

Water-Data Report 2009

## 05227500 MISSISSIPPI RIVER AT AITKIN, MN

Mississippi Headwaters Basin  
Prairie-Willow Subbasin

LOCATION.--Lat 46°32'26", long 93°42'26" referenced to North American Datum of 1927, in SW ¼ NW ¼ sec.24, T.47 N., R.27 W., Aitkin County, MN, Hydrologic Unit 07010104, on right bank upstream side of highway bridge at north edge of Aitkin, 1 mi downstream from Ripple River and at mile 1,055.9 upstream from Ohio River.

Diversion Gage: Lat 46°35'30", long 93°41'13", in NW¼NW¼ sec.6, T.47N., R.26W., Aitkin County, Hydrologic Unit 07010104, on upstream side of bridge 1.2 miles downstream from entrance control structure, 1 mile upstream from Little Willow River and 3.8 miles north of Aitkin.

DRAINAGE AREA.--6,140 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1945 to current year.

REVISED RECORDS.--Unpublished, 2009: 1924(M).

GAGE.--Water-stage recorder. Datum of gage is 1,182.41 ft above sea level (NGVD of 1929, levels by U.S. Army Corps of Engineers). Mar. 1, 1945 to Mar. 14, 1961, non-recording gage, and Mar. 15, 1961 to Sept. 30, 1967, water-stage recorder at same site at datum 3.0 ft higher. Diversion channel: non-recording gage and crest-stage gage. Datum of gage is 1,182.02 ft above sea level (NGVD of 1929). Apr. 9, 1955 to Apr. 10, 1956, non-recording gage at site 4 mi downstream at different datum. Apr. 11, 1956 to Sept. 30, 1967, non-recording gage at same site at datum 3.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, were considered poor. Flow regulated by Winnibigoshish Lake, Leech Lake, Pokegama Lake, and Sandy Lake. Water diverted at medium and high stages into Aitkin diversion channel 6.5 mi above station, bypasses station and returns to river 15.5 mi below station. Diversion began Apr. 2, 1955. These records include flow in diversion channel.

EXTREMES FOR CURRENT YEAR.--Main channel: maximum discharge, 4,100 ft<sup>3</sup>/s, Mar. 28 (estimated daily-mean, backwater from ice); maximum gage height, 15.12 ft., Mar. 29, backwater from ice. Diversion channel: maximum discharge, 3,700 ft<sup>3</sup>/s, Mar. 28 (estimated daily-mean, backwater from ice); maximum gage height, 16.48 ft., April 3, backwater from ice.

## 05227500 MISSISSIPPI RIVER AT AITKIN, MN—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,000	1,710	e1,880	e1,390	e1,770	e2,060	e7,560	6,550	3,850	2,110	967	801
2	1,010	1,740	e1,790	e1,390	e1,780	e2,070	e7,420	6,610	3,790	2,020	949	818
3	1,010	1,740	e1,680	e1,390	e1,810	e2,080	e7,220	6,630	3,690	1,960	955	837
4	995	1,730	e1,590	e1,390	e1,830	e2,070	e6,990	6,600	3,640	1,930	953	826
5	981	1,740	e1,520	e1,390	e1,850	e2,080	e6,920	6,560	3,580	1,860	920	785
6	1,000	1,830	e1,450	e1,390	e1,860	e2,080	e6,990	6,550	3,500	1,780	905	760
7	1,050	1,980	e1,410	e1,400	e1,870	e2,070	e7,070	6,500	3,440	1,720	960	722
8	1,130	2,180	e1,380	e1,550	e1,890	e2,060	e7,030	6,420	3,390	1,680	967	723
9	1,220	2,370	e1,380	e1,530	e1,900	e2,050	e7,020	6,310	3,380	1,610	980	716
10	1,370	2,480	e1,380	e1,530	e1,920	e2,020	e7,050	6,210	3,390	1,520	986	697
11	1,500	2,580	e1,390	e1,530	e1,930	e2,010	e7,060	6,090	3,370	1,410	951	644
12	1,590	2,650	e1,390	e1,520	e1,930	e2,020	7,060	5,950	3,330	1,300	929	592
13	1,670	2,660	e1,380	e1,520	e1,940	e2,040	7,050	5,850	3,280	1,240	876	579
14	1,760	2,660	e1,390	e1,520	e1,940	e2,040	7,050	5,750	3,170	1,260	772	572
15	1,860	2,650	e1,390	e1,530	e1,950	e2,240	7,030	5,600	3,020	1,460	711	564
16	1,890	2,640	e1,400	e1,550	e1,950	e2,440	7,020	5,560	2,940	1,340	715	564
17	1,890	2,620	e1,400	e1,570	e1,950	e2,660	7,010	5,560	2,870	1,240	698	541
18	1,870	2,540	e1,410	e1,580	e1,960	e2,870	7,010	5,580	2,770	1,210	644	536
19	1,840	2,490	e1,400	e1,610	e1,970	e3,060	7,000	5,570	2,810	1,130	667	521
20	1,810	e2,420	e1,400	e1,620	e1,980	e3,230	6,980	5,620	2,790	1,020	766	523
21	1,760	e2,330	e1,400	e1,620	e1,990	e3,510	6,920	5,630	2,800	976	772	519
22	1,700	e2,000	e1,400	e1,630	e2,000	e3,880	6,820	5,480	2,870	1,000	743	516
23	1,650	e2,060	e1,400	e1,630	e2,000	e4,790	6,740	5,270	2,840	1,000	750	483
24	1,600	e2,100	e1,390	e1,650	e2,010	e5,930	6,670	4,940	2,890	1,060	755	477
25	1,580	e2,040	e1,400	e1,660	e2,010	e6,850	6,590	4,590	2,970	1,090	774	496
26	1,590	e2,000	e1,390	e1,670	e2,020	e7,460	6,510	4,340	2,920	1,090	790	513
27	1,600	e2,180	e1,400	e1,680	e2,030	e7,710	6,500	4,160	2,880	1,090	784	493
28	1,580	e2,140	e1,400	e1,720	e2,050	e7,680	6,470	4,060	2,630	1,070	787	490
29	1,570	e2,070	e1,390	e1,740	---	e7,360	6,440	3,980	2,400	1,000	792	464
30	1,600	e1,990	e1,390	e1,740	---	e7,080	6,490	3,940	2,230	975	781	461
31	1,660	---	e1,390	e1,760	---	e7,260	---	3,890	---	969	787	---
<b>Total</b>	46,336	66,320	44,760	48,400	54,090	114,760	207,690	172,350	93,430	42,120	25,786	18,233
<b>Mean</b>	1,495	2,211	1,444	1,561	1,932	3,702	6,923	5,560	3,114	1,359	832	608
<b>Max</b>	1,890	2,660	1,880	1,760	2,050	7,710	7,560	6,630	3,850	2,110	986	837
<b>Min</b>	981	1,710	1,380	1,390	1,770	2,010	6,440	3,890	2,230	969	644	461
<b>Ac-ft</b>	91,910	131,500	88,780	96,000	107,300	227,600	412,000	341,900	185,300	83,550	51,150	36,170
<b>Cfsm</b>	0.24	0.36	0.24	0.25	0.31	0.60	1.13	0.91	0.51	0.22	0.14	0.10
<b>In.</b>	0.28	0.40	0.27	0.29	0.33	0.70	1.26	1.04	0.57	0.26	0.16	0.11

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	2,637	2,752	2,254	1,963	1,860	2,205	5,152	5,152	3,666	3,016	2,213	2,093
<b>Max</b>	6,534	6,756	4,498	3,525	3,196	5,415	10,830	15,510	8,072	8,201	8,270	6,689
<b>(WY)</b>	(1966)	(1972)	(1997)	(1966)	(1966)	(1945)	(1966)	(1950)	(1965)	(1993)	(1953)	(1986)
<b>Min</b>	313	328	324	345	398	638	1,074	669	540	346	273	321
<b>(WY)</b>	(1977)	(1977)	(1977)	(1977)	(1977)	(1977)	(1977)	(1958)	(1988)	(1961)	(1961)	(1976)

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SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1945 - 2009	
<b>Annual total</b>	872,824		934,275			
<b>Annual mean</b>	2,385		2,560		2,906	
<b>Highest annual mean</b>					4,985	1966
<b>Lowest annual mean</b>					796	1977
<b>Highest daily mean</b>	9,390	May 3	7,710	Mar 27	19,900	May 20, 1950
<b>Lowest daily mean</b>	495	Sep 5	461	Sep 30	153	Sep 1, 1961
<b>Annual seven-day minimum</b>	506	Sep 4	485	Sep 24	195	Aug 26, 1961
<b>Maximum peak flow</b>			<sup>a</sup> 7,800	Mar 28	20,000	May 20, 1950
<b>Maximum peak stage</b>			<sup>b</sup> 15.12	Mar 29	<sup>c</sup> 22.49	May 20, 1950
<b>Instantaneous low flow</b>			411	Sep 29	151	Sep 1, 1961
<b>Annual runoff (ac-ft)</b>	1,731,000		1,853,000		2,106,000	
<b>Annual runoff (cfsm)</b>	0.388		0.417		0.473	
<b>Annual runoff (inches)</b>	5.29		5.66		6.43	
<b>10 percent exceeds</b>	6,000		6,550		5,770	
<b>50 percent exceeds</b>	1,490		1,830		2,320	
<b>90 percent exceeds</b>	721		773		919	

<sup>a</sup> Estimated daily-mean discharge, backwater from ice.

<sup>b</sup> Backwater from ice

<sup>c</sup> Present datum.

