

## RED RIVER OF THE NORTH BASIN--Continued

05069000 SAND HILL RIVER AT CLIMAX, MN

LOCATION.--Lat 47°36'43", long 96°48'52", in NE $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 30, T.148 N., R.48 W., Polk County, Hydrologic Unit 09020301, on left bank 25 ft upstream from bridge on U.S. Highway 75 in Climax and 3.7 mi upstream from mouth.

DRAINAGE AREA.--420 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1943 to September 1984, June 1985 to current year (winter records incomplete prior to 1947). Monthly discharge only for some periods, published in WSP 1308 and 1728. October 1984 to May 1985, operated as a high-flow partial-record station.

REVISED RECORDS.--WSP 1388: 1943(M), 1944, 1947(M). WSP 1728: 1951(M), 1960 (average discharge).

GAGE.--Water stage recorder. Datum of gage is 820.10 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Oct. 1, 1966, nonrecording gage at site 3.2 mi upstream at datum 12.78 ft higher. Oct. 1, 1966 to Sept 5, 1989, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, 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	22	75	101	e35	e33	e38	3540	143	134	74	77	108
2	21	70	96	e34	e33	e39	3340	133	125	69	75	137
3	20	66	94	e32	e34	e40	2900	126	113	65	84	191
4	21	64	e90	e30	e34	e41	2790	122	104	68	99	312
5	29	62	e84	e29	e34	e41	2520	139	99	67	92	430
6	45	59	e76	e29	e34	e41	2120	162	106	65	87	469
7	50	57	e67	e28	e34	e42	1810	187	105	64	78	552
8	41	56	e64	e28	e35	e43	1540	267	127	83	75	667
9	36	54	e62	e28	e35	e44	1270	273	148	149	73	703
10	33	52	e60	e28	e35	e45	995	892	147	120	81	662
11	33	37	e58	e28	e35	e46	713	991	151	113	91	615
12	35	e41	e57	e29	e35	e49	480	540	230	115	121	587
13	43	e45	e56	e29	e35	e52	424	556	304	112	156	548
14	40	e47	e55	e29	e35	e55	380	713	323	100	180	509
15	39	e47	e54	e30	e35	e60	365	829	316	94	186	475
16	38	e45	e53	e30	e35	e64	336	840	306	100	195	445
17	118	e44	e52	e30	e35	e73	314	751	287	107	207	415
18	339	e44	e50	e30	e35	e82	299	614	257	114	214	379
19	265	e43	e49	e29	e35	e97	287	488	221	115	219	348
20	179	e44	e48	e29	e35	e115	279	413	186	116	218	324
21	120	e44	e47	e29	e35	e140	274	360	156	107	210	305
22	100	e45	e47	e29	e36	e175	266	317	133	107	193	288
23	94	e45	e46	e29	e36	e240	250	280	121	161	177	270
24	97	e46	e45	e29	e37	e400	234	253	108	157	156	248
25	107	e48	e45	e30	e37	e600	227	237	96	147	152	229
26	106	e52	e44	e31	e37	e1000	208	216	91	139	137	215
27	97	e60	e43	e31	e37	e2000	200	196	84	127	117	210
28	87	e70	e42	e32	e37	e2800	188	179	77	118	105	199
29	117	80	e40	e32	---	e3300	174	161	76	103	100	189
30	112	93	e38	e32	---	3480	158	142	76	90	99	180
31	85	---	e36	e32	---	3680	---	139	---	83	101	---
TOTAL	2569	1635	1799	930	983	18922	28881	11659	4807	3249	4155	11209
MEAN	82.9	54.5	58.0	30.0	35.1	610	963	376	160	105	134	374
MAX	339	93	101	35	37	3680	3540	991	323	161	219	703
MIN	20	37	36	28	33	38	158	122	76	64	73	108
AC-FT	5100	3240	3570	1840	1950	37530	57290	23130	9530	6440	8240	22230
CFSM	.20	.13	.14	.07	.08	1.45	2.29	.90	.38	.25	.32	.89
IN.	.23	.14	.16	.08	.09	1.68	2.56	1.03	.43	.29	.37	.99

e Estimated

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1999, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	36.9	29.8	19.1	13.9	16.6	95.9	385	134	100	82.0	40.2	33.2
MAX	223	209	58.0	32.0	183	610	1568	1156	596	478	426	374
(WY)	1972	1972	1999	1998	1998	1999	1997	1950	1984	1997	1993	1999
MIN	9.43	8.64	5.11	2.02	3.55	5.81	25.3	23.7	11.5	8.95	6.30	6.49
(WY)	1977	1956	1964	1962	1962	1948	1981	1958	1980	1980	1961	1955

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1943 - 1999
ANNUAL TOTAL	61148	90798	
ANNUAL MEAN	168	249	82.4 <sup>a</sup>
HIGHEST ANNUAL MEAN			249 1999
LOWEST ANNUAL MEAN			18.4 1977
HIGHEST DAILY MEAN	1430	3680	4360 Apr 14 1965
LOWEST DAILY MEAN	20	20	1.0 Jan 17 1962
ANNUAL SEVEN-DAY MINIMUM	20	28	1.1 Jan 12 1962
INSTANTANEOUS PEAK FLOW		3720	4560 <sup>b</sup> Apr 14 1965
INSTANTANEOUS PEAK STAGE		21.24	39.40 <sup>c</sup> Apr 20 1997
ANNUAL RUNOFF (AC-FT)	121300	180100	59710
ANNUAL RUNOFF (CFSM)	.40	.59	.20
ANNUAL RUNOFF (INCHES)	5.42	8.04	2.67
10 PERCENT EXCEEDS	380	483	167
50 PERCENT EXCEEDS	64	96	24
90 PERCENT EXCEEDS	30	33	9.0

a Median of annual mean discharges is 64 ft<sup>3</sup>/s.  
 b Gage height, 17.81 ft, site and datum then in use.  
 c Backwater from Red River of the North.

