Water-Data Report 2010

05079000 RED LAKE RIVER AT CROOKSTON, MN

Lower Red Basin
Red Lake Subbasin

LOCATION.--Lat 47°46′32″, long 96°36′33″ referenced to North American Datum of 1927, in SW ¼ SW ¼ sec.30, T.150 N., R.46 W., Polk County, MN, Hydrologic Unit 09020303, on right bank 100 ft upstream from Woodland Avenue bridge in Crookston, 0.3 mi downstream from Interstate Power Co.′s dam, 0.6 mi downstream from bridge on U.S. Highway 75, and 53 mi upstream from mouth.

DRAINAGE AREA.--5,270 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--May 1901 to current year. Monthly discharge only for some periods, published in WSP 1308. Figures of daily discharge for Apr. 3-30, 1904, published in WSP 130, have been found unreliable and should not be used.

REVISED RECORDS.--WSP 1115: 1906, 1915-16, 1919-20, 1922, 1925, 1927, 1929. WSP 1308: 1916(M), 1919(M), 1928(M), 1930(M). Unpublished 2009: 1920(M).

GAGE.--Water-stage recorder. Datum of gage is 832.72 ft above sea level (NGVD of 1929). May 18, 1901 to June 30, 1909, non-recording gage at bridge 300 ft upstream at same datum. July 1, 1909 to Sept. 25, 1911, non-recording gage, Sept. 26, 1911 to Sept. 30, 1919, water-stage recorder, Oct. 1, 1919 to Sept. 30, 1930, non-recording gage, at present site and datum. Oct. 1, 1930 to present, water-stage recorder.

REMARKS.--Records good to fair, except those for estimated daily discharges, which are poor. Diurnal fluctuation prior to 1975 caused by power plant 1,000 ft upstream. Runoff from 1,950 mi^2 in the headwaters of Red Lake River is completely controlled by dam at outlet of Lower Red Lake. Flow partially affected by occasional regulation at Thief and Mud Lakes in Thief River basin (see station 05076000).

05079000 RED LAKE RIVER AT CROOKSTON, MN—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	561	905	750	e715	e705	e706	2,060	1,120	4,380	2,470	1,480	1,100
2	607	907	775	e711	e704	e708	1,900	1,320	3,750	2,260	1,430	1,100
3	633	958	604	e713	e708	e710	1,910	1,460	3,210	2,020	1,460	1,140
4	631	956	e511	e714	e711	e714	1,640	1,530	2,770	1,870	1,460	1,070
5	653	928	e468	e723	e713	e720	1,500	1,600	2,500	1,940	1,480	1,050
6	600	924	e514	e728	e710	e726	1,450	1,850	2,090	2,090	1,460	985
7	610	882	e581	e732	e708	e737	1,350	2,210	1,870	2,170	1,380	1,120
8	605	934	e634	e734	e703	e750	1,260	2,450	1,890	2,060	1,340	1,420
9	683	873	e689	e731	e701	e768	1,180	2,810	1,850	1,970	1,260	1,630
10	533	864	e724	e728	e699	e820	1,080	2,870	1,910	1,850	1,250	1,770
11	582	900	e740	e723	e702	e1,100	1,260	2,670	2,100	1,700	1,290	3,080
12	679	867	e754	e725	e704	e2,900	1,100	2,440	2,760	1,560	1,460	4,320
13	879	831	e742	e721	e702	e6,500	1,120	2,200	3,020	1,440	1,680	4,020
14	760	855	e751	e719	e702	e9,970	1,130	2,160	2,750	1,480	1,610	3,430
15	578	843	e739	e717	e701	e18,500	1,110	2,140	2,510	1,470	1,580	3,130
16	563	874	e745	e720	e701	e15,600	1,090	2,220	2,330	1,420	1,460	2,840
17	595	854	e737	e721	e703	e13,500	1,030	2,130	2,200	1,390	1,370	2,660
18	825	793	e735	e722	e704	e14,500	964	2,060	2,160	1,350	1,320	2,470
19	1,040	757	e732	e718	e705	10,400	968	1,920	2,330	1,330	1,230	2,280
20	796	743	e729	e713	e703	7,720	945	1,750	2,340	1,300	1,170	2,070
21	502	742	e728	e710	e707	5,960	918	1,600	2,360	1,230	1,520	1,920
22	513	763	e730	e710	e705	5,040	877	1,480	2,260	1,220	1,450	1,820
23	577	835	e733	e711	e703	4,370	872	1,410	2,580	1,240	1,270	1,690
24	667	805	e738	e712	e701	3,750	839	1,530	2,630	1,450	1,190	4,070
25	754	837	e745	e712	e704	3,130	831	7,850	3,290	1,680	1,190	9,950
26	888	858	e747	e706	e705	2,630	907	14,500	5,950	1,840	1,120	10,200
27	824	815	e746	e697	e705	2,400	913	13,000	6,640	1,920	1,120	9,160
28	716	773	e743	e619	e705	2,350	911	9,840	6,620	1,890	1,140	7,720
29	781	765	e739	e600	---	2,170	906	7,600	4,460	1,850	1,130	6,530
30	784	813	e736	e670	---	2,080	972	6,200	3,020	1,710	1,090	5,700
31	834	---	e726	e700	---	1,950	---	5,150	---	1,580	1,080	---
Total	21,253	25,454	21,765	21,975	19,724	143,879	34,993	111,070	90,530	52,750	41,470	101,445
Mean	686	848	702	709	704	4,641	1,166	3,583	3,018	1,702	1,338	3,382
Max	1,040	958	775	734	713	18,500	2,060	14,500	6,640	2,470	1,680	10,200
Min	502	742	468	600	699	706	831	1,120	1,850	1,220	1,080	985
Ac-ft	42,160	50,490	43,170	43,590	39,120	285,400	69,410	220,300	179,600	104,600	82,260	201,200
Cfsm	0.13	0.16	0.13	0.13	0.13	0.88	0.22	0.68	0.57	0.32	0.25	0.64
In.	0.15	0.18	0.15	0.16	0.14	1.02	0.25	0.78	0.64	0.37	0.29	0.72

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1901 - 2010, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	861	777	605	529	515	1,113	3,134	2,161	1,818	1,394	877	889
Max	2,836	3,620	1,900	1,663	1,778	5,950	11,870	15,290	7,205	6,851	3,868	5,408
(WY)	(1972)	(2001)	(1904)	(1951)	(1998)	(2009)	(1997)	(1950)	(1962)	(1975)	(1985)	(1999)
Min	8.02	10.1	5.34	15.6	17.8	24.9	232	154	80.4	26.2	12.3	8.87
(WY)	(1937)	(1937)	(1937)	(1934)	(1937)	(1936)	(1981)	(1934)	(1934)	(1936)	(1934)	(1934)

05079000 RED LAKE RIVER AT CROOKSTON, MN—Continued

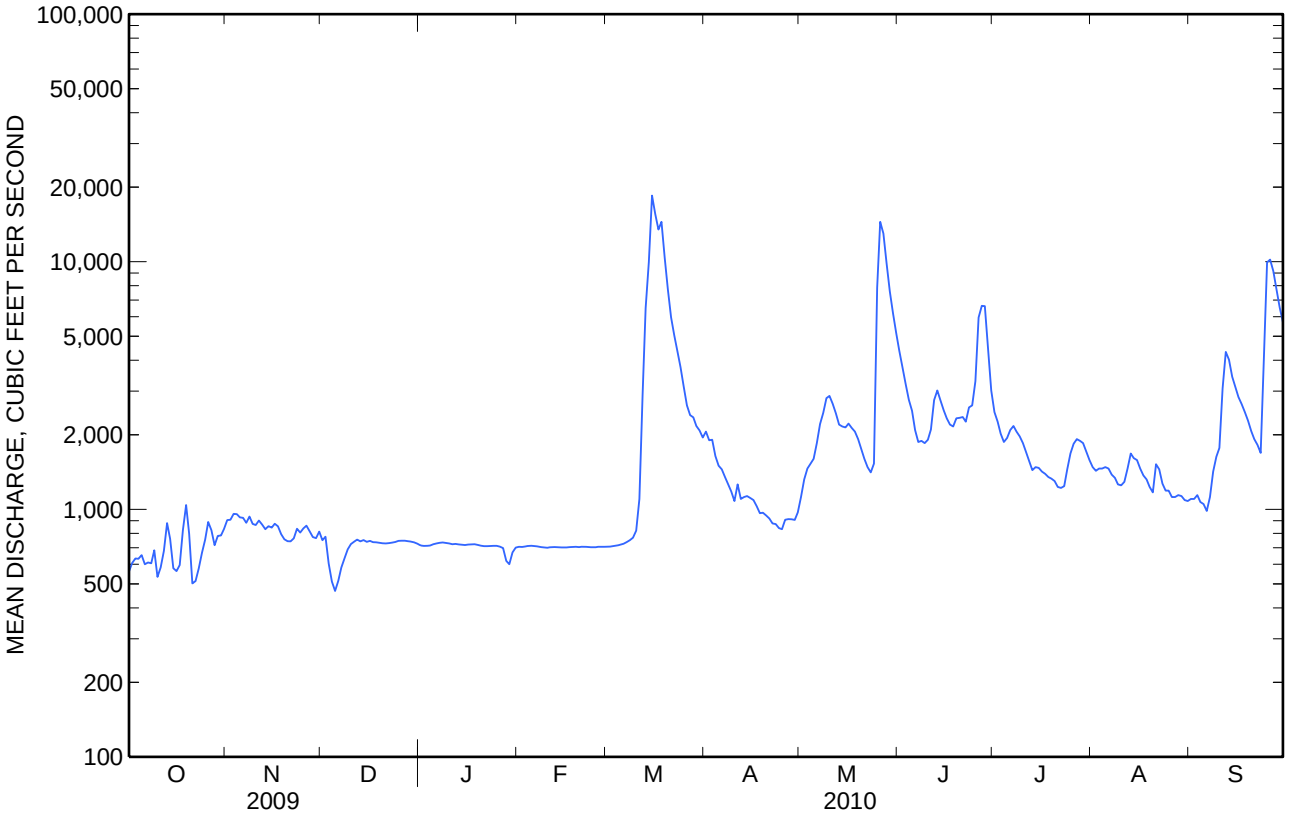
SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1901 - 2010	
Annual total	723,149		686,308			
Annual mean	1,981		1,880		1,220	
Highest annual mean					3,129	1950
Lowest annual mean					83.6	1934
Highest daily mean	25,000	Mar 25	18,500	Mar 15	27,500	Apr 18, 1997
Lowest daily mean	265	Feb 5	468	Dec 5	2.5	Sep 29, 1936
Annual seven-day minimum	267	Feb 3	572	Dec 3	3.9	Sep 28, 1936
Maximum peak flow			[a]18,500	Mar 15	[b]28,400	Apr 12, 1969
Maximum peak stage			[c]23.97	Mar 15	[d]28.40	Apr 17, 1997
Instantaneous low flow					[e]0.00	Jul 13, 1960
Annual runoff (ac-ft)	1,434,000		1,361,000		883,600	
Annual runoff (cfsm)	0.376		0.357		0.231	
Annual runoff (inches)	5.10		4.84		3.14	
10 percent exceeds	4,720		3,240		2,670	
50 percent exceeds	784		1,100		750	
90 percent exceeds	349		702		125	

[a] Estimated daily-mean discharge.

[b] Gage height, 27.33 ft.

[c] Backwater from ice.

[d] From highwater mark, backwater from ice.

[e] From regulation by powerplant upstream.