Water-Data Report 2009

05331000 MISSISSIPPI RIVER AT ST. PAUL, MN

Upper Mississippi Basin
Twin Cities Subbasin

LOCATION.--Lat 44°56′02″, long 93°06′21″ referenced to North American Datum of 1927, in NW ¼ NW ¼ sec.13, T.28 N., R.22 W., Ramsey County, MN, Hydrologic Unit 07010206, on left bank in St. Paul, 100 ft upstream from Smith Ave. Bridge, 4.8 mi downstream from Minnesota River, and at mile 840.5 upstream from Ohio River.

DRAINAGE AREA.--36,800 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--March 1892 to current year (prior to 1901, fragmentary during some winters). Records prior to March 1892, published in the 19th Annual Report, Part 4, have been found to be unreliable and should not be used. Monthly discharge only for some periods, published in WSP 1308. Gage-height records (winter records incomplete) collected at same site since 1866 are contained in reports of U.S. Weather Bureau, War Department and Mississippi River Commission.

REVISED RECORDS.--WSP 285: 1892-96. WSP 715: Drainage area. WSP 875: 1938. WSP 895: 1939. WSP 1308: 1867(M). WSP 1508: 1897, 1898(M). 1903(M), 1917-18(M). 1928(M), 1929. WRD MN-74: 1973. Unpublished, 2009: 1965(M), 1969(M), 1997(M), 2001(M).

GAGE.--Water-stage recorder. Datum of gage is 683.62 ft above sea level (NGVD of 1929). Prior to Mar. 18, 1925, non-recording gage at several sites within 300 ft of each other and 1.2 miles downstream of present site at present datum. Mar. 19, 1925 to June 24, 1999, recording gage 1.2 miles downstream of present site at present datum. Since September 1938, auxiliary water-stage recorder 5.6 mi downstream.

COOPERATION.--Records of discharge from the Metro Plant wastewater treatment plant were provided by the Metropolitan Council -Environmental Services. Records of water withdrawals used in routing computations were provided by the cities of Minneapolis and St. Paul water utilities.

REMARKS.--Records good to fair except those for estimated discharges and discharges less than 5,000 cfs which are fair to poor. Flow-routing techniques were used from Oct. 1 to Apr. 7 and May 9 to Sept. 30. Routed discharges are considered fair except were noted above. Slight regulation, except during extreme floods, by reservoirs on headquarters and by power plants. Beginning July 20, 1939, effluent from Minneapolis and St. Paul, which formerly entered the river above station, was diverted to a wastewater treatment plant, thence to river about 4 miles below station. Daily-mean discharge figures do not include this diversion.

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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	e3,750	7,090	7,620	e5,300	e5,190	6,470	61,600	26,700	10,600	9,930	5,310	5,310
2	e3,680	6,880	6,820	e5,190	e5,320	6,320	59,700	26,700	10,200	9,110	5,360	5,140
3	3,930	6,900	6,120	e5,530	e5,450	6,160	57,000	26,200	10,300	8,350	4,860	4,640
4	e3,780	7,030	6,050	e5,280	e5,270	6,210	54,500	25,500	9,630	8,160	4,820	4,400
5	e3,760	7,030	5,870	e4,830	e4,900	6,370	53,100	25,200	9,340	7,840	4,940	4,360
6	e3,560	7,080	e5,260	e4,780	e4,960	6,550	51,700	24,600	9,750	7,240	4,770	4,210
7	3,820	7,360	e4,360	e4,920	e5,260	6,540	51,200	23,800	9,520	6,770	6,540	4,030
8	4,230	7,600	e4,160	e5,160	e5,410	6,880	50,600	23,300	9,940	6,940	6,450	4,040
9	e5,030	7,870	e4,030	e5,350	e4,950	7,060	50,200	22,400	10,300	6,250	6,210	3,640
10	e4,710	8,110	e3,990	e5,320	e5,370	7,580	48,700	21,200	10,300	5,540	6,130	3,580
11	5,240	8,040	e4,040	e5,210	e6,100	7,560	47,000	21,000	11,200	5,580	6,010	3,510
12	e5,230	8,480	e4,220	e5,320	6,660	7,430	45,600	20,600	11,400	5,620	5,580	3,540
13	6,250	8,990	e4,370	e5,290	7,000	e7,620	43,700	20,000	11,300	5,840	5,480	e3,610
14	6,160	9,020	e4,510	e5,000	6,990	e8,340	42,000	19,700	11,000	5,970	5,540	e3,730
15	6,760	9,310	e4,930	e4,780	6,930	8,640	40,600	19,200	10,800	6,900	5,500	3,490
16	6,700	9,270	e4,710	e4,630	7,450	9,550	39,300	19,000	10,900	7,290	5,620	3,350
17	7,310	9,410	e4,150	e4,780	8,040	11,400	38,100	18,300	11,500	7,710	5,920	e3,010
18	6,970	8,900	e3,840	e4,980	7,940	14,400	37,000	17,800	11,200	7,500	5,980	e3,030
19	7,500	8,950	e4,310	e5,380	7,990	17,100	36,000	17,400	10,300	7,010	7,200	3,390
20	7,140	8,540	e4,550	e5,630	7,850	19,800	34,600	16,900	10,600	6,590	7,130	2,930
21	7,150	8,380	e4,740	e5,660	8,070	20,800	33,100	16,400	11,100	7,210	e7,700	e2,880
22	7,000	7,550	e4,520	e5,430	7,750	22,900	32,200	15,900	11,100	7,300	e7,690	e2,810
23	6,580	6,650	e4,440	e5,490	7,140	25,800	31,500	15,100	11,300	6,540	e7,630	e2,820
24	7,070	7,270	e4,560	e5,490	7,100	30,900	30,000	14,800	11,500	6,160	e7,290	e3,050
25	7,350	6,830	e4,980	e5,290	6,760	41,600	29,000	14,100	11,700	6,350	e7,280	e3,040
26	6,830	6,320	e5,350	e4,870	6,940	49,200	28,800	13,200	12,000	6,160	7,010	e3,050
27	6,930	6,280	e5,460	e4,900	6,540	53,200	28,100	13,100	11,700	5,890	6,810	e2,930
28	6,970	7,040	e5,530	e5,200	6,540	55,800	27,700	12,500	11,500	5,930	6,410	e2,880
29	7,670	7,060	e5,610	e5,150	---	58,600	27,100	12,100	10,800	5,930	5,850	e2,990
30	7,560	7,240	e5,660	e5,220	---	60,300	26,800	11,300	10,500	5,260	5,670	e3,200
31	7,200	---	e5,630	e5,150	---	61,900	---	11,200	---	5,470	5,200	---
Total	183,820	232,480	154,390	160,510	181,870	658,980	1,236,500	585,200	323,280	210,340	189,890	106,590
Mean	5,930	7,749	4,980	5,178	6,495	21,260	41,220	18,880	10,780	6,785	6,125	3,553
Max	7,670	9,410	7,620	5,660	8,070	61,900	61,600	26,700	12,000	9,930	7,700	5,310
Min	3,560	6,280	3,840	4,630	4,900	6,160	26,800	11,200	9,340	5,260	4,770	2,810
Ac-ft	364,600	461,100	306,200	318,400	360,700	1,307,000	2,453,000	1,161,000	641,200	417,200	376,600	211,400
Cfsm	0.16	0.21	0.14	0.14	0.18	0.58	1.12	0.51	0.29	0.18	0.17	0.10
In.	0.19	0.24	0.16	0.16	0.18	0.67	1.25	0.59	0.33	0.21	0.19	0.11
Diversion, in cubic feet per second, from wastewater treatment plant.												
+	258	254	251	252	256	259	259	251	254	246	260	255
Mississippi River at St. Paul adjusted with discharges with wastewater treatment plant added.												
‡ Mean	6,190	8,000	5,230	5,430	6,750	21,500	41,500	19,100	11,000	7,030	6,380	3,810
‡ Cfsm	0.17	0.22	0.14	0.15	0.18	0.58	1.13	0.52	0.30	0.19	0.17	0.10
‡ In.	0.19	0.24	0.16	0.17	0.19	0.67	1.26	0.60	0.33	0.22	0.22	0.12

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STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1892 - 2009, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	8,797	8,032	5,836	4,750	4,696	11,230	26,820	21,660	18,860	14,500	8,825	8,003
Max	38,210	27,660	16,080	12,770	14,700	43,240	96,590	70,430	57,170	73,590	42,550	34,380
(WY)	(1987)	(1972)	(1983)	(2006)	(1966)	(1983)	(2001)	(2001)	(1993)	(1993)	(1993)	(1986)
Min	1,289	1,348	1,277	1,097	1,300	1,757	3,421	3,085	1,980	1,272	864	1,143
(WY)	(1937)	(1937)	(1935)	(1935)	(1895)	(1940)	(1895)	(1934)	(1934)	(1934)	(1934)	(1934)

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1892 - 2009	
Annual total	4,639,520		4,223,850			
Annual mean	12,680		11,570		11,910	
Highest annual mean					29,580	1986
Lowest annual mean					1,935	1934
Highest daily mean	47,400	May 11	61,900	Mar 31	171,000	Apr 16, 1965
Lowest daily mean	2,950	Sep 10	2,810	Sep 22	632	Aug 26, 1934
Annual seven-day minimum	3,140	Sep 7	2,940	Sep 20	741	Aug 26, 1934
Maximum peak flow			62,300	Mar 31	171,000	Apr 16, 1965
Maximum peak stage			12.67	Mar 31	26.01	Apr 16, 1965
Annual runoff (ac-ft)	9,202,000		8,378,000		8,631,000	
Annual runoff (cfsm)	0.344		0.314		0.324	
Annual runoff (inches)	4.69		4.27		4.40	
10 percent exceeds	35,200		27,300		27,800	
50 percent exceeds	6,600		6,940		7,210	
90 percent exceeds	3,770		4,160		2,770	

+ Diversion, in cubic feet per second, from wastewater treatment plant.
‡ Adjusted for discharges from wastewater treatment plant.