

UPPER MISSISSIPPI RIVER BASIN

05378500 MISSISSIPPI RIVER AT WINONA, MN

LOCATION.--Lat 44° 03'21", long 91° 38'16", in sec. 23, T.107 N., R.7 W., Winona County, Hydrologic Unit 07040003, on right bank at Winona pumping station in Winona, 9.5 mi upstream from Trempealeau River, and at mile 725.7 upstream from the Ohio River.

DRAINAGE AREA.--59,200 mi², approximately.

PERIOD OF RECORD.--June 1928 to current year. Gage-height records collected in this vicinity since 1878 are contained in reports of Mississippi River Commission.

GAGE.--Water-stage recorder. Datum of gage is 639.64 ft above mean sea level. June 10, 1928 to Apr. 15, 1931, nonrecording gage at site 800 ft upstream. Prior to Oct. 1, 1929, at datum 0.20 ft higher and Oct. 1, 1929 to Apr. 15, 1931, at datum 0.12 ft lower. Apr. 16, 1931 to Nov. 12, 1934, nonrecording gage at present site and datum. Since Mar. 31, 1937, auxiliary water-stage recorder 2.7 mi upstream at tailwater of navigation dam 5A.

REMARKS.-- Records good except those for estimated days, which are fair to poor. Some regulation by reservoirs, navigation dams, and power plants at low and medium stages. Daily discharges for some days provided by the U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Minimum gage height, -3.38 ft, Aug. 31, 1934 (prior to dam construction in 1936); minimum gage height since 1938, after completion of dam, 1.95 ft, Jan. 27, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 18, 1880, reached an elevation of 657.14 ft, discharge, 172,000 ft³/s, from information by U.S. Army Corps of Engineers.

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	19500	36500	45500	e25000	e27000	e27700	74400	90900	42800
34800	66100	e42000							
2	17600	37100	56400	e25100	e27000	e29700	80000	85900	42900
35600	64700	e43000							
3	19200	38100	63600	e26800	e27400	31400	88000	83000	42800
40000	63900	e42000							
4	19700	39000	62800	e27800	e28300	29800	97900	79200	42300
45100	62100	e41000							
5	19700	40300	62600	e31500	e29200	28700	112000	76700	39800
49500	59800	e40000							

6	17800	41000	62000	e32800	e29100	28600	130000	75300	39200
51400	58700	e39000							
7	16400	39800	62900	e27700	e29000	28700	147000	72800	37700
51500	56000	e37000							
8	15600	38800	62400	e25800	e27400	28900	161000	70500	36300
51300	52000	e35000							
9	15300	37600	56100	e27000	e27300	29400	173000	69100	35500
52200	48700	e33000							
10	16400	35800	41700	e29200	e27000	28500	184000	66100	34200
52900	44900	e31000							
11	16100	35700	39000	e31600	e27000	28200	192000	64200	32500
52600	40100	e30000							
12	15100	35800	37700	e30000	e27000	28400	194000	63700	31400
52800	37600	e29000							
13	15200	34700	36800	e26900	e26900	31800	193000	62100	29900
52700	37200	e28000							
14	15800	33400	36900	e26400	e26700	32500	190000	59700	29000
53200	32800	e27000							
15	15100	31400	36600	e26500	e26600	34000	187000	59300	27300
53100	32000	e26000							
16	15500	30400	33000	e27800	e26700	38000	183000	58000	24300
52900	31800	e25000							
17	15100	33900	30300	e27300	e26700	38600	178000	56200	21200
54000	32300	e27000							
18	16400	40600	27100	e21600	e26700	36800	171000	55400	23500
55500	31300	e32000							
19	22500	46400	21000	e23300	e27300	35500	164000	55100	27400
57500	29900	e37000							
20	25600	52100	e22000	e26400	e27600	36700	156000	52700	27400
58100	31200	e36000							
21	27000	58700	e24000	e28400	e28000	37400	148000	48800	27000
57400	35800	e36000							
22	27800	62200	e26000	e28800	e28200	39100	141000	50600	26900
57100	39100	e35000							
23	28800	62500	e33200	e28700	e28300	43800	133000	48000	26200
56500	40900	e32000							
24	28900	55400	e33200	e28600	e28600	49900	127000	46600	23500
58000	41000	e30000							
25	30200	54700	e33000	e28400	e28200	53900	120000	46600	20800
61900	41800	e28000							
26	32500	43300	e30900	e28300	e26700	55400	113000	45000	19500
63500	41500	e28000							
27	33200	39000	e26200	e25700	e27000	58200	108000	41900	20600
64200	e41000	e27000							
28	34500	38700	e25200	e25700	e27500	60500	103000	42500	27600
68200	e40000	e27000							
29	35200	37500	e25000	e25700	---	64300	97500	42900	31200
70000	e38000	e28000							
30	35200	42200	e25000	e25800	---	68400	94600	42900	34300
68600	e39000	e28000							

31	36000	---	e25000	e25800	---	72300	---	42900	---
67100	e40000	---							
TOTAL	698900	1252600	1203100	846400	770400	1235100	4240400	1854600	925000
1699200	1351200	979000							
MEAN	22550	41750	38810	27300	27510	39840	141300	59830	30830
54810	43590	32630							
MAX	36000	62500	63600	32800	29200	72300	194000	90900	42900
70000	66100	43000							
MIN	15100	30400	21000	21600	26600	27700	74400	41900	19500
34800	29900	25000							
AC-FT	1386000		2485000	2386000	1679000	1528000	2450000	8411000	3679000
1835000	3370000	2680000	1942000						
CFSM	.38	.71	.66	.46	.46	.67	2.39	1.01	.52
.93	.74	.55							

o e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1997, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
JUL	AUG	SEP							
MEAN	22610	22960	17710	15230	15410	30460	61430	48710	39170
31600	21440	22540							
MAX	85950	50040	40440	30480	35900	86420	152600	111500	100200
118800	67560	69490							
(WY)	1987	1972	1992	1983	1984	1983	1965	1986	1993
1993	1993	1986							
MIN	6774	7367	6286	6742	7874	9023	12810	11930	8450
7063	5391	6790							
(WY)	1934	1934	1934	1940	1977	1934	1931	1931	1934
1934	1934	1933							

SUMMARY STATISTICS	FOR 1996 CALENDAR YEAR	FOR 1997 WATER YEAR	WATER YEARS
1928 - 1997			
ANNUAL TOTAL	15263500	17055900	
ANNUAL MEAN	41710	46730	29140
HIGHEST ANNUAL MEAN			
56850		1986	
LOWEST ANNUAL MEAN			
9742		1934	
HIGHEST DAILY MEAN	143000	Apr 25	194000
20			Apr 12
1965			264000
LOWEST DAILY MEAN	14800	Sep 17	15100
29			Oct 12
1933			2250
ANNUAL SEVEN-DAY MINIMUM	15400	Oct 11	15400
27			Oct 11
1933			3210
INSTANTANEOUS PEAK FLOW			194000
19			Apr 11
1965			268000
INSTANTANEOUS PEAK STAGE			18.27
19			Apr 11
1965			20.77a
			Apr

INSTANTANEOUS LOW FLOW			1940b	Dec
12 1980				
ANNUAL RUNOFF (AC-FT)	30280000	33830000	21110000	
ANNUAL RUNOFF (CFSM)	.70	.79	.49	
10 PERCENT EXCEEDS	69500	73400	60400	
50 PERCENT EXCEEDS	34400	36000	20900	
90 PERCENT EXCEEDS	18100	25100	9900	

o a From highwater mark.

b Result of ice jam.

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- Daily sediment, temperature, and specific conductance station, water years 1976 to 88. Periodic sediment station, water years 1989 to current.

REMARKS.-- Suspended-sediment samples were collected at five points in a river cross-section.

SUSPENDED-SEDIMENT CONCENTRATIONS, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI- MENT SUS- SPENDED MG/L (80154	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
APR				
17...	1610	177,000	70	61
MAY				
08...	1600	70,400	21	83