

**UPPER MISSISSIPPI RIVER BASIN**

**05355250 MISSISSIPPI RIVER AT RED WING, MN**

LOCATION.--Lat 44° 34'13", long 92° 32'02", in NE¼NE¼ sec. 30, T.113 N., R.14 W., Goodhue County, Hydrologic Unit 07040001, at bridge on U.S. Highway 63 in Red Wing, 6.3 mi downstream from Lock and Dam 3, and at mile 790.6 upstream from Ohio River.

DRAINAGE AREA.--46,800 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--October 1996 to September 1997.

REMARKS.--Water-discharge computed on the basis of discharge for Mississippi River at Prescott, WI (station 05344500) combined with Cannon River at Welch (station 05355200) and adjusted for inflow.

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997**

**DAILY MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP							
1	9240	21100	23500	15900	13700	13400	64200	63400	28800
26000	48300	25100							
2	9160	21600	25000	15100	12900	13700	70900	61200	28200
32200	47100	23500							
3	8990	21800	24300	15500	14000	13800	79400	59400	27600
34700	45400	22900							
4	9270	21700	22600	16000	14000	13400	89300	56600	26500
35200	43600	24300							
5	9330	22000	22000	16100	13700	13700	99000	54700	25900
35600	40600	22700							
6	9420	21900	21900	16300	13300	14700	111000	51900	25800
36200	37600	21600							
7	8650	21600	23400	15100	13700	15100	123000	49800	25800
36400	34500	19700							
8	9160	22400	23900	14400	14200	15200	136000	48900	24300
37400	31800	18800							
9	8780	22400	22800	14300	13900	16900	147000	47200	23200
37600	29500	18100							
10	8480	21900	21900	13500	13300	18200	155000	44700	22500
37000	27700	17500							
11	8780	22300	22100	13600	13900	18900	161000	43700	21400
36600	25700	17100							
12	8980	22000	22300	13800	13400	20000	163000	42300	20600
36200	24800	16800							
13	8650	20700	22900	12700	13100	22400	163000	41100	20100
36400	23300	16000							
14	8550	18400	23300	12200	12800	23900	159000	40600	19300

37200	22300	15500							
15	7960	17300	22500	12500	13300	25300	152000	39900	17800
37700	22400	15500							
16	8330	17400	20400	12900	13500	26500	143000	38600	17300
38400	24600	15600							
17	8180	17400	19000	13600	13200	26700	133000	37500	16700
39100	24500	17100							
18	9460	22700	17700	15000	13100	26800	123000	36500	16400
39700	23300	17100							
19	10200	26600	17400	13700	12800	27000	116000	35800	16000
39700	22700	17100							
20	11200	30100	16800	14000	13300	27300	108000	34500	15400
37600	28100	17200							
21	11200	32700	15400	13800	12900	28200	102000	33300	15200
37000	30700	16700							
22	11300	33700	14600	13900	13600	29800	96200	31900	15200
35700	31000	16500							
23	13200	33500	15200	13900	13600	32500	90000	30700	14500
37700	29500	16300							
24	14300	30200	17000	14400	13600	36000	84900	30700	13900
38100	28700	15800							
25	15600	29100	16500	14500	13300	38200	80500	29400	15100
43900	28300	15900							
26	17100	27200	15900	14000	13400	38200	77000	28700	14500
50400	27600	15500							
27	17800	24100	15000	14000	13300	39800	74100	28400	17000
51200	26100	14600							
28	17600	21800	15600	13800	13600	43100	71500	29000	18400
50800	24800	14600							
29	17900	20900	15900	14000	---	47600	69200	29300	20400
50600	23900	15200							
30	18900	22600	16200	13900	---	52500	67000	29400	21400
49700	23400	14300							
31	19100	---	16400	13800	---	58300	---	29300	---
48900	25200	---							
TOTAL	354770	709100	609400	440200	376400	837100	3308200	1258400	605200
1220900	927000	534600							
MEAN	11440	23640	19660	14200	13440	27000	110300	40590	20170
39380	29900	17820							
MAX	19100	33700	25000	16300	14200	58300	163000	63400	28800
51200	48300	25100							
MIN	7960	17300	14600	12200	12800	13400	64200	28400	13900
26000	22300	14300							
AC-FT	703700	1406000	1209000	873100	746600	1660000	6562000	2496000	1200000
2422000	1839000	1060000							
CFSM	367	758	630	455	431	865	3530	1300	647
1260	958	571							
IN.	422.99	845.47	726.59	524.85	448.78	998.08	3944.39	1500.40	721.58
1455.69	1105.27	637.41							

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1997, BY WATER YEAR (WY)**

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP							
MEAN	11440	23640	19660	14200	13440	27000	110300	40590	20170
39380	29900	17820							
MAX	11440	23640	19660	14200	13440	27000	110300	40590	20170
39380	29900	17820							
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997
1997	1997	1997							
MIN	11440	23640	19660	14200	13440	27000	110300	40590	20170
39380	29900	17820							
(WY)	1997	1997	1997	1997	1997	1997	1997	1997	1997
1997	1997	1997							

SUMMARY STATISTICS	FOR 1997 WATER YEAR	WATER YEARS 1996 - 1997
ANNUAL TOTAL	11181270	
ANNUAL MEAN	30630	30630
HIGHEST ANNUAL MEAN		30630 1997
LOWEST ANNUAL MEAN		30630 1997
HIGHEST DAILY MEAN	163000 Apr 12	163000 Apr 12 1997
LOWEST DAILY MEAN	7960 Oct 15	7960 Oct 15 1996
ANNUAL SEVEN-DAY MINIMUM	8490 Oct 11	8490 Oct 11 1996
ANNUAL RUNOFF (AC-FT)	22180000	22190000
ANNUAL RUNOFF (CFSM)	982	982
ANNUAL RUNOFF (INCHES)	13331.51	13340.37
10 PERCENT EXCEEDS	53400	51800
50 PERCENT EXCEEDS	22100	21800
90 PERCENT EXCEEDS	13300	11500

**(National Water-Quality Assessment Station)**

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1996 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURES.-- May 1996 to current year.

INSTRUMENTATION.-- Water-quality monitor since May 1996, provides continuous recordings. Sensor located in Minnesota channel at Red Wing.

REMARKS.--Records represent water temperature at sensor within 0.5 °C. Temperature at the sensor was compared with the average for the river by temperature cross section on Oct. 7, Nov. 14, May 12, June 2,16, July 7,14, Aug. 6, Sept. 5. Variation was within 0.5 °C. Monthly samples (composited) were

collected from both Wisconsin and Minnesota channels near U.S. Highway 63 bridges.

**EXTREMES FOR PERIOD OF DAILY RECORD:**

**WATER TEMPERATURES.**--Maximum, 27.0 °C, July 4, 5, 1996, July 16-18, 1997; minimum, 3.0 °C, Nov. 12,13, 1996.

**EXTREMES FOR CURRENT YEAR:**

**WATER TEMPERATURES.**-- Maximum, 27.0 °C, July 16-18; minimum recorded, 3.0 °C, Nov. 12,13.

**WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997**

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
MAX	MIN	MEAN							
	OCTOBER			NOVEMBER					
DECEMBER			JANUARY						
1	18.5	17.0	17.5	7.5	6.5	7.0	---	---	---
2	18.0	17.0	17.5	6.5	5.5	6.0	---	---	---
3	17.5	16.5	17.0	6.5	6.0	6.0	---	---	---
4	16.5	16.0	16.0	6.5	6.0	6.5	---	---	---
5	16.5	15.5	16.0	6.5	6.5	6.5	---	---	---
6	17.0	16.0	16.5	6.5	6.5	6.5	---	---	---
7	16.5	16.0	16.0	7.0	6.0	6.5	---	---	---
8	16.0	15.5	16.0	7.0	6.0	6.5	---	---	---
9	16.0	15.5	16.0	6.0	5.5	5.5	---	---	---
10	15.5	14.5	15.0	5.5	4.5	5.0	---	---	---
11	15.0	14.5	14.5	4.5	3.5	3.5	---	---	---
12	15.0	14.5	15.0	3.5	3.0	3.0	---	---	---
13	15.5	14.5	15.0	3.5	3.0	3.0	---	---	---
14	15.5	15.0	15.5	---	---	---	---	---	---





16.5	15.5	15.5								
29	---	---	---	---	---	---	---	---	---	---
15.5	15.0	15.0								
30	---	---	---	---	---	---	---	---	---	---
16.5	14.5	15.5								
31	---	---	---	---	---	---	---	---	---	---
18.0	16.0	17.0								
MONTH	---	---	---	---	---	---	---	---	---	---
	---	---								---

**WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997**

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
MAX	MIN	MEAN							
AUGUST		JUNE	SEPTEMBER		JULY				
1	19.0	17.0	17.5	26.5	25.0	25.5	25.5	24.5	25.0
25.0	24.0	24.5							
2	19.5	17.5	18.5	26.0	23.0	24.5	26.0	25.0	25.5
25.0	24.0	24.5							
3	20.0	18.5	19.0	23.0	21.0	21.5	26.0	25.5	26.0
24.5	23.0	23.5							
4	21.0	19.5	20.0	21.5	20.5	21.0	26.5	25.5	26.0
23.5	22.5	22.5							
5	21.5	20.0	21.0	22.0	21.0	21.5	26.0	25.5	25.5
23.0	22.0	22.5							
6	22.0	20.5	21.5	22.0	21.0	21.5	26.0	25.0	25.5
23.5	22.5	23.0							
7	22.0	21.0	21.5	21.5	20.5	21.0	26.5	25.0	25.5
23.5	22.5	23.0							
8	22.0	21.0	21.5	20.5	20.0	20.0	26.0	25.0	25.5
22.5	22.5	22.5							
9	23.0	21.0	22.0	21.0	19.5	20.5	25.5	24.0	25.0
22.5	22.0	22.5							
10	23.5	22.0	22.5	21.5	20.5	21.0	25.0	24.0	24.5
22.0	21.5	22.0							
11	24.0	22.5	23.0	22.0	20.5	21.5	24.0	23.0	23.5
22.0	21.5	21.5							
12	24.0	23.0	23.5	23.0	21.5	22.5	24.0	23.0	23.5
22.0	21.5	21.5							
13	24.5	23.5	24.0	24.5	22.5	23.5	23.5	23.0	23.5
21.5	21.0	21.5							
14	24.5	23.5	24.0	25.0	24.0	24.5	23.5	22.0	22.5
21.5	21.0	21.5							
15	24.0	23.0	23.5	25.5	24.0	25.0	23.0	22.0	22.5
21.5	21.5	21.5							
16	23.5	22.5	23.0	27.0	25.0	26.0	24.0	22.5	23.5





OCT											
07...	1100	9300	436	445	8.6	8.2	16.5	750	10.4	108	
NOV											
14...	1235	19800	412	433	8.1	7.9	2.5	766	12.9	94	
DEC											
03...	1015	26000	458	481	7.8	7.8	0.5	751	9.9	70	
JAN											
02...	1000	16300	457	470	7.6	7.8	1.5	737	11.7	86	
FEB											
03...	1030	15100	456	474	7.5	7.8	0.5	755	11.1	78	
MAR											
12...	1100	21400	531	499	7.6	7.8	2.5	758	11.6	86	
APR											
15...	1300	164000	362	376	7.7	7.6	4.5	746	11.8	94	
29...	1225	74500	426	447	8.1	8.2	12.5	736	11.0	107	
MAY											
12...	1200	45500	481	500	8.5	7.8	12.5	741	10.6	103	
JUN											
02...	1322	30300	522	523	8.3	8.2	18.0	741	10.2	110	
16...	1150	18600	536	533	8.4	8.4	22.5	--	7.9	94	
JUL											
07...	1315	39200	506	494	8.0	8.1	21.0	747	7.6	88	
14...	1230	40000	489	470	8.1	8.1	24.5	744	7.5	92	
AUG											
06...	1215	40300	526	526	8.0	8.1	25.0	751	6.8	84	
SEP											
05...	1050	24100	479	463	8.2	8.3	21.5	746	7.9	93	

PHOS- PHORUS	HARD- NESS	ALKA- LINITY WAT DIS	ALKA- LINITY LAB	BICAR- BONATE WATER	NITRO- GEN, AMMONIA	NITRO- GEN, NITRITE	NITRO- GEN,AM- MONIA +	NITRO- GEN,AM- MONIA +	NITRO- GEN, NO2+NO3	
TOTAL	TOT IT	IT	LAB	DIS IT	DIS-	DIS-	ORGANIC	ORGANIC	DIS-	
(MG/L	FIELD	(MG/L	FIELD	SOLVED	SOLVED	DIS.	TOTAL	SOLVED		
DATE	AS	MG/L AS	AS	MG/L AS	(MG/L	(MG/L	(MG/L	(MG/L	(MG/L	
(MG/L	CACO3)	CACO3	CACO3)	HCO3	AS N)	AS N)	AS N)	AS N)	AS N)	
P)	(00900)	(39086)	(90410)	(00453)	(00608)	(00613)	(00623)	(00625)	(00631)	
(00665)										

OCT										
07...	180	155	160	182	0.020	0.020	0.40	1.1	0.820	
0.200										
NOV										
14...	190	142	154	173	0.070	0.020	0.50	0.70	1.30	
0.100										
DEC										
03...	200	156	160	190	0.190	0.030	0.80	0.90	2.50	
0.100										
JAN										
02...	200	165	173	201	0.220	0.020	0.70	0.70	1.70	





07...	50	0.29	14	<3.0	1.5	346	279	90	99
14...	52	0.23	16	11	1.7	323	288	78	99
AUG									
06...	55	0.35	19	12	2.8	352	302	62	99
SEP									
05...	36	0.22	15	5.9	<1.0	303	274	45	100