69	.89
IN	.59	.79	.98	.56	.30	.33	1.90	2.24	1.15	3.17	.80	.99
+	90.0	-55.9	-39.9	-219.9	-77.7	-97.2	487	-22.7	23.4	-2.91	-29.6	48.3
MEAN ‡	721	811	1003	379	275	256	2581	2364	1290	3380	823	1143
CFSM ‡	.59	.66	.82	.31	.22	.21	2.10	1.92	1.05	2.75	.67	.93
IN ‡	.68	.74	.95	.36	.23	.24	2.34	2.21	1.17	3.17	.77	1.04
CAL. YR. 98	TOTAL 264,126	MEAN 724	MAX 3040	MIN 29	MEAN ‡ 733	CFSM ‡ .60	IN ‡ 8.10					
WTR. YR. 99	TOTAL 456,161	MEAN 1250	MAX 5720	MIN 60	MEAN ‡ 1258	CFSM ‡ 1.02	IN ‡ 13.90					

+ Change in contents, equivalent in cubic feet per second, in Camp Six, Bald Eagle, Gabbro, Little Gabbro, Birch, White Iron, Farm, South Farm, and Garden Lakes.

‡ Adjusted for change in reservoir contents.

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1999, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	884	759	596	455	350	378	1216	3114	1920	1179	685	738
MAX	4277	3572	1422	862	770	844	5020	9278	5661	3382	3775	3149
(WY)	1947	1971	1983	1978	1927	1945	1945	1950	1968	1999	1988	1928
MIN	66.5	8.97	76.1	80.3	74.5	103	19.3	111	519	217	51.7	38.1
(WY)	1924	1924	1977	1977	1977	1924	1924	1924	1980	1961	1919	1919

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1905 - 1999
ANNUAL TOTAL	264126	456161	
ANNUAL MEAN	724	1250	1033
HIGHEST ANNUAL MEAN			1967
LOWEST ANNUAL MEAN			240
HIGHEST DAILY MEAN	3040	Apr 28	5720
LOWEST DAILY MEAN	29	Aug 28	60
ANNUAL SEVEN-DAY MINIMUM	30	Aug 28	85
ANNUAL RUNOFF (AC-FT)	523900	904800	748600
ANNUAL RUNOFF (CFSM)	.59	1.02	.84
ANNUAL RUNOFF (INCHES)	7.99	13.81	11.42
10 PERCENT EXCEEDS	1840	2770	2440
50 PERCENT EXCEEDS	453	898	595
90 PERCENT EXCEEDS	60	312	194

a Many days, several years.

