05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND

LOCATION.--Lat 47°55'38", long 97°01'34", in sec.2, T.151 N., R.50 W., Grand Forks County, Hydrologic Unit 09020301, on right bank 200 ft upstream from the DeMers Avenue bridge, 0.4 mi downstream from Red Lake River, and at mile 297.6.

DRAINAGE AREA.--30,100 mi^2 (approximately), including 3,800 mi^2 in closed basins.

PERIOD OF RECORD.--April 1882 to current year. Prior to January 1904 monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 855: 1936(M). WSP 1115: 1942. WSP 1175: 1897(M). WSP 1388: 1904, 1914-15, 1917-19, 1921-22, 1927, 1950. WSP 1728: Drainage area. WRD-ND-81-1: 1882, 1897 (M).

GAGE.--Water-stage recorder. Datum of gage is 779.00 ft above sea level. Oct. 1, 1983, to Sept. 30, 1986, datum of gage was 780.00 ft at same site. Apr. 14, 1965, to Sept. 30, 1983, water-stage recorder 1.9 mi downstream at a datum of 778.35 ft. Nov. 3, 1933, to Apr. 13, 1965, water-stage recorder 0.3 mi upstream at 778.35 ft datum. See WSP 1728 or 1913 for history of changes prior to Nov. 3, 1933.

REMARKS.--Records good except for periods of estimated discharge, which are poor.

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	1640	3960	4810	e1690	e1660	e2100	49700	9210	10300	6640	4930	4070
2	1690	3950	5040	e1680	e1640	e2150	48200	8810	10300	6270	4830	3990
3	1700	3950	5340	e1670	e1620	e2200	46400	8490	9830	6000	4700	4920
4	1710	3920	5830	e1660	e1600	e2250	44200	8100	10000	5790	4440	7740
5	1850	3810	6010	e1650	e1580	e2300	42500	7790	9720	5790	4120	12700
6	1820	3650	5900	e1650	e1560	e2500	40900	7520	9860	7040	3910	17200
7	1870	3500	5710	e1650	e1540	e2800	39200	7710	10200	8240	3780	20600
8	1930	3360	5140	e1650	e1520	e3300	37600	8430	10900	8520	3580	22700
9	e1930	3100	4540	e1660	e1510	e3500	35800	10400	11800	8200	3320	23300
10	e1920	2880	4090	e1670	e1500	e3600	33900	13400	12500	8210	3160	22200
11	e2030	3010	3870	e1680	e1500	e3700	31800	17400	12900	8470	3140	20300
12	e2100	2860	e3800	e1690	e1500	e3700	29600	21900	13600	8780	3670	17700
13	e2100	2570	e3700	e1700	e1520	e3650	27300	25600	13900	9120	4310	14800
14	2030	2830	4350	e1720	e1530	e3600	25200	28300	13400	8790	5520	13300
15	2070	2720	4560	e1740	e1540	e3500	23300	30300	12500	7860	6550	12400
16	2090	2570	4480	e1760	e1550	e3600	21500	31000	11600	7050	6730	12000
17	2360	e2400	4090	e1780	e1560	e3800	19900	29800	10900	6530	7010	11600
18	3140	e2200	3590	e1790	e1570	e4300	18300	27900	10200	6170	7720	11100
19	5630	e2100	3070	e1800	e1600	e5100	16700	25800	9430	6220	7840	10300
20	7740	e2000	2480	e1800	e1630	e7700	15700	23500	8680	6100	7390	9420
21	8000	2000	2270	e1800	e1680	e11000	15000	21300	7750	5770	6660	8470
22	e7400	2180	2090	e1800	e1750	e13500	14400	19900	7210	5510	5980	7600
23	e6400	2770	e1950	e1790	e1820	e15500	13800	18400	7100	5560	5570	7110
24	e5700	3310	e1850	e1780	e1880	e18000	13200	16800	6850	5660	6090	6830
25	e5200	3540	e1800	e1770	e1950	e21000	12600	15300	6650	5460	7480	6630
26	4810	3820	e1750	e1760	e2000	e23500	12000	13700	6780	5240	7340	6330
27	4510	4290	e1740	e1750	e2000	e26000	11400	12100	7180	5060	6490	6300
28	4280	4670	e1730	e1740	e2050	e31000	10800	10700	7460	5080	5710	6250
29	4180	4730	e1720	e1720	---	e40000	10200	10100	7410	5290	5020	6210
30	4120	4740	e1710	e1700	---	45900	9680	9990	7140	5190	4560	6100
31	3960	---	e1700	e1680	---	49100	---	10300	---	5060	4240	---
TOTAL	107910	97390	110710	53380	46360	363850	770780	509950	294050	204670	165790	340170
MEAN	3481	3246	3571	1722	1656	11740	25690	16450	9802	6602	5348	11340
MAX	8000	4740	6010	1800	2050	49100	49700	31000	13900	9120	7840	23300
MIN	1640	2000	1700	1650	1500	2100	9680	7520	6650	5060	3140	3990
AC-FT	214000	193200	219600	105900	91960	721700	1529000	1011000	583200	406000	328800	674700

e Estimated

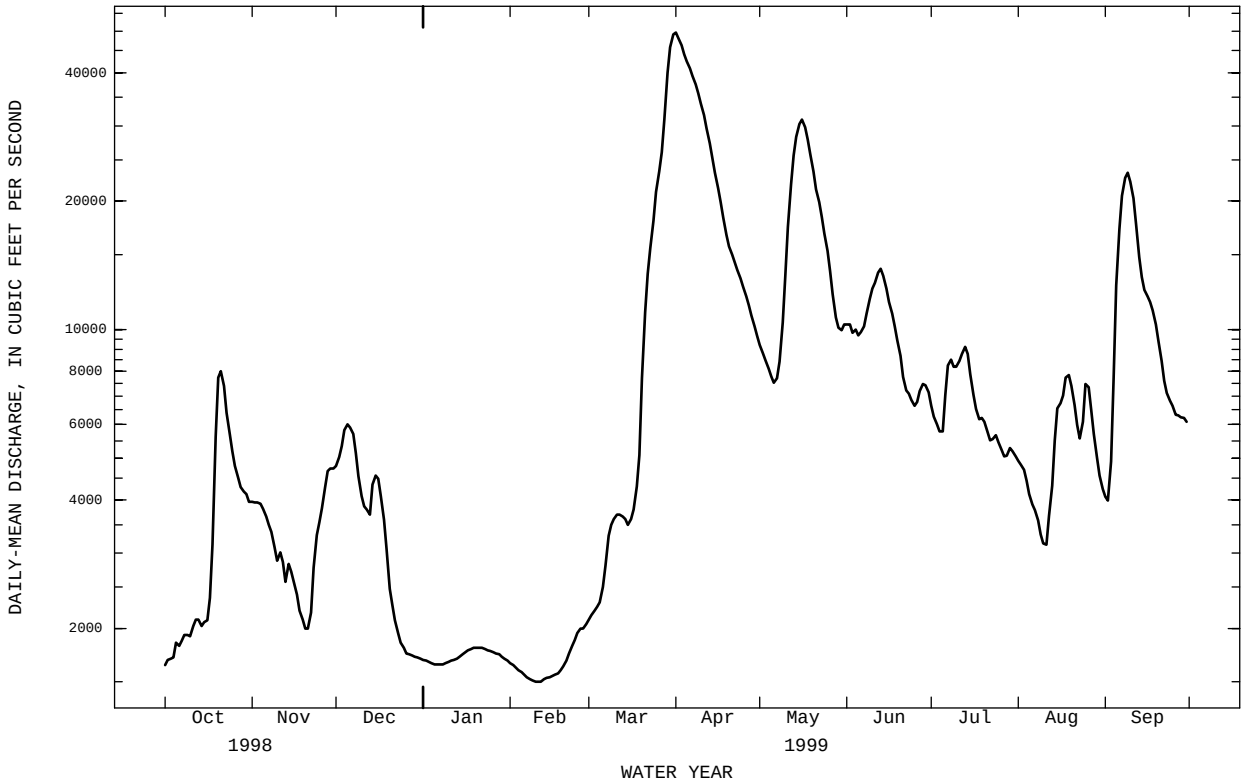
05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND--Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1999, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1446	1240	1021	852	838	2736	10120	5522	4064	3520	1815	1550
MAX	5127	5218	3571	2030	3520	15370	56210	36510	19340	25270	17050	11340
(WY)	1995	1972	1999	1996	1998	1995	1997	1950	1962	1975	1993	1999
MIN	12.1	30.5	17.8	18.8	2.87	42.1	954	373	151	88.8	30.6	20.3
(WY)	1937	1937	1937	1937	1937	1937	1938	1934	1934	1936	1934	1936

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1904 - 1999	
ANNUAL TOTAL	2397170		3065010			
ANNUAL MEAN	6568		8397		2877	
HIGHEST ANNUAL MEAN					10070	1997
LOWEST ANNUAL MEAN					244	1934
HIGHEST DAILY MEAN	29600	May 21	49700	Apr 1	127000	Apr 18 1997
LOWEST DAILY MEAN	1560	Sep 29	1500	Feb 10	1.8	Sep 2 1977
ANNUAL SEVEN-DAY MINIMUM	1640	Sep 27	1510	Feb 8	2.5	Feb 12 1937
INSTANTANEOUS PEAK FLOW			50000a	Mar 31	137000b	Apr 18 1997
INSTANTANEOUS PEAK STAGE			44.26	Apr 1	54.35c	Apr 22 1997
ANNUAL RUNOFF (AC-FT)	4755000		6079000		2085000	
10 PERCENT EXCEEDS	16700		20800		6350	
50 PERCENT EXCEEDS	3960		5240		1400	
90 PERCENT EXCEEDS	1840		1700		280	

a Gage height, 44.11 ft.
b Maximum observed, affected by breakout flow from Red River about 20 miles upstream of gage that entered Red Lake River about 2 miles from the confluence with Red River of the North.
c From floodmark.



05082500 RED RIVER OF THE NORTH AT GRAND FORKS, ND--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1949, 1956 to current year.

REMARKS.--Quality assurance sample also collected at this location.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT											
16...	1140	2080	--	--	--	592	9.5	9.0	--	--	--
DEC											
14...	1130	4210	--	--	--	--	4.0	.0	--	--	--
FEB											
25...	1445	2070	--	--	--	622	--	1.4	--	--	--
APR											
02...	1215	48100	7.9	--	376	358	3.0	2.5	150	37	15
MAY											
21...	1045	21300	--	--	--	856	19.2	17.0	--	--	--
JUN											
30...	0950	7020	--	--	--	577	22.5	22.1	--	--	--
AUG											
23...	1400	5510	8.3	8.1	506	511	21.5	21.5	240	54	25

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM AD-SORP-TION RATIO (00931)	SODIUM PERCENT (00932)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, DIS-SOLVED (TONS PER DAY) (70302)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
OCT										
16...	--	--	--	--	--	--	--	--	--	--
DEC										
14...	--	--	--	--	--	--	--	--	--	--
FEB										
25...	--	--	--	--	--	--	--	--	--	--
APR										
02...	5.5	.4	13	11	134	8.9	.20	56	30300	233
MAY										
21...	--	--	--	--	--	--	--	--	--	--
JUN										
30...	--	--	--	--	--	--	--	--	--	--
AUG										
23...	4.3	.4	11	14	185	10	.20	81	4790	322

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WATER-QUALITY RECORDS

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT										
16...	--	--	--	--	--	--	--	--	--	--
DEC										
14...	--	--	--	--	--	--	--	--	--	--
FEB										
25...	--	--	--	--	--	--	--	--	--	--
APR										
02...	215	3	500	<.00	20	50	<.1	2.0	1	180
MAY										
21...	--	--	--	--	--	--	--	--	--	--
JUN										
30...	--	--	--	--	--	--	--	--	--	--
AUG										
23...	300	5	90	1.0	20	10	<.1	1.0	<1	260