

Water-Data Report 2007

**05013900 GRINNELL CREEK AT GRINNELL GLACIER, NEAR MANY GLACIER, MT**

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°45'28", long 113°43'29" referenced to North American Datum of 1927, in S ¼ W ¼ sec.29, T.35 N., R.16 W., Glacier County, MT, Hydrologic Unit 10010002, Glacier National Park, on left bank 0.2 mi downstream from outlet of Grinnell Glacier, 0.4 mi upstream from Grinnell Falls, 4 mi southwest of Many Glacier, and 15 mi southwest of Babb.

DRAINAGE AREA.--1.10 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 1959 to September 1971, July 2004 to current year (no winter records).

GAGE.--Water-stage recorder. Elevation of gage is 6,322 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. No regulation or diversion occurs upstream from station. Bureau of Reclamation satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 05013900 GRINNELL CREEK AT GRINNELL GLACIER, NEAR MANY GLACIER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1							23	23	17	5.8		
2							25	23	14	e9.0		
3							28	23	14	e8.0		
4							31	21	14	e7.5		
5							33	19	13	e7.0		
6							37	19	12	e6.0		
7							37	19	11	e6.5		
8							32	17	9.3	e7.0		
9							28	15	7.5	e8.0		
10							26	16	6.9	e9.0		
11							27	15	8.1	e10		
12							30	15	9.0	e11		
13							33	15	7.5	e12		
14							36	17	6.4	e12		
15							34	17	6.2	11		
16							32	16	6.4	5.7		
17							31	17	8.2	4.2		
18							34	17	7.5	6.1		
19							40	15	8.6	e6.4		
20							33	18	6.9	e6.6		
21							28	15	7.4	e6.2		
22							27	12	5.7	e6.0		
23							31	13	6.3	e6.5		
24							36	13	5.5	e7.0		
25							31	13	4.3	e6.5		
26							28	13	3.8	e4.5		
27							30	11	3.4	e4.5		
28							30	10	3.2	e5.5		
29							30	11	6.3	e6.0		
30							27	12	5.7	e5.5		
31							25	14	---	e5.5		
<b>Total</b>							953	494	245.1	222.5		
<b>Mean</b>							30.7	15.9	8.17	7.18		
<b>Max</b>							40	23	17	12		
<b>Min</b>							23	10	3.2	4.2		
<b>Ac-ft</b>							1,890	980	486	441		

**STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1959 - 2007\***

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>							38.1	28.0	15.1	7.97		
<b>Max</b>							47.0	38.6	31.6	19.3		
<b>(WY)</b>							(1967)	(1971)	(1968)	(1962)		
<b>Min</b>							26.2	15.9	6.93	2.72		
<b>(WY)</b>							(2005)	(2007)	(1965)	(2007)		

\* For periods of seasonal records, July 1959 to September 1971 and July 2004 to current year.

05013900 GRINNELL CREEK AT GRINNELL GLACIER, NEAR MANY GLACIER, MT—Continued

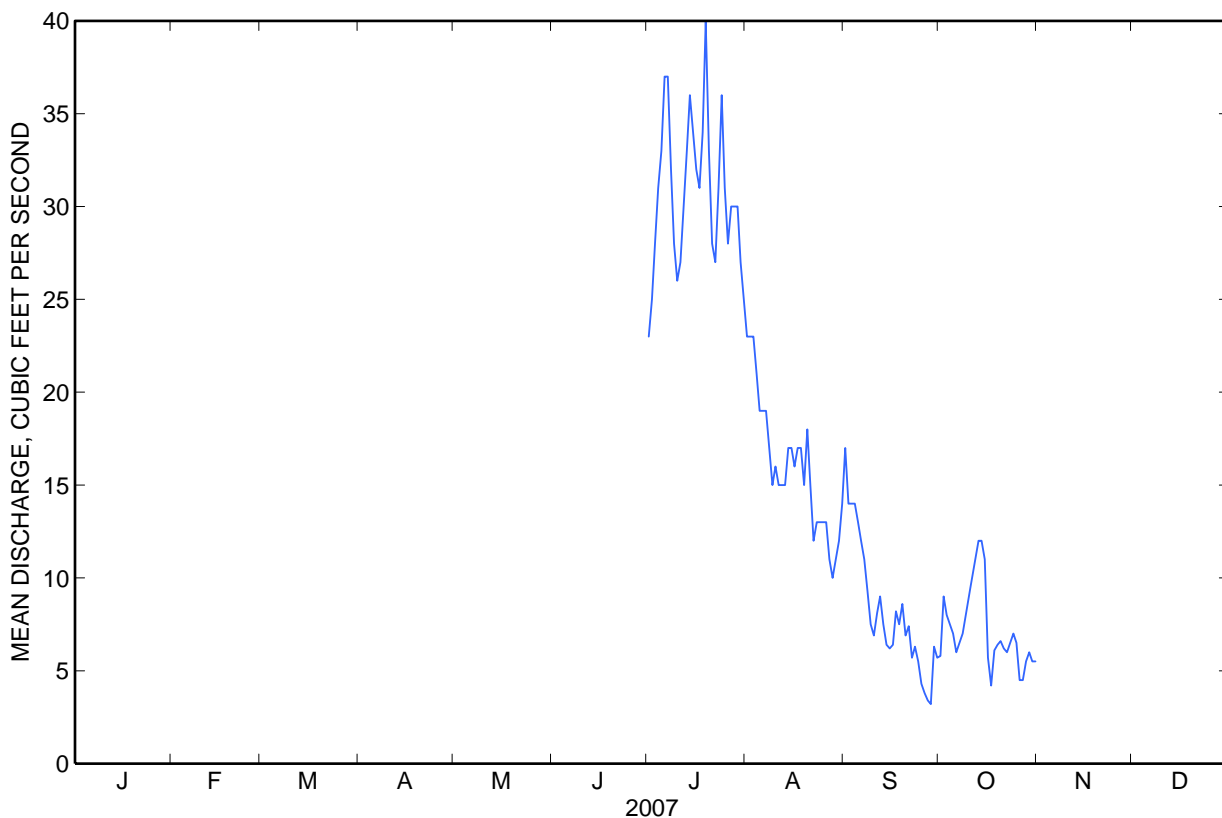
SUMMARY STATISTICS

	2007 Season		Seasons 1959 - 2007*	
<b>Highest daily mean</b>	40	Jul 19	126	Sep 30, 2005
<b>Lowest daily mean</b>	3.2	Sep 28	0.00	Nov 29, 1960
<b>Maximum peak flow</b>	<sup>a</sup> 43	Jul 19	230	Sep 30, 2005
<b>Maximum peak stage</b>	<sup>b</sup> 3.63	Oct 08	4.43	Sep 30, 2005

\* For periods of seasonal records, July 1959 to September 1971 and July 2004 to current year.

<sup>a</sup> Gage height, 2.69 ft.

<sup>b</sup> Backwater from ice.



STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	7.97	3.07	1.84	---	---	---	---	---	---	38.1	28.0	15.1
<b>Max</b>	19.3	5.52	1.84	---	---	---	---	---	---	47.0	38.6	31.6
<b>(WY)</b>	(1962)	(1963)	(1963)	(---	(---	(---	(---	(---	(---	(1967)	(1971)	(1968)
<b>Min</b>	2.72	0.85	1.84	---	---	---	---	---	---	26.2	15.9	6.93
<b>(WY)</b>	(2007)	(1962)	(1963)	(---	(---	(---	(---	(---	(---	(2005)	(2007)	(1965)

Water-Data Report 2007

**05014300 SWIFTCURRENT CREEK ABOVE SWIFTCURRENT LAKE, AT MANY GLACIER, MT**

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°47'43", long 113°40'45" referenced to North American Datum of 1927, in NE ¼ sec.15, T.35 N., R.16 W., Glacier County, MT, Hydrologic Unit 10010002, Glacier National Park, on left bank 0.7 mi upstream of inlet to Swiftcurrent Lake at Many Glacier, and 12 mi southwest of Babb.

DRAINAGE AREA.--14.5 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1, 2003 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 4,920 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are fair. No regulation or diversion occurs upstream from station. Several unpublished observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 7, 2006 reached a discharge of 2,000 ft<sup>3</sup>/s, gage height, 5.28 ft, from slope-area measurement of peak flow.

## Water-Data Report 2007

## 05014300 SWIFTCURRENT CREEK ABOVE SWIFTCURRENT LAKE, AT MANY GLACIER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1				e50	144	227	88	27	8.6	9.4		
2				e45	175	250	81	25	7.5	16		
3				41	210	272	81	23	8.0	24		
4				40	171	291	85	21	8.4	19		
5				38	131	359	84	19	8.5	18		
6				35	107	351	87	19	8.3	17		
7				33	108	284	91	18	9.2	16		
8				33	157	211	83	17	10	17		
9				41	282	180	72	17	8.7	20		
10				48	289	245	64	16	7.7	25		
11				48	231	240	59	15	7.1	32		
12				46	226	181	58	14	6.8	34		
13				43	246	136	60	13	6.7	35		
14				42	203	115	65	13	6.5	33		
15				45	168	104	66	12	6.2	30		
16				47	168	100	61	12	6.1	29		
17				48	196	107	57	12	6.2	28		
18				50	241	121	56	12	6.5	25		
19				48	238	129	61	12	7.9	33		
20				46	195	137	59	13	7.5	34		
21				43	165	152	50	12	7.5	26		
22				42	145	155	44	11	6.5	26		
23				45	119	148	43	11	7.0	26		
24				58	112	126	48	11	7.0	34		
25				74	104	105	46	10	7.0	58		
26				91	99	83	42	8.6	6.9	64		
27				94	113	72	38	8.6	6.5	55		
28				105	174	71	36	9.0	6.5	48		
29				132	179	86	34	8.5	7.7	38		
30				141	174	98	32	8.0	8.2	32		
31				---	197	---	29	7.7	---	27		
<b>Total</b>				1,692	5,467	5,136	1,860	435.4	223.2	928.4		
<b>Mean</b>				56.4	176	171	60.0	14.0	7.44	29.9		
<b>Max</b>				141	289	359	91	27	10	64		
<b>Min</b>				33	99	71	29	7.7	6.1	9.4		
<b>Ac-ft</b>				3,360	10,840	10,190	3,690	864	443	1,840		

**STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 2003 - 2007**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>				63.7	175	195	70.7	28.1	20.3	34.7		
<b>Max</b>				87.5	229	250	96.6	66.7	52.0	88.3		
<b>(WY)</b>				(2004)	(2006)	(2006)	(2004)	(2004)	(2004)	(2006)		
<b>Min</b>				49.7	138	171	57.8	14.0	7.44	9.19		
<b>(WY)</b>				(2005)	(2005)	(2007)	(2005)	(2007)	(2007)	(2007)		

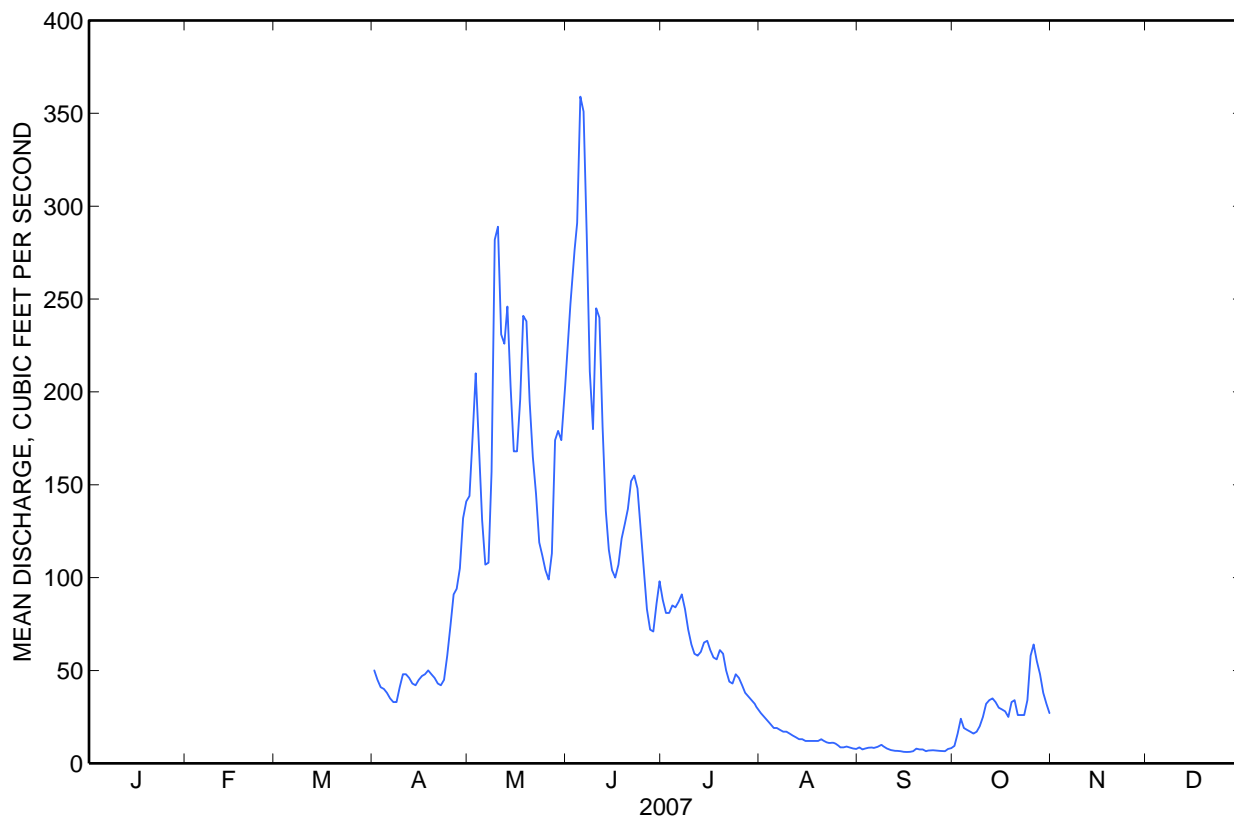
## 05014300 SWIFTCURRENT CREEK ABOVE SWIFTCURRENT LAKE, AT MANY GLACIER, MT—Continued

## SUMMARY STATISTICS

	For 2007 Season		Seasons 2003 - 2007	
<b>Highest daily mean</b>	359	Jun 5	700	May 26, 2003
<b>Lowest daily mean</b>	6.1	Sep 16	6.0	Oct 30, 2006
<b>Maximum peak flow</b>	398	Jun 5	<sup>a</sup> 2,000	Nov 7, 2006
<b>Maximum peak stage</b>	2.31	Jun 5	<sup>b</sup> 5.28	Nov 7, 2006

<sup>a</sup> From slope-area measurement of peak flow.

<sup>b</sup> From floodmark.



## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2003 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	35.9	---	---	---	---	---	63.7	175	195	70.7	28.1	20.3
<b>Max</b>	88.3	---	---	---	---	---	87.5	229	250	96.6	66.7	52.0
<b>(WY)</b>	(2006)	(---	(---	(---	(---	(---	(2004)	(2006)	(2006)	(2004)	(2004)	(2004)
<b>Min</b>	9.19	---	---	---	---	---	49.7	138	171	57.8	14.0	7.44
<b>(WY)</b>	(2007)	(---	(---	(---	(---	(---	(2005)	(2005)	(2007)	(2005)	(2007)	(2007)

Water-Data Report 2007

**05014500 SWIFTCURRENT CREEK AT MANY GLACIER, MT**

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°47'57", long 113°39'21" referenced to North American Datum of 1927, in SE ¼ sec.11, T.35 N., R.16 W., Glacier County, MT, Hydrologic Unit 10010002, Glacier National Park, on right bank 100 ft upstream from outlet of Swiftcurrent Lake at Many Glacier, and 11 mi southwest of Babb.

DRAINAGE AREA.--30.9 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--June 1912 to current year (records incomplete most years prior to 1959). Published as "at McDermott Lake" 1912-14. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1308.

REVISED RECORDS.-- WSP 1508: 1918, maximum discharge; 1943. Water Data Report MT-75-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,876.78 ft, referenced to National Geodetic Vertical Datum of 1929. Prior to May 23, 1916, nonrecording gage on left bank of lake opposite present gage and at present elevation, and May 23, 1916, to June 15, 1918, nonrecording gage at present site and elevation.

REMARKS.--Records are good. No regulation or diversion occurs upstream from station. Bureau of Reclamation satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 05014500 SWIFTCURRENT CREEK AT MANY GLACIER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52	19	58	24	26	25	138	262	412	196	83	37
2	49	19	58	22	23	28	124	302	461	181	79	34
3	46	22	53	33	21	29	114	392	508	179	75	35
4	42	38	50	33	19	29	99	365	553	187	69	36
5	39	59	47	29	19	28	89	284	651	189	66	36
6	35	160	45	20	21	26	80	227	708	191	63	35
7	33	2,770	43	19	22	25	72	209	581	199	60	36
8	31	2,330	40	17	23	28	68	258	427	192	56	38
9	31	763	39	19	22	28	76	473	357	170	54	36
10	29	395	37	23	21	25	97	575	423	153	53	32
11	28	280	35	45	21	29	99	471	502	141	50	29
12	26	225	35	56	21	138	95	441	393	135	49	27
13	25	191	37	48	21	310	90	479	294	138	45	27
14	24	161	35	39	21	231	85	423	238	145	46	27
15	24	151	41	32	19	178	88	344	214	150	44	26
16	25	136	38	27	20	154	95	324	200	145	45	24
17	25	144	40	23	18	132	96	362	207	138	46	24
18	24	350	40	21	19	150	99	465	232	135	44	26
19	24	200	37	20	17	164	98	501	262	143	45	33
20	29	132	36	21	14	176	94	416	279	143	46	32
21	31	158	34	22	13	171	87	347	299	133	46	31
22	29	147	32	18	14	147	83	295	307	118	44	27
23	27	133	31	19	16	131	85	245	304	114	43	30
24	25	121	30	19	16	134	102	221	273	122	45	30
25	25	111	31	20	15	377	124	206	240	123	41	27
26	27	98	32	20	17	481	160	189	197	115	37	26
27	21	88	34	20	19	349	177	195	164	105	36	24
28	22	80	34	23	21	253	186	286	154	100	36	23
29	17	69	29	26	---	194	221	343	174	96	35	26
30	20	55	27	27	---	162	251	327	203	92	34	29
31	20	---	27	27	---	143	---	357	---	88	33	---
<b>Total</b>	905	9,605	1,185	812	539	4,475	3,372	10,584	10,217	4,456	1,548	903
<b>Mean</b>	29.2	320	38.2	26.2	19.2	144	112	341	341	144	49.9	30.1
<b>Max</b>	52	2,770	58	56	26	481	251	575	708	199	83	38
<b>Min</b>	17	19	27	17	13	25	68	189	154	88	33	23
<b>Ac-ft</b>	1,800	19,050	2,350	1,610	1,070	8,880	6,690	20,990	20,270	8,840	3,070	1,790
<b>Cfsm</b>	0.94	10.4	1.24	0.85	0.62	4.67	3.64	11.0	11.0	4.65	1.62	0.97
<b>In.</b>	1.09	11.56	1.43	0.98	0.65	5.39	4.06	12.74	12.30	5.36	1.86	1.09

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	84.3	74.9	37.4	33.9	26.9	32.2	105	375	486	257	116	84.8
<b>Max</b>	243	320	99.8	177	68.4	144	340	656	822	519	207	236
<b>(WY)</b>	(1948)	(2007)	(1981)	(1918)	(1995)	(2007)	(1934)	(1928)	(1975)	(1916)	(1916)	(1968)
<b>Min</b>	19.5	13.0	13.6	10.1	6.93	9.71	16.9	205	193	114	49.9	30.1
<b>(WY)</b>	(1988)	(1988)	(1979)	(1979)	(1985)	(1975)	(1975)	(1955)	(1926)	(1944)	(2007)	(2007)

\* Only for complete months of operation (records incomplete most years prior to 1959).



05014500 SWIFTCURRENT CREEK AT MANY GLACIER, MT—Continued

SUMMARY STATISTICS

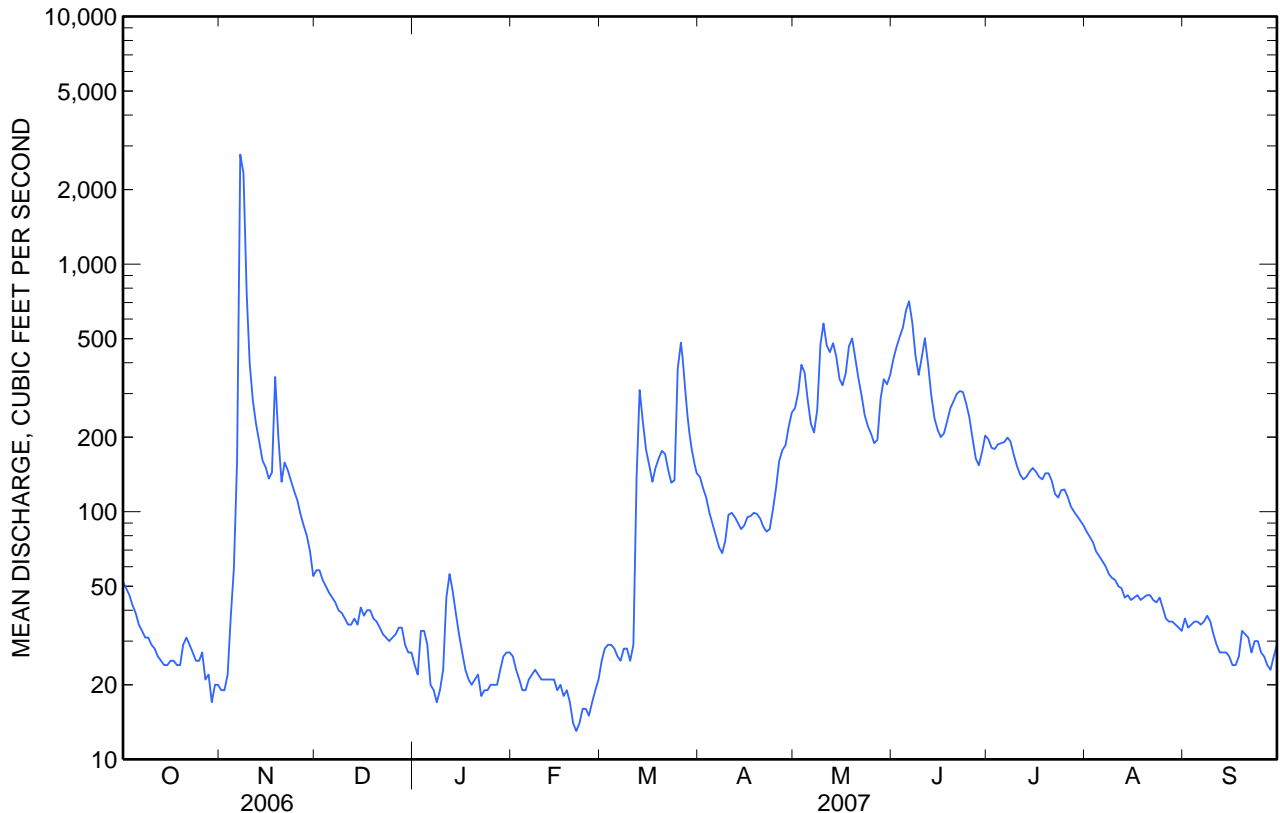
	Calendar Year 2006		Water Year 2007		Water Years 1912 - 2007**	
Annual total	56,433		48,601			
Annual mean	155		133		140	
Highest annual mean					184	1991
Lowest annual mean					86.4	2001
Highest daily mean	2,770	Nov 7	2,770	Nov 7	4,130	Jun 8, 1964
Lowest daily mean	17	Oct 29	13	Feb 21	<sup>a</sup> 0.00	Nov 14, 1976
Annual seven-day minimum	20	Oct 27	15	Feb 19	4.6	Nov 13, 1976
Maximum peak flow			4,270	Nov 7	<sup>b</sup> 6,700	Jun 8, 1964
Maximum peak stage			9.21	Nov 7	<sup>c</sup> 10.00	Jun 8, 1964
Annual runoff (ac-ft)	111,900		96,400		101,500	
Annual runoff (cfsm)	5.00		4.31		4.53	
Annual runoff (inches)	67.94		58.51		61.61	
10 percent exceeds	412		333		383	
50 percent exceeds	50		52		65	
90 percent exceeds	24		21		18	

\*\* For complete years only.

<sup>a</sup> Result of pumping operations, Nov. 14-16, 1976.

<sup>b</sup> From rating curve extended above 1,100 ft<sup>3</sup>/s, on basis of flow over dam computation.

<sup>c</sup> From floodmarks.



## Water-Data Report 2007

**05015500 LAKE SHERBURNE AT SHERBURNE, MT**

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°49'42", long 113°31'16" referenced to North American Datum of 1927, in SE ¼ SE ¼ SE ¼ sec.35, T.36 N., R.15 W., Glacier County, MT, Hydrologic Unit 10010002, Blackfeet Indian Reservation, in gatehouse at dam on Swiftcurrent Creek, 4.5 mi southwest of Babb.

DRAINAGE AREA.--64.1 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1915 to September 1923 (fragmentary), May 1924 to September 1925, November 1925 to June 1926 September 1926 to March 1936 (no winter records some years), May 1936 to September 1952 (monthend contents and daily elevations). October 1952 to current year (monthend contents only). Monthend contents for some periods, published in WSP 1308. Published as Sherburne Lake Reservoir at Sherburne 1915, 1917-28, 1931-52, and as Sherburne Lake Reservoir near Babb 1929-30.

REVISED RECORDS.-- Water Data Report 1983: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,709.45 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to May 7, 1931, nonrecording gage at present site, and May 8, 1931, to Sept. 30, 1974, water-stage recorder at present site, all at elevation 9.45 ft lower.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

REMARKS.--Reservoir is formed on a natural lake by earthfill dam completed in 1921. Prior to 1919, flashboards on a temporary dam provided limited storage. Storage behind main dam began in 1919. The following capacity figures are from capacity table effective Jan. 1, 2007; see previous reports for superseded figures. Usable capacity, 64,250 acre-ft between gage height 4,729.3 ft, 9.3 ft above lowest outlet gage sill, and 4,788.00 ft (spillway crest). Streambed above gates prevents withdrawal of storage to sill elevation. Dead storage is 1,900 acre-ft below gage height 4,729.30 ft. Figures given herein represent usable contents. Water is used for irrigation on Milk River project of Bureau of Reclamation. Bureau of Reclamation satellite telemeter is located at the station.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 65,480 acre-ft, June 30, 1986, gage height, 4,788.40 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum usable contents, 52,560 acre-ft, June 28, gage height, 4,780.92 ft; minimum usable, 2,700 acre-ft, Sept. 4, gage height, 4,734.31 ft.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
September 30	4,738.74	6,290	--
October 31	4,742.13	8,980	+2,690
November 30	4,767.44	34,910	+25,930
December 31	4,770.21	38,330	+3,420
December 31	4,770.21	37,100	+2,190*
Calendar Year 2006	--	--	+620
January 31	4,771.79	39,170	+2,070
February 28	4,772.88	40,650	+1,480
March 31	4,765.19	30,970	-9,680
April 30	4,751.59	16,450	-14,520
May 31	4,768.23	34,630	+18,180
June 30	4,780.80	52,370	+17,740
July 31	4,765.09	30,860	-21,510
August 31	4,734.84	3,030	-27,830
September 30	4737.75	4,970	+1,940
Water Year 2007	--	--	-1,320

\* Began using new capacity table on Jan. 1, 2007; revised dead storage is 1,900 ac-ft.

Water-Data Report 2007

**05017500 ST. MARY RIVER NEAR BABB, MT**

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°50'00", long 113°25'08" referenced to North American Datum of 1927, in NW ¼ NW ¼ SE ¼ sec.34, T.36 N., R.14 W., Glacier County, MT, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on right bank 0.7 mi upstream from outlet of Lower St. Mary Lake and 2.0 mi southeast of Babb.

DRAINAGE AREA.--276 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 1901 to October 1902, May 1910 to September 1925, October 1950 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1308. Published as "at Main" in 1901-02, and as "below Swiftcurrent Creek, at Babb" 1910-15. Records published as "near Babb" for April 1902 to September 1915, May 1929 to September 1950 at sites about 1.5 mi downstream not equivalent because flow of Swiftcurrent Creek not included 1902-15 and because diversion by St. Mary Canal not included 1929-50.

REVISED RECORDS.-- WSP 1308: 1913-14, 1920, 1922-24. WSP 1508: 1902.

GAGE.--Water-stage recorder. Elevation of gage is 4,468.13 ft (NGVD 29). Prior to Oct. 1, 1915, water-stage recorder or nonrecording gages at several sites about 3.8 mi downstream at different elevations. Oct. 1, 1915, to Sept. 30, 1925, water-stage recorder or nonrecording gages at several sites within 1.5 mi downstream at different elevations.

REMARKS.--Records are good. Entire flow of Swiftcurrent Creek below Lake Sherburne is diverted into Lower St. Mary Lake upstream from station. Flow of Swiftcurrent Creek is regulated by Lake Sherburne (station number 05015500) since 1919. October 1950 to September 1976, monthly discharge and runoff figures adjusted for change in contents in Lake Sherburne. U.S. Geological Survey satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.

## 05017500 ST. MARY RIVER NEAR BABB, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	186	93	407	48	109	81	1,280	952	1,700	1,170	979	317
2	180	87	361	43	106	79	1,230	1,030	1,750	1,170	947	287
3	174	86	285	46	103	76	1,180	1,230	1,840	1,230	927	258
4	171	93	213	49	101	69	1,110	1,390	1,950	1,270	885	234
5	168	101	169	60	97	67	1,060	1,390	2,060	1,300	861	211
6	164	105	146	87	97	e80	1,040	1,350	2,230	1,340	839	191
7	156	483	185	105	96	e100	1,010	1,310	2,390	1,360	815	178
8	154	3,150	228	129	94	e200	967	1,210	2,310	1,400	787	179
9	154	4,500	255	144	92	e300	961	1,150	2,100	1,370	741	167
10	148	3,890	264	160	91	e380	961	1,250	1,970	1,350	728	156
11	143	3,100	265	168	88	454	980	1,420	1,960	1,300	702	146
12	139	2,460	267	171	87	577	987	1,540	1,940	1,250	680	134
13	134	1,990	262	170	85	646	963	1,650	1,820	1,200	653	126
14	131	1,640	251	170	87	679	907	1,770	1,670	1,180	645	119
15	129	1,410	257	163	85	726	858	1,750	1,500	1,160	629	115
16	127	1,180	240	154	85	765	832	1,660	1,380	1,140	611	112
17	127	986	207	143	80	836	772	1,590	1,350	1,130	606	106
18	131	845	193	136	83	919	738	1,600	1,350	1,130	602	104
19	126	733	200	131	84	962	748	1,690	1,320	1,150	593	120
20	125	678	180	128	85	1,010	758	1,770	1,290	1,160	592	125
21	127	634	168	132	85	1,070	737	1,750	1,250	1,150	600	128
22	125	610	156	123	85	1,080	718	1,700	1,260	1,130	594	121
23	123	595	128	120	84	1,070	711	1,640	1,310	1,110	588	119
24	119	575	106	121	85	1,060	709	1,530	1,330	1,090	592	123
25	117	553	91	119	83	1,130	708	1,450	1,330	1,060	581	124
26	122	529	81	119	85	1,280	733	1,360	1,260	1,040	555	118
27	119	497	73	115	85	1,400	762	1,280	1,130	1,030	530	112
28	119	461	68	113	84	1,450	803	1,280	1,040	1,060	508	108
29	113	431	60	110	---	1,450	843	1,350	1,050	1,060	468	105
30	111	434	58	106	---	1,390	891	1,440	1,120	1,040	413	107
31	102	---	51	107	---	1,330	---	1,580	---	1,010	356	---
<b>Total</b>	4,264	32,929	5,875	3,690	2,511	22,716	26,957	45,062	47,960	36,540	20,607	4,550
<b>Mean</b>	138	1,098	190	119	89.7	733	899	1,454	1,599	1,179	665	152
<b>Max</b>	186	4,500	407	171	109	1,450	1,280	1,770	2,390	1,400	979	317
<b>Min</b>	102	86	51	43	80	67	708	952	1,040	1,010	356	104
<b>Ac-ft</b>	8,460	65,310	11,650	7,320	4,980	45,060	53,470	89,380	95,130	72,480	40,870	9,020

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	373	270	148	113	105	172	500	1,624	2,421	1,576	1,003	698
<b>Max</b>	1,323	1,281	722	302	249	733	977	2,573	4,807	2,697	1,413	1,291
<b>(WY)</b>	(1952)	(2000)	(1996)	(1981)	(1996)	(2007)	(1988)	(1957)	(1975)	(1954)	(1976)	(1959)
<b>Min</b>	67.4	45.0	33.5	37.2	33.8	38.6	85.0	670	1,289	687	320	119
<b>(WY)</b>	(2002)	(1988)	(1953)	(2001)	(2001)	(2001)	(1975)	(1955)	(1992)	(1977)	(1988)	(1988)

\* During periods of operation (October 1950 to current year).

05017500 ST. MARY RIVER NEAR BABB, MT—Continued

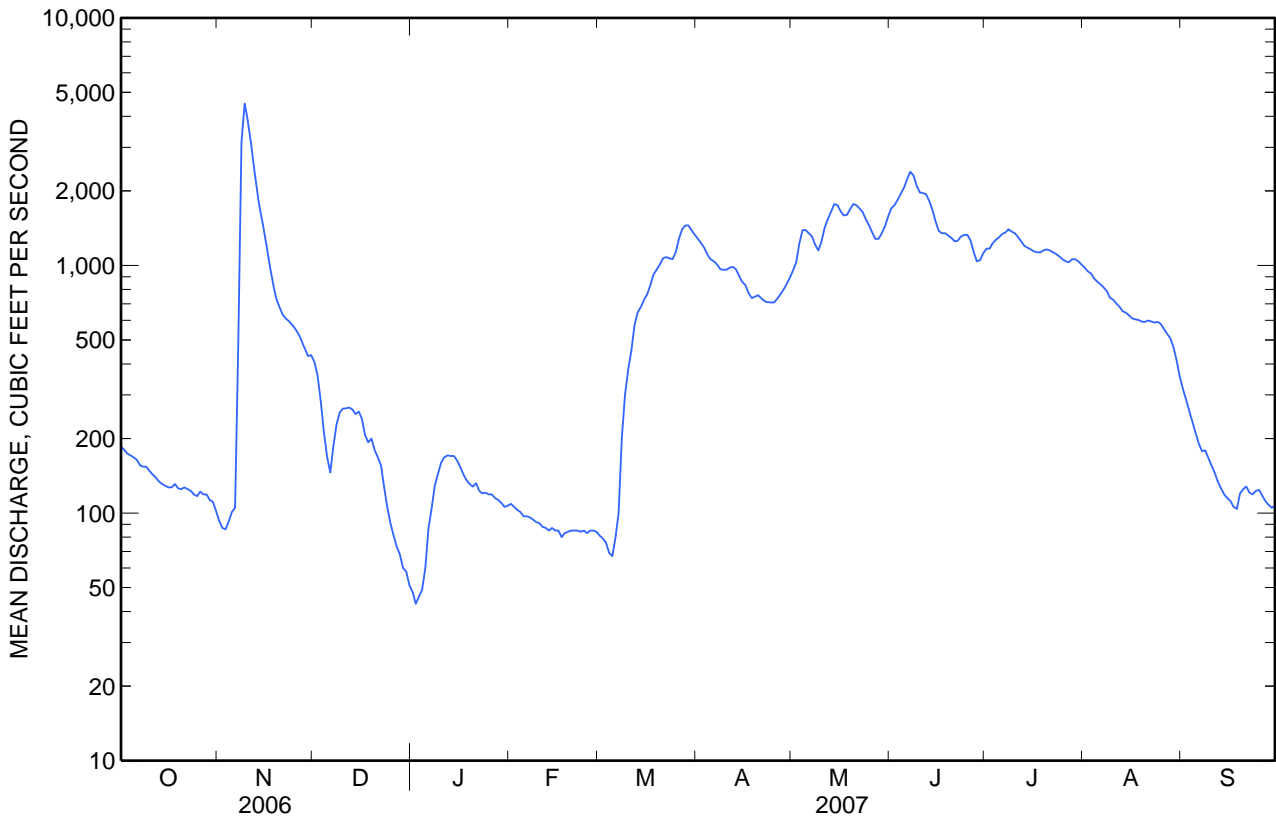
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1951 - 2007*	
<b>Annual total</b>	303,541		253,661			
<b>Annual mean</b>	832		695		753	
<b>Highest annual mean</b>					1,073	1951
<b>Lowest annual mean</b>					442	2001
<b>Highest daily mean</b>	4,550	Jun 17	4,500	Nov 9	15,600	Jun 9, 1964
<b>Lowest daily mean</b>	51	Dec 31	43	Jan 2	27	Jan 3, 1953
<b>Annual seven-day minimum</b>	69	Dec 25	51	Dec 29	28	Dec 30, 1952
<b>Maximum peak flow</b>			4,600	Nov 9	<sup>a</sup> 16,500	Jun 9, 1964
<b>Maximum peak stage</b>			6.31	Nov 9	<sup>b</sup> 12.96	Jun 9, 1964
<b>Instantaneous low flow</b>					27	Jan 3, 1953
<b>Annual runoff (ac-ft)</b>	602,100		503,100		545,400	
<b>10 percent exceeds</b>	2,030		1,470		1,860	
<b>50 percent exceeds</b>	579		577		366	
<b>90 percent exceeds</b>	121		87		74	

\* During periods of operation (October 1950 to current year).

<sup>a</sup> From rating curve extended above 6,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

<sup>b</sup> From highwater mark in well.





Water-Data Report 2007

## 05018000 ST. MARY CANAL AT INTAKE, NEAR BABB, MT

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°51'10", long 113°24'57" referenced to North American Datum of 1927, in SE ¼ NW ¼ NE ¼ sec.27, T.36 N., R.14 W., Glacier County, MT, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on right bank of canal 500 ft downstream from St. Mary intake structure, and 1.0 mi east of Babb.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 1918 to November 1951, May 1997 to current season (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 4,470 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to April 17, 1919, staff gage located at site 300 ft upstream at different elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Canal diverts water from left bank of St. Mary River near Babb and discharges into North Fork Milk River. This water flows in the natural channel of Milk River through Canada and then back into Montana where it is used for irrigation in Milk River Valley downstream from Havre, Montana. U.S. Geological Survey satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 871 ft<sup>3</sup>/s, May 26, 27, 1936; no flow at times most seasons.

## Water-Data Report 2007

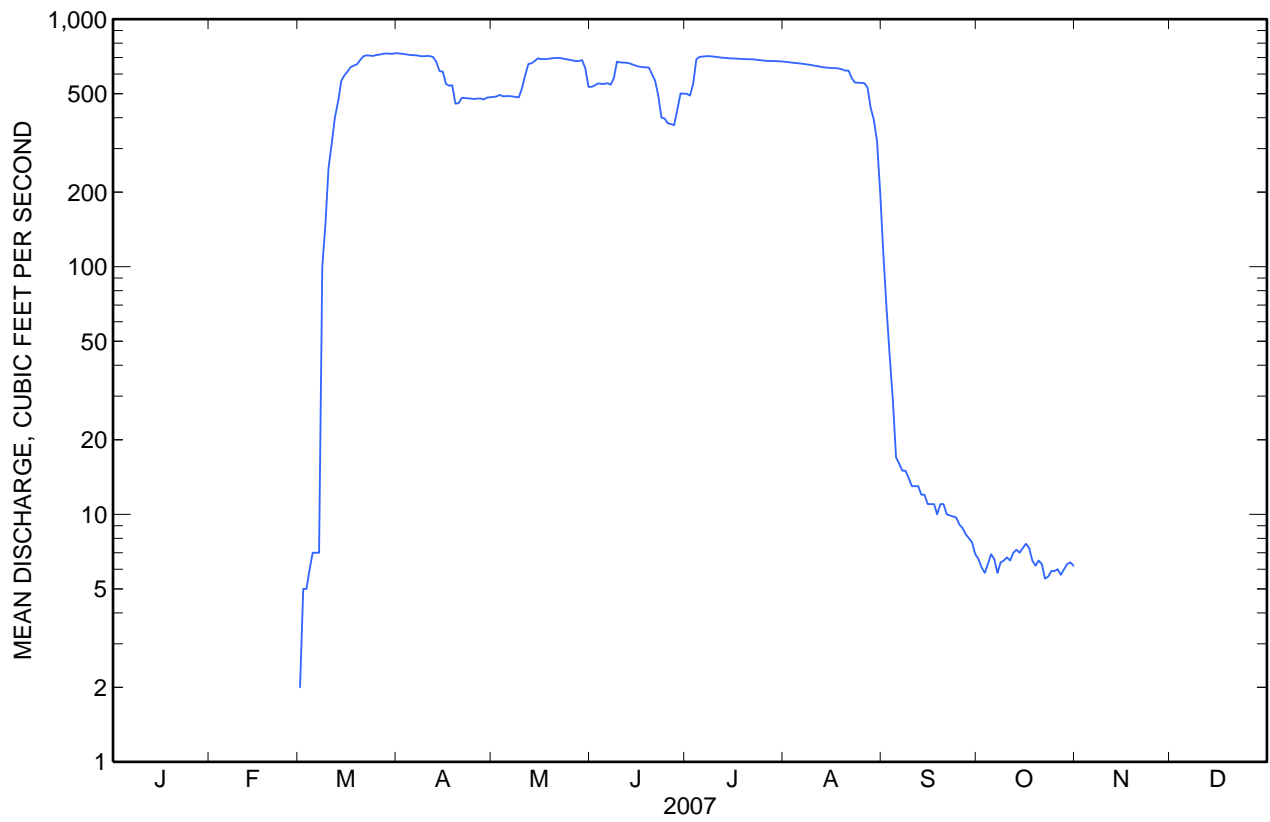
## 05018000 ST. MARY CANAL AT INTAKE, NEAR BABB, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			e2.0	727	485	533	500	672	112	6.6		
2			e5.0	725	487	541	491	671	69	6.1		
3			e5.0	722	494	550	547	669	44	5.8		
4			e6.0	719	488	548	688	665	29	6.3		
5			e7.0	716	489	547	704	663	17	6.9		
6			e7.0	715	489	551	706	662	16	6.6		
7			e7.0	713	487	543	708	660	15	5.8		
8			e100	709	485	580	709	655	15	6.4		
9			e150	708	483	674	707	653	14	6.5		
10			e250	710	525	668	705	650	13	6.7		
11			314	709	593	668	702	645	13	6.5		
12			401	703	659	667	699	643	13	7.0		
13			465	671	663	661	696	639	12	7.2		
14			564	616	677	655	695	638	12	7.0		
15			594	614	694	649	694	636	11	7.3		
16			615	548	691	642	693	634	11	7.6		
17			641	538	688	640	690	634	11	7.3		
18			649	541	690	639	691	631	10	6.5		
19			658	456	694	638	691	627	11	6.2		
20			685	458	695	601	689	619	11	6.5		
21			708	481	697	565	687	620	10	6.3		
22			714	480	696	491	688	578	9.9	5.5		
23			712	479	692	400	686	555	9.8	5.6		
24			710	477	689	397	682	554	9.7	5.9		
25			716	476	685	380	680	552	9.1	5.9		
26			719	478	681	377	679	551	8.8	6.0		
27			724	478	677	373	678	529	8.3	5.7		
28			726	474	678	430	678	440	8.0	6.0		
29			726	482	683	501	678	393	7.7	6.3		
30			724	484	633	500	676	322	6.9	6.4		
31			728	---	533	---	674	199	---	6.2		
<b>Total</b>			14,032.0	17,807	19,000	16,609	20,891	18,259	547.2	198.6		
<b>Mean</b>			453	594	613	554	674	589	18.2	6.41		
<b>Max</b>			728	727	697	674	709	672	112	7.6		
<b>Min</b>			2.0	456	483	373	491	199	6.9	5.5		
<b>Ac-ft</b>			27,830	35,320	37,690	32,940	41,440	36,220	1,090	394		

05018000 ST. MARY CANAL AT INTAKE, NEAR BABB, MT—Continued





Water-Data Report 2007

**05018500 ST. MARY CANAL AT ST. MARY CROSSING, NEAR BABB, MT**

Saskatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 48°56'50", long 113°22'28" referenced to North American Datum of 1927, in NE ¼ SW ¼ SW ¼ sec.19, T.37 N., R.13 W., Glacier County, MT, Hydrologic Unit 10010002, Blackfeet Indian Reservation, on left bank 50 ft upstream from inlet of St. Mary siphon, 6.6 mi northeast of Babb, and 9 mi downstream from intake.

DRAINAGE AREA.--Not determined.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 1918 to current season (seasonal records only). Monthly discharge only for some periods, published in WSP 1308, 1728.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,450 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to June 14, 1951, water-stage recorder at several sites 0.8 mi downstream at different elevations.

COOPERATION.--This is one of a number of stations which are maintained jointly by the United States and Canada.

REMARKS.--Records are excellent. Canal diverts water from left bank of St. Mary River near Babb and discharges into North Fork Milk River. This water flows in the natural channel of Milk River through Canada and then back into Montana where it is used for irrigation in Milk River Valley downstream from Havre, Mt. Bureau of Reclamation satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.

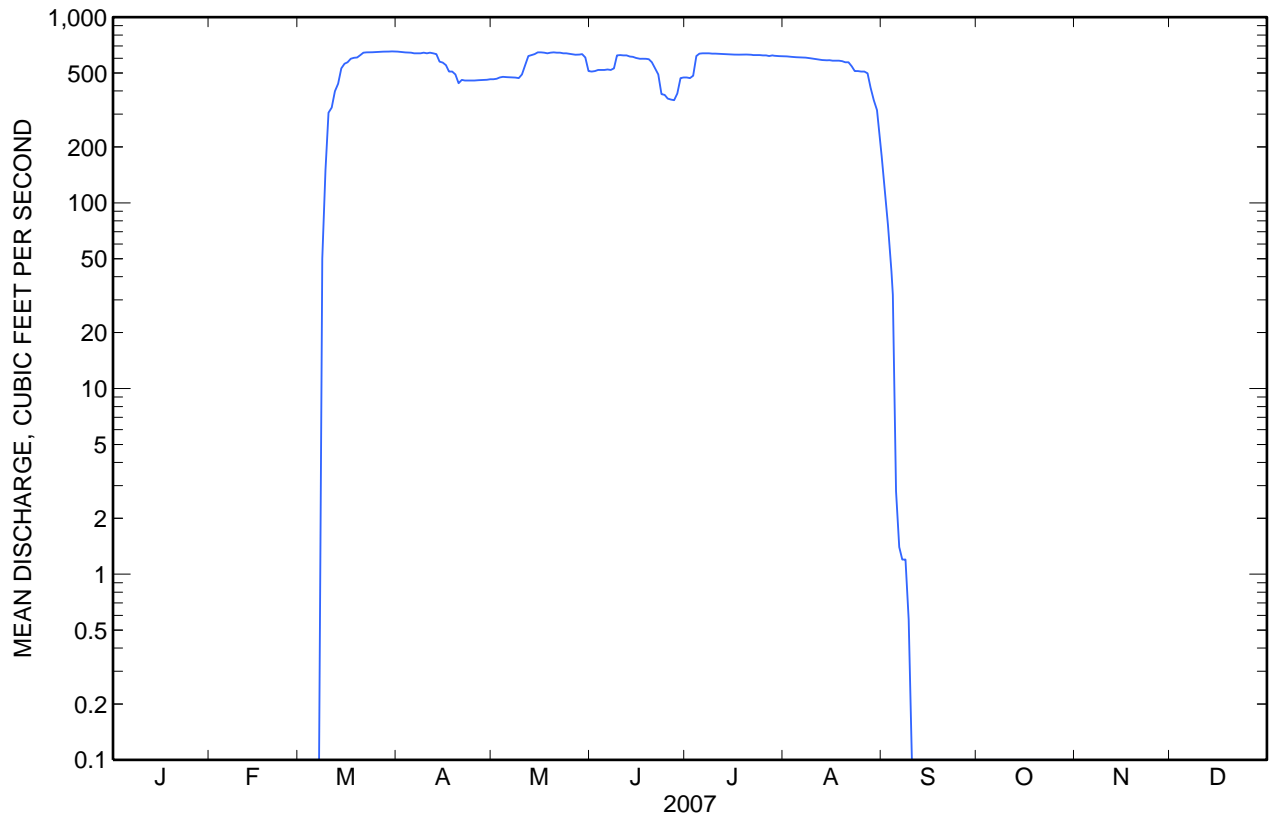
EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 767 ft<sup>3</sup>/s, June 19, 28, 1936; no flow at times each season.

## 05018500 ST. MARY CANAL AT ST. MARY CROSSING, NEAR BABB, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			0.00	653	463	509	473	614	141	0.00		
2			0.00	650	466	512	470	614	97	0.00		
3			0.00	646	473	519	484	611	57	0.00		
4			0.00	643	477	519	618	611	32	0.00		
5			0.00	643	477	519	636	607	2.8	0.00		
6			0.00	639	473	523	639	607	1.4	0.00		
7			0.00	639	473	519	639	607	1.2	0.00		
8			50	639	473	530	639	604	1.2	0.00		
9			150	643	470	622	636	600	0.57	0.00		
10			306	639	491	625	636	597	0.00	0.00		
11			326	643	551	622	636	593	0.00	0.00		
12			399	639	618	622	632	590	0.00	0.00		
13			438	632	625	614	632	586	0.00	0.00		
14			530	576	632	611	632	586	0.00	0.00		
15			561	569	646	604	629	586	0.00	0.00		
16			572	551	646	597	629	583	0.00	0.00		
17			597	509	643	597	629	583	0.00	0.00		
18			604	509	639	597	629	583	0.00	0.00		
19			607	491	643	593	629	579	0.00	0.00		
20			625	441	646	572	629	572	0.00	0.00		
21			643	459	643	530	629	572	0.00	0.00		
22			646	456	643	491	625	544	0.00	0.00		
23			646	456	639	385	625	512	0.00	0.00		
24			646	456	639	381	625	512	0.00	0.00		
25			650	456	636	364	622	509	0.00	0.00		
26			650	456	629	360	622	509	0.00	0.00		
27			653	459	629	357	618	498	0.00	0.00		
28			650	459	629	388	622	417	0.00	0.00		
29			653	459	632	470	618	357	0.00	0.00		
30			653	463	607	473	618	316	0.00	0.00		
31			653	---	512	---	618	211	---	0.00		
<b>Total</b>			12,908.00	16,573	17,863	15,625	19,018	16,870	334.17	0.00		
<b>Mean</b>			416	552	576	521	613	544	11.1	0.00		
<b>Max</b>			653	653	646	625	639	614	141	0.00		
<b>Min</b>			0.00	441	463	357	470	211	0.00	0.00		
<b>Ac-ft</b>			25,600	32,870	35,430	30,990	37,720	33,460	663	0.00		

05018500 ST. MARY CANAL AT ST. MARY CROSSING, NEAR BABB, MT—Continued





Water-Data Report 2007

## 05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY

Sastatchewan Basin  
St. Mary Subbasin

LOCATION.--Lat 49°00'43", long 113°17'57" referenced to North American Datum of 1927, in NE ¼ sec.5, T.0 1., R.25 W., Hydrologic Unit is unknown, fourth meridian, in Alberta, Hydrologic Unit 10010002, on left bank 1.0 mi north of international boundary, 3.6 mi downstream from Boundary Creek, 6.5 mi southwest of Kimball, Alberta, and 13 mi northeast of Babb, MT.

DRAINAGE AREA.--465 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--September 1902 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "near Cardston, Alberta" and "at Cook's Ranch, Alberta" 1902-12 and as "near Kimball, Alberta" 1913-55.

REVISED RECORDS.-- Water Supply Paper (WSP) 1308: 1902, 1908-12. WSP 1508: 1902, 1908-09. Water Data Report 1983: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,087.40 ft (referenced to the National Geodetic Vertical Datum of 1929) based upon levels from elevation established at previous site located 1.1 mi upstream by Prairie Farm Rehabilitation Administration. Prior to Jan. 1, 1913, nonrecording gages were located at two sites within 0.3 mi of previous site at different elevations. Jan. 1, 1913 to Oct. 25, 1955, water-stage recorder was located at several sites about 7 mi downstream from present site at various elevations. Oct. 26, 1955 to Mar. 23, 1965, water-stage recorder was located at site 200 ft upstream from previous site at elevation 2 ft higher. Mar. 24, 1965 to Sept. 8, 1975, water-stage recorder was located at site 100 ft upstream from previous site at same elevation. Water-stage recorder was located at site 1.1 miles upstream June 22, 1975 to Oct. 31, 1999.

COOPERATION.--This is one of a number of stations which are maintained jointly by Canada and the United States.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Since 1917, St. Mary Canal has diverted water from the river near Babb, MT, to North Fork Milk River. Some regulation occurs by Lake Sherburne on Swiftcurrent Creek. Bureau of Reclamation satellite telemeter is located at the station.

## 05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	277	e130	e480	e96	e145	e92	754	663	1,480	808	439	264
2	265	e140	e460	e94	e150	e90	698	747	1,550	803	422	274
3	257	150	e370	e110	e145	e94	654	976	1,630	818	404	267
4	250	151	e300	e115	e140	e100	592	1,150	1,750	702	373	250
5	249	164	281	e125	e135	e110	539	1,110	1,880	704	352	247
6	243	161	248	e140	e130	e130	521	1,040	2,100	737	338	224
7	232	901	237	e160	e125	e200	492	999	2,340	760	320	215
8	229	4,290	283	e180	e120	e250	462	926	2,180	790	303	230
9	229	5,390	308	e200	e120	e300	458	908	1,810	771	273	210
10	222	4,860	319	e210	e120	e330	456	1,010	1,640	755	260	199
11	213	3,980	325	e215	e115	e340	468	1,080	1,610	719	241	189
12	209	3,130	326	e215	e115	362	475	1,110	1,560	681	226	179
13	200	2,480	e310	e220	e115	382	478	1,260	1,430	645	204	174
14	194	1,970	e300	e215	e110	276	476	1,360	1,260	625	194	166
15	188	1,670	e290	e210	e110	274	437	1,300	1,090	605	181	159
16	193	1,430	e300	e200	e115	308	433	1,200	959	585	171	153
17	192	1,180	e290	e190	e115	349	401	1,150	926	566	165	149
18	196	1,010	e280	e190	e110	442	369	1,170	922	566	169	143
19	190	881	e260	e180	e105	493	397	1,280	887	574	163	182
20	195	836	e270	e180	e105	536	475	1,350	879	585	172	173
21	199	779	e250	e175	e105	547	446	1,310	880	577	184	172
22	193	739	e230	e175	e110	571	420	1,270	942	564	211	171
23	190	706	e210	e170	e110	552	410	1,200	1,080	554	243	179
24	182	679	e190	e170	e110	531	403	1,100	1,090	525	251	177
25	175	e580	e170	e170	e110	640	401	1,020	1,100	502	240	170
26	180	e540	e140	e160	e105	772	429	937	1,050	490	221	164
27	174	e520	e130	e160	e100	878	454	861	926	481	204	154
28	170	e500	e120	e155	e98	909	493	922	785	487	264	147
29	162	e480	e110	e150	---	919	545	1,020	710	491	281	145
30	150	e470	e110	e150	---	867	597	1,100	758	478	237	144
31	e140	---	e100	e145	---	804	---	1,320	---	465	251	---
<b>Total</b>	6,338	40,897	7,997	5,225	3,293	13,448	14,633	33,849	39,204	19,413	7,957	5,670
<b>Mean</b>	204	1,363	258	169	118	434	488	1,092	1,307	626	257	189
<b>Max</b>	277	5,390	480	220	150	919	754	1,360	2,340	818	439	274
<b>Min</b>	140	130	100	94	98	90	369	663	710	465	163	143
<b>Ac-ft</b>	12,570	81,120	15,860	10,360	6,530	26,670	29,020	67,140	77,760	38,510	15,780	11,250

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1902 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	449	347	202	155	151	191	468	1,650	2,565	1,306	588	483
<b>Max</b>	1,588	1,423	844	729	411	516	1,330	3,565	7,499	3,463	1,460	1,511
<b>(WY)</b>	(1952)	(2000)	(1996)	(1918)	(1934)	(1916)	(1934)	(1928)	(1908)	(1916)	(1909)	(1927)
<b>Min</b>	88.4	80.3	64.3	55.5	41.6	54.7	136	678	694	496	246	153
<b>(WY)</b>	(2002)	(1988)	(2001)	(1944)	(1936)	(2001)	(1975)	(1941)	(1941)	(1988)	(1988)	(1988)

## 05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY—Continued

## SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1902 - 2007	
<b>Annual total</b>	244,489		197,924			
<b>Annual mean</b>	670		542		714	
<b>Highest annual mean</b>					1,353	1908
<b>Lowest annual mean</b>					316	1941
<b>Highest daily mean</b>	5,390	Nov 9	5,390	Nov 9	28,000	Jun 5, 1908
<b>Lowest daily mean</b>	85	Mar 9	90	Mar 2	16	Nov 29, 1936
<b>Annual seven-day minimum</b>	126	Dec 25	97	Feb 26	27	Nov 26, 1936
<b>Maximum peak flow</b>			5,780	Nov 9	<sup>a</sup> 40,000	Jun 5, 1908
<b>Maximum peak stage</b>			7.75	Nov 9	<sup>b</sup> 13.46	Jun 21, 1975
<b>Annual runoff (ac-ft)</b>	484,900		392,600		517,500	
<b>10 percent exceeds</b>	1,780		1,150		1,800	
<b>50 percent exceeds</b>	300		300		356	
<b>90 percent exceeds</b>	152		128		110	

	Water Years 1902 – 1916*		Water Years 1917 – 2007**	
<b>Annual mean</b>	1,002		670	
<b>Highest annual mean</b>	1,353		1,285	1927
<b>Lowest annual mean</b>	646		316	1941
<b>Highest daily mean</b>	28,000	Jun 5, 1908	17,000	Jun 9, 1964
<b>Lowest daily mean</b>	70	Feb 5, 1914	16	Nov 29, 1936
<b>Annual seven-day minimum</b>	75	Feb 1, 1914	27	Nov 26, 1936
<b>Maximum peak flow</b>	<sup>a</sup> 40,000	Jun 5, 1908	23,300	Jun 21, 1975
<b>Maximum peak stage</b>	<sup>b</sup> 12.75	Jun 5, 1908	13.46	Jun 21, 1975
<b>Annual runoff (ac-ft)</b>	726,000		486,500	
<b>10 percent exceeds</b>	2,470		1,670	
<b>50 percent exceeds</b>	538		336	
<b>90 percent exceeds</b>	150		106	

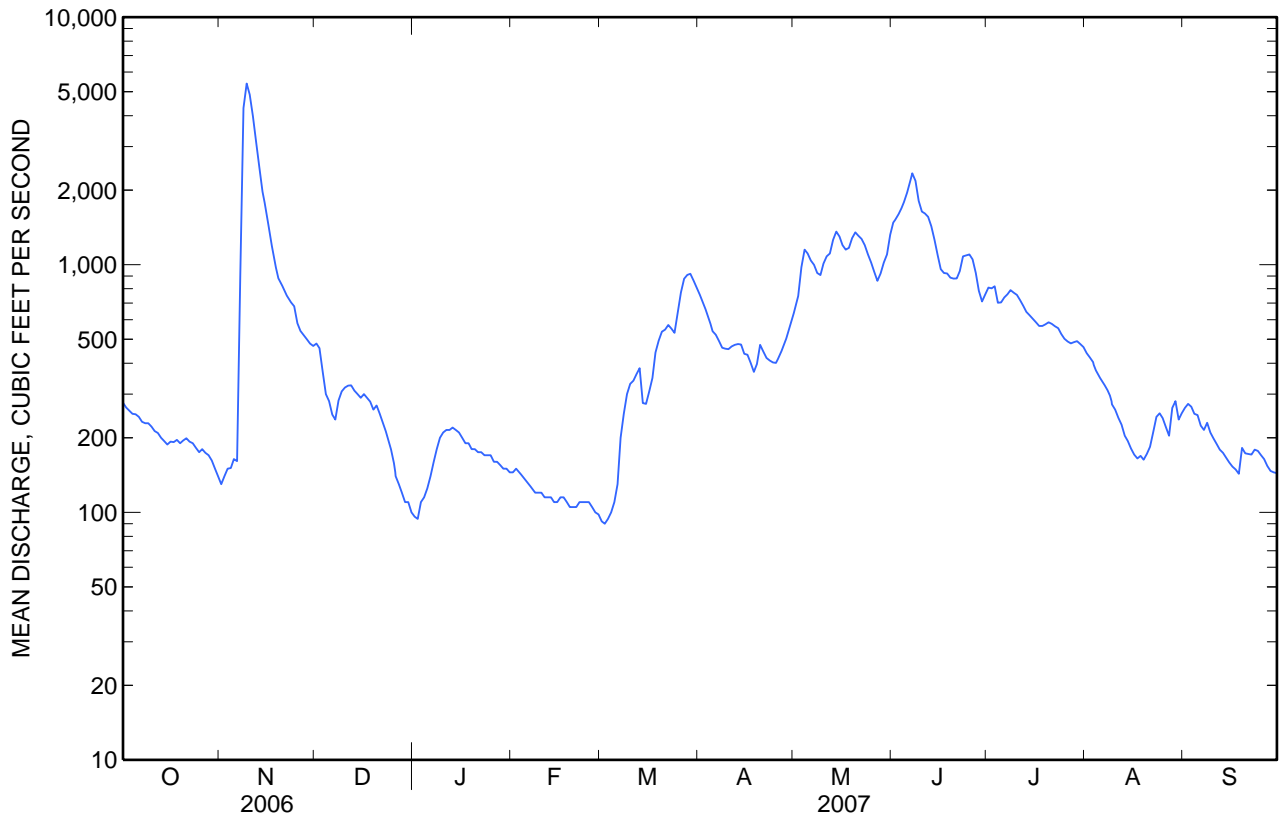
\* Before St. Mary Canal diversions.

\*\* Post operation of St. Mary Canal.

<sup>a</sup> From rating curve extended above 6,000 ft<sup>3</sup>/s.

<sup>b</sup> From floodmarks at site and datum then in use.

05020500 ST. MARY RIVER AT INTERNATIONAL BOUNDARY—Continued





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Water-Data Report 2007

**06006000 RED ROCK CREEK ABOVE LAKES, NEAR LAKEVIEW, MT**

Missouri Headwaters Basin  
Red Rock Subbasin

LOCATION.--Lat 44°36'56", long 111°37'42" referenced to North American Datum of 1927, in NW ¼ SE ¼ NW ¼ sec.17, T.14 S., R.1 E., Beaverhead County, MT, Hydrologic Unit 10020001, on right bank 0.2 mi downstream from Red Rock Lakes National Wildlife Refuge boundary, 9.1 mi east of Lakeview, and at river mile 2,602.2.

DRAINAGE AREA.--39.2 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 1997 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 6,670 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Seasonal records are good. Diversion for use by Wildlife Refuge is located about 1.5 mi upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.



## 06006000 RED ROCK CREEK ABOVE LAKES, NEAR LAKEVIEW, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND  
CALENDAR YEAR JANUARY TO DECEMBER 2007  
DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1				22	39	37	25	20	17	18		
2				21	44	38	25	20	16	18		
3				20	56	39	25	20	16	18		
4				21	46	38	25	20	17	17		
5				22	41	35	24	21	17	20		
6				22	36	42	24	21	17	19		
7				22	33	40	24	20	17	18		
8				23	34	35	25	19	16	18		
9				23	39	33	24	19	17	19		
10				21	49	33	23	18	17	19		
11				20	64	33	23	18	17	18		
12				20	75	31	22	18	16	18		
13				19	83	31	22	17	16	17		
14				20	84	29	23	17	17	17		
15				20	75	29	23	17	16	17		
16				20	71	28	22	17	16	17		
17				21	70	30	22	19	16	18		
18				28	72	32	22	21	17	17		
19				25	69	34	21	19	17	19		
20				24	71	32	21	19	17	26		
21				25	65	31	20	19	16	19		
22				23	51	30	20	18	17	18		
23				26	45	30	20	19	19	18		
24				25	42	29	20	18	19	18		
25				23	39	28	21	18	18	18		
26				24	38	28	23	17	17	18		
27				23	38	28	24	17	17	17		
28				24	41	27	21	17	17	17		
29				29	40	26	21	17	18	17		
30				35	38	26	20	17	18	18		
31				---	37	---	20	17	---	17		
<b>Total</b>				691	1,625	962	695	574	508	563		
<b>Mean</b>				23.0	52.4	32.1	22.4	18.5	16.9	18.2		
<b>Max</b>				35	84	42	25	21	19	26		
<b>Min</b>				19	33	26	20	17	16	17		
<b>Ac-ft</b>				1,370	3,220	1,910	1,380	1,140	1,010	1,120		

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2007, BY WATER YEAR (WY)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>				28.2	60.0	91.7	53.7	34.0	27.9	24.9		
<b>Max</b>				46.4	93.0	192	110	56.7	43.0	37.6		
<b>(WY)</b>				(2006)	(2006)	(1999)	(1999)	(1999)	(1997)	(1998)		
<b>Min</b>				18.7	37.8	30.5	22.4	18.5	16.9	16.3		
<b>(WY)</b>				(2003)	(2002)	(2001)	(2007)	(2007)	(2007)	(2002)		

**06006000 RED ROCK CREEK ABOVE LAKES, NEAR LAKEVIEW, MT—Continued**

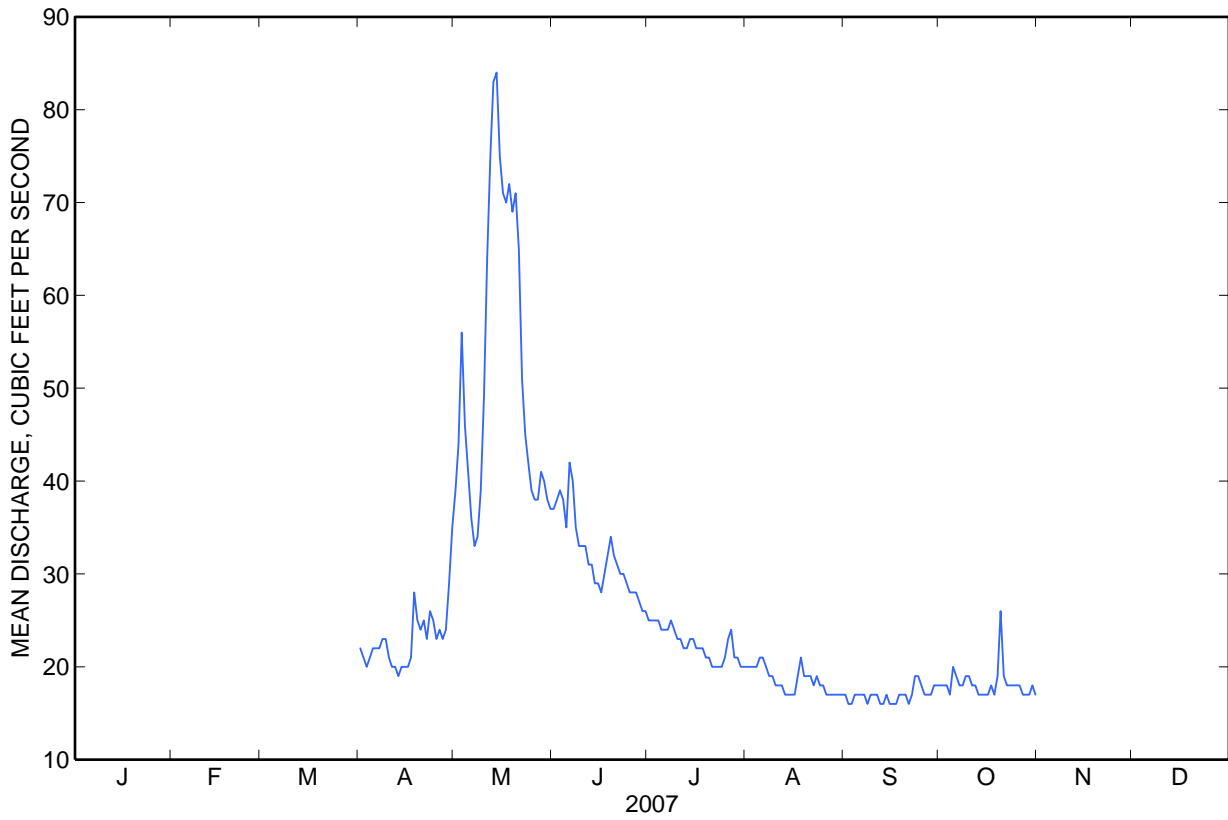
**SUMMARY STATISTICS**

	2007 Season		Water Years 1997 - 2007	
<b>Highest daily mean</b>	84	May 14	270	Jun 22, 1999
<b>Lowest daily mean</b>	16	Sep 2	12	Oct 30, 2003
<b>Maximum peak flow</b>	93	May 14	<sup>b</sup> 293	Jun 10, 1997
<b>Maximum peak stage</b>	3.70	May 14	5.34	Jun 22, 1999
<b>Instantaneous low flow</b>	<sup>a</sup> 9.5	Apr 3	<sup>c</sup> 8.9	Oct 25, 2001

<sup>a</sup> Gage height, 2.48 ft, result of freezeup.

<sup>b</sup> Gage height, 3.93 ft, from crest-stage gage at miscellaneous site downstream.

<sup>c</sup> Gage height, 2.48 ft, result of freezeup.



Water-Data Report 2007

**06012000 LIMA RESERVOIR NEAR MONIDA**

Missouri Headwaters Basin  
Red Rock Subbasin

LOCATION.--Lat 44°39'16", long 112°21'54" referenced to North American Datum of 1927, in SW ¼ sec.32, T.13 S., R.6 W., Beaverhead County, MT, Hydrologic Unit 10020001, at Lima Dam on Red Rock River, 7 mi northwest of Monida, and at river mile 2,542.2

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 1940 to current year. Records prior to October 1950, published only in Water Supply Paper (WSP) 1309, and those for April 1955, published only in WSP 1729. Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana.

COOPERATION.--Records furnished by Bureau of Reclamation.

REMARKS.--Elevation of gage is at sea level (levels by Montana Department of Natural Resources and Conservation). Reservoir is formed by earthfill dam with concrete spillway completed in 1902. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity is 84,050 acre-ft between elevation 6,537.30 ft, bottom of tunnel, and 6,582.7 ft, spillway crest. No dead storage. Figures given herein represent usable contents. Water is used for irrigation, flood control, and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 85,870 acre-ft, May 27, 28, June 14, 15, 1984, elevation, 6,582.98 ft; no usable storage Sept. 20-26, 1979, Sept. 13-30, 1987, October 1987, July 18 to Sept. 30, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 80,950 acre-ft, May 16, elevation, 6,582.22 ft; minimum contents, 11,430 acre-ft, Sept. 26, elevation, 6,560.45 ft.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

Date	Elevation (feet)	Contents (acre-feet)	Change in Contents (acre-feet)
September 30	6,571.25	33,000	--
October 31	6,572.62	37,020	+4,020
November 30	6,573.90	41,470	+4,450
December 31	6,574.21	42,650	+1,180
Calendar Year 2006	--	--	+6,620
January 31	6,574.62	44,280	+1,630
February 28	6,575.09	46,160	+1,880
March 31	6,575.78	48,920	+2,760
April 30	6,581.82	78,430	+29,510
May 31	6,580.54	70,970	-7,460
June 30	6,574.11	42,270	-28,700
July 31	6,566.34	21,510	-20,760
August 31	6,560.67	11,740	-9,770
September 30	6,560.58	11,610	-130
Water Year 2007	--	--	-21,390



Water-Data Report 2007

## 06012500 RED ROCK RIVER BELOW LIMA RESERVOIR, NEAR MONIDA, MT

Missouri Headwaters Basin  
Red Rock Subbasin

LOCATION.--Lat 44°39'22", long 112°22'14" referenced to North American Datum of 1927, in NE ¼ SE ¼ SE ¼ sec.31, T.13 S., R.6 W., Beaverhead County, MT, Hydrologic Unit 10020001, on right bank just downstream from Lima Reservoir, 7 mi northwest of Monida, and at river mile 2,542.1.

DRAINAGE AREA.--570 mi<sup>2</sup>.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1911 to December 1918, April 1919, May 1925 to October 1933, April 1934 to September 1935, May 1936 to October 1938, May 1939 to September 1969, seasonal records only June 1974 to September 1982 and April 1985 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309. Prior to October 1950, published as "below Red Rock Reservoir".

REVISED RECORDS.-- WSP 1309: 1935. WSP 1389: 1912, 1934. WSP 1559: Drainage area.

GAGE.--Water-stage recorder and sharp-crested weir. Elevation of gage is 6,530 ft, referenced to the National Geodetic Vertical Datum of 1929, estimated from spillway elevation based on Montana Department of Natural Resources and Conservation elevation. Prior to Oct. 1, 1978, at elevation 1.00 ft higher. See WSP 1709 for history of nonrecording gage changes prior to May 8, 1939.

REMARKS.--Seasonal records are good. Flow is regulated by Lima Reservoir (station number 06012000). No storage during 1934. Diversions for irrigation of about 10,000 acres occur upstream from reservoir. A Bureau of Reclamation satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 1984 reached a discharge of 1,500 ft<sup>3</sup>/s, gage height, 5.15 ft, from floodmarks.

## 06012500 RED ROCK RIVER BELOW LIMA RESERVOIR, NEAR MONIDA, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1				0.00	88	583	447	302	18	26		
2				0.00	93	574	445	300	18	26		
3				0.00	100	560	444	298	18	26		
4				0.00	112	552	442	263	16	27		
5				0.00	95	582	440	244	16	27		
6				0.00	93	613	439	243	16	27		
7				0.00	97	610	438	241	21	27		
8				0.00	107	609	437	239	21	27		
9				0.00	114	605	407	238	15	27		
10				0.00	117	603	382	237	14	27		
11				0.00	122	600	363	235	14	27		
12				0.00	123	595	346	233	14	27		
13				0.00	124	593	316	244	14	27		
14				20	124	591	283	248	13	27		
15				56	129	589	282	246	13	27		
16				56	149	584	281	243	12	26		
17				39	226	553	280	74	11	26		
18				27	335	526	269	8.5	11	26		
19				27	414	526	229	6.8	11	27		
20				27	415	525	229	6.7	32	27		
21				27	393	523	228	12	42	27		
22				27	434	507	227	16	42	27		
23				32	462	495	267	15	41	27		
24				40	486	494	307	15	41	27		
25				48	565	493	305	15	41	27		
26				55	609	486	302	15	32	27		
27				62	609	456	301	15	25	27		
28				69	603	453	300	16	26	27		
29				75	592	451	302	18	26	27		
30				81	593	449	306	18	26	28		
31				---	590	---	303	18	---	27		
<b>Total</b>				768.00	9,113	16,380	10,347	4,323.0	660	832		
<b>Mean</b>				25.6	294	546	334	139	22.0	26.8		
<b>Max</b>				81	609	613	447	302	42	28		
<b>Min</b>				0.00	88	449	227	6.7	11	26		
<b>Ac-ft</b>				1,520	18,080	32,490	20,520	8,570	1,310	1,650		

**STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1974 - 2007\***

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>	0.00	0.00	0.00	69.4	304	534	326	221	140	54.4	5.00	0.00
<b>Max</b>	0.00	0.00	0.00	416	559	707	652	513	384	222	5.00	0.00
<b>(WY)</b>	(1994)	(1994)	(1994)	(1997)	(1975)	(1975)	(1982)	(1982)	(1995)	(1999)	(1994)	(1994)
<b>Min</b>	0.00	0.00	0.00	0.00	66.2	153	14.1	3.32	0.00	0.00	5.00	0.00
<b>(WY)</b>	(1994)	(1994)	(1994)	(1980)	(1991)	(2004)	(1988)	(1988)	(1994)	(1993)	(1994)	(1994)

\* During periods of operation (January 1911 to December 1918, April 1919, May 1925 to October 1933, April 1934 to September 1935, May 1936 to October 1938, May 1939 to September 1969, June 1974 to September 1982, April 1985 to current year; seasonal records beginning water year 1974).

06012500 RED ROCK RIVER BELOW LIMA RESERVOIR, NEAR MONIDA, MT—Continued

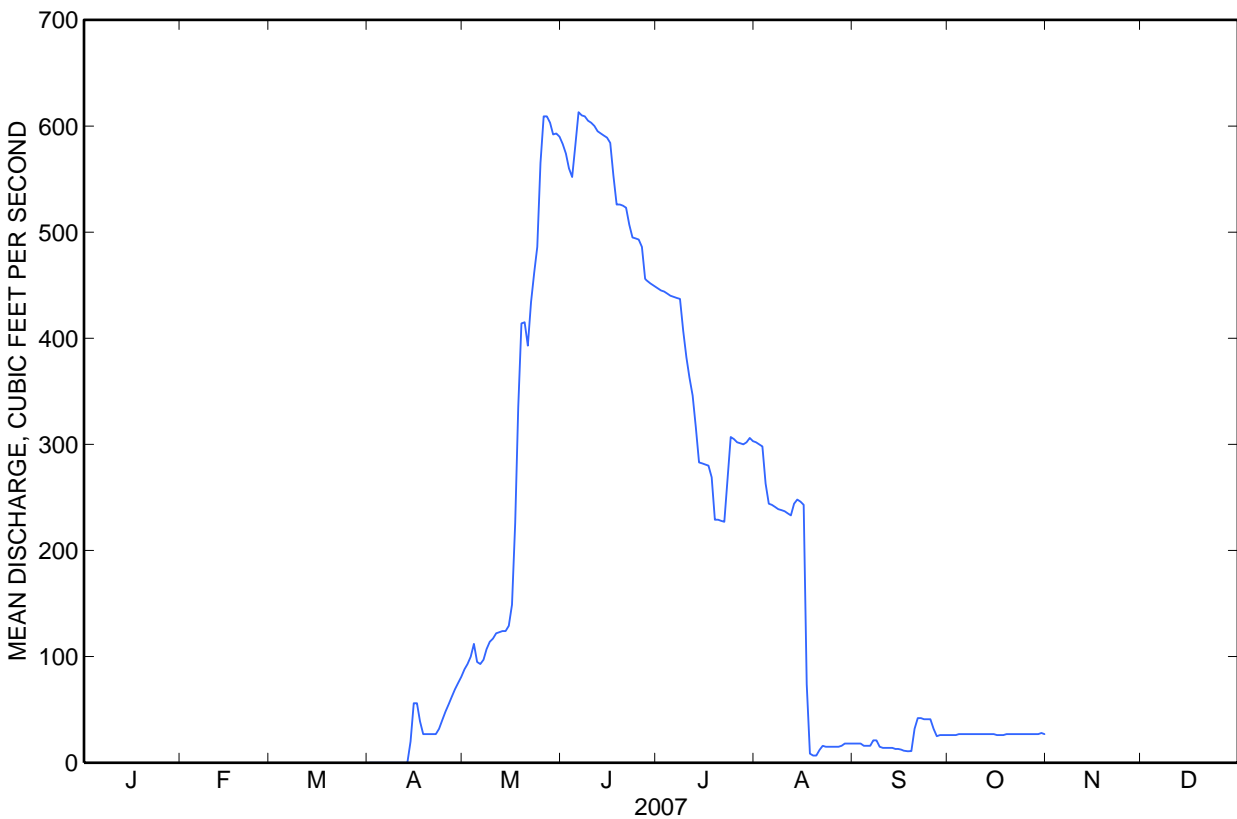
SUMMARY STATISTICS

	2007 Season		Water Years 1911 - 1969*		Seasons 1974 - 2007*	
Annual mean			143			
Highest annual mean			271	1913		
Lowest annual mean			59.5	1935		
Highest daily mean	613	Jun 6	<sup>a</sup> 2,500	May 15, 1933	<sup>b</sup> 946	May 28, 1975
Lowest daily mean	.00	Apr 1	0.00	Oct 1, 1931	0.00	Oct 9, 1978
Annual seven-day minimum			0.00	Oct 1, 1931		
Maximum peak flow	655	May 28	<sup>a</sup> 2,500	May 15, 1933	<sup>b</sup> 946	May 28, 1975
Maximum peak stage	3.56	May 28	6.4	May 15, 1933	4.00	Jun 26, 1981
Annual runoff (ac-ft)			103,300			
10 percent exceeds			449			
50 percent exceeds			56			
90 percent exceeds			8.0			

\* During periods of operation (January 1911 to December 1918, April 1919, May 1925 to October 1933, April 1934 to September 1935, May 1936 to October 1938, May 1939 to September 1969, June 1974 to September 1982, April 1985 to current year; seasonal records beginning water year 1974).

<sup>a</sup> Observed, estimated by dam tender; released to prevent dam failure.

<sup>b</sup> Gage height, 3.38 ft, datum then in use.



Water-Data Report 2007

**06015300 CLARK CANYON RESERVOIR NEAR GRANT, MT**

Missouri Headwaters Basin  
Red Rock Subbasin

LOCATION.--Lat 44°59'59", long 112°51'34" referenced to North American Datum of 1927, in SE ¼ SW ¼ sec.32, T.9 S., R.10 W., Beaverhead County, MT, Hydrologic Unit 10020001, in shaft house near left end of dam on Beaverhead River, 1.5 mi upstream from Clark Canyon Creek, 10 mi east of Grant, and at river mile 2,483.9.

DRAINAGE AREA.--2,321 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1964 to current year (monthend contents only). Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana.

GAGE.--Water-stage recorder in shaft house. Elevation of gage is 5,455 ft, referenced to the National Geodetic Vertical Datum of 1929, (levels by Bureau of Reclamation).

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

REMARKS.--Reservoir is formed by zoned earthfill dam with concrete control works and spillway completed in October 1964. Storage began Aug. 28, 1964 (uncontrolled storage began June 10, 1964). Capacity table effective Oct. 1, 2001. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity is 253,400 acre-ft between elevation 5,470.60 ft, invert of outlet works, and 5,560.40 ft, top of flood control. Dead storage is 1,060 acre-ft, below elevation 5,470.60 ft. Normal operating level is 174,400 acre-ft at elevation 5,546.10 ft. Minimum operating level is 1,060 acre-ft at elevation 5,470.60 ft. Figures given herein represent usable contents. Total contents published in previous water-supply papers and annual reports for May 1964 to September 1975. Water is used for irrigation, flood control, and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 283,000 acre-ft, June 25, 1984, elevation, 5,564.70 ft; minimum after normal operating level was reached, 9,660 acre-ft, Aug. 18, 19, 2003, elevation, 5,490.01 ft

EXTREMES FOR CURRENT YEAR.--Maximum contents, 130,400 acre-ft, May 7, elevation, 5,537.32 ft; minimum, 57,340 acre-ft, Sept. 12, elevation, 5,517.17 ft.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	5,519.31	63,340	--
October 31	5,523.49	76,250	+12,910
November 30	5,527.17	88,880	+12,630
December 31	5,525.95	99,290	+10,410
Calendar Year 2006	--	--	+20,700
January 31	5,531.95	107,200	+7,910
February 28	5,533.76	114,700	+7,500
March 31	5,536.26	125,600	+10,900
April 30	5,537.24	130,000	+4,400
May 31	5,534.15	116,400	-13,600
June 30	5,529.74	98,480	-17,920
July 31	5,520.86	67,950	-30,530
August 31	5,517.74	58,900	-9,050
September 30	5,518.49	60,990	+2,090
Water Year 2007	--	--	-2,350



Water-Data Report 2007

## 06016000 BEAVERHEAD RIVER AT BARRETT'S, MT

Missouri Headwaters Basin  
Beaverhead Subbasin

LOCATION.--Lat 45°06'59", long 112°44'59" referenced to North American Datum of 1927, in SE ¼ SW ¼ SE ¼ sec.19, T.8 S., R.9 W., Beaverhead County, MT, Hydrologic Unit 10020002, on left bank 1.4 mi upstream from Barretts, 2.2 mi downstream from Grasshopper Creek, 8.9 mi southwest of Dillon, and at river mile 2,469.2.

DRAINAGE AREA.--2,737 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--August 1907 to September 1986, October 1986 to current year (seasonal records only). Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309. Prior to October 1963, published as "at Barratts".

REVISED RECORDS.-- WSP 1279: 1908(M), 1910-12(M), 1929(M), 1935-36. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,268.17 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1934, nonrecording gages at same site and elevation.

REMARKS.--Seasonal records are good. Some regulation occurs by Lima Reservoir (station number 06012000) and nearly complete regulation occurs by Clark Canyon Reservoir (station number 06015300) since August 1964. Diversions for irrigation include about 90,000 acres above station. Bureau of Reclamation satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.



## 06016000 BEAVERHEAD RIVER AT BARRETTS, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			116	144	155	607	724	540	348	92		
2			114	145	200	637	800	530	348	93		
3			113	139	246	675	815	498	348	93		
4			111	137	249	694	841	461	334	94		
5			114	140	233	731	856	464	313	102		
6			123	143	226	777	880	453	302	103		
7			136	143	221	698	880	411	282	99		
8			141	140	245	522	882	379	265	97		
9			166	144	290	443	882	369	264	96		
10			158	144	331	423	877	343	263	97		
11			160	136	364	413	873	343	263	99		
12			188	137	379	406	877	341	254	102		
13			229	134	396	403	883	349	236	104		
14			234	133	430	412	897	377	189	103		
15			201	137	501	439	904	399	157	102		
16			177	138	554	491	897	402	154	103		
17			181	137	608	545	878	405	152	104		
18			198	155	657	564	850	406	128	105		
19			186	162	684	598	806	399	130	107		
20			175	156	681	630	810	389	126	116		
21			158	153	690	663	808	366	112	119		
22			148	154	693	679	805	370	110	113		
23			148	158	589	708	784	357	115	111		
24			151	154	522	700	770	329	118	111		
25			153	154	475	669	746	312	105	112		
26			154	151	461	641	710	309	102	113		
27			160	136	453	636	652	309	94	112		
28			164	131	446	629	601	318	89	111		
29			147	136	475	657	571	337	91	111		
30			141	144	525	720	568	348	93	118		
31			142	---	559	---	559	347	---	114		
<b>Total</b>			4,887	4,315	13,538	17,810	24,686	11,960	5,885	3,256		
<b>Mean</b>			158	144	437	594	796	386	196	105		
<b>Max</b>			234	162	693	777	904	540	348	119		
<b>Min</b>			111	131	155	403	559	309	89	92		
<b>Ac-ft</b>			9,690	8,560	26,850	35,330	48,960	23,720	11,670	6,460		

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 – 1986 AND SEASONS 1987 – 2007 \***

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>	293	290	317	429	602	791	570	457	338	345	409	346
<b>Max</b>	547	513	934	1,347	1,913	2,608	2,147	1,929	1,645	1,093	889	685
<b>(WY)</b>	(1984)	(1984)	(1910)	(1913)	(1917)	(1908)	(1984)	(1984)	(1984)	(1985)	(1913)	(1984)
<b>Min</b>	120	132	97.5	98.1	131	146	95.5	96.1	76.2	76.8	138	133
<b>(WY)</b>	(1932)	(1975)	(2005)	(2005)	(1934)	(1934)	(1934)	(1934)	(2002)	(2003)	(1975)	(1975)

\* Seasonal records after 1986 water year.

## 06016000 BEAVERHEAD RIVER AT BARRETTS, MT—Continued

## SUMMARY STATISTICS

	2007 Season		Seasons 1987 - 2007		Water Years 1908 - 2007*	
<b>Annual mean</b>					441	
<b>Highest annual mean</b>					1,101	1984
<b>Lowest annual mean</b>					168	1934
<b>Highest daily mean</b>	904	Jul 15	1,640	Jul 26, 1995	3,640	Jun 19, 1908
<b>Lowest daily mean</b>	89	Sep 28	64	Sep 11, 2002	64	Sep 11, 2002
<b>Annual seven-day minimum</b>					64	Sep 10, 2002
<b>Maximum peak flow</b>	911	Jul 15	1,650	Jul 25, 1995	3,720	Jun 20, 1908
<b>Maximum peak stage</b>	2.19	Jul 15	3.25	Jul 25, 1995	6.10	Jun 20, 1908
<b>Instantaneous low flow</b>	<sup>a</sup> 89	Sep 27			<sup>b</sup> 61	Sep 15, 2002
<b>Annual runoff (ac-ft)</b>					319,200	
<b>10 percent exceeds</b>					836	
<b>50 percent exceeds</b>					347	
<b>90 percent exceeds</b>					182	

	Water Years 1908 - 1986**		Water Years 1908 - 1964***		Water Years 1965 - 1986****	
<b>Annual mean</b>	441		401		543	
<b>Highest annual mean</b>	1,101	1984	738	1913	1,101	1984
<b>Lowest annual mean</b>	168	1934	168	1934	293	1967
<b>Highest daily mean</b>	3,640	Jun 19, 1908	3,640	Jun 19, 1908	2,930	Jun 23, 1984
<b>Lowest daily mean</b>	80	Jan 22, 1962	80	Jan 22, 1962	110	Jan 29, 1975
<b>Annual seven-day minimum</b>	81	Sep 11, 1934	81	Sep 11, 1934	119	Jan 28, 1975
<b>Maximum peak flow</b>	3,720	Jun 20, 1908	3,720	Jun 20, 1908	3,000	Jun 22, 1984
<b>Maximum peak stage</b>	6.10	Jun 20, 1908	6.10	Jun 20, 1908	5.04	Jun 22, 1984
<b>Instantaneous low flow</b>	<sup>c</sup> 69	Jan 30, 1938	<sup>c</sup> 69	Jan 30, 1938		
<b>Annual runoff (ac-ft)</b>	319,200		290,500		393,700	
<b>10 percent exceeds</b>	830		676		1,000	
<b>50 percent exceeds</b>	344		330		454	
<b>90 percent exceeds</b>	177		179		190	

\* Seasonal records after 1986 water year.

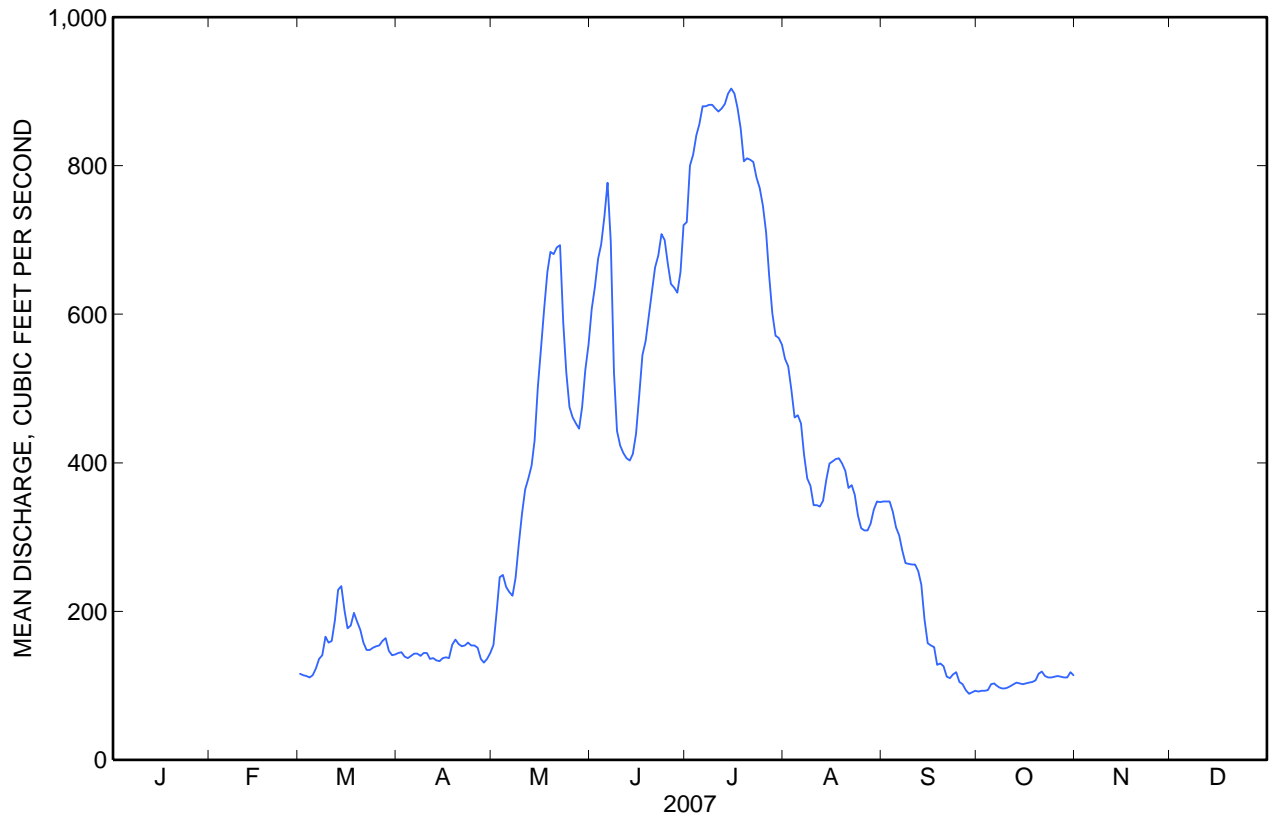
\*\* Annual record.

\*\*\* Prior to Clark Canyon Dam construction.

\*\*\*\* After Clark Canyon Dam construction.

<sup>a</sup> Gage height, 0.53 ft.<sup>b</sup> Gage height, 0.33 ft.<sup>c</sup> Gage height, 0.76 ft.

06016000 BEAVERHEAD RIVER AT BARRETTS, MT—Continued





Water-Data Report 2007

**06017000 BEAVERHEAD RIVER AT DILLON, MT**

Missouri Headwaters Basin  
Beaverhead Subbasin

LOCATION.--Lat 45°13'05", long 112°39'18" referenced to North American Datum of 1927, in NW ¼ NE ¼ NW ¼ sec.24, T.7 S., R.9 W., Beaverhead County, MT, Hydrologic Unit 10020002, on right bank 0.2 mi downstream from West Side Canal and county road bridge, at Dillon, and at river mile 2,456.1.

DRAINAGE AREA.--2,895 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--August to September 1907 (gage heights only), October 1950 to September 1952, September 1963 to September 1971, April 2002 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 5,100 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Sept. 30, 1952, nonrecording gages at same site at different elevation.

REMARKS.--Seasonal records are good except those for July through September, which are fair, and estimated daily discharges, which are poor. Some regulation by Lima Reservoir (station number 06012000) and nearly complete regulation by Clark Canyon Reservoir (station number 06015300) since August 1964. Diversions for irrigation of about 125,500 acres, of which about 23,000 acres lies downstream from station. Bureau of Reclamation satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06017000 BEAVERHEAD RIVER AT DILLON, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			e140	98	67	119	185	143	111	130		
2			e130	100	88	122	188	160	112	132		
3			e125	98	111	138	174	161	111	127		
4			e125	90	101	134	182	160	115	120		
5			e125	92	87	144	182	183	123	129		
6			e125	101	81	198	204	191	133	131		
7			e125	112	75	228	191	175	128	123		
8			e130	122	76	188	194	159	112	120		
9			e135	131	80	150	193	153	116	118		
10			e140	124	94	148	185	130	119	114		
11			e135	118	92	146	184	133	121	114		
12			161	110	93	131	188	132	129	112		
13			188	91	95	99	192	113	126	114		
14			198	93	106	107	200	127	135	113		
15			182	100	108	108	202	138	121	112		
16			164	114	114	101	202	139	116	110		
17			161	106	134	110	195	144	125	114		
18			171	103	141	102	186	168	112	125		
19			165	100	142	99	160	165	111	147		
20			157	84	145	109	175	149	117	156		
21			143	81	150	123	185	141	106	161		
22			125	73	179	124	192	150	106	157		
23			122	68	172	155	195	158	105	154		
24			120	66	173	170	177	153	113	145		
25			121	64	158	215	177	137	112	147		
26			121	66	157	205	172	133	124	147		
27			123	60	148	197	167	129	121	148		
28			109	59	141	192	175	119	120	147		
29			105	57	134	196	159	124	127	146		
30			99	61	118	189	152	131	127	157		
31			97	---	106	---	158	119	---	161		
<b>Total</b>			4,267	2,742	3,666	4,447	5,671	4,517	3,554	4,131		
<b>Mean</b>			138	91.4	118	148	183	146	118	133		
<b>Max</b>			198	131	179	228	204	191	135	161		
<b>Min</b>			97	57	67	99	152	113	105	110		
<b>Ac-ft</b>			8,460	5,440	7,270	8,820	11,250	8,960	7,050	8,190		

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 -1971 AND SEASONS 2002 - 2007\***

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>	372	385	366	325	251	311	222	209	262	259	457	429
<b>Max</b>	462	539	606	1,078	742	1,157	493	475	796	680	700	613
<b>(WY)</b>	(1971)	(1971)	(1969)	(1969)	(1969)	(1964)	(1971)	(1965)	(1965)	(1966)	(1966)	(1966)
<b>Min</b>	221	218	146	90.0	83.6	91.9	67.1	114	65.1	84.7	230	226
<b>(WY)</b>	(1967)	(1967)	(2007)	(2004)	(2005)	(2005)	(1951)	(2004)	(2004)	(2005)	(1965)	(1967)

\* During periods of operation [October 1950 to September 1952, September 1963 to September 1971, April 2002 to current year (seasonal records only)].

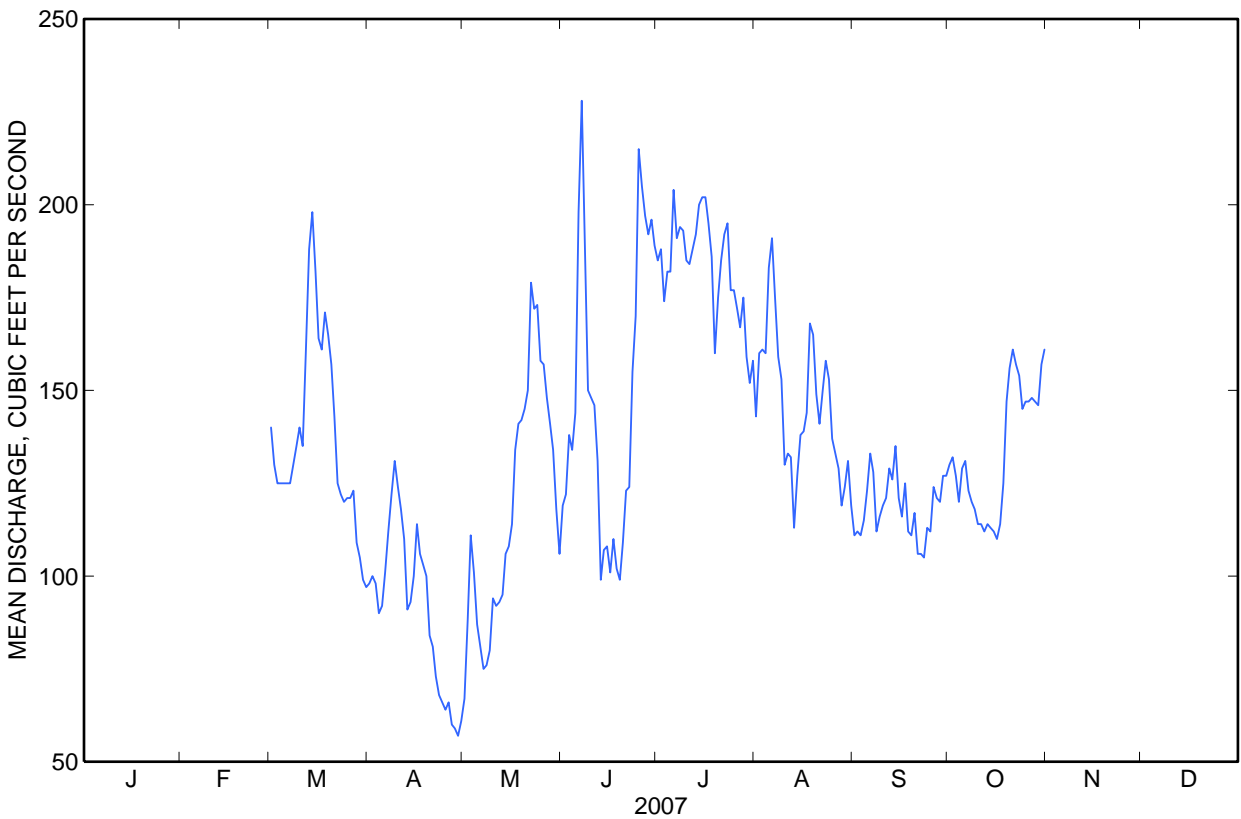
06017000 BEAVERHEAD RIVER AT DILLON, MT—Continued

SUMMARY STATISTICS

	2007 Season		Seasons 2002 - 2007*		Water Years 1951 - 1971*	
<b>Annual mean</b>					370	
<b>Highest annual mean</b>					523	1971
<b>Lowest annual mean</b>					183	1967
<b>Highest daily mean</b>	228	Jun 7	288	Jul 21, 2003	1,700	Jun 21, 1964
<b>Lowest daily mean</b>	57	Apr 29	31	May 26, 2005	18	Jun 19, 1952
<b>Annual seven-day minimum</b>					32	Jul 27, 1951
<b>Maximum peak flow</b>	251	Jul 23	317	Jul 21, 2003	1,740	Jun 21, 1964
<b>Maximum peak stage</b>	4.09	Jul 23	4.56	Jul 21, 2003	6.63	Jun 21, 1964
<b>Instantaneous low flow</b>					<sup>a</sup> 18	Jun 19, 1952
<b>Annual runoff (ac-ft)</b>					267,800	
<b>10 percent exceeds</b>					615	
<b>50 percent exceeds</b>					357	
<b>90 percent exceeds</b>					134	

\* During periods of operation [October 1950 to September 1952, September 1963 to September 1971, April 2002 to current year (seasonal records only)].

<sup>a</sup> Observed.



Water-Data Report 2007

## 06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT

Missouri Headwaters Basin  
Beaverhead Subbasin

LOCATION.--Lat 45°23'01", long 112°27'07" referenced to North American Datum of 1927, in SW ¼ NW ¼ SE ¼ sec.22, T.5 S., R.7 W., Madison County, MT, Hydrologic Unit 10020002, on left bank at downstream side of bridge on State Highway 41, 11.5 mi upstream from Ruby River, 12.7 mi southwest of Twin Bridges, 14.5 mi northeast of Dillon, and at river mile 2,430.4.

DRAINAGE AREA.--3,619 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--August 1935 to current year. Prior to October 1968, published as "at Blaine."

REVISED RECORDS.-- Water Supply Paper (WSP) 1309: 1938, maximum discharge (M); 1945(M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,809.15 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Feb. 17, 1949, nonrecording gage at bridge 0.5 mi upstream at different elevation. Feb. 17, 1949, to June 28, 1951, nonrecording gage at present site and elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Since August 1964, flow has been partly regulated by Lima Reservoir (station number 06012000) and Clark Canyon Reservoir (station number 06015300). Diversions occur upstream from station for irrigation of about 135,400 acres, of which about 5,000 acres are irrigated by imported water from Birch and Willow Creeks, and of which about 9,200 acres lies downstream from station including 600 acres in Ruby River drainage. Bureau of Reclamation satellite telemeter is located at the station. Several unpublished observations of water temperature and conductance were made during the year.

## 06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	187	278	e220	220	206	241	204	105	88	71	100	104
2	161	279	e220	255	161	234	199	110	80	84	101	99
3	167	288	e220	241	179	228	203	149	71	88	110	98
4	184	295	e230	243	220	229	188	176	83	74	89	91
5	187	295	e230	209	251	236	175	164	88	61	95	86
6	180	293	e230	197	254	248	171	152	120	69	117	92
7	245	287	e250	199	243	283	172	139	298	73	127	90
8	287	288	260	267	242	316	172	127	288	81	111	88
9	269	289	263	249	242	303	170	114	178	81	110	79
10	280	295	259	250	237	308	160	114	155	76	110	73
11	262	285	258	149	245	298	152	116	148	73	96	89
12	255	277	259	e120	240	316	155	106	142	73	91	106
13	253	275	263	e140	230	348	136	92	115	76	81	105
14	255	282	268	e150	233	382	145	89	96	86	69	112
15	254	275	272	e170	241	363	147	72	78	107	59	110
16	266	279	238	e175	242	330	143	63	81	125	58	106
17	280	276	217	e175	240	311	125	68	75	132	61	104
18	281	277	201	e165	246	318	134	78	75	146	65	107
19	296	272	e180	e160	244	320	186	72	66	128	88	101
20	314	281	e190	e160	246	305	182	67	52	110	71	120
21	311	286	e200	e170	243	297	172	77	56	109	80	134
22	304	293	e210	e180	244	254	159	100	52	115	82	128
23	297	290	207	181	256	245	152	142	54	114	103	141
24	295	272	229	202	248	233	146	142	69	105	113	165
25	300	264	236	221	246	226	136	138	83	109	104	156
26	299	265	248	225	243	225	133	143	73	113	95	159
27	298	272	273	213	243	247	127	140	76	104	89	185
28	295	e220	255	202	243	246	109	128	87	95	83	173
29	299	e200	243	200	---	236	98	135	83	98	81	179
30	296	e210	192	210	---	220	97	135	78	97	84	190
31	285	---	199	214	---	205	---	110	---	101	95	---
<b>Total</b>	8,142	8,238	7,220	6,112	6,608	8,551	4,648	3,563	3,088	2,974	2,818	3,570
<b>Mean</b>	263	275	233	197	236	276	155	115	103	95.9	90.9	119
<b>Max</b>	314	295	273	267	256	382	204	176	298	146	127	190
<b>Min</b>	161	200	180	120	161	205	97	63	52	61	58	73
<b>Ac-ft</b>	16,150	16,340	14,320	12,120	13,110	16,960	9,220	7,070	6,130	5,900	5,590	7,080

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	431	532	469	397	411	459	458	302	369	270	239	368
<b>Max</b>	1,328	1,065	852	725	707	799	1,251	1,117	1,615	1,586	1,581	1,691
<b>(WY)</b>	(1985)	(1985)	(1984)	(1976)	(1984)	(1972)	(1969)	(1984)	(1984)	(1984)	(1984)	(1984)
<b>Min</b>	32.4	205	200	173	191	176	95.5	40.8	24.2	28.0	25.8	28.1
<b>(WY)</b>	(1938)	(2005)	(2005)	(1937)	(2004)	(2005)	(1961)	(1937)	(1940)	(1937)	(1937)	(1937)



## 06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT—Continued

## SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1935 - 2007	
<b>Annual total</b>	67,876		65,532			
<b>Annual mean</b>	186		180		392	
<b>Highest annual mean</b>					1,097	1984
<b>Lowest annual mean</b>					142	2004
<b>Highest daily mean</b>	473	Apr 7	382	Mar 14	3,130	Jun 12, 1944
<b>Lowest daily mean</b>	45	Jul 21	52	Jun 20	7.0	May 25, 1940
<b>Annual seven-day minimum</b>	56	Jul 18	61	Jun 18	8.7	May 13, 1954
<b>Maximum peak flow</b>			410	Mar 14	<sup>b</sup> 3,130	Jun 12, 1944
<b>Maximum peak stage</b>			4.80	Mar 14	7.88	Jun 25, 1984
<b>Instantaneous low flow</b>			<sup>a</sup> 43	Jun 22	<sup>c</sup> 7.0	May 25, 1940
<b>Annual runoff (ac-ft)</b>	134,600		130,000		283,900	
<b>10 percent exceeds</b>	279		288		706	
<b>50 percent exceeds</b>	200		175		367	
<b>90 percent exceeds</b>	89		79		95	

	Water Years 1935 - 1964*		Water Years 1955 - 2007**	
<b>Annual mean</b>	391		389	
<b>Highest annual mean</b>	642	1948	1,097	1984
<b>Lowest annual mean</b>	170	1937	142	2004
<b>Highest daily mean</b>	3,130	Jun 12, 1944	2,180	Jun 25, 1984
<b>Lowest daily mean</b>	7.0	May 25, 1940	22	Jul 22, 2005
<b>Annual seven-day minimum</b>			27	Jul 17, 2005
<b>Maximum peak flow</b>	3,130	Jun 12, 1944	2,200	Jun 25, 1984
<b>Maximum peak stage</b>	6.76	Jun 12, 1944	7.88	Jun 25, 1984
<b>Instantaneous low flow</b>	<sup>c</sup> 7.0	May 25, 1940	<sup>d</sup> 17	Jul 18, 2005
<b>Annual runoff (ac-ft)</b>	283,100		291,900	
<b>10 percent exceeds</b>	648		772	
<b>50 percent exceeds</b>	410		346	
<b>90 percent exceeds</b>	60		115	

\* Prior to construction of Clark Canyon Dam.

\*\* After construction of Clark Canyon dam.

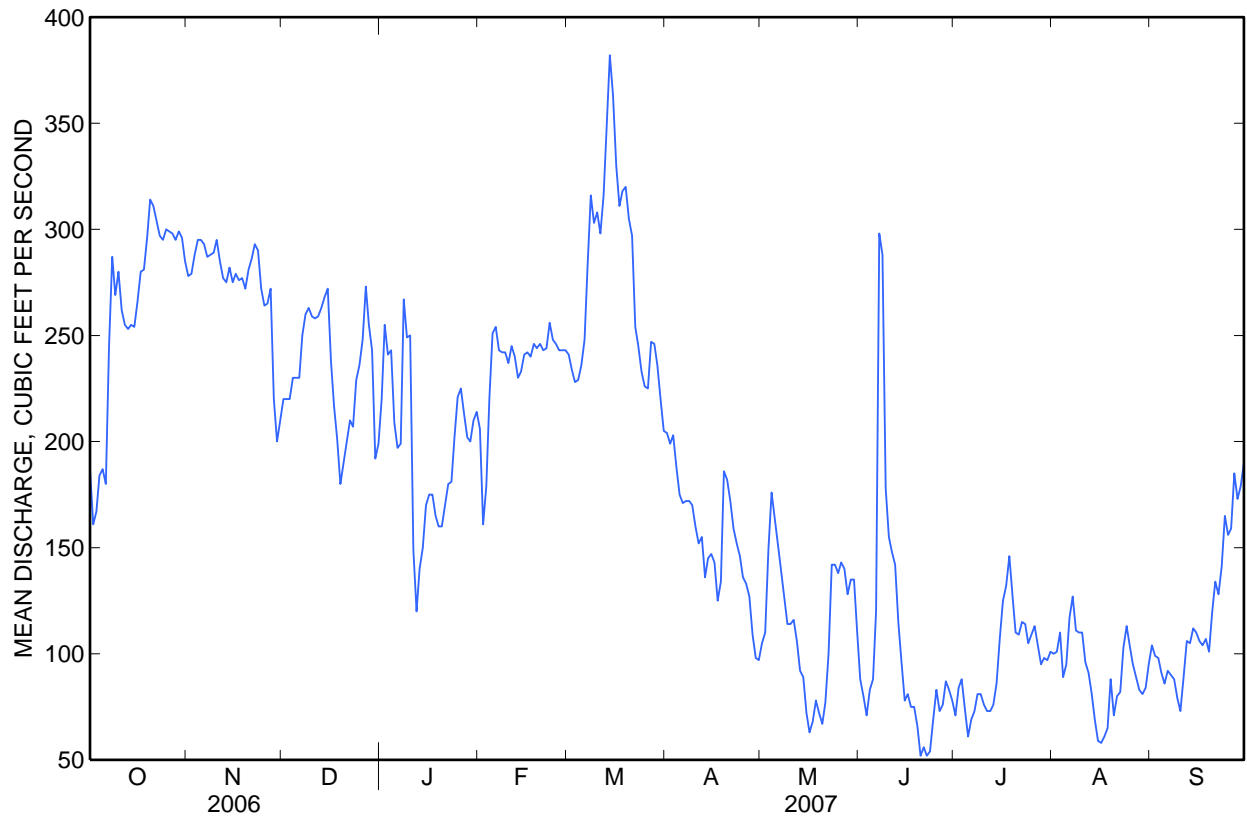
<sup>a</sup> Gage height, 3.12 ft.

<sup>b</sup> Observed, gage height, 6.76 ft, site and datum then in use.

<sup>c</sup> Observed, site and datum then in use.

<sup>d</sup> Gage height, 2.94 ft.

**06018500 BEAVERHEAD RIVER NEAR TWIN BRIDGES, MT—Continued**



Water-Data Report 2007

**06019500 RUBY RIVER ABOVE RESERVOIR, NEAR ALDER, MT**

Missouri Headwaters Basin  
Ruby Subbasin

LOCATION.--Lat 45°11'33", long 112°08'30" referenced to North American Datum of 1927, in NW ¼ SE ¼ SW ¼ sec.30, T.7 S., R.4 W., Madison County, MT, Hydrologic Unit 10020003, on right bank at county road bridge, 0.7 mi downstream from Mormon Creek, 4.2 mi upstream from Ruby Dam, 9.3 mi south of Alder, and at river mile 52.1.

DRAINAGE AREA.--534 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1938 to current year; seasonal record for 2007. Monthly discharge only for May 1938, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.-- WSP 1309: 1938, maximum discharge. WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 5,400 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, nonrecording gage was located at bridge 2.0 mi upstream at different elevation. Oct. 1, 1938, to Aug. 5, 1955, water-stage recorder was located at site 2.2 mi upstream at a different elevation. Aug. 6, 1955 to Sept. 30, 1997, water-stage recorder was located 2.3 mi upstream at a different elevation.

REMARKS.--Records are good. Diversion for irrigation of about 3,000 acres occurs upstream from the station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06019500 RUBY RIVER ABOVE RESERVOIR, NEAR ALDER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
1	125					101	134	434	181	113	81	80	
2	122					99	132	481	183	111	81	80	
3	124					97	128	585	187	106	90	82	
4	125					103	125	399	183	108	95	84	
5	124					104	130	322	194	114	92	88	
6	120					128	137	270	252	113	89	103	
7	144					168	141	246	288	110	82	109	
8	149					174	144	272	247	119	78	101	
9	138					134	152	345	242	114	78	100	
10	134					121	152	388	233	110	80	101	
11	128					118	139	444	242	105	85	99	
12	127					130	133	510	217	98	79	92	
13	125					199	128	594	201	92	76	95	
14	122					188	126	545	194	96	77	100	
15	119					145	129	422	190	100	79	99	
16	136					132	138	386	187	101	78	98	
17	145					139	145	377	181	101	76	99	
18	129					153	184	364	165	98	80	100	
19	125					148	202	326	154	94	89	104	
20	131					153	174	328	147	92	78	115	
21	130					144	165	282	146	90	76	116	
22	124					129	161	229	139	95	78	113	
23	119					130	163	233	131	97	83	118	
24	121					122	165	216	131	91	80	134	
25	124					134	169	204	131	89	80	130	
26	118					140	199	200	125	88	77	125	
27	119					155	196	192	123	86	77	118	
28	124					171	208	221	123	86	75	119	
29	122					127	300	230	119	84	76	140	
30	120					122	414	186	116	83	76	141	
31	100					143	---	181	---	82	80	---	
<b>Total</b>	3,913						4,251	5,013	10,412	5,352	3,066	2,501	3,183
<b>Mean</b>	126						137	167	336	178	98.9	80.7	106
<b>Max</b>	149						199	414	594	288	119	95	141
<b>Min</b>	100						97	125	181	116	82	75	80
<b>Ac-ft</b>	7,760						8,430	9,940	20,650	10,620	6,080	4,960	6,310

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2007, BY WATER YEAR (WY)\***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	122	122	111	103	102	110	164	417	464	192	120	114
<b>Max</b>	185	177	170	158	135	181	288	1,010	1,117	482	235	171
<b>(WY)</b>	(1984)	(1984)	(1948)	(1948)	(1971)	(1960)	(1962)	(1984)	(1984)	(1975)	(1975)	(1984)
<b>Min</b>	83.4	87.8	80.3	69.8	79.2	84.3	94.6	187	136	74.8	59.3	73.3
<b>(WY)</b>	(1940)	(1940)	(1940)	(1943)	(1942)	(1945)	(1945)	(2002)	(1987)	(1961)	(1940)	(1988)

\* May 1938 to current year; seasonal record only for 2007.

06019500 RUBY RIVER ABOVE RESERVOIR, NEAR ALDER, MT—Continued

SUMMARY STATISTICS

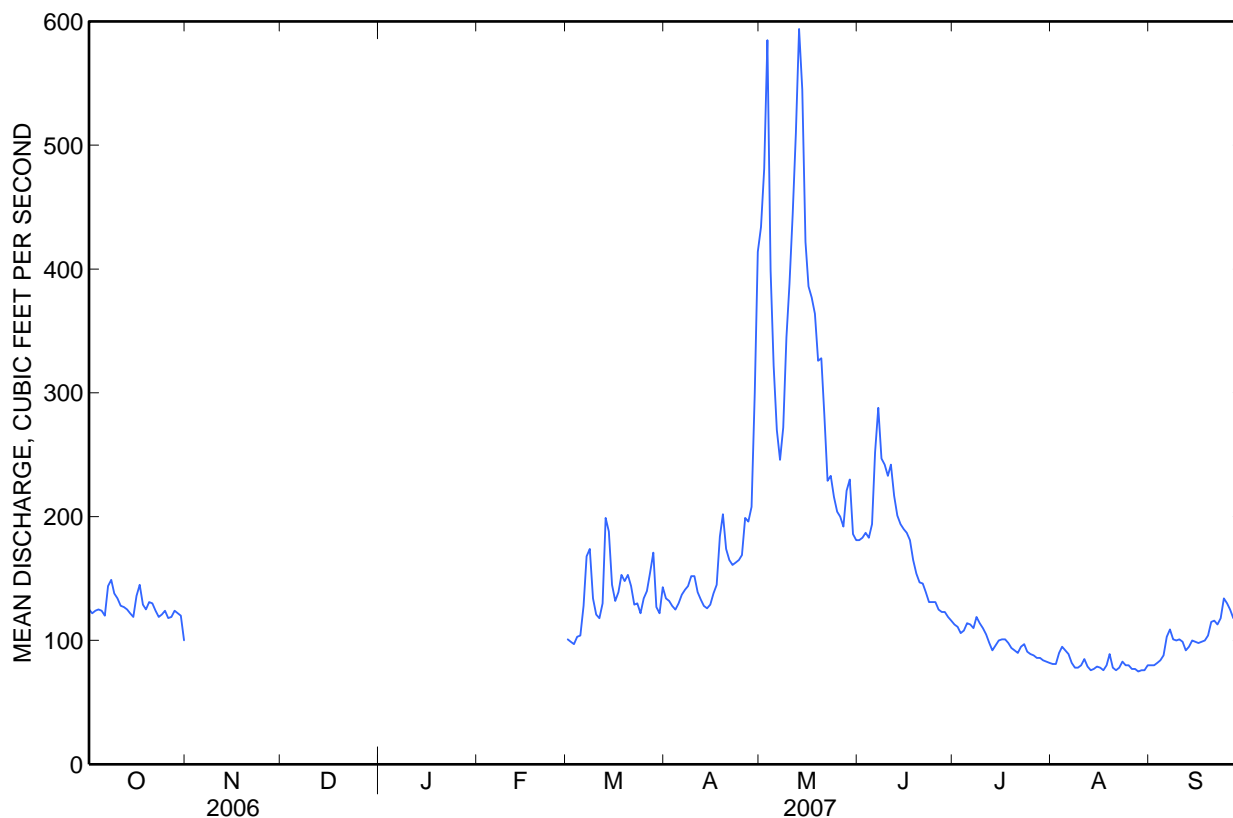
	Season 2007		Water Years 1935 - 2007*	
<b>Annual mean</b>			179	
<b>Highest annual mean</b>			336	1984
<b>Lowest annual mean</b>			119	1961
<b>Highest daily mean</b>	594	May 13	2,940	May 16, 1984
<b>Lowest daily mean</b>	75	Aug 28	35	Jan 23, 1962
<b>Annual seven-day minimum</b>			38	Aug 14, 1992
<b>Maximum peak flow</b>	754	May 13	3,810	May 16, 1984
<b>Maximum peak stage</b>	4.57	May 13	<sup>b</sup> 6.24	May 16, 1984
<b>Instantaneous low flow</b>	<sup>a</sup> 72	Aug 17	<sup>c</sup> 34	Aug 14, 1992
<b>Annual runoff (ac-ft)</b>			129,800	
<b>10 percent exceeds</b>			351	
<b>50 percent exceeds</b>			119	
<b>90 percent exceeds</b>			90	

\* May 1938 to current year; seasonal record only for 2007.

<sup>a</sup> Gage height, 2.66 ft.

<sup>b</sup> Site and datum then in use.

<sup>c</sup> Gage height, 1.99 ft, site and datum then in use.





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Water-Data Report 2007

**06020600 RUBY RIVER BELOW RESERVOIR, NEAR ALDER, MT**

Missouri Headwaters Basin  
Ruby Subbasin

LOCATION.--Lat 45°14'32", long 112°06'36" referenced to North American Datum of 1927, in SE ¼ SE ¼ NE ¼ sec.8, T.7 S., R.4 W., Madison County, MT, Hydrologic Unit 10020003, on right bank 0.2 mi downstream from Ruby Dam, 5.7 mi south of Alder, and at river mile 47.8.

DRAINAGE AREA.--596 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--December 1962 to current year.

REVISED RECORDS.--Water Data Report MT-85-1, maximum discharge.

GAGE.--Water-stage recorder. Elevation of gage is 5,286.63 ft, referenced to the National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records are good. Flow is regulated by Ruby River Reservoir (station number 06020500). Diversions for irrigation of about 3,500 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06020600 RUBY RIVER BELOW RESERVOIR, NEAR ALDER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	129	74	47	47	52	46	34	423	331	259	348	260
2	130	74	46	47	52	46	34	468	330	257	346	258
3	128	73	47	47	52	46	34	542	330	257	343	257
4	127	74	47	47	52	46	34	515	347	257	342	255
5	126	74	46	47	52	46	34	409	379	257	340	252
6	115	75	47	47	53	46	34	332	338	260	337	250
7	90	75	47	47	53	46	34	287	286	259	327	247
8	91	75	47	47	53	46	35	275	286	259	265	246
9	92	75	47	48	54	46	35	312	286	258	183	244
10	82	75	47	48	54	47	35	368	287	275	207	243
11	75	75	47	48	54	47	35	422	287	284	222	240
12	76	75	47	47	54	47	35	485	294	282	230	238
13	76	76	47	47	54	47	39	558	310	301	229	232
14	76	70	47	48	54	47	42	577	310	333	244	218
15	76	61	47	48	55	47	42	509	310	346	295	217
16	76	61	47	48	55	47	42	489	310	345	314	215
17	75	61	47	48	55	47	42	476	309	344	311	147
18	74	61	47	48	55	47	42	424	310	344	307	89
19	73	62	47	48	55	47	42	388	318	341	305	90
20	74	63	47	49	55	47	42	356	328	339	320	91
21	75	63	47	50	55	47	42	337	328	338	327	92
22	75	62	47	50	50	48	42	291	326	336	316	92
23	74	62	47	50	46	48	43	268	328	354	286	93
24	75	61	47	50	46	48	43	299	326	366	267	93
25	75	61	47	50	46	48	47	300	324	365	265	78
26	76	56	47	50	46	41	84	315	324	361	264	62
27	75	49	47	51	46	34	139	347	324	358	253	63
28	75	48	47	51	46	34	177	346	324	355	241	60
29	75	48	47	52	---	34	232	345	308	352	240	58
30	75	47	47	52	---	34	335	336	261	350	251	59
31	75	---	47	52	---	34	---	331	---	348	263	---
<b>Total</b>	2,686	1,966	1,455	1,509	1,454	1,381	1,930	12,130	9,459	9,740	8,788	5,039
<b>Mean</b>	86.6	65.5	46.9	48.7	51.9	44.5	64.3	391	315	314	283	168
<b>Max</b>	130	76	47	52	55	48	335	577	379	366	348	260
<b>Min</b>	73	47	46	47	46	34	34	268	261	257	183	58
<b>Ac-ft</b>	5,330	3,900	2,890	2,990	2,880	2,740	3,830	24,060	18,760	19,320	17,430	9,990

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	117	71.5	54.2	50.1	45.2	54.9	87.2	419	573	348	351	245
<b>Max</b>	244	222	142	139	92.4	174	192	1,035	1,209	559	473	399
<b>(WY)</b>	(1965)	(1985)	(1984)	(1984)	(1971)	(1998)	(1965)	(1984)	(1984)	(1975)	(1970)	(1975)
<b>Min</b>	38.0	28.9	23.6	20.9	21.4	19.3	30.5	189	281	197	222	59.4
<b>(WY)</b>	(1986)	(2003)	(2003)	(1989)	(1991)	(1991)	(1991)	(1963)	(2004)	(1992)	(1985)	(1994)

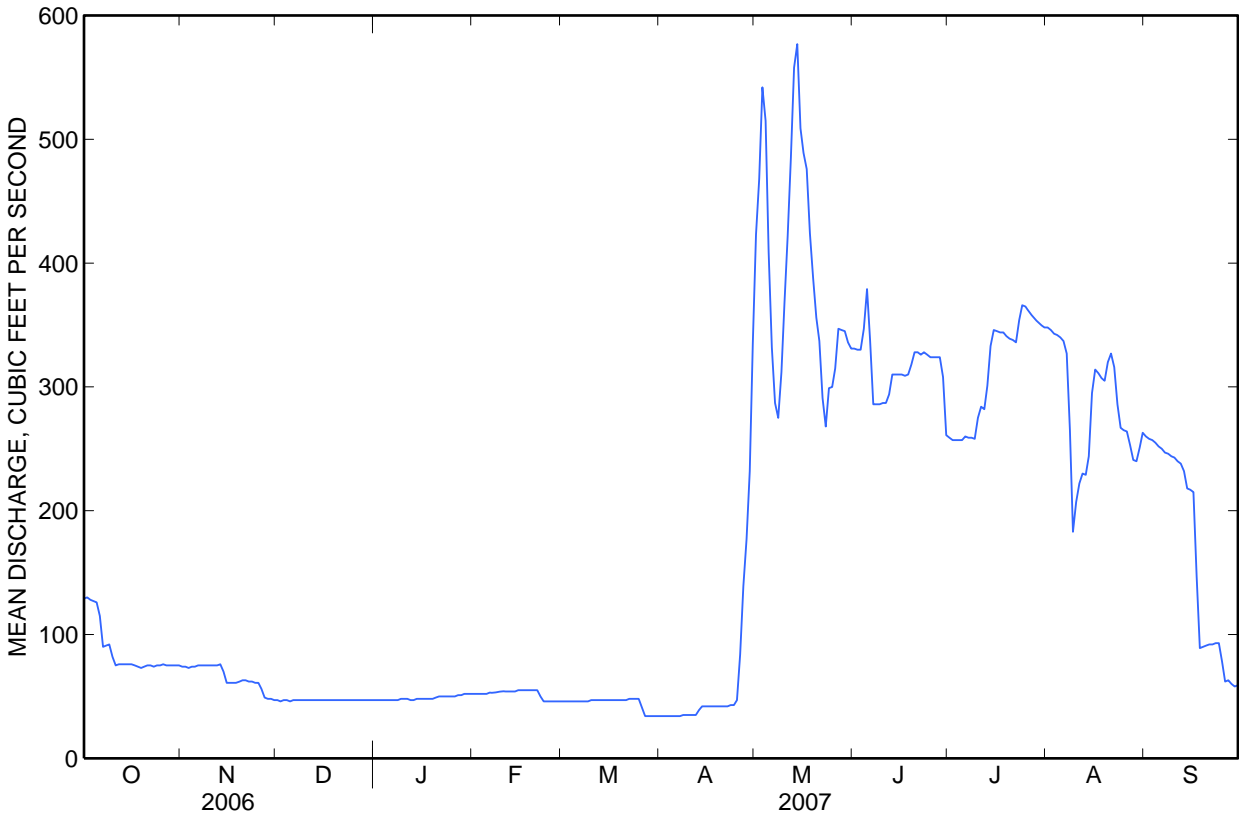
06020600 RUBY RIVER BELOW RESERVOIR, NEAR ALDER, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1963 - 2007	
<b>Annual total</b>	71,130		57,537			
<b>Annual mean</b>	195		158		203	
<b>Highest annual mean</b>					352	1984
<b>Lowest annual mean</b>					128	2002
<b>Highest daily mean</b>	906	May 21	577	May 14	2,500	May 17, 1984
<b>Lowest daily mean</b>	26	Mar 28	34	Mar 27	15	Feb 17, 1995
<b>Annual seven-day minimum</b>	30	Mar 27	34	Mar 27	16	Jan 3, 1989
<b>Maximum peak flow</b>			619	May 13	3,010	May 16, 1984
<b>Maximum peak stage</b>			4.39	May 13	<sup>a</sup> 8.52	May 16, 1984
<b>Instantaneous low flow</b>					<sup>b</sup> 1.4	Dec 5, 1974
<b>Annual runoff (ac-ft)</b>	141,100		114,100		147,000	
<b>10 percent exceeds</b>	412		343		445	
<b>50 percent exceeds</b>	86		75		107	
<b>90 percent exceeds</b>	47		46		31	

<sup>a</sup> From floodmark.

<sup>b</sup> Dam closure, result of measurement. May have been less on Oct. 1, 2004 and Nov. 30, 2005 but discharge was not verified.





Water-Data Report 2007

**06024450 BIG HOLE RIVER BELOW BIG LAKE CREEK, AT WISDOM, MT**

Missouri Headwaters Basin  
Big Hole Subbasin

LOCATION.--Lat 45°37'07", long 113°27'25" referenced to North American Datum of 1927, in SW ¼ SW ¼ NE ¼ sec.33, T.2 S., R.15 W., Beaverhead County, MT, Hydrologic Unit 10020004, on downstream side of State Highway 43 bridge, 0.3 mi west of Wisdom, 0.6 mi downstream from Big Lake Creek, and at river mile 116.0.

DRAINAGE AREA.--575 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1988 to current year (seasonal records only).

REVISED RECORDS.-- WDR-MT-95-1: 1991, maximum discharge.

GAGE.--Water-stage recorder. Elevation of gage is 6,040 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Seasonal records are good. Diversions for irrigation of about 66,900 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06024450 BIG HOLE RIVER BELOW BIG LAKE CREEK, AT WISDOM, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND  
CALENDAR YEAR JANUARY TO DECEMBER 2007  
DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1				254	266	64	19	16	8.3	46		
2				254	318	50	19	14	8.3	49		
3				209	549	43	22	13	7.9	51		
4				194	766	48	21	15	8.5	53		
5				191	724	86	17	15	12	58		
6				206	530	463	16	14	14	65		
7				216	384	1,700	20	14	17	65		
8				217	325	1,400	23	13	15	64		
9				227	302	673	22	12	14	62		
10				238	282	348	22	11	14	62		
11				194	264	515	21	11	14	64		
12				179	226	551	22	10	13	67		
13				161	233	307	20	9.4	12	66		
14				148	250	217	20	8.9	12	70		
15				150	249	177	24	8.5	12	70		
16				155	222	139	27	8.5	11	73		
17				143	181	117	31	9.0	12	83		
18				176	153	104	40	9.2	13	81		
19				203	129	88	39	8.8	15	97		
20				219	115	69	34	8.5	17	158		
21				246	195	59	30	9.0	16	143		
22				273	391	47	26	9.5	20	123		
23				265	634	36	21	9.6	38	121		
24				226	433	28	22	9.7	60	122		
25				189	323	23	31	9.4	53	120		
26				181	199	19	31	8.9	49	124		
27				154	141	23	30	8.5	44	121		
28				148	182	27	26	8.4	42	112		
29				180	193	24	22	8.4	45	113		
30				237	140	20	20	8.3	48	121		
31				---	84	---	19	8.0	---	126		
<b>Total</b>				6,033	9,383	7,465	757	326.5	665.0	2,750		
<b>Mean</b>				201	303	249	24.4	10.5	22.2	88.7		
<b>Max</b>				273	766	1,700	40	16	60	158		
<b>Min</b>				143	84	19	16	8.0	7.9	46		
<b>Ac-ft</b>				11,970	18,610	14,810	1,500	648	1,320	5,450		

**STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1988 - 2007**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>				359	441	509	188	55.2	36.9	64.7		
<b>Max</b>				614	1,476	1,797	739	215	95.4	139		
<b>(WY)</b>				(1996)	(1997)	(1997)	(1995)	(1997)	(1997)	(1998)		
<b>Min</b>				86.5	45.4	68.9	21.4	1.11	2.42	23.5		
<b>(WY)</b>				(2004)	(2004)	(1994)	(1988)	(1988)	(1988)	(2004)		

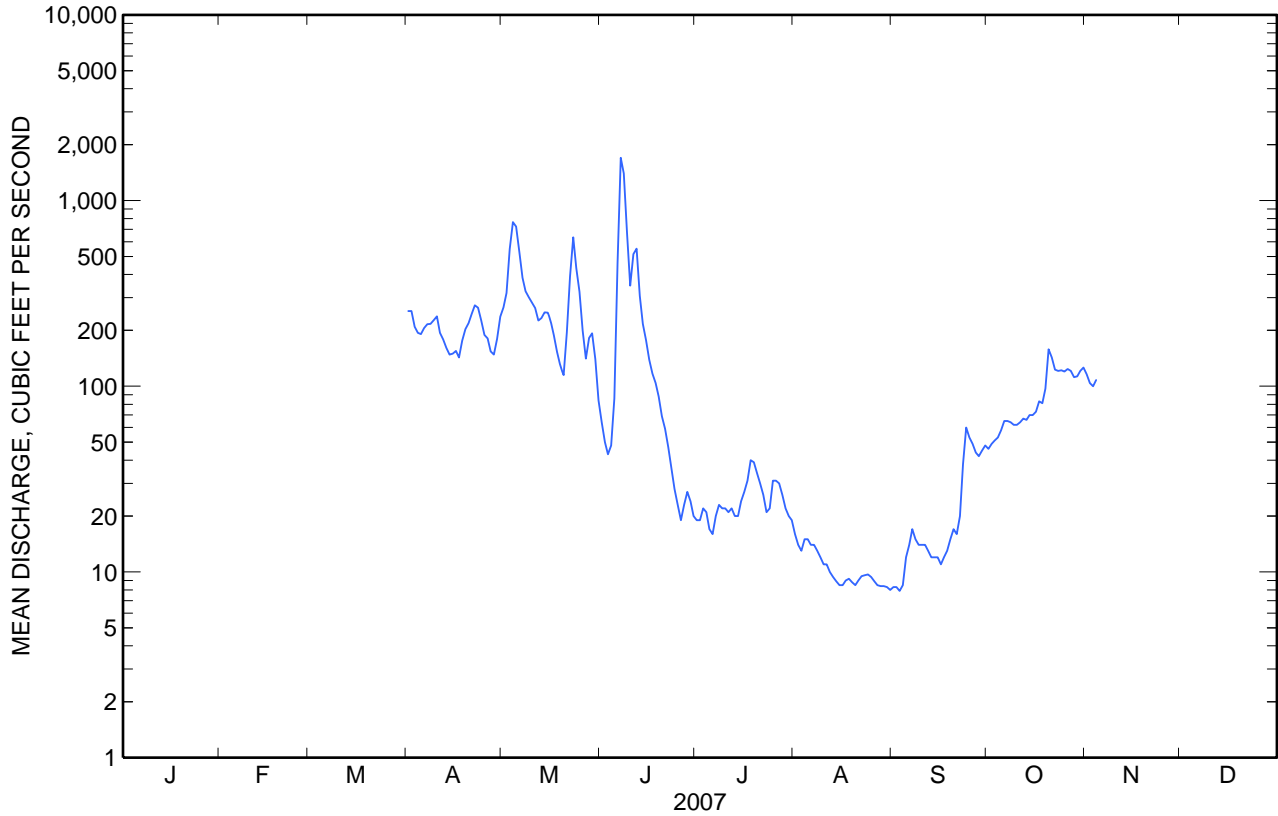
06024450 BIG HOLE RIVER BELOW BIG LAKE CREEK, AT WISDOM, MT—Continued

SUMMARY STATISTICS

	2007 Season		Seasons 1988 - 2007	
<b>Highest daily mean</b>	1,700	June 7	3,830	Jun 7, 1991
<b>Lowest daily mean</b>	7.9	Aug 3	0.00	Aug 28, 1988 <sup>b</sup>
<b>Maximum peak flow</b>	2,010	Jun 7	4,200	Jun 6, 1995
<b>Maximum peak stage</b>	5.23	Jun 7	6.37	Jun 6, 1995
<b>Instantaneous low flow</b>	<sup>a</sup> 7.2	Sep 3	<sup>a</sup> 0.00	Aug 28, 1988

<sup>a</sup> Gage height, 2.11 ft.

<sup>b</sup> No flow many days in August and September 1988.



**06024450 BIG HOLE RIVER BELOW BIG LAKE CREEK, AT WISDOM, MT—Continued****WATER-QUALITY RECORDS**

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May 1988 to current year (seasonal records only).

INSTRUMENTATION.--Temperature recorder since Apr. 27, 1988.

REMARKS.--Seasonal period for water-temperature record is Apr. 1 to Oct. 31. Daily water temperature record rated excellent. Several unpublished observations of water temperature and specific conductance were made during the year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (seasonal records): Maximum, 26.5°C, July 12, 2002; July 22 and 23, 2006; and July 5, 2007; minimum, 0.0°C many days during winter period.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: (seasonal records): Maximum, 26.5°C, July 5; minimum, 1.0°C, Apr. 3, 10-11, and Oct. 27-28, and 31.

**TEMPERATURE, WATER, DEGREES CELSIUS  
SEASON APRIL 2007 TO DECEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	April			May			June			July		
1	8.5	2.5	5.5	15.0	7.5	11.5	21.0	10.5	15.5	25.0	14.0	19.0
2	6.0	3.0	4.5	13.0	9.5	11.5	20.0	12.0	16.0	21.5	14.5	18.5
3	8.0	1.0	4.0	10.5	5.0	6.5	21.0	12.0	16.0	25.0	14.0	19.5
4	7.0	3.0	5.0	9.5	2.5	6.0	21.5	12.0	16.0	26.0	15.5	20.5
5	10.5	4.0	6.5	10.0	4.0	7.0	16.0	13.0	14.0	26.5	16.0	21.0
6	11.0	4.5	7.5	12.0	4.5	8.0	13.0	6.0	9.5	26.0	17.0	21.0
7	11.5	4.5	7.5	12.5	6.5	9.0	11.5	5.0	8.5	23.0	17.0	19.5
8	12.0	5.0	8.0	16.0	7.0	11.5	15.0	8.5	12.0	25.0	14.5	19.5
9	9.0	4.5	6.5	16.0	9.5	12.5	16.5	10.5	13.5	25.0	15.0	20.0
10	4.5	1.0	3.0	16.0	10.0	13.0	14.5	11.5	13.5	25.5	15.0	20.0
11	8.0	1.0	4.0	16.0	9.5	12.5	17.5	10.0	13.5	26.0	15.5	20.5
12	9.0	2.0	5.0	17.0	10.0	13.5	18.5	12.0	15.0	25.5	16.0	20.5
13	9.5	2.0	5.5	14.5	10.5	12.0	17.5	12.0	15.0	26.0	16.5	21.0
14	9.0	3.5	6.5	15.0	7.5	11.0	19.0	13.0	15.5	25.0	17.0	21.0
15	8.0	5.5	6.5	17.0	8.0	12.5	20.0	12.0	15.5	24.0	16.0	20.0
16	11.5	3.5	7.5	18.0	9.5	13.5	21.5	13.0	17.0	25.5	16.0	20.5
17	10.5	6.0	8.0	18.5	10.0	14.0	17.0	12.5	14.5	25.0	17.5	21.0
18	7.0	3.5	5.0	19.0	10.5	14.5	17.5	10.0	14.0	25.5	17.0	21.0
19	7.5	2.0	4.5	19.0	10.5	14.5	21.0	10.5	15.5	25.5	17.0	21.0
20	8.0	2.5	5.0	14.5	11.5	12.5	20.0	13.5	16.5	25.0	17.0	21.0
21	9.0	2.5	6.0	11.5	6.0	9.0	22.5	12.5	17.0	24.0	16.0	20.0
22	10.0	4.5	7.0	8.0	4.5	6.5	24.0	14.0	18.5	26.0	16.0	20.5
23	11.5	6.0	8.0	10.5	5.0	7.5	23.5	14.5	19.0	24.0	16.5	20.5
24	11.5	5.0	8.5	10.5	7.5	9.0	23.0	13.0	17.5	22.0	17.5	19.5
25	10.0	5.5	8.0	16.0	7.5	11.5	20.5	13.0	16.5	23.5	16.5	20.0
26	12.5	6.0	8.5	16.5	10.0	13.5	21.5	10.5	15.5	22.0	16.5	19.0
27	14.0	6.0	9.5	14.5	10.5	12.5	23.5	12.5	18.0	23.5	15.5	19.5
28	15.5	7.0	11.0	13.5	8.5	10.5	24.0	14.5	19.0	25.5	16.0	20.5
29	14.5	8.5	11.5	15.0	7.0	11.0	22.5	14.5	18.5	23.5	15.5	19.5
30	15.0	8.5	12.0	18.5	8.5	13.0	24.5	14.0	19.0	20.5	15.5	18.0
31	---	---	---	19.5	9.5	14.0	---	---	---	24.0	14.5	18.5
Month	15.5	1.0	7.0	19.5	2.5	11.0	24.5	5.0	15.5	26.5	14.0	20.0

## 06024450 BIG HOLE RIVER BELOW BIG LAKE CREEK, AT WISDOM, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**SEASON APRIL 2007 TO DECEMBER 2007**

<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>
	<b>August</b>			<b>September</b>			<b>October</b>		
<b>1</b>	23.5	14.0	18.5	20.5	12.0	16.0	7.0	5.5	6.0
<b>2</b>	22.5	14.5	18.5	21.0	11.5	16.0	8.0	4.5	6.0
<b>3</b>	23.5	16.0	19.5	22.0	12.5	16.5	9.5	5.5	7.0
<b>4</b>	22.0	14.5	18.5	18.0	12.5	15.0	8.5	3.5	6.5
<b>5</b>	20.0	13.5	16.5	18.5	13.5	15.5	6.5	5.5	6.0
<b>6</b>	21.5	12.0	16.5	17.5	12.0	15.0	5.5	4.5	5.0
<b>7</b>	21.0	13.5	17.0	18.5	10.0	14.0	8.0	3.5	5.5
<b>8</b>	21.5	11.5	16.5	18.5	9.5	13.5	11.5	6.0	8.5
<b>9</b>	22.0	13.0	17.5	17.0	8.5	12.5	11.5	5.0	8.0
<b>10</b>	19.5	13.0	16.0	18.0	7.5	12.5	10.0	6.0	8.0
<b>11</b>	21.5	11.5	16.5	17.5	8.5	13.0	11.0	5.5	8.0
<b>12</b>	22.0	12.5	17.5	16.5	9.0	12.5	10.5	5.5	8.0
<b>13</b>	21.0	12.0	16.5	18.0	9.0	13.0	11.0	7.0	9.0
<b>14</b>	20.5	12.0	16.0	16.0	8.5	12.5	10.5	5.0	8.0
<b>15</b>	21.0	12.0	16.0	18.0	9.0	13.5	10.5	4.5	7.5
<b>16</b>	21.0	12.5	16.5	16.5	10.0	13.0	8.0	5.5	6.5
<b>17</b>	21.0	13.5	17.0	12.5	8.5	10.0	6.5	4.5	5.5
<b>18</b>	20.5	13.0	16.5	12.5	6.0	9.0	5.0	3.0	4.0
<b>19</b>	17.5	11.5	14.5	10.5	7.0	8.5	5.0	4.0	4.5
<b>20</b>	15.5	11.5	13.5	14.0	8.0	10.5	5.5	3.0	4.5
<b>21</b>	19.0	11.5	14.5	15.5	6.5	11.0	5.0	3.0	3.5
<b>22</b>	20.0	10.0	15.0	11.5	7.5	9.0	5.5	3.0	4.0
<b>23</b>	19.5	11.0	15.0	9.0	7.5	8.5	8.5	3.0	5.5
<b>24</b>	21.0	10.0	15.0	10.0	6.0	7.5	8.5	3.5	6.0
<b>25</b>	20.0	10.5	15.5	12.0	4.5	8.0	8.5	4.5	6.5
<b>26</b>	19.0	11.5	15.0	13.0	6.0	9.5	6.5	4.0	5.0
<b>27</b>	19.5	10.5	15.0	14.0	6.0	10.0	5.5	1.0	3.5
<b>28</b>	20.5	10.5	15.0	11.5	7.0	9.0	6.0	1.0	3.5
<b>29</b>	21.0	11.0	15.5	9.5	6.0	7.5	5.0	2.5	3.5
<b>30</b>	21.0	11.0	15.5	10.0	3.5	6.5	7.5	4.5	5.5
<b>31</b>	17.5	12.5	15.5	---	---	---	5.0	1.0	3.0
<b>Month</b>	23.5	10.0	16.0	22.0	3.5	11.5	11.5	1.0	6.0



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Water-Data Report 2007

**06024540 BIG HOLE RIVER BELOW MUDD CREEK, NEAR WISDOM, MT**

Missouri Headwaters Basin  
Big Hole Subbasin

LOCATION.--Lat 45°48'27", long 113°18'45" referenced to North American Datum of 1927, in SE ¼ SW ¼ NW ¼ sec.26, T.1 N., R.14 W., Beaverhead County, MT, Hydrologic Unit 10020004, on right bank at bridge on Montana Highway 43, 0.5 mi downstream from Mudd Creek, 15.0 mi northeast of Wisdom, 17.3 mi west of Wise River, and at river mile 91.6.

DRAINAGE AREA.--1,267 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1997 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 5,880 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Seasonal records are good. U.S. Geological Survey satellite telemeter located at the station. Several unpublished observations of water temperature and specific conductances were made during the year.

## 06024540 BIG HOLE RIVER BELOW MUDD CREEK, NEAR WISDOM, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1				548	1,100	756	181	90	57	148		
2				553	1,220	680	168	88	56	146		
3				502	1,710	664	162	87	52	161		
4				458	2,290	650	155	83	54	183		
5				454	2,100	691	141	83	65	180		
6				469	1,730	1,110	130	87	70	191		
7				508	1,410	1,890	119	89	72	191		
8				526	1,190	2,640	120	85	70	185		
9				568	1,190	2,060	119	82	71	179		
10				612	1,150	1,400	119	81	70	180		
11				550	1,280	1,610	118	74	72	180		
12				505	1,360	1,860	109	69	74	180		
13				469	1,470	1,420	108	64	72	180		
14				447	1,540	1,110	107	63	73	176		
15				470	1,480	951	104	62	75	176		
16				493	1,360	844	105	62	77	182		
17				478	1,270	749	107	61	76	208		
18				564	1,210	697	124	64	79	205		
19				641	1,180	645	122	64	90	248		
20				627	1,160	563	113	55	94	353		
21				635	1,350	494	102	54	93	361		
22				629	1,650	438	96	56	97	307		
23				682	1,930	387	91	58	133	282		
24				628	1,870	340	88	57	161	272		
25				608	1,610	302	129	55	170	278		
26				638	1,320	265	120	53	158	283		
27				622	1,090	247	112	50	147	276		
28				621	1,240	232	110	51	143	254		
29				715	1,250	219	103	53	148	247		
30				897	1,070	199	99	54	148	262		
31				---	892	---	95	56	---	273		
<b>Total</b>				17,117	43,672	26,113	3,676	2,090	2,817	6,927		
<b>Mean</b>				571	1,409	870	119	67.4	93.9	223		
<b>Max</b>				897	2,290	2,640	181	90	170	361		
<b>Min</b>				447	892	199	88	50	52	146		
<b>Ac-ft</b>				33,950	86,620	51,800	7,290	4,150	5,590	13,740		

**STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1998 - 2007**

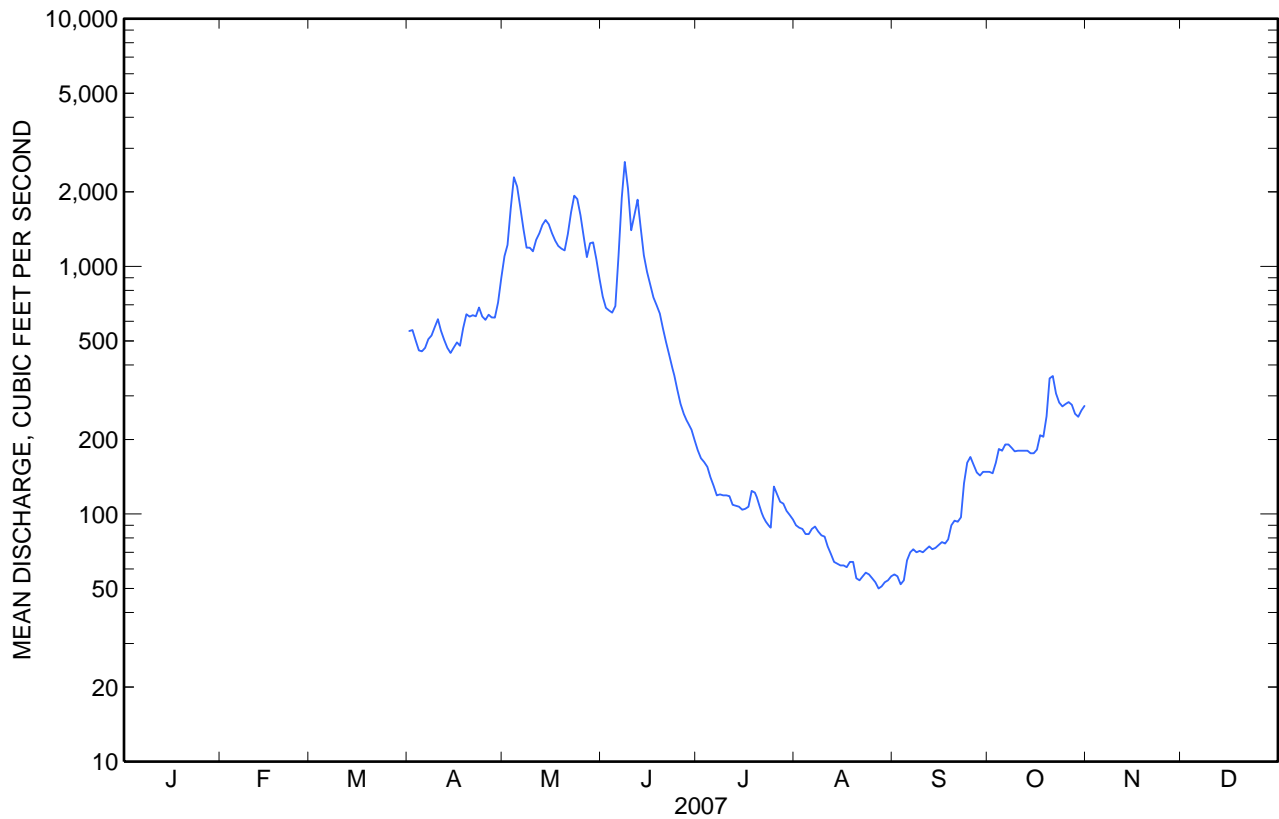
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>				716	1,257	1,241	301	110	110	172		
<b>Max</b>				1,086	2,306	2,272	961	244	209	258		
<b>(WY)</b>				(2003)	(1998)	(1999)	(1998)	(1998)	(2004)	(1998)		
<b>Min</b>				300	670	506	113	48.5	70.6	104		
<b>(WY)</b>				(2005)	(2004)	(2000)	(2000)	(2000)	(2006)	(2004)		

06024540 BIG HOLE RIVER BELOW MUDD CREEK, NEAR WISDOM, MT—Continued

SUMMARY STATISTICS

	2007 Season		Seasons 1998 – 2007	
Highest daily mean	2,640	Jun 8	4,810	Jun 1, 2003
Lowest daily mean	50	Aug 27	38	Aug 28, 2000
Maximum peak flow	2,780	Jun 8	4,900	Jun 1, 2003
Maximum peak stage	4.76	Jun 8	5.97	Jun 1, 2003
Instantaneous low flow	<sup>a</sup> 47	Aug 27	31	Aug 31, 2005

<sup>a</sup> Gage height, 2.25 ft.







Water-Data Report 2007

**06025500 BIG HOLE RIVER NEAR MELROSE, MT**

Missouri Headwaters Basin  
Big Hole Subbasin

LOCATION.--Lat 45°31'36", long 112°42'03" referenced to North American Datum of 1927, in SE ¼ SE ¼ SW ¼ sec.34, T.3 S., R.9 W., Madison County, MT, Hydrologic Unit 10020004, on left bank 50 ft downstream from bridge, on frontage road east of Interstate 15, 0.1 mi downstream from Rock Creek, 7 mi south of Melrose, and at river mile 31.1.

DRAINAGE AREA.--2,476 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1923 to current year. Monthly discharge only for some periods, published in Water Supply Paper 1309.

GAGE.--Water-stage recorder. Elevation of gage is 5,032.87 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to June 14, 1927, water-stage recorder, and July 17, 1927, to Sept. 30, 1931, nonrecording gage, at site 1.7 mi upstream at different elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 136,000 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06025500 BIG HOLE RIVER NEAR MELROSE, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	278	249	e320	e330	301	343	980	1,920	1,980	598	221	124
2	276	262	e360	e350	294	328	959	2,170	1,900	561	194	127
3	277	395	e400	e410	339	337	924	2,790	1,910	522	187	120
4	284	502	e430	e340	322	341	835	3,270	1,980	479	183	113
5	295	503	e470	e370	314	327	801	3,100	2,170	458	188	130
6	319	490	e480	e350	328	346	806	2,710	2,940	428	202	160
7	404	514	e470	e340	345	367	849	2,320	3,490	418	195	151
8	456	932	e450	e390	351	402	908	2,100	3,900	407	185	141
9	459	1,180	e430	e410	349	379	980	2,100	3,890	384	176	145
10	464	1,020	e410	e400	347	371	1,050	2,210	3,080	381	175	146
11	434	857	e410	e300	354	383	1,030	2,460	3,130	371	170	146
12	422	752	e420	e230	351	435	936	2,750	3,360	362	156	143
13	411	655	e440	e200	333	677	844	3,000	2,990	350	142	145
14	402	650	e460	e220	343	1,160	806	3,160	2,490	340	141	143
15	396	597	e470	e240	357	1,240	796	3,020	2,250	341	142	147
16	409	579	e370	e250	369	1,500	836	2,830	2,050	324	143	151
17	423	616	e310	e250	360	1,790	837	2,700	1,930	306	149	149
18	423	597	e290	e250	374	2,000	938	2,700	1,790	409	157	149
19	422	517	e280	e270	367	2,300	1,030	2,750	1,610	408	178	162
20	441	502	e280	e270	387	2,560	1,020	2,750	1,460	333	177	176
21	494	625	e280	e250	374	1,780	997	2,990	1,370	304	165	176
22	522	659	e320	e300	370	1,420	1,030	3,240	1,270	281	161	183
23	517	618	e310	e300	370	1,260	1,070	3,320	1,160	267	157	237
24	490	542	e340	e300	339	1,200	1,110	3,390	1,040	261	160	326
25	475	373	e350	e300	352	1,220	1,040	3,210	957	277	155	349
26	469	372	e390	e280	349	1,270	1,060	2,800	876	303	152	356
27	450	e400	e400	e280	341	1,280	1,080	2,430	787	302	143	337
28	440	e300	e390	e280	339	1,400	1,050	2,580	703	279	141	320
29	435	e210	e350	e260	---	1,200	1,200	2,790	653	265	135	336
30	444	e220	e300	e270	---	1,010	1,530	2,440	623	247	130	346
31	371	---	e310	e280	---	967	---	2,170	---	240	127	---
<b>Total</b>	12,802	16,688	11,690	9,270	9,719	31,593	29,332	84,170	59,739	11,206	5,087	5,834
<b>Mean</b>	413	556	377	299	347	1,019	978	2,715	1,991	361	164	194
<b>Max</b>	522	1,180	480	410	387	2,560	1,530	3,390	3,900	598	221	356
<b>Min</b>	276	210	280	200	294	327	796	1,920	623	240	127	113
<b>Ac-ft</b>	25,390	33,100	23,190	18,390	19,280	62,660	58,180	167,000	118,500	22,230	10,090	11,570

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	487	488	389	345	358	480	1,470	3,219	3,845	1,264	451	365
<b>Max</b>	1,109	1,037	763	716	800	1,019	3,515	8,294	8,380	4,120	1,457	870
<b>(WY)</b>	(1947)	(1928)	(1976)	(1928)	(1971)	(2007)	(1943)	(1976)	(1965)	(1975)	(1975)	(1965)
<b>Min</b>	184	255	223	143	143	247	490	1,108	814	254	87.6	114
<b>(WY)</b>	(1936)	(1938)	(1933)	(1937)	(1937)	(1937)	(1975)	(1977)	(1992)	(1931)	(1988)	(1988)

06025500 BIG HOLE RIVER NEAR MELROSE, MT—Continued

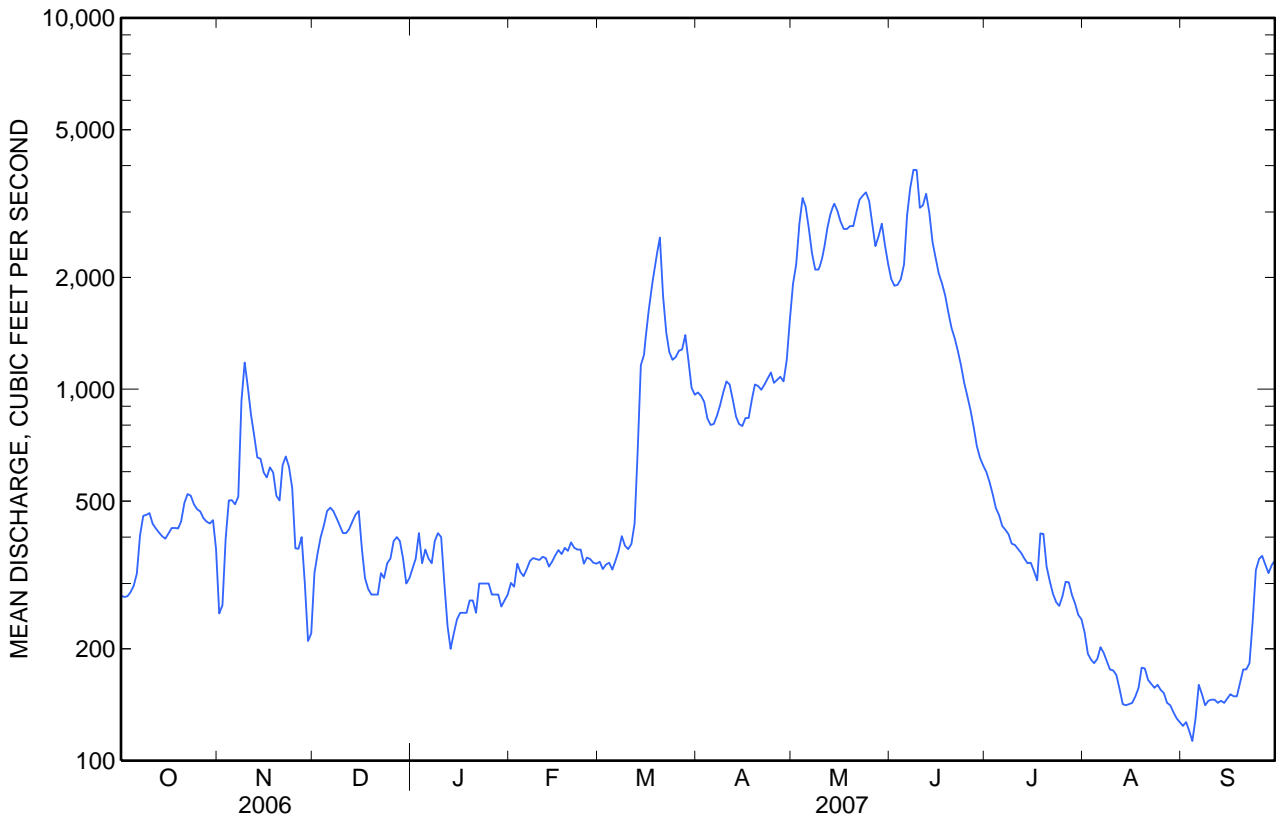
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1924 - 2007	
<b>Annual total</b>	337,496		287,130			
<b>Annual mean</b>	925		787		1,098	
<b>Highest annual mean</b>					2,024	1976
<b>Lowest annual mean</b>					486	1931
<b>Highest daily mean</b>	6,320	May 21	3,900	Jun 8	13,800	Jun 4, 1948
<b>Lowest daily mean</b>	135	Sep 8	113	Sep 4	49	Aug 17, 1931
<b>Annual seven-day minimum</b>	137	Sep 6	124	Aug 30	55	Aug 30, 1988
<b>Maximum peak flow</b>			4,150	Jun 8	<sup>b</sup> 23,000	Jun 14, 1927
<b>Maximum peak stage</b>			4.42	Jun 8	14.00	Jun 14, 1927
<b>Instantaneous low flow</b>			<sup>a</sup> 110	Sep 3	<sup>c</sup> 49	Aug 17, 1931
<b>Annual runoff (ac-ft)</b>	669,400		569,500		795,200	
<b>10 percent exceeds</b>	2,560		2,270		2,910	
<b>50 percent exceeds</b>	380		400		470	
<b>90 percent exceeds</b>	177		164		252	

<sup>a</sup> Gage height, 0.94 ft.

<sup>b</sup> When Wise River Reservoir dam failed; maximum discharge unaffected by dam failure, 14,300 ft<sup>3</sup>/s, June 10, 1927.

<sup>c</sup> Observed, gage height, 0.70 ft, site and datum then in use.



**06025500 BIG HOLE RIVER NEAR MELROSE, MT—Continued****WATER-QUALITY RECORDS**

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1956 to September 1957, August 1960 to September 1964, June 1977 to current year; seasonal records beginning April 2007.

SUSPENDED-SEDIMENT DISCHARGE: August 1956 to September 1957, August 1960 to September 1964.

INSTRUMENTATION.--Temperature recorder since June 1977.

REMARKS.--Daily water temperature record is rated excellent. Several unpublished observations of specific conductance and water temperature were made during the year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 24.0°C, June 25, 1988 and several days in July in 2003, 2006, and 2007. Minimum, 0.0°C on many days during winter most years.

SEDIMENT CONCENTRATION (water years 1956-57, 1960-64): Maximum daily mean, 200 mg/L, June 29, 1961; minimum daily mean, 1 mg/L, on many days in 1960-64.

SEDIMENT LOAD (water years 1956-57, 1960-64): Maximum daily, 4,300 tons, June 9, 1964; minimum daily, less than 0.5 ton on several days in 1961.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 24.0°C, July 5, 6, 18, 22, and 28; minimum for seasonal period of operation, 3.0°C, April 3, 11, and 12.

## 06025500 BIG HOLE RIVER NEAR MELROSE, MT—Continued

TEMPERATURE, WATER, DEGREES CELSIUS  
SEASON APRIL 2007 TO SEPTEMBER 2007

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>April</b>			<b>May</b>			<b>June</b>		
<b>1</b>	8.5	5.0	6.5	13.5	10.5	12.0	16.5	12.5	14.5
<b>2</b>	7.0	4.5	6.0	13.0	11.5	12.0	17.0	14.0	15.5
<b>3</b>	8.0	3.0	5.5	11.5	7.5	9.5	17.5	13.5	15.5
<b>4</b>	8.0	4.0	6.0	8.0	5.5	7.0	16.5	14.0	15.0
<b>5</b>	10.0	5.0	7.0	9.0	5.5	7.5	15.0	13.0	14.5
<b>6</b>	10.0	6.5	8.0	10.5	6.5	8.5	13.0	9.0	11.0
<b>7</b>	9.5	5.5	7.5	12.5	8.5	10.0	10.0	8.0	9.0
<b>8</b>	11.5	5.5	8.5	14.0	10.5	12.0	11.5	8.5	10.0
<b>9</b>	10.0	7.5	8.5	13.5	11.5	12.5	14.0	10.5	12.0
<b>10</b>	7.5	4.5	6.0	14.5	12.0	13.0	14.0	13.0	13.5
<b>11</b>	7.5	3.0	5.0	13.5	11.0	12.0	14.5	11.5	13.0
<b>12</b>	7.0	3.0	5.0	13.5	11.0	12.5	15.5	12.0	14.0
<b>13</b>	9.5	3.5	6.5	12.5	10.5	11.5	15.0	13.0	14.0
<b>14</b>	10.5	5.5	8.0	12.0	9.5	11.0	15.5	13.5	14.5
<b>15</b>	9.5	7.0	8.0	13.0	9.5	11.0	17.0	13.5	15.0
<b>16</b>	12.0	6.0	9.0	14.0	11.0	12.5	17.5	14.0	15.5
<b>17</b>	10.5	8.0	9.5	14.0	12.0	13.0	16.5	14.5	15.0
<b>18</b>	9.0	5.5	7.0	15.0	12.0	13.5	15.0	12.0	13.5
<b>19</b>	7.5	4.5	6.0	15.0	12.5	13.5	17.0	11.5	14.0
<b>20</b>	8.0	4.5	6.0	13.0	12.0	12.5	18.0	14.0	15.5
<b>21</b>	9.0	4.5	6.5	12.0	7.5	10.0	19.0	14.0	16.0
<b>22</b>	10.5	5.5	8.0	7.5	6.0	6.5	20.5	15.0	17.5
<b>23</b>	10.0	7.0	8.5	9.0	6.0	7.5	20.0	16.0	18.0
<b>24</b>	12.5	6.5	9.5	10.0	7.5	9.0	20.0	15.0	17.5
<b>25</b>	12.0	8.5	10.0	11.5	8.0	9.5	19.5	14.0	16.5
<b>26</b>	12.5	8.0	10.0	13.0	10.0	11.5	18.5	12.0	15.5
<b>27</b>	13.0	8.0	10.5	14.0	12.0	13.0	20.0	13.0	16.5
<b>28</b>	15.0	9.0	11.5	12.5	11.0	11.5	20.5	14.5	17.0
<b>29</b>	14.5	10.5	12.5	11.0	9.0	10.0	20.0	15.0	17.5
<b>30</b>	13.5	11.0	12.5	13.5	9.5	11.0	21.0	14.5	17.5
<b>31</b>	---	---	---	15.0	11.5	13.0	---	---	---
<b>Month</b>	15.0	3.0	8.0	15.0	5.5	11.0	21.0	8.0	15.0

## 06025500 BIG HOLE RIVER NEAR MELROSE, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS  
SEASON APRIL 2007 TO SEPTEMBER 2007**

<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>
	<b>July</b>			<b>August</b>			<b>September</b>		
<b>1</b>	21.5	15.0	18.5	22.5	16.5	19.5	18.5	14.0	16.5
<b>2</b>	20.5	15.5	18.0	21.5	17.0	19.5	20.0	14.0	17.0
<b>3</b>	22.5	15.0	18.5	22.5	17.5	19.5	20.5	15.5	18.0
<b>4</b>	23.5	16.0	19.5	21.0	16.5	19.0	19.0	15.5	16.5
<b>5</b>	24.0	17.5	20.5	18.5	15.0	17.0	17.0	14.5	15.5
<b>6</b>	24.0	18.5	21.0	19.5	14.0	17.0	18.0	14.5	16.0
<b>7</b>	21.0	18.0	19.5	19.0	15.0	17.5	17.5	13.5	15.5
<b>8</b>	23.0	15.5	19.0	19.5	14.5	17.0	16.0	12.5	14.5
<b>9</b>	23.0	16.5	19.5	19.0	15.0	17.5	15.5	11.5	13.5
<b>10</b>	22.5	16.0	19.0	19.0	14.5	17.0	15.5	10.5	13.0
<b>11</b>	23.0	17.0	20.0	19.0	13.5	16.5	16.5	11.0	13.5
<b>12</b>	23.0	17.5	20.0	21.0	14.5	17.5	16.0	11.5	14.0
<b>13</b>	23.5	18.5	21.0	20.0	14.5	17.5	15.0	11.0	13.0
<b>14</b>	22.5	18.5	20.5	19.0	14.5	17.0	14.5	10.5	12.5
<b>15</b>	21.5	17.5	19.5	19.0	14.0	16.5	16.5	11.0	13.5
<b>16</b>	21.0	17.0	19.0	19.0	14.5	17.0	16.0	12.0	14.0
<b>17</b>	22.0	17.5	19.5	19.0	15.0	17.0	14.0	11.0	12.0
<b>18</b>	24.0	17.5	20.5	18.5	15.0	16.5	12.0	9.0	10.5
<b>19</b>	23.0	18.0	20.5	18.0	14.0	16.0	11.5	9.5	10.5
<b>20</b>	23.0	17.5	20.5	16.0	13.0	14.5	13.5	9.5	11.5
<b>21</b>	23.0	17.5	20.5	18.5	13.5	15.5	14.5	9.0	11.5
<b>22</b>	24.0	17.5	20.5	18.0	13.5	15.5	13.0	10.0	10.5
<b>23</b>	22.0	18.0	20.0	17.5	13.5	16.0	10.5	8.5	9.5
<b>24</b>	20.5	18.0	19.0	19.0	13.0	16.0	11.0	7.0	9.0
<b>25</b>	22.5	17.5	19.5	19.5	13.5	16.5	11.0	7.0	9.0
<b>26</b>	22.0	17.5	20.0	19.5	14.0	16.5	12.0	8.5	10.0
<b>27</b>	22.5	17.5	20.0	19.0	13.0	16.0	13.0	8.5	10.5
<b>28</b>	24.0	17.5	20.5	18.0	13.0	15.5	11.5	9.5	10.5
<b>29</b>	23.0	18.0	20.5	19.0	14.0	16.5	10.5	8.0	9.0
<b>30</b>	21.0	17.5	19.5	18.0	14.0	16.5	10.0	6.0	8.0
<b>31</b>	23.0	16.5	19.5	17.5	15.0	16.5	---	---	---
<b>Month</b>	24.0	15.0	20.0	22.5	13.0	17.0	20.5	6.0	12.5



Water-Data Report 2007

**06026210 BIG HOLE RIVER NEAR GLEN, MT**

Missouri Headwaters Basin  
Big Hole Subbasin

LOCATION.--Lat 45°26'26", long 112°33'20" referenced to North American Datum of 1927, in NW ¼ SW ¼ SE ¼ sec.35, T.4 S., R.8 W., Madison County, MT, Hydrologic Unit 10020004, on left bank 50 ft downstream from private suspension bridge, 0.1 mi downstream from Sandy Hollow, 7.0 mi southeast of Glen, and at river mile 17.2.

DRAINAGE AREA.--2,655 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1997 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 4,850 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Seasonal records are good. Figures of discharge for seasons 1998-99 are the sum of river flow, Fred Bryan Ditch on left bank, and Upper and Lower Raffety Ditches on right bank. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06026210 BIG HOLE RIVER NEAR GLEN, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			1,530	898	1,750	1,820	603	247	149	406		
2			1,410	882	2,020	1,700	572	225	148	409		
3			1,450	865	2,600	1,710	537	215	145	408		
4			1,620	790	3,170	1,760	497	207	142	407		
5			1,590	758	3,070	1,970	473	209	150	439		
6			1,660	762	2,710	2,690	446	221	209	441		
7			1,700	795	2,320	3,260	433	219	197	433		
8			1,780	841	2,040	3,620	450	207	168	434		
9			1,580	894	1,990	3,830	417	201	142	433		
10			999	969	2,080	3,100	406	194	163	433		
11			473	969	2,320	2,950	399	192	176	434		
12			473	884	2,600	3,250	394	184	178	439		
13			626	812	2,850	2,970	391	166	177	430		
14			1,000	776	3,050	2,460	384	150	183	424		
15			1,120	769	2,930	2,180	396	145	181	415		
16			1,310	799	2,730	1,940	396	148	182	419		
17			1,590	811	2,590	1,800	385	154	184	430		
18			1,720	883	2,570	1,680	454	167	182	446		
19			2,120	983	2,600	1,490	457	170	208	464		
20			2,400	982	2,610	1,290	379	191	222	553		
21			1,720	951	2,820	1,210	339	176	213	639		
22			1,310	983	3,110	1,140	319	169	220	644		
23			1,160	1,010	3,160	1,050	297	168	265	600		
24			1,080	1,050	3,220	963	291	169	354	580		
25			1,090	1,000	3,070	878	316	169	424	582		
26			1,130	1,010	2,700	811	328	167	420	585		
27			1,150	1,030	2,350	747	321	160	407	610		
28			1,260	1,000	2,390	680	305	147	383	599		
29			1,130	1,090	2,660	642	295	148	393	584		
30			956	1,360	2,330	621	274	147	404	588		
31			893	---	2,030	---	265	154	---	592		
<b>Total</b>			41,030	27,606	80,440	56,212	12,219	5,586	6,969	15,300		
<b>Mean</b>			1,324	920	2,595	1,874	394	180	232	494		
<b>Max</b>			2,400	1,360	3,220	3,830	603	247	424	644		
<b>Min</b>			473	758	1,750	621	265	145	142	406		
<b>Ac-ft</b>			81,380	54,760	159,600	111,500	24,240	11,080	13,820	30,350		

**STATISTICS OF MONTHLY MEAN DATA FOR SEASONS 1998 - 2007**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
<b>Mean</b>			1,324	1,185	2,252	2,564	785	276	278	452
<b>Max</b>			1,324	1,929	3,829	4,432	2,138	565	398	708
<b>(WY)</b>			(2007)	(2006)	(1998)	(1999)	(1998)	(1998)	(2004)	(1998)
<b>Min</b>			1,324	491	1,133	1,274	394	149	204	318
<b>(WY)</b>			(2007)	(2005)	(2004)	(2004)	(2007)	(2000)	(2006)	(2004)



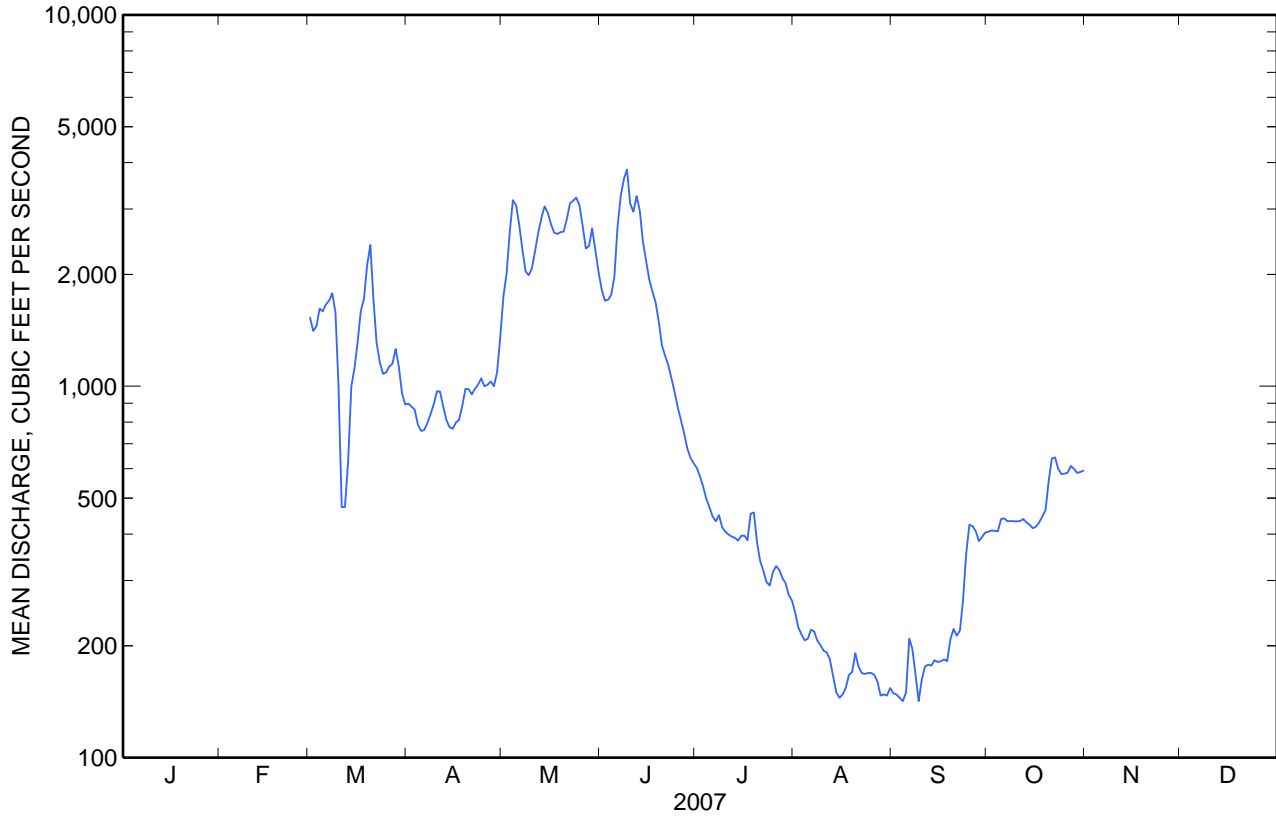
**06026210 BIG HOLE RIVER NEAR GLEN, MT—Continued**

**SUMMARY STATISTICS**

	2007 Season		Seasons 1998 - 2007	
<b>Highest daily mean</b>	3,830	Jun 9	10,000	Jun 1, 2003
<b>Lowest daily mean</b>	142	Sep 4	122	Aug 29, 2000 <sup>b</sup>
<b>Maximum peak flow</b>	3,980	Jun 9	10,500	May 31, 2003
<b>Maximum peak stage</b>	4.73	Jun 9	7.05	May 31, 2003
<b>Instantaneous low flow</b>	<sup>a</sup> 134	Sep 9	<sup>b</sup> 111	Aug 24, 2006

<sup>a</sup> Gage height, 1.90 ft.

<sup>b</sup> Gage height, 1.84 ft.





## Water-Data Report 2007

## 455018111401101 Local number 01N01W13BDDD01

Sediments

Jefferson County, MT

LOCATION.--Lat 45°50'18", long 111°40'11" referenced to North American Datum of 1927, Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 120 ft. Upper casing diameter 6 in, top of first opening 80 ft, bottom of last opening 120 ft.

DATUM.--Land-surface datum is 4132 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif-ic conduc-tance, wat unf 25 degC (00095)	Temper-ature, water, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 18...	1300	120	45	.8	8.4	898	10.0	24	8.78	.623	9.11	17	198

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanad-ium, water, fltrd, µg/L (01085)
Sep 18...	294	13.8	1.23	39.5	154	601	<.016	<.002	.027	10	E4	E.03

455018111401101 Local number 01N01W13BDDD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b> <b>18...</b>	47	2,640	2.78	2.51



## Water-Data Report 2007

## 45492211510901 Local number 01N02W21DBAA01

Sediments

Jefferson County, MT

LOCATION.--Lat 45°49'21.8", long 111°51'09.1" referenced to North American Datum of 1927, in NE ¼ NW ¼ SE ¼ sec.21, T.1 N., R.2 W., Jefferson County, MT, Hydrologic Unit 10020005.

## WATER-QUALITY RECORDS

WELL CHARACTERISTICS.--Depth 86 ft. Upper casing diameter 6.0 in, top of first opening undefined, bottom of last opening undefined.

DATUM.--Land-surface datum is 4270 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 24...	1500	86	43	7.9	7.7	612	11.0	310	66.1	34.2	2.02	.4	16.7

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 24...	322	6.62	.28	13.4	57.7	395	.994	<.002	.011	94	<6	1.6

454922111510901 Local number 01N02W21DBAA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>24...</b>	57	3,710	5.56	5.63



## Water-Data Report 2007

## 45522111563601 Local number 01N03W02BACB01

Sediments

Jefferson County, MT

LOCATION.--Lat 45°52'20.7", long 111°56'36.1" referenced to North American Datum of 1927, in SW ¼ NE ¼ NW ¼ sec.2, T.1 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 53 ft. Upper casing diameter 6.0 in, top of first opening 46 ft, bottom of last opening 53 ft.

DATUM.--Land-surface datum is 4290 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 18...	1030	53	55	2.7	7.5	430	10.0	180	56.9	8.78	3.12	.9	26.8

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alkalinity, water fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 18...	182	6.04	.48	16.1	39.9	268	.171	.003	.012	58	<6	.66

455221111563601 Local number 01N03W02BACB01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>18...</b>	42	2,090	2.33	1.96



Water-Data Report 2007

**455136111573001 Local number 01N03W03DCCD01**

Sediments

Jefferson County, MT

LOCATION.--Lat 45°51'36.4", long 111°57'29.5" referenced to North American Datum of 1927, in SW ¼ SW ¼ SE ¼ sec.3, T.1 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10020005.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 200 ft. Upper casing diameter 6.0 in, top of first opening 194 ft, bottom of last opening 199 ft.

DATUM.--Land-surface datum is 4270 ft above National Geodetic Vertical Datum of 1929. Measuring point: access hole in cap, 1.5 ft above land-surface datum, Sep. 11, 2007, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: S, steel tape.

Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measurement method</b>	<b>Water level status</b>
Sep 11	8.44	S	--



## Water-Data Report 2007

455136111573001 Local number 01N03W03DCCD01—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 11...	1000	200	45	.7	8.9	724	10.5	18	5.99	.637	1.52	17	159

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents mg/L (70301)	Nitrate + nitrite, water fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanadium, water, fltrd, μg/L (01085)
Sep 11...	146	44.6	2.04	11.0	126	439	<.016	E.001	.007	9	51	.06

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Radon-222 2-sigma, water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural, water, fltrd, μg/L (22703)	Uranium natural, water, unfltrd, μg/L (28011)
Sep 11...	36	1,120	.18	.240



Water-Data Report 2007

**455028112174601 Local number 01N06W13BADC01**

Plutonic Rocks Upper Cretaceous

Jefferson County, MT

LOCATION.--Lat 45°50'27.8", long 112°17'45.8" referenced to North American Datum of 1927, in SE ¼ NE ¼ NW ¼ sec.13, T.1 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020005.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 70 ft. Upper casing diameter 6.0 in, top of first opening 50 ft, bottom of last opening 70 ft.

DATUM.--Land-surface datum is 4870 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of casing, 1.5 ft above land-surface datum, Sep. 11, 2007, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: V, calibrated electric tape--accuracy of instrument has been checked. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measurement method</b>	<b>Water level status</b>
Sep 11	10.82	V	--

455028112174601 Local number 01N06W13BADCO1—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 2007.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 11...	1700	70	40	.6	8.3	370	12.0	52	16.6	2.45	2.30	3.8	63.1

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: E, estimated.]

Date	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanadium, water, fltrd, μg/L (01085)
Sep 11...	95	10.2	4.00	30.0	58.5	245	.082	E.002	.020	2	96	1.1

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, μg/L (22703)	Uranium natural water, unfltrd μg/L (28011)
Sep 11...	83	6,980	3.66	3.15



## Water-Data Report 2007

## 455019112205701 Local number 01N06W16ADCA01

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 45°50'18.6", long 112°20'56.8" referenced to North American Datum of 1927, in SW ¼ SE ¼ NE ¼ sec.16, T.1 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020005.

## WATER-QUALITY RECORDS

WELL CHARACTERISTICS.--Depth 200 ft. Upper casing diameter 6.0 in, top of first opening 160 ft, bottom of last opening 200 ft.

DATUM.--Land-surface datum is 5780 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 11...	1500	200	27	2.4	7.4	337	10.5	140	43.0	8.28	3.52	.4	11.8

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: E, estimated.]

Date	Alkalinity, water filtered, mg/L as CaCO <sub>3</sub> (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 11...	100	4.60	.18	19.8	57.4	213	.966	E.001	.042	29	11	1.8

455019112205701 Local number 01N06W16ADCA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>11...</b>	47	2,100	3.60	3.44



## Water-Data Report 2007

**455533111460701 Local number 02N01W18ACDD01**

Climbing Arrow Formation of Bozeman Group (Oligocene-Eocene)

Jefferson County, MT

LOCATION.--Lat 45°55'33.2", long 111°46'07.3" referenced to North American Datum of 1927, in SE ¼ SW ¼ NE ¼ sec.18, T.2 N., R.1 W., Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 137 ft. Upper casing diameter 6.0 in, top of first opening, 137 ft; bottom of last opening, 137 ft.

DATUM.--Land-surface datum is 4750 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 25...	1200	137	40	.6	7.7	1,080	9.5	250	91.8	4.33	4.96	4.4	159

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alkalinity, water filtered, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 25...	193	17.5	.48	20.1	334	748	<.016	<.002	.009	8	391	.04

## Water-Data Report 2007

455533111460701 Local number 02N01W18ACDD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>25...</b>	50	2,570	.21	.232



## Water-Data Report 2007

**455630112061801 Local number 02N04W09ACDB01**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 45°56'30.4", long 112°06'18.1" referenced to North American Datum of 1927, in SE ¼ SW ¼ NE ¼ sec.9, T.2 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 42 ft. Upper casing diameter 6.0 in, top of first opening 36 ft, bottom of last opening 41 ft.

DATUM.--Land-surface datum is 4610 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 24...	1300	42	43	9.3	7.9	419	11.0	190	54.9	12.1	1.63	.5	14.5

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 24...	123	29.4	.13	19.1	37.9	248	1.08	<.002	.012	62	<6	5.5



## Water-Data Report 2007

455630112061801 Local number 02N04W09ACDB01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>24...</b>	29	750	1.12	1.16



Water-Data Report 2007

**455304112073601 Local number 02N04W32ACBA01**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 45°53'04.2", long 112°07'35.6" referenced to North American Datum of 1927, in NW ¼ SW ¼ NE ¼ sec.32, T.2 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10020005.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 220 ft. Upper casing diameter 6.0 in, top of first opening 180 ft, bottom of last opening 220 ft.

DATUM.--Land-surface datum is 4520 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of casing, 1.70 ft above land-surface datum, Sep. 23, 2007, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: V, calibrated electric tape--accuracy of instrument has been checked. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measurement method</b>	<b>Water level status</b>
Sep 23	138.20	V	--

## Water-Data Report 2007

455304112073601 Local number 02N04W32ACBA01—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 23...	1300	220	182	.5	7.7	741	11.5	95	32.5	3.40	5.60	5.3	118

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanadium, water, fltrd, μg/L (01085)
Sep 23...	98	106	.96	8.80	90.0	428	.038	E.001	<.018	55	4,000	.08

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, μg/L (22703)	Uranium natural water, unfltrd μg/L (28011)
Sep 23...	22	250	.53	.599



Water-Data Report 2007

**455336112112201 Local number 02N05W26DBC01**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 45°53'35.7", long 112°11'21.5" referenced to North American Datum of 1927, in SW ¼ NW ¼ SE ¼ sec.26, T.2 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020005.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 148 ft. Upper casing diameter 6.0 in, top of first opening 141 ft, bottom of last opening 146 ft.

DATUM.--Land-surface datum is 4580 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of casing, 2.1 ft above land-surface datum, Sep. 11, 2007, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM**

**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: V, calibrated electric tape--accuracy of instrument has been checked. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measurement method</b>	<b>Water level status</b>
Sep 11	112.85	V	--

Period of record highest: 112.85 Sep 11, 2007; lowest: 118 Feb 14, 1978

## Water-Data Report 2007

455336112112201 Local number 02N05W26DBC01—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

[Remark codes: E, estimated.]

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd, std units (00400)	Specific conductance, $\mu$ S/cm wat unfltrd, 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 11...	1200	148	23	7.6	7.8	652	12.0	140	47.2	5.75	8.72	3.2	87.0

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: E, estimated.]

Date	Alkalinity, water field, mg/L as CaCO <sub>3</sub> (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 11...	130	58.8	1.08	56.9	90.0	444	2.32	E.001	.022	26	13	15.5

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: E, estimated.]

Date	Radon-222 2-sigma, water, unfltrd, pCi/L (76002)	Radon-222, water, unfltrd, pCi/L (82303)	Uranium natural, water, fltrd, $\mu$ g/L (22703)	Uranium natural, water, unfltrd, $\mu$ g/L (28011)
Sep 11...	29	570	14.4	14.2



## Water-Data Report 2007

## 455342112151901 Local number 02N05W29CABA01

Sediments

Jefferson County, MT

LOCATION.--Lat 45°53'41.7", long 112°15'19.1" referenced to North American Datum of 1927, in NW ¼ NE ¼ SW ¼ sec.29, T.2 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 280 ft. Upper casing diameter 6.0 in, top of first opening 240 ft, bottom of last opening 280 ft.

DATUM.--Land-surface datum is 4810 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 11...	1300	280	42	6.7	8.3	402	16.0	37	11.7	1.93	9.73	5.4	75.5

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Alkalinity, water field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 11...	158	15.0	1.05	50.5	19.8	282	.428	E.001	.046	27	<6	50.7

455342112151901 Local number 02N05W29CABA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>11...</b>	40	1,480	22.9	22.8



## Water-Data Report 2007

**455922111400801 Local number 03N01W25ABBC01**

Climbing Arrow Formation of Bozeman Group (Oligocene-Eocene)

Jefferson County, MT

LOCATION.--Lat 45°59'22.3", long 111°40'08.2" referenced to North American Datum of 1927, in NW ¼ NW ¼ NE ¼ sec.25, T.3 N., R.1 W., Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 60 ft. Upper casing diameter 6.0 in, top of first opening 40 ft, bottom of last opening 60 ft.

DATUM.--Land-surface datum is 4515 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 25...	1000	60	40	4.2	7.5	736	9.0	290	94.8	12.0	1.99	1.2	47.8

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alkalinity, water fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 25...	263	36.4	.60	32.3	77.8	462	.023	<.002	.031	78	<6	7.7



## Water-Data Report 2007

455922111400801 Local number 03N01W25ABBC01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>25...</b>	63	4,260	9.20	9.59



## Water-Data Report 2007

**46063112071401 Local number 04N04W17AAAB01**

Elkhorn Mountains Volcanics

Jefferson County, MT

LOCATION.--Lat 46°06'31.3", long 112°07'13.6" referenced to North American Datum of 1927, in NE ¼ NE ¼ NE ¼ sec.17, T.4 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10020005.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 130 ft. Upper casing diameter 6.0 in, top of first opening 100 ft, bottom of last opening 130 ft.

DATUM.--Land-surface datum is 5200 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd std units (00400)	Specific conductance, wat unfltrd $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium, adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 12...	1300	130	63	5.8	7.4	388	10.0	140	41.0	8.47	2.44	1.1	28.3

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanad-ium, water, fltrd, $\mu$ g/L (01085)
Sep 12...	124	18.6	.33	26.1	37.3	244	1.60	E.001	.022	66	<6	4.5

460631112071401 Local number 04N04W17AAAB01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>12...</b>	40	1,480	10.8	10.1



Water-Data Report 2007

**06026420 Big Hole River below Hamilton Ditch, near Twin Bridges, MT**

Missouri Headwaters Basin  
Jefferson Subbasin

LOCATION.--Lat 45°32'59", long 112°21'32" referenced to North American Datum of 1927, in NW ¼ SW ¼ NW ¼ sec.28, T.35 S., R.6 W., Madison County, MT, Hydrologic Unit 10020005, on right bank 100 ft downstream from Hamilton ditch return, 0.2 mi downstream from county road bridge, 0.3 mi downstream from Rochester Creek, 0.8 mi west of Twin Bridges, and at river mile 2.1.

DRAINAGE AREA.--2,790 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 2007 to September 2007.

GAGE.--Water-stage recorder. Elevation of gage is 4,630 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Seasonal records are good except those for estimated daily discharges, which are poor. Numerous diversions for irrigation occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06026420 Big Hole River below Hamilton Ditch, near Twin Bridges, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1										e420	108	39
2										e400	91	40
3										e380	77	39
4										e360	66	40
5										e330	66	43
6										e300	74	65
7										e270	68	63
8										e280	59	57
9										e260	58	43
10										e250	54	44
11										e240	51	62
12										e240	47	63
13										e230	41	62
14										e220	32	70
15										e220	25	74
16										e210	25	69
17										e200	26	71
18										e240	28	70
19										e250	32	73
20										210	34	85
21										193	35	92
22										181	32	115
23										163	32	138
24										158	31	194
25										174	41	274
26										162	44	271
27										171	42	265
28										148	37	243
29										149	36	250
30										136	35	262
31										127	37	---
<b>Total</b>										7,272	1,464	3,276
<b>Mean</b>										235	47.2	109
<b>Max</b>										420	108	274
<b>Min</b>										127	25	39
<b>Ac-ft</b>										14,420	2,900	6,500

## STATISTICS OF MONTHLY MEAN DATA FOR SEASON 2007

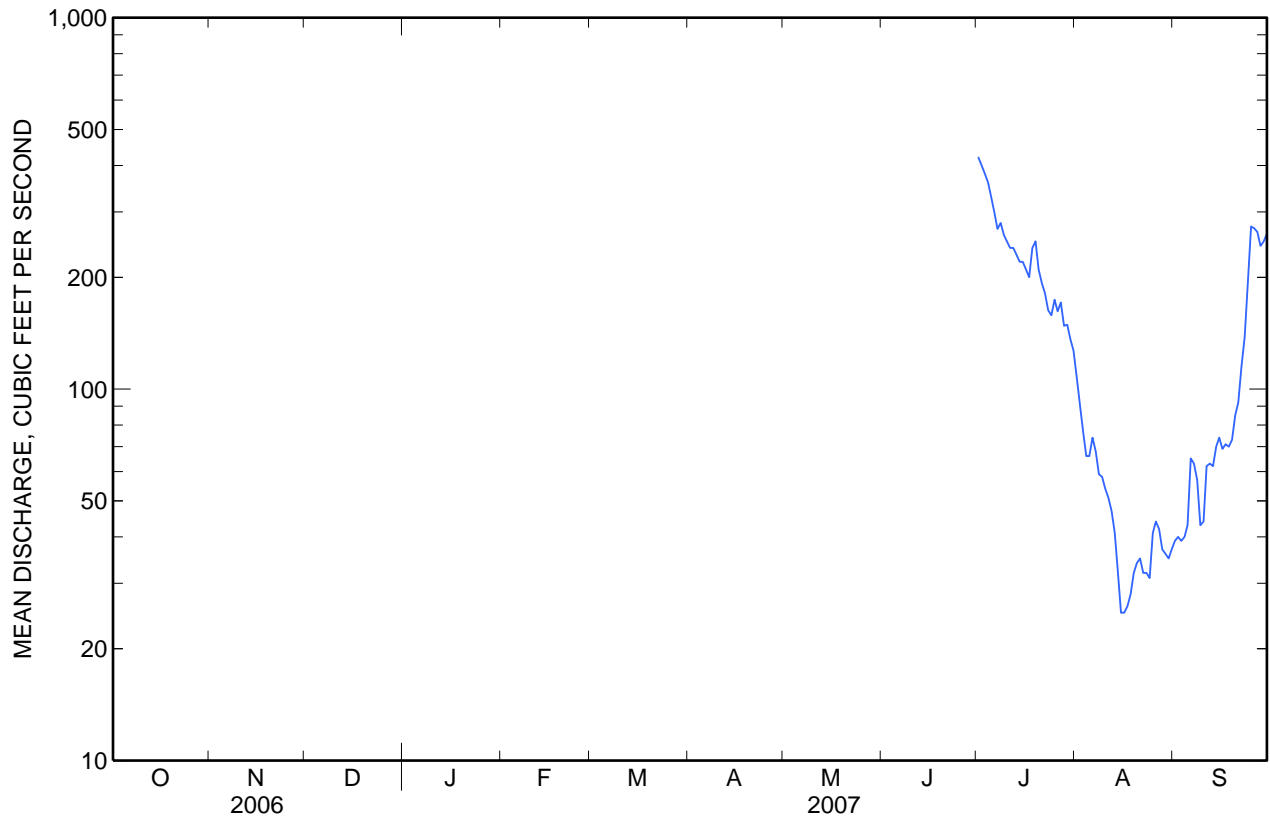
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>										235	47.2	109
<b>Max</b>										235	47.2	109
<b>(WY)</b>										(2007)	(2007)	(2007)
<b>Min</b>										235	47.2	109
<b>(WY)</b>										(2007)	(2007)	(2007)

**06026420 Big Hole River below Hamilton Ditch, near Twin Bridges, MT—Continued**

**SUMMARY STATISTICS**

	<b>2007 Season</b>	
<b>Highest daily mean</b>	420	Jul 1
<b>Lowest daily mean</b>	25	Aug 15
<b>Maximum peak flow</b>	Not determined	
<b>Maximum peak stage</b>	Not determined	
<b>Instantaneous low flow</b>	<sup>a</sup> 23	Aug 15

<sup>a</sup> Gage height, 1.77 ft.



**06026420 Big Hole River below Hamilton Ditch, near Twin Bridges, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July to September 2007.

INSTRUMENTATION.--Temperature probe installed July 19, 2007.

REMARKS.--Daily water temperature record is rated excellent. Several unpublished observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 27.0°C, July 22, 28, 29, and Aug. 3, 2007; minimum, 8.0°, September 30, 2007.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 27.0°C, July 22, 28, 29, and Aug. 3; minimum, 8.0°, September 30.

**TEMPERATURE, WATER, DEGREES CELSIUS  
JULY 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	July			August			September		
1				23.5	18.5	21.0	23.5	16.5	20.0
2				26.0	18.0	21.5	23.5	16.5	20.0
3				27.0	19.5	23.0	24.0	17.0	20.5
4				23.5	18.5	21.5	21.5	16.5	18.0
5				23.0	17.5	20.0	19.5	16.0	17.5
6				24.5	16.5	20.0	20.5	16.0	18.0
7				23.0	17.0	20.0	20.5	14.5	17.5
8				23.0	15.5	19.5	18.0	12.5	15.0
9				22.5	16.5	19.5	16.5	10.5	13.5
10				20.5	16.0	18.5	18.5	11.0	14.5
11				23.0	15.0	18.5	19.5	12.0	15.5
12				24.5	16.0	20.0	18.0	13.0	15.5
13				24.0	16.0	20.0	17.0	10.5	13.5
14				22.0	16.5	19.5	17.5	11.5	14.0
15				22.0	16.0	19.0	19.5	12.5	15.5
16				22.5	16.5	19.5	18.5	13.0	16.0
17				21.5	17.5	19.5	15.5	12.5	14.0
18				20.5	16.5	18.5	15.0	11.0	13.0
19				21.5	16.0	18.5	13.0	11.0	12.0
20	26.0	19.0	22.5	18.0	14.5	16.0	15.0	10.0	12.5
21	25.5	19.0	22.5	22.5	14.5	18.0	17.0	10.5	13.0
22	27.0	19.0	22.5	21.5	14.5	17.5	14.0	11.5	12.5
23	26.0	20.0	23.0	21.5	14.5	17.5	12.5	10.0	12.0
24	23.0	20.5	21.0	22.0	14.5	18.0	13.5	8.5	10.5
25	25.5	19.0	21.5	22.5	15.0	18.5	13.5	9.0	11.0
26	26.0	20.0	22.5	22.0	15.5	18.5	14.0	10.0	11.5
27	26.0	19.5	22.5	22.5	15.0	18.0	14.5	9.5	12.0
28	27.0	19.5	23.0	22.0	14.0	17.5	12.5	10.5	11.5
29	27.0	19.5	23.0	23.0	15.0	18.5	11.5	9.5	10.5
30	25.5	19.5	22.5	22.0	15.5	19.0	12.0	8.0	9.5
31	26.0	19.0	22.0	20.5	16.5	18.5	---	---	---
Month	---	---	---	27.0	14.0	19.0	24.0	8.0	14.5



Water-Data Report 2007

## 06026500 JEFFERSON RIVER NEAR TWIN BRIDGES, MT

Missouri Headwaters Basin  
Jefferson Subbasin

LOCATION.--Lat 45°36'45", long 112°19'47" referenced to North American Datum of 1927, in SE ¼ SE ¼ SW ¼ sec.34, T.2 S., R.6 W., Madison County, MT, Hydrologic Unit 10020005, on left bank 0.4 mi upstream from Hells Canyon Creek, 4.8 mi north of Twin Bridges, and at river mile 2,399.7.

DRAINAGE AREA.--7,632 mi<sup>2</sup>.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--August 1940 to September 1943, October 1957 to September 1972, May 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,560 ft, referenced to the National Geodetic Vertical Datum of 1929. August 1940 to September 1943, nonrecording gage at site 500 ft downstream at different elevation. October 1957 to June 3, 1972, water-stage recorder at site 250 ft downstream and June 4 to September 30, 1972, nonrecording gage 6.5 mi downstream at different elevations.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Some regulation occurs by Clark Canyon, Lima and Ruby River Reservoirs. Diversion for irrigation of about 310,000 acres occurs upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of specific conductance and water temperature were made during the year.



## Water-Data Report 2007

## 06026500 JEFFERSON RIVER NEAR TWIN BRIDGES, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	693	903	e800	810	e650	845	1,350	2,020	2,020	689	303	255
2	692	855	e850	895	e650	806	1,340	2,440	1,840	641	286	253
3	693	929	e900	963	e700	802	1,330	2,980	1,810	622	295	250
4	728	1,030	1,050	914	e750	846	1,260	3,720	1,820	584	297	250
5	766	1,060	1,050	853	e800	857	1,200	3,730	2,010	551	298	268
6	783	1,060	1,090	804	e850	891	1,180	3,340	2,800	503	336	318
7	1,020	1,040	1,060	786	e900	969	1,200	2,890	3,980	473	366	330
8	1,150	1,150	1,020	910	e900	1,050	1,230	2,450	4,200	513	352	304
9	1,120	1,590	978	929	e880	1,050	1,270	2,240	4,510	500	327	283
10	1,110	1,540	955	912	896	1,020	1,330	2,250	3,840	470	317	289
11	1,090	1,400	964	e750	878	1,030	1,320	2,450	3,380	452	312	313
12	1,030	1,300	971	e600	871	1,060	1,260	2,710	3,720	434	306	335
13	1,010	1,210	992	e550	828	1,150	1,170	2,920	3,530	427	307	344
14	980	1,170	1,010	e600	836	1,420	1,120	3,220	2,990	419	287	353
15	983	1,190	1,020	e620	860	1,660	1,110	3,140	2,590	437	256	390
16	1,050	1,090	904	e650	879	1,710	1,130	2,880	2,270	479	254	385
17	1,150	1,160	803	e650	855	2,000	1,150	2,680	2,080	476	262	374
18	1,070	1,110	704	e650	872	2,170	1,210	2,630	1,940	505	277	392
19	1,060	1,090	655	e700	874	2,520	1,360	2,630	1,720	543	313	416
20	1,070	1,050	684	e700	884	2,910	1,380	2,630	1,490	464	323	452
21	1,090	1,080	713	e700	888	2,440	1,330	2,780	1,380	413	326	488
22	1,100	1,170	793	e750	879	1,890	1,330	3,210	1,310	397	343	492
23	1,110	1,160	819	e750	915	1,670	1,360	3,370	1,190	383	344	539
24	1,090	1,070	812	e750	843	1,550	1,390	3,470	1,100	378	340	662
25	1,080	996	868	e800	861	1,520	1,340	3,470	1,050	393	336	761
26	1,060	920	914	e800	855	1,580	1,310	3,160	960	378	307	757
27	1,050	967	947	e800	843	1,690	1,340	2,740	865	382	289	762
28	1,030	940	934	e750	822	1,800	1,340	2,610	815	359	271	730
29	1,010	684	909	e750	---	1,710	1,380	2,980	752	339	273	759
30	1,020	610	807	e750	---	1,480	1,620	2,690	723	328	260	808
31	992	---	759	e700	---	1,380	---	2,320	---	319	244	---
<b>Total</b>	30,880	32,524	27,735	23,546	23,519	45,476	38,640	88,750	64,685	14,251	9,407	13,312
<b>Mean</b>	996	1,084	895	760	840	1,467	1,288	2,863	2,156	460	303	444
<b>Max</b>	1,150	1,590	1,090	963	915	2,910	1,620	3,730	4,510	689	366	808
<b>Min</b>	692	610	655	550	650	802	1,110	2,020	723	319	244	250
<b>Ac-ft</b>	61,250	64,510	55,010	46,700	46,650	90,200	76,640	176,000	128,300	28,270	18,660	26,400

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,264	1,394	1,182	1,012	1,076	1,257	2,209	3,623	5,258	1,842	774	934
<b>Max</b>	2,052	2,025	1,864	1,424	1,690	2,092	4,634	7,025	9,816	4,477	1,700	2,114
<b>(WY)</b>	(1966)	(1966)	(1996)	(1996)	(1971)	(1972)	(1943)	(1997)	(1997)	(1995)	(1995)	(1965)
<b>Min</b>	632	775	708	506	627	622	756	1,303	1,296	460	208	288
<b>(WY)</b>	(2004)	(2004)	(2002)	(2004)	(2002)	(2002)	(2005)	(2004)	(1994)	(2007)	(1961)	(1994)

\* During periods of operation (August 1940 to September 1943, October 1957 to September 1972, May 1994 to current year).

06026500 JEFFERSON RIVER NEAR TWIN BRIDGES, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1940 - 2007*	
<b>Annual total</b>	496,192		412,725			
<b>Annual mean</b>	1,359		1,131		1,841	
<b>Highest annual mean</b>					2,824	1997
<b>Lowest annual mean</b>					845	2004
<b>Highest daily mean</b>	7,940	Jun 11	4,510	Jun 9	14,900	Jun 9, 1997
<b>Lowest daily mean</b>	271	Aug 12	244	Aug 31	165	Aug 19, 1961
<b>Annual seven-day minimum</b>	290	Aug 10	254	Aug 30	176	Aug 16, 1961
<b>Maximum peak flow</b>			<sup>a</sup> 4,610	Jun 9	<sup>d</sup> 16,500	Jun 10, 1964
<b>Maximum peak stage</b>			<sup>b</sup> 9.34	Jan 15	12.60	Jun 8, 1995
<b>Instantaneous low flow</b>			<sup>c</sup> 240	Aug 31	<sup>e</sup> 82	Aug 17, 1966
<b>Annual runoff (ac-ft)</b>	984,200		818,600		1,334,000	
<b>10 percent exceeds</b>	3,110		2,480		3,890	
<b>50 percent exceeds</b>	909		912		1,250	
<b>90 percent exceeds</b>	332		329		646	

\* During periods of operation (August 1940 to September 1943, October 1957 to September 1972, May 1994 to current year).

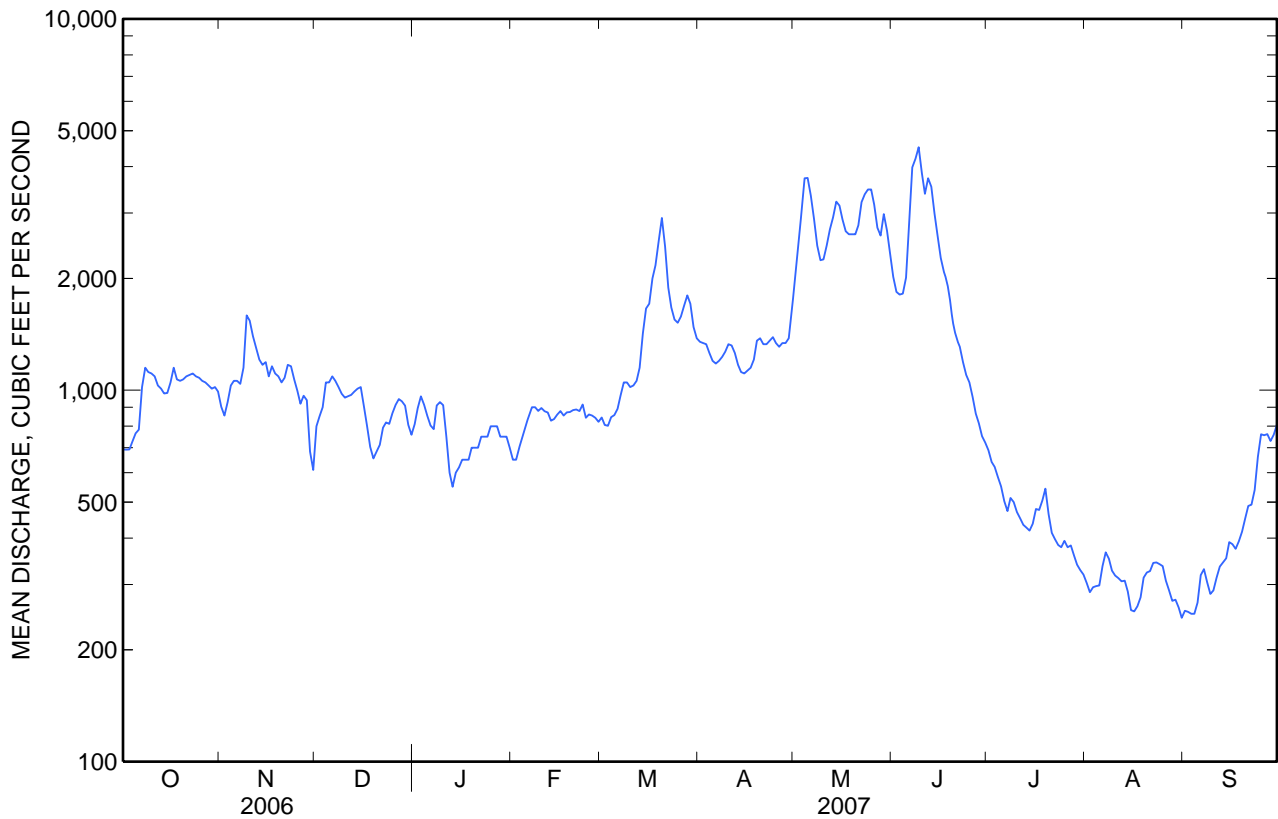
<sup>a</sup> Gage height, 7.47 ft.

<sup>b</sup> Backwater from ice.

<sup>c</sup> Gage height, 2.96 ft.

<sup>d</sup> Gage height, 9.04 ft, site and datum then in use.

<sup>e</sup> Gage height, 1.61 ft, site and datum then in use.





Water-Data Report 2007

**06027600 JEFFERSON RIVER AT PARSONS BRIDGE, NEAR SILVER STAR, MT**

Missouri Headwaters Basin  
Jefferson Subbasin

LOCATION.--Lat 45°44'50", long 112°11'08" referenced to North American Datum of 1927, in SW ¼ NE ¼ SW ¼ sec.14, T.1 S., R.5 W., Madison County, MT, Hydrologic Unit 10020005, on right bank, 0.2 mi downstream from Parsons Bridge, 1.8 mi north of Waterloo, 5.9 mi northeast of Silver Star, and at river mile 2,383.0.

DRAINAGE AREA.--7,811 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 2006 to current year (seasonal records only).

GAGE.--Water-stage recorder. Elevation of gage is 4,420 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Seasonal records are good. Some regulation occurs from Lima, Clark Canyon, and Ruby River Reservoirs. Numerous diversions for irrigation occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06027600 JEFFERSON RIVER AT PARSONS BRIDGE, NEAR SILVER STAR, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1										530	45	25
2										539	38	30
3										487	36	30
4										456	44	29
5										357	42	33
6										188	57	62
7										131	71	87
8										141	76	69
9										156	69	59
10										126	59	84
11										98	57	120
12										85	49	125
13										76	40	133
14										65	39	145
15										70	32	172
16										94	26	195
17										104	27	192
18										111	29	212
19										138	38	245
20										119	52	301
21										82	79	387
22										66	86	421
23										63	96	446
24										59	97	532
25										74	93	614
26										81	84	641
27										73	54	647
28										72	45	630
29										61	44	640
30										54	37	682
31										51	27	---
<b>Total</b>										4,807	1,668	7,988
<b>Mean</b>										155	53.8	266
<b>Max</b>										539	97	682
<b>Min</b>										51	26	25
<b>Ac-ft</b>										9,530	3,310	15,840

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2006 - 2007, BY WATER YEAR (WY)**

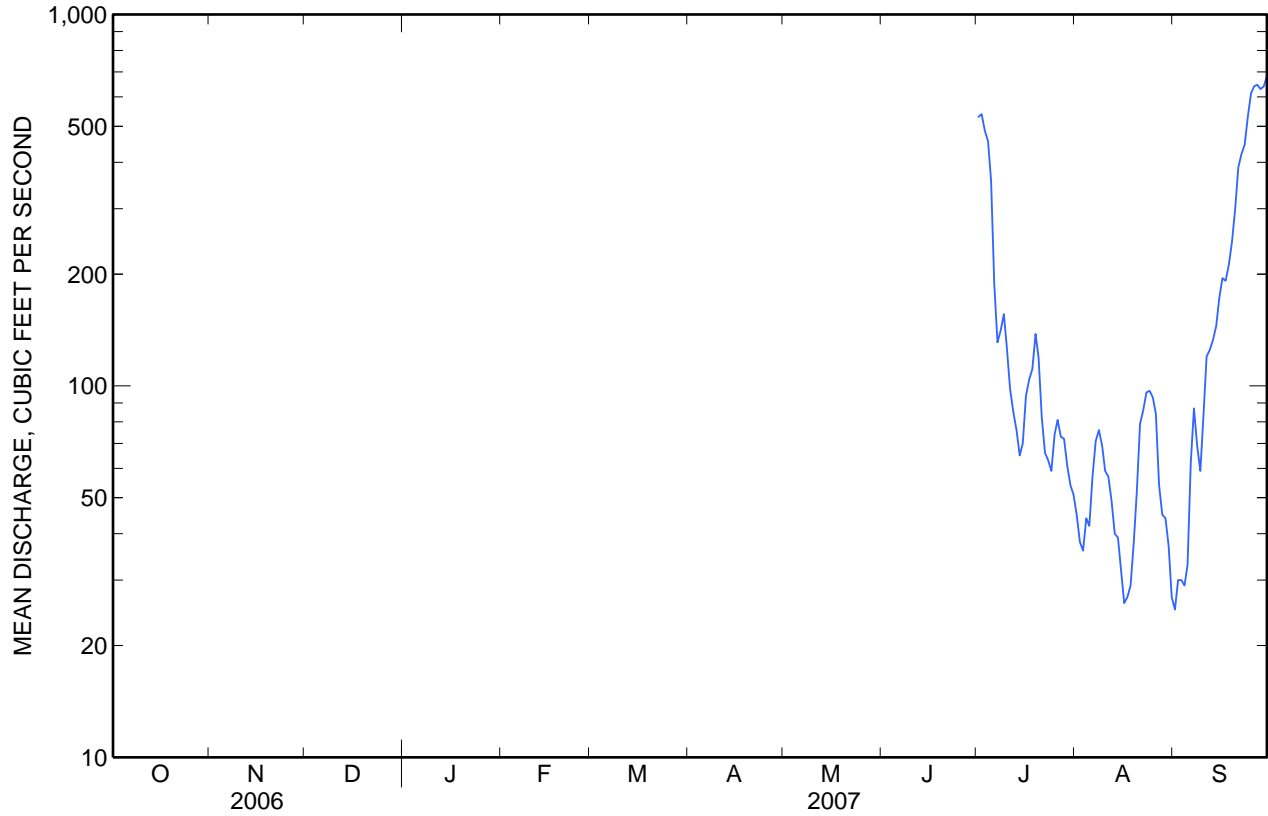
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>										350	52.2	243
<b>Max</b>										545	53.8	266
<b>(WY)</b>										(2006)	(2007)	(2007)
<b>Min</b>										155	50.6	220
<b>(WY)</b>										(2007)	(2006)	(2006)

06027600 JEFFERSON RIVER AT PARSONS BRIDGE, NEAR SILVER STAR, MT—Continued

SUMMARY STATISTICS

	Season 2007		For Seasons 2006 - 2007	
Highest daily mean	682	Sep 30	1,130	Jul 2, 2006
Lowest daily mean	25	Sep 1	25	Sep 1, 2007
Maximum peak flow	690	Sep 30	1,150	Jul 2, 2006
Maximum peak stage	3.72	Sep 30	4.34	Jul 2, 2006
Instantaneous low flow	<sup>a</sup> 20	Aug 31	<sup>a</sup> 20	Aug 31, 2007

<sup>a</sup> Gage height, 2.16 ft.



**06027600 JEFFERSON RIVER AT PARSONS BRIDGE, NEAR SILVER STAR, MT—Continued**

**WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (seasonal records): July 2006 to current year.

INSTRUMENTATION.--Water temperature recorder was installed June 28, 2006.

REMARKS.--Daily water temperature record is rated good for the season. Several unpublished observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum 27.5°C, July 5, 6, and 28 2007; minimum for seasonal period, 7.5°C, Sept. 30, 2007.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 27.5°C, July 5, 6, and 28; minimum for seasonal period, 7.5°C, Sept. 30.

**TEMPERATURE, WATER, DEGREES CELSIUS  
SEASON JULY 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>July</b>			<b>August</b>			<b>September</b>		
<b>1</b>	24.5	17.5	20.5	23.5	17.5	20.5	21.5	15.0	17.5
<b>2</b>	23.0	18.5	20.5	25.0	17.5	21.0	22.5	15.0	18.5
<b>3</b>	25.0	18.0	21.0	25.0	18.0	21.0	23.5	16.0	19.5
<b>4</b>	26.0	19.0	22.0	23.5	18.0	20.5	19.0	15.5	17.0
<b>5</b>	27.5	20.0	23.0	23.0	17.0	19.5	19.5	15.0	17.0
<b>6</b>	27.5	20.5	23.5	22.5	15.5	19.0	20.0	15.5	17.5
<b>7</b>	24.0	19.0	21.0	22.0	16.0	18.5	19.5	14.5	16.5
<b>8</b>	24.0	17.0	20.5	21.5	15.0	18.0	18.0	12.5	15.0
<b>9</b>	25.5	18.5	21.5	23.0	15.5	18.5	17.5	11.0	14.0
<b>10</b>	23.0	16.5	19.5	20.0	15.5	17.5	17.5	11.0	14.0
<b>11</b>	24.5	16.5	20.0	22.0	14.0	17.5	18.0	11.0	14.0
<b>12</b>	24.5	17.5	21.0	23.0	15.0	18.5	18.0	11.5	14.0
<b>13</b>	25.5	18.5	21.5	22.0	15.0	18.5	16.5	10.0	13.0
<b>14</b>	24.5	19.0	21.5	21.0	15.0	18.0	17.0	10.5	13.5
<b>15</b>	24.0	17.5	20.5	21.5	15.0	18.0	18.5	11.5	14.5
<b>16</b>	25.0	17.5	21.0	21.0	15.0	17.5	18.0	12.5	15.0
<b>17</b>	25.0	19.0	21.5	20.5	15.5	17.5	15.0	12.0	13.5
<b>18</b>	26.5	19.0	22.5	19.0	15.0	16.5	14.5	10.5	12.5
<b>19</b>	25.5	20.5	23.0	20.0	14.5	17.0	12.5	10.5	11.5
<b>20</b>	26.5	18.5	22.0	17.0	12.5	14.5	15.0	10.5	12.0
<b>21</b>	25.0	18.0	21.0	20.0	13.0	16.0	15.0	10.0	12.0
<b>22</b>	26.5	18.0	22.0	20.0	13.5	16.5	12.5	11.5	12.0
<b>23</b>	26.5	19.0	22.5	19.5	14.0	16.5	12.0	10.0	11.0
<b>24</b>	22.5	20.0	20.5	20.0	13.5	16.5	12.5	9.0	10.5
<b>25</b>	26.0	18.5	21.5	20.5	13.5	17.0	12.5	8.5	10.5
<b>26</b>	26.0	19.5	22.5	20.0	14.5	17.0	13.0	10.0	11.5
<b>27</b>	26.0	20.0	22.5	21.5	14.0	17.5	13.5	10.0	12.0
<b>28</b>	27.5	19.0	23.0	21.0	14.0	17.0	12.5	11.0	11.5
<b>29</b>	27.0	19.5	23.0	22.0	14.0	17.5	11.5	9.5	10.5
<b>30</b>	26.5	19.0	22.0	22.0	14.5	18.0	10.5	7.5	9.0
<b>31</b>	26.5	18.5	22.0	19.0	15.5	17.0	---	---	---
<b>Month</b>	27.5	16.5	21.5	25.0	12.5	18.0	23.5	7.5	13.5

Water-Data Report 2007

**455819111515101 Local number 03N02W33BCBA01**

Sediments

Jefferson County, MT

LOCATION.--Lat 45°58'19.3", long 111°51'51.4" referenced to North American Datum of 1927, in NW ¼ SW ¼ NW ¼ sec.33, T.3 N., R.2 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 220 ft. Upper casing diameter 6.0 in, top of first opening 180 ft, bottom of last opening 220 ft.

DATUM.--Land-surface datum is 4515 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered, $\mu$ S/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 25...	1430	220	70	8.3	7.8	561	10.5	220	53.5	20.3	9.40	1.0	33.3

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Alkalinity, water filtered field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 25...	161	15.7	.46	54.7	93.5	392	3.18	.013	.029	24	154	19.2

455819111515101 Local number 03N02W33BCBA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222	Uranium	Uranium	
	2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	natural water, fltrd, µg/L (22703)	natural water, unfltrd µg/L (28011)
<b>Sep</b>				
25...	26	440	21.9	23.7





## Water-Data Report 2007

**46054011551701 Local number 04N03W24BABA01**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 46°05'39.7", long 111°55'17" referenced to North American Datum of 1927, in NW ¼ NE ¼ NW ¼ sec.24, T.4 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 79.2 ft. Upper casing diameter 6.0 in, top of first opening 62 ft, bottom of last opening 78 ft.

DATUM.--Land-surface datum is 4560 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 12...	0900	79.2	45	7.2	7.8	410	11.5	180	51.7	12.9	1.53	.5	14.1

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: E, estimated.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 12...	148	11.4	.22	22.1	46.7	252	.588	E.001	.021	53	7	5.8

460540111551701 Local number 04N03W24BABA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>12...</b>	38	1,230	6.46	6.09



## Water-Data Report 2007

**460751112232901 Local number 04N06W06ABCD01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°07'51.2", long 112°23'29.1" referenced to North American Datum of 1927, in SW ¼ NW ¼ NE ¼ sec.6, T.4 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 60 ft. Upper casing diameter 6.0 in, top of first opening 40 ft, bottom of last opening 60 ft.

DATUM.--Land-surface datum is 6300 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 17...	1500	60	65	4.3	7.4	174	7.5	68	19.8	4.50	2.23	.3	6.40

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanad-ium, water, fltrd, $\mu$ g/L (01085)
Sep 17...	60	1.56	<.10	24.0	21.4	116	.122	<.002	.020	2	81	4.3

460751112232901 Local number 04N06W06ABCD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>17...</b>	34	1,050	17.1	16.7

Water-Data Report 2007

**460425112243401 Local number 04N07W25ADCA01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°04'25.4", long 112°24'33.7" referenced to North American Datum of 1927, in SW ¼ SE ¼ NE ¼ sec.25, T.4 N., R.7 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 160 ft. Upper casing diameter 6.0 in, top of first opening 80 ft, bottom of last opening 160 ft.

DATUM.--Land-surface datum is 6560 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 26...	1300	160	42	6.9	6.5	171	6.0	68	19.9	4.32	1.01	.4	7.28

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 26...	39	2.67	<.10	28.3	32.6	125	1.28	<.002	.062	4	<6	1.5

460425112243401 Local number 04N07W25ADCA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>26...</b>	58	4,000	.31	.363

Water-Data Report 2007

**461052111554201 Local number 05N03W13CCAD01**

Madison Group (Upper and Lower Mississippian

Jefferson County, MT

LOCATION.--Lat 46°10'52.4", long 111°55'42.0" referenced to North American Datum of 1927, in NE ¼ SW ¼ SW ¼ sec.13, T.5 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 820 ft. Upper casing diameter 6.0 in, top of first opening 600 ft, bottom of last opening 820 ft.

DATUM.--Land-surface datum is 5050 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 26...	1000	820	72	7.5	8.1	279	12.5	130	32.3	13.0	.98	.2	6.19

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than; E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 26...	124	4.35	.13	10.1	12.8	158	.765	<.002	.016	66	E3	2.6

461052111554201 Local number 05N03W13CCAD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>26...</b>	32	1,000	.56	.613





Water-Data Report 2007

**461231112055801 Local number 05N04W03CCCB01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°12'30.8", long 112°05'57.9" referenced to North American Datum of 1927, in SW ¼ SW ¼ SW ¼ sec.3, T.5 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 260 ft. Upper casing diameter 6.0 in, top of first opening 200 ft, bottom of last opening 260 ft.

DATUM.--Land-surface datum is 4830 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of casing, 1.7 ft above land-surface datum, Sep. 12, 2007, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: V, calibrated electric tape--accuracy of instrument has been checked. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measurement method</b>	<b>Water level status</b>
Sep 12	19.80	V	--

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 2007.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 12...	1100	260	48	<.1	7.4	1,040	11.5	380	98.0	31.9	9.11	2.2	96.2

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: E, estimated.]

Date	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents mg/L (70301)	Nitrate + nitrite, water fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanadium, water, fltrd, µg/L (01085)
Sep 12...	284	79.0	1.44	27.4	154	668	.124	E.002	.010	15	78	.08

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 3

Date	Radon-222 2-sigma, water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural, water, fltrd, µg/L (22703)	Uranium natural, water, unfltrd, µg/L (28011)
Sep 12...	79	6,090	60.4	56.7



## Water-Data Report 2007

**461629111564101 Local number 06N03W14BDAB01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°16'29.1", long 111°56'40.6" referenced to North American Datum of 1927, in NE ¼ SE ¼ NW ¼ sec.14, T.6 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 110 ft. Upper casing diameter 6.0 in, top of first opening 70 ft, bottom of last opening 110 ft.

DATUM.--Land-surface datum is 6460 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd std units (00400)	Specific conductance, wat unfltrd $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 12...	1700	110	80	5.4	7.7	473	9.0	230	52.5	23.8	2.55	.5	17.4

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanad-ium, water, fltrd, $\mu$ g/L (01085)
Sep 12...	193	2.49	E.08	14.1	53.3	285	.642	E.001	.013	21	E4	.88

461629111564101 Local number 06N03W14BDAB01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, wat flt Th-230, pCi/L (62639)	Alpha radioac 72 hr, wat flt Th-230, pCi/L (62636)	Beta radioac 30 day, wat flt Cs-137, pCi/L (62645)	Beta radioac 72 hr, wat flt Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
Sep 12...	.14	.99	2.50	1.78	.0026	<sup>a</sup> -.007	29	580

<sup>a</sup> This value is considered a non detect. Detection is based on sample specific critical level.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
Sep 12...	1.89	1.72	.942	.051	.658



Water-Data Report 2007

**461613112152801 Local number 06N05W17ACA01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°16'12.8", long 112°15'27.6" referenced to North American Datum of 1927, in SW ¼ NE ¼ SW ¼ sec.17, T.6 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 110 ft. Upper casing diameter 6.0 in, top of first opening 70 ft, bottom of last opening 110 ft.

DATUM.--Land-surface datum is 5340 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, µS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 17...	1200	110	38	7.1	6.8	235	8.0	93	25.1	7.44	2.29	.3	7.76

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanadium, water, fltrd, µg/L (01085)
Sep 17...	65	7.34	.15	17.8	34.1	145	.757	<.002	.016	32	16	.13

461613112152801 Local number 06N05W17CACA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>17...</b>	39	1,470	1.97	1.94



## Water-Data Report 2007

**462500112170701 Local number 08N05W30BCBD01 (LUTTRELL WELL EPA-5)**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°24'59.6", long 112°17'06.6" referenced to North American Datum of 1983, in NW ¼ SW ¼ NW ¼ sec.30, T.8 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 110 ft. Upper casing diameter 4.0 in, top of first opening 60 ft, bottom of last opening 110 ft. Drilled June 18, 1999.

DATUM.--Land-surface datum is 7557.99 ft above National Geodetic Vertical Datum of 1929. Measuring point: Edge of PVC casing at mark, 0.8 ft above land-surface datum, Oct. 11, 2001, to present.

PERIOD OF RECORD.--October 2001 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 11	24.26	T	--	Aug 28	29.20	T	--
Jul 17	27.12	T	--	Sep 6	29.40	T	--

Water year 2007 highest: 24.26 Jun 11, 2007; lowest: 29.40 Sep 06, 2007

Period of record highest: 24.01 Jun 16, 2005; lowest: 34.27 Apr 05, 2004

## 462500112170701 Local number 08N05W30BCBD01 (LUTTRELL WELL EPA-5)—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 2001 to current year.

REMARKS. --Sample taken on Sept. 6 was in conjunction with a ground-water quality study in Jefferson County.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 5

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	Turbidity white light, 90+/-30 corrected NTRU (63676)	Dissolved oxygen, mg/L (00300)	pH, unfiltered field, standard units (00400)	Specific conductance, water unfiltered, $\mu$ S/cm 25 deg C (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)
Sep 06...	1200	1.0	75	100	5.0	.9	6.2	62	4.5	17	2.93	2.24	1.06

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 5

[Remark codes: E, estimated.]

Date	Sodium adsorption ratio (00931)	Sodium, water, filtered, mg/L (00930)	Alkalinity, water filtered, mg/L as CaCO3 (29801)	Alkalinity, water filtered, mg/L as CaCO3 (39086)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L (00955)	Sulfate, water, filtered, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)	Orthophosphate, water, filtered, mg/L as P (00671)
Sep 06...	.6	5.52	22	18	.39	.25	32.3	7.55	64	E.015	E.001	.293

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 5

[Remark codes: &lt;, less than; E, estimated.]

Date	Aluminum, water, filtered, $\mu$ g/L (01106)	Arsenic, water, filtered, $\mu$ g/L (01000)	Barium, water, filtered, $\mu$ g/L (01005)	Cadmium, water, filtered, $\mu$ g/L (01025)	Copper, water, filtered, $\mu$ g/L (01040)	Iron, water, filtered, $\mu$ g/L (01046)	Lead, water, filtered, $\mu$ g/L (01049)	Manganese, water, filtered, $\mu$ g/L (01056)	Vanadium, water, filtered, $\mu$ g/L (01085)	Zinc, water, filtered, $\mu$ g/L (01090)
Sep 06...	E1.4	.37	2	E.02	.53	70	<.12	55.9	.04	5.2



## 462500112170701 Local number 08N05W30BCBD01 (LUTTRELL WELL EPA-5)—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 5

[Remark codes: &lt;, less than.]

Date	Time	Alpha	Alpha	Beta	Beta	Radium-226,	Radon-222		
		radioac	radioac	radioac	radioac	water,	Radium-228,	2-sigma	Radon-222,
		30 day,	72 hr,	30 day,	72 hr,	fltrd,	water,	water,	water,
		Th-230,	Th-230,	Cs-137,	Cs-137,	method	fltrd,	unfltrd	unfltrd
		pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L	pCi/L
		(62639)	(62636)	(62645)	(62642)	(09511)	(81366)	(76002)	(82303)
<b>Sep</b>									
06...	1200	<sup>a</sup> .00	<sup>a</sup> .57	1.04	1.00	.161	.24	69	3,860

<sup>a</sup> This value is considered a non detect. Detection is based on sample specific critical level.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 5 of 5

[Remark codes: &lt;, less than.]

Date	Time	Uranium	Uranium	Ura-	Ura-	Ura-
		natural	natural	nium-234,	nium-235,	nium-238,
		water,	water,	water,	water,	water,
		fltrd,	unfltrd	fltrd,	fltrd,	fltrd,
		µg/L	µg/L	pCi/L	pCi/L	pCi/L
		(22703)	(28011)	(22610)	(22620)	(22603)
<b>Sep</b>						
06...	1200	<.04	.065	.013	<sup>a</sup> .000	.0173

<sup>a</sup> This value is considered a non detect. Detection is based on sample specific critical level.



## Water-Data Report 2007

**462503112172301 Local number 08N06W25ADAC01 (LUTTRELL WELL EPA-4)**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°25'03", long 112°17'23" referenced to North American Datum of 1983, in NE ¼ SE ¼ NE ¼ sec.25, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 170 ft. Upper casing diameter 4.0 in., top of first opening 150 ft, bottom of last opening 170 ft. Drilled May 27, 1999.

DATUM.--Land-surface datum is 7521.1 ft above National Geodetic Vertical Datum of 1929. Measuring point: Edge of PVC casing, 3.00 ft above land-surface datum, Sep. 9, 2004, to present.

PERIOD OF RECORD.--October 2001 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measure- ment method</b>	<b>Water level status</b>	<b>Date</b>	<b>Water level</b>	<b>Measure- ment method</b>	<b>Water level status</b>
Jun 11	29.52	T	--	Aug 28	34.87	T	--
Jul 20	30.88	T	--	Sep 4	35.15	T	--

Water year 2007 - highest: 29.52 Jun 11, 2007; lowest: 35.15 Sep 04, 2007

Period of record - highest: 29.52 Jun 11, 2007; lowest: 46.05 Apr 11, 2006

462503112172301 Local number 08N06W25ADAC01 (LUTTRELL WELL EPA-4)—Continued

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 2001 to current year.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	Turbidity white light, 90+/-30 corrctd NTRU (63676)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, water unfiltered, 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)
Jun 11...	1300	1.0	106	140	15	.1	7.0	133	7.5	36
Jul 20...	1200	1.6	75	150	45	.1	6.9	134	7.5	36
Sep 04...	1600	1.0	63	130	3.8	.6	6.2	127	5.5	37

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Calcium water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, filtered, mg/L (00930)	Alkalinity, water filtered end lab, mg/L as CaCO3 (29801)	Alkalinity, water filtered inc tit field, mg/L as CaCO3 (39086)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L (00955)	Sulfate, water, filtered, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)
Jun 11...	10.2	2.58	5.42	.5	7.11	25	25	.41	.23	36.5	32.9	112
Jul 20...	10.3	2.53	5.43	.4	6.11	23	22	.40	.20	40.4	33.2	113
Sep 04...	10.6	2.62	5.50	.4	5.53	22	18	.40	.23	36.4	33.3	106

462503112172301 Local number 08N06W25ADAC01 (LUTTRELL WELL EPA-4)—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Alum- inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Cadmium water, fltrd, µg/L (01025)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan- ese, water, fltrd, µg/L (01056)	Zinc, water, fltrd, µg/L (01090)
<b>Jun</b>								
11...	<1.6	1.3	<.04	<.40	1,500	<.12	134	5.0
<b>Jul</b>								
20...	E1.4	1.1	E.02	E.34	1,250	<.12	134	8.0
<b>Sep</b>								
04...	E.9	.54	E.03	1.1	695	<.12	139	9.7



Water-Data Report 2007

**462503112172302 Local number 08N06W25ADAC02 (LUTTRELL WELL EPA-4S)**

Volcanics

Jefferson County, MT

LOCATION.--Lat 46°25'03", long 112°17'23" referenced to North American Datum of 1983, in NE ¼ SE ¼ NE ¼ sec.25, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 98.5 ft. Upper casing diameter 2.0 in., top of first opening 38.5 ft, bottom of last opening 98.5 ft. Drilled June 4, 2000.

DATUM.--Land-surface datum is 7521.47 ft above National Geodetic Vertical Datum of 1929. Measuring point: Edge of PVC at mark, 1.6 ft above land-surface datum, Oct. 10, 2001, to present.

PERIOD OF RECORD.--June 2000 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 11	14.61	T	--	Aug 28	20.60	T	--
Jul 20	18.55	T	--	Sep 4	20.54	T	--

Water year 2007 - highest: 14.61 Jun 11, 2007; lowest: 20.60 Aug 28, 2007

Period of record - highest: 14.16 Jun 17, 2000; lowest: 30.23 Apr 11, 2006

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 2002 to current year.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	Turbidity white light, 90+/-30 det ang corrctd NTRU (63676)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, mg/L fltrd, (00915)	Magnesium, water, mg/L fltrd, (00925)	Potassium, water, mg/L fltrd, (00935)
Jun 11...	1500	.30	66	90.0	39	3.4	4.7	52	8.5	3	.95	.126	3.31
Jul 20...	1000	.50	77	90.0	43	4.4	4.5	58	10.0	3	.79	.135	3.69
Sep 04...	1700	.30	57	80.0	34	4.6	4.4	54	6.5	3	1.04	.129	3.23

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Sodium adsorption ratio (00931)	Sodium, water, mg/L fltrd, (00930)	Alkalinity, water fltrd, mg/L as CaCO3 (39086)	Chloride, water, mg/L fltrd, (00940)	Fluoride, water, mg/L fltrd, (00950)	Silica, water, mg/L fltrd, (00955)	Sulfate, water, mg/L fltrd, (00945)	Dissolved solids, sum of constituents mg/L (70301)
Jun 11...	.9	3.38	<1	2.29	<.10	33.2	14.7	E59
Jul 20...	1.2	4.29	<2	3.12	<.10	35.5	17.3	E66
Sep 04...	.8	3.44	<2	2.32	<.10	33.4	17.7	E63

## Water-Data Report 2007

462503112172302 Local number 08N06W25ADAC02 (LUTTRELL WELL EPA-4S)—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Alum- inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Cadmium water, fltrd, µg/L (01025)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan- ese, water, fltrd, µg/L (01056)	Zinc, water, fltrd, µg/L (01090)
<b>Jun</b>								
11...	388	.25	.15	1.9	31	42.0	7.2	78.9
<b>Jul</b>								
20...	523	.16	.12	1.8	22	50.0	5.2	97.4
<b>Sep</b>								
04...	383	.16	.11	2.9	16	35.5	5.1	78.7



## Water-Data Report 2007

**462344112173701 Local number 08N06W36DCAC01 (BUCKEYE WELL BTMW-1)**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 46°23'44", long 112°17'37" referenced to North American Datum of 1927, in NE ¼ SW ¼ SE ¼ sec.36, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 10.6 ft. Upper casing diameter 2 in., top of first opening 5.6 ft, bottom of last opening 10.6 ft. Drilled Oct. 19, 1998.

DATUM.--Land-surface datum is 7040 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of PVC casing, 2.8 ft above land-surface datum, Dec. 1, 1998, to present.

PERIOD OF RECORD.--December 1998 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measure- ment method</b>	<b>Water level status</b>	<b>Date</b>	<b>Water level</b>	<b>Measure- ment method</b>	<b>Water level status</b>
Jun 14	.21	T	--	Aug 28	3.49	T	--

Water year 2007 - highest: .21 Jun 14, 2007; lowest: 3.49 Aug 28, 2007

Period of record - highest: .16 May 20, 1999; lowest: 7.15 Sep 09, 2004



462344112173701 Local number 08N06W36DCAC01 (BUCKEYE WELL BTMW-1)—Continued

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--June 1999, July 2004 to current year.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd $\mu$ S/cm 25 degC (00095)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
Jun 14...	0900	.30	5	10.0	5.5	549	5.0	160	48.7	8.60	2.24
Aug 28...	1000	.20	5	10.3	4.1	457	10.0	--	--	--	--

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, water fltrd inc tit mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents mg/L (70301)
Jun 14...	.2	5.92	4	.60	.36	40.9	216	343
Aug 28...	--	--	--	--	--	--	--	--

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Aluminum, water, fltrd, $\mu$ g/L (01106)	Arsenic water, fltrd, $\mu$ g/L (01000)	Cadmium water, fltrd, $\mu$ g/L (01025)	Copper, water, fltrd, $\mu$ g/L (01040)	Iron, water, fltrd, $\mu$ g/L (01046)	Lead, water, fltrd, $\mu$ g/L (01049)	Manganese, water, fltrd, $\mu$ g/L (01056)	Zinc, water, fltrd, $\mu$ g/L (01090)
Jun 14...	4,330	.73	36.6	544	2,790	45.4	4,820	4,150
Aug 28...	4,140	.65	31.3	592	654	54.9	4,560	3,900



## Water-Data Report 2007

**462342112174801 Local number 08N06W36DCBC02 (BUCKEYE WELL BTMW-8)**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 46°23'42", long 112°17'48" referenced to North American Datum of 1927, in NW ¼ SW ¼ SE ¼ sec.36, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 10.5 ft. Upper casing diameter 2 in., top of first opening 5.5 ft, bottom of last opening 10.5 ft. Drilled Oct. 22, 1998.

DATUM.--Land-surface datum is 7035 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of PVC casing, 3.9 ft above land-surface datum, June 15, 2006, to present.

PERIOD OF RECORD.--December 1998 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum. No valid water levels are available from June 14, 1999 to June 14, 2006 due to frost upheaval of casing and measuring point.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measure-ment method</b>	<b>Water level status</b>	<b>Date</b>	<b>Water level</b>	<b>Measure-ment method</b>	<b>Water level status</b>
Jun 14	3.65	T	--	Aug 28	4.69	T	--

Water year 2007 - highest: 3.65 Jun 14, 2007; lowest: 4.69 Aug 28, 2007

Period of record - highest: 3.16 May 20, 1999; lowest: 4.69 Aug 28, 2007

## Water-Data Report 2007

462342112174801 Local number 08N06W36DCBC02 (BUCKEYE WELL BTMW-8)—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1999, July 2004 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	pH, water, unflt'd, std units (00400)	Specific conductance, wat unft'd, $\mu$ S/cm 25 deg C (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium, water, fltr'd, mg/L (00915)	Magnesium, water, fltr'd, mg/L (00925)	Potassium, water, fltr'd, mg/L (00935)
Jun 14...	1000	.30	--	9.00	6.2	312	6.0	110	30.6	7.42	1.64
Aug 28...	1100	.20	10	10.6	6.6	264	11.0	--	--	--	--

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Sodium adsorption ratio (00931)	Sodium, water, fltr'd, mg/L (00930)	Alkalinity, wat flt'd, mg/L as CaCO <sub>3</sub> (29801)	Alkalinity, wat flt'd, mg/L as CaCO <sub>3</sub> (39086)	Chloride, water, fltr'd, mg/L (00940)	Fluoride, water, fltr'd, mg/L (00950)	Silica, water, fltr'd, mg/L (00955)	Sulfate, water, fltr'd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)
Jun 14...	.2	5.51	83	96	.68	.24	29.9	42.1	188
Aug 28...	--	--	--	--	--	--	--	--	--

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Aluminum, water, fltr'd, $\mu$ g/L (01106)	Arsenic, water, fltr'd, $\mu$ g/L (01000)	Cadmium, water, fltr'd, $\mu$ g/L (01025)	Copper, water, fltr'd, $\mu$ g/L (01040)	Iron, water, fltr'd, $\mu$ g/L (01046)	Lead, water, fltr'd, $\mu$ g/L (01049)	Manganese, water, fltr'd, $\mu$ g/L (01056)	Zinc, water, fltr'd, $\mu$ g/L (01090)
Jun 14...	18.2	82.0	E.02	<.40	9,860	E.09	861	1,300
Aug 28...	10.3	94.8	<.04	E.40	11,300	.13	684	96.1



## Water-Data Report 2007

**462342112174201 Local number 08N06W36DCBD02 (BUCKEYE WELL BTMW-3)**

Quaternary Alluvium

Jefferson County, MT

LOCATION.--Lat 46°23'42", long 112°17'42" referenced to North American Datum of 1927, in NW ¼ SW ¼ SE ¼ sec.36, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 10.5 ft. Upper casing diameter 2 in., top of first opening 5.5 ft, bottom of last opening 10.5 ft. Drilled Oct. 21, 1998.

DATUM.--Land-surface datum is 7035 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of casing, 3.5 ft above land-surface datum, June 15, 2006, to present; MP change due to heaving, 3.80 ft above land-surface datum, June 14, 2007, to present.

PERIOD OF RECORD.--December 1998 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum. No valid water levels are available from June 14, 1999 to June 14, 2006 due to frost upheaval of casing and measuring point.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 14	3.03	T	--	Aug 28	3.97	T	--

Water year 2007 - highest: 3.03 Jun 14, 2007; lowest: 3.97 Aug 28, 2007

Period of record - highest: 2.90 May 20, 1999; lowest: 4.06 Sep 11, 2006

## 462342112174201 Local number 08N06W36DCBD02 (BUCKEYE WELL BTMW-3)—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1999, July 2004 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
Jun 14...	1100	.30	10	10.0	5.7	1,120	--	430	125	28.0	1.33
Aug 28...	1200	.20	10	9.70	6.1	459	9.5	--	--	--	--

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, water fltrd lab, mg/L as CaCO <sub>3</sub> (29801)	Alkalinity, water fltrd inc tit field, mg/L as CaCO <sub>3</sub> (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)
Jun 14...	.3	12.2	6	17	1.55	.29	51.9	631	988
Aug 28...	--	--	--	--	--	--	--	--	--

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Aluminum, water, fltrd, $\mu$ g/L (01106)	Arsenic, water, fltrd, $\mu$ g/L (01000)	Cadmium, water, fltrd, $\mu$ g/L (01025)	Copper, water, fltrd, $\mu$ g/L (01040)	Iron, water, fltrd, $\mu$ g/L (01046)	Lead, water, fltrd, $\mu$ g/L (01049)	Manganese, water, fltrd, $\mu$ g/L (01056)	Zinc, water, fltrd, $\mu$ g/L (01090)
Jun 14...	116	16,100	64.7	.42	99,600	7.97	5,350	4,890
Aug 28...	139	5,410	16.5	1.5	38,900	3.14	1,900	1,850



## Water-Data Report 2007

**462347112180401 BASIN CREEK BELOW BUCKEYE MINE, NEAR LOGGING ROAD, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°23'47", long 112°18'04" referenced to North American Datum of 1927, in SW ¼ SE ¼ NW ¼ sec.36, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006, at old logging road crossing, 0.5 mi downstream from the Buckeye Mine, and 8.7 mi north of Basin.

DRAINAGE AREA.--2.54 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,940 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--January 2000 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
<b>Mar</b> <b>06...</b>	1300	.43	7.8	87	0.5	0.0	35	10.1	2.42	12.3	16.5	.20	.21
<b>May</b> <b>09...</b>	0900	7.7	7.4	43	10.5	0.5	18	5.27	1.17	11.6	13.4	.33	.38
<b>Jul</b> <b>11...</b>	0815	.68	7.5	70	14.0	7.0	29	8.55	1.96	12.0	12.2	.14	.14
<b>Aug</b> <b>29...</b>	1200	.33	7.5	89	17.0	7.5	38	11.0	2.59	17.9	22.2	.11	.11

## 462347112180401 BASIN CREEK BELOW BUCKEYE MINE, NEAR LOGGING ROAD, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration	Sus- pended sedi- ment dis- charge,
	µg/L (01040)	µg/L (01042)	µg/L (01049)	µg/L (01051)	µg/L (01090)	µg/L (01092)	(70331)	mg/L (80154)	tons/d (80155)
<b>Mar</b> 06...	2.1	2.2	.32	.57	51.0	48.7	94	3	<.01
<b>May</b> 09...	5.9	6.3	1.15	3.25	66.7	63.4	53	7	.15
<b>Jul</b> 11...	1.9	1.9	.18	.35	37.3	33.3	80	1	<.01
<b>Aug</b> 29...	1.1	E.70	.26	.52	25.1	22.8	75	1	<.01



## Water-Data Report 2007

### 462500112170201 UNNAMED STREAM (LAD 1) DRAINING LUTTRELL REPOSITORY AREA, NEAR RIMINI, MT

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°25'00", long 112°17'03" referenced to North American Datum of 1983, in NE ¼ SW ¼ NW ¼ sec.30, T.8 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling location is 7,560 ft., referenced to the National Geodetic Vertical Datum of 1929.

#### WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 2004 to current year.

REMARKS.--Site was visited on Sept. 6 but sample was not collected due to no flow.

#### WATER-QUALITY DATA WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt end lab, mg/L as CaCO3 (29801)
Jun 14...	1230	.001	5.5	71	7.0	5.5	19	5.20	1.36	.76	.5	4.68	6

#### WATER-QUALITY DATA WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: <, less than.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Dissolved solids, tons/acre-ft (70303)	Dissolved solids, tons/d (70302)	Aluminum, water, fltrd, µg/L (01106)	Arsenic, water, fltrd, µg/L (01000)	Arsenic, water, unfltrd, µg/L (01002)	Cadmium, water, fltrd, µg/L (01025)	Cadmium, water, unfltrd, µg/L (01027)	Copper, water, fltrd, µg/L (01040)
Jun 14...	.69	<.10	12.4	23.4	52	.07	<.01	95.6	.92	.87	.06	.05	2.1



462500112170201 UNNAMED STREAM (LAD 1) DRAINING LUTTRELL REPOSITORY AREA, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: E, estimated.]

Date	Copper, water, unfltrd recover- -able, µg/L (01042)	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover- -able, µg/L (01045)	Lead, water, fltrd, µg/L (01049)	Lead, water, unfltrd recover- -able, µg/L (01051)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover- -able, µg/L (01055)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover- -able, µg/L (01092)
	Jun 14...	2.1	37	44	E.09	.10	4.8	4.8	4.6



## Water-Data Report 2007

## 462500112170501 UNNAMED STREAM (LAD 2) DRAINING LUTTRELL REPOSITORY AREA, NEAR RIMINI, MT

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°25'00", long 112°17'06" referenced to North American Datum of 1983, in NW ¼ SW ¼ NW ¼ sec.30, T.8 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling location is 7,560 ft, referenced to the National Geodetic Vertical Datum of 1929.

### WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 2004 to current year.

REMARKS.--Site was visited on Sept. 6 but sample was not collected due to no flow.

### WATER-QUALITY DATA WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd $\mu$ S/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt lab, mg/L as CaCO3 (29801)
Jun 14...	1300	.004	5.8	66	7.0	6.0	19	4.91	1.55	.81	.4	4.05	9

### WATER-QUALITY DATA WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: <, less than.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Dis-solved solids, tons/acre-ft (70303)	Dis-solved solids, tons/d (70302)	Aluminum, water, fltrd, $\mu$ g/L (01106)	Arsenic, water, fltrd, $\mu$ g/L (01000)	Arsenic, water, unfltrd, $\mu$ g/L (01002)	Cadmium, water, fltrd, $\mu$ g/L (01025)	Cadmium, water, unfltrd, $\mu$ g/L (01027)
Jun 14...	.70	<.10	11.6	19.2	48	.07	<.01	53.5	1.1	1.4	.06	.06

462500112170501 UNNAMED STREAM (LAD 2) DRAINING LUTTRELL REPOSITORY AREA, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: <, less than.]

Date	Copper, water, unfltrd		Iron, water, unfltrd		Lead, water, unfltrd		Mangan-ese, water, unfltrd		Zinc, water, unfltrd	
	Copper, water, recover fltrd, µg/L (01040)	Copper, water, recover -able, µg/L (01042)	Iron, water, recover fltrd, µg/L (01046)	Iron, water, recover -able, µg/L (01045)	Lead, water, recover fltrd, µg/L (01049)	Lead, water, recover -able, µg/L (01051)	Mangan-ese, water, recover fltrd, µg/L (01056)	Mangan-ese, water, recover -able, µg/L (01055)	Zinc, water, recover fltrd, µg/L (01090)	Zinc, water, recover -able, µg/L (01092)
Jun 14...	1.9	2.7	23	124	<.12	.61	1.1	7.7	4.8	5.7



## Water-Data Report 2007

**462442112174603 SETTLING POND DISCHARGE TO GRUB CREEK, NEAR BASIN, MT**

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°24'42", long 112°17'46" referenced to North American Datum of 1927, in SW ¼ NW ¼ SE ¼ sec.25, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10030101.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at site is 7,235 ft referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt lab, mg/L as CaCO3 (29801)
Sep 06...	1210	.09	5.0	144	12.0	12.5	30	9.09	1.76	3.50	.8	10.5	<5

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: E, estimated.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)	Aluminum, water, fltrd, μg/L (01106)	Arsenic, water, fltrd, μg/L (01000)	Arsenic, water, unfltrd, μg/L (01002)	Cadmium, water, fltrd, μg/L (01025)	Cadmium, water, unfltrd, μg/L (01027)	Copper, water, fltrd, μg/L (01040)	Copper, water, unfltrd recoverable, μg/L (01042)
Sep 06...	4.34	E.05	8.65	46.8	E.12	207	5.7	8.9	.30	.33	2.9	5.0

## 462442112174603 SETTLING POND DISCHARGE TO GRUB CREEK, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Iron, water, unfltrd	Iron, water, recover -able,	Lead, water, unfltrd	Lead, water, recover -able,	Mangan- ese, water, unfltrd	Mangan- ese, water, recover -able,	Zinc, water, unfltrd	Zinc, water, recover -able,
	µg/L (01046)	µg/L (01045)	µg/L (01049)	µg/L (01051)	µg/L (01056)	µg/L (01055)	µg/L (01090)	µg/L (01092)
<b>Sep</b> 06...	2,550	4,140	7.48	11.6	123	120	51.3	50.9



## Water-Data Report 2007

**462442112174602 UNNAMED TRIBUTARY TO GRUB CREEK AT MOUTH, SS NO. 6, NEAR RIMINI, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°24'42", long 112°17'46" referenced to North American Datum of 1927, in SW ¼ NW ¼ SE ¼ sec.25, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006, 30 ft upstream from Grub Creek and 5.9 mi south of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling site is 7,320 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--July 2003 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt lab, mg/L as CaCO3 (29801)
Jun 14...	1320	.80	6.5	99	15.0	9.0	33	9.81	2.04	2.60	.3	3.38	9
Jul 18...	1230	1.7	6.6	154	--	12.5	52	14.5	3.77	4.45	.2	2.67	10
Sep 06...	1200	.05	7.0	118	12.0	9.0	40	11.0	3.11	3.62	.2	2.94	13

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: E, estimated.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)	Dissolved solids, tons/acre-ft (70303)	Dissolved solids, tons/d (70302)	Aluminum, water, fltrd, μg/L (01106)	Arsenic, water, fltrd, μg/L (01000)	Arsenic, water, unfltrd, μg/L (01002)	Cadmium, water, fltrd, μg/L (01025)	Cadmium, water, unfltrd, μg/L (01027)
Jun 14...	1.03	E.06	8.81	30.2	63	.09	.14	51.5	.90	2.7	.48	.47
Jul 18...	2.13	E.06	11.4	49.2	95	.13	.42	66.1	1.2	5.7	.45	.47
Sep 06...	1.35	E.10	16.0	34.9	81	.11	.01	15.7	.50	1.1	.16	.18

## 462442112174602 UNNAMED TRIBUTARY TO GRUB CREEK AT MOUTH, SS NO. 6, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: E, estimated.]

Date	Copper, water, unfltrd		Iron, water, unfltrd		Lead, water, unfltrd		Mangan-ese, water, unfltrd		Zinc, water, unfltrd	
	Copper, water, fltrd, recover-able, µg/L (01040)	Copper, water, recover-able, µg/L (01042)	Iron, water, fltrd, µg/L (01046)	Iron, water, recover-able, µg/L (01045)	Lead, water, fltrd, µg/L (01049)	Lead, water, recover-able, µg/L (01051)	Mangan-ese, water, fltrd, µg/L (01056)	Mangan-ese, water, recover-able, µg/L (01055)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, recover-able, µg/L (01092)
<b>Jun</b>										
14...	4.9	7.5	57	536	.12	4.28	116	115	101	116
<b>Jul</b>										
18...	3.7	7.4	112	2,010	.36	11.1	219	226	104	111
<b>Sep</b>										
06...	.92	E1.2	59	192	E.08	.66	152	154	59.0	57.7



## Water-Data Report 2007

**462442112174601 GRUB CREEK ABOVE MOUTH OF UNNAMED TRIBUTARY (GC03), NEAR RIMINI, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°24'42", long 112°17'46" referenced to North American Datum of 1927, in NE ¼ NW ¼ SE ¼ sec.25, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006, 1.1 mi upstream from Basin Creek and 5.9 mi south of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling site is 7,290 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--July 2003 to current year.

REMARKS.--Site was visited on Sept. 6 but sample was not collected due to no flow.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat fltrd end lab, mg/L as CaCO <sub>3</sub> (29801)
Jun 14...	1350	.70	6.1	33	15.0	9.0	12	3.36	.766	.65	.2	1.35	8
Jul 18...	1315	.08	6.3	44	--	13.0	16	4.66	1.10	.63	.2	1.56	13

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Dissolved solids, tons/acre-ft (70303)	Dissolved solids, tons/d (70302)	Aluminum, water, fltrd, $\mu$ g/L (01106)	Arsenic, water, fltrd, $\mu$ g/L (01000)	Arsenic, water, unfltrd, $\mu$ g/L (01002)	Cadmium, water, fltrd, $\mu$ g/L (01025)	Cadmium, water, unfltrd, $\mu$ g/L (01027)
Jun 14...	.26	E.05	9.02	7.11	28	.04	.05	133	1.8	1.8	.47	.44
Jul 18...	.55	<.10	9.23	6.74	33	.04	.01	109	2.2	2.4	.89	.87



## 462442112174601 GRUB CREEK ABOVE MOUTH OF UNNAMED TRIBUTARY (GC03), NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Copper, water, unfltrd		Iron, water, unfltrd		Lead, water, unfltrd		Mangan-ese, water, unfltrd		Zinc, water, unfltrd	
	recover-able, fltrd, µg/L (01040)	recover-able, fltrd, µg/L (01042)	recover-able, fltrd, µg/L (01046)	recover-able, fltrd, µg/L (01045)	recover-able, fltrd, µg/L (01049)	recover-able, fltrd, µg/L (01051)	recover-able, fltrd, µg/L (01056)	recover-able, fltrd, µg/L (01055)	recover-able, fltrd, µg/L (01090)	recover-able, fltrd, µg/L (01092)
<b>Jun</b>										
<b>14...</b>	18.2	19.1	48	62	.17	.35	3.0	3.3	107	105
<b>Jul</b>										
<b>18...</b>	32.0	33.4	152	223	.51	.92	74.4	81.5	151	138



## Water-Data Report 2007

**462155112181501 JACK CREEK ABOVE BULLION MINE TRIBUTARY, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°21'55", long 112°18'15" referenced to North American Datum of 1927, in NW ¼ SW ¼ SW ¼ sec.12, T.7 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006, 0.2 mi upstream of Bullion Mine tributary, 2.4 mi upstream of Basin Creek, and 7.1 mi north of Basin.

DRAINAGE AREA.--2.55 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,580 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to August 1999, March 2003 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

[Remark codes: E, estimated.]

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Mar</b> 06...	1350	.40	7.8	106	1.0	0.5	45	13.2	3.00	4.7	4.5	.32	.31
<b>May</b> 09...	1030	4.6	7.5	67	14.5	1.0	30	8.96	1.89	4.7	4.7	.07	.12
<b>Jul</b> 11...	0930	1.2	7.7	88	16.0	8.5	37	11.2	2.27	6.1	6.3	.08	.09
<b>Aug</b> 29...	1330	.28	7.6	106	17.0	9.0	47	13.8	2.96	5.6	5.5	E.04	.03

## Water-Data Report 2007

## 462155112181501 JACK CREEK ABOVE BULLION MINE TRIBUTARY, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper,	Copper,	Lead,	Lead,	Zinc,	Zinc,	Suspnd.	Sus-	Sus-
	water,	water,	water,	water,	water,	water,	sediment,	pended	pended
	unfltrd	recovery	unfltrd	recovery	unfltrd	recovery	sieve	sediment	sediment
	filtrable,	filtrable,	filtrable,	filtrable,	filtrable,	filtrable,	diameter	concentration	discharge,
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	<.063mm	mg/L	tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Mar</b>									
<b>06...</b>	3.1	3.3	<.12	.07	50.8	47	75	1	<.01
<b>May</b>									
<b>09...</b>	4.6	4.7	E.11	.40	14.8	16.9	65	3	.04
<b>Jul</b>									
<b>11...</b>	2.4	2.5	<.12	.12	14.1	13.1	75	1	<.01
<b>Aug</b>									
<b>29...</b>	1.2	<1.2	<.12	E.03	5.6	4.6	50	1	<.01



## Water-Data Report 2007

**462120112173701 BULLION MINE ADIT NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°21'20", long 112°17'37" referenced to North American Datum of 1927, in NW ¼ SW ¼ SE ¼ sec.13, T.7 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006, at PVC pipe draining the Bullion mine adit about 400 ft upstream from the Bullion mine tributary, 2 mi upstream from Jack Creek, and 6.3 mi northwest of Basin.

DRAINAGE AREA.--Indeterminate (subsurface).

GAGE.--None. Elevation at site is 7,360 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1999 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf 25 degC $\mu$ S/cm (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium water, fltrd, mg/L (00925)	Aluminum water, fltrd, $\mu$ g/L (01106)	Antimony water, fltrd, $\mu$ g/L (01095)	Arsenic water, fltrd, $\mu$ g/L (01000)	Cadmium water, fltrd, $\mu$ g/L (01025)
<b>Mar</b> 06...	0945	.005	3.3	1,400	0.5	3.5	--	--	--	8,810	15.4	1,610	325
<b>May</b> 09...	1230	.005	3.6	1,290	4.5	5.0	330	82.5	29.6	8,060	15.8	1,960	307
<b>Jun</b> 12...	1100	.012	2.8	1,930	7.0	5.0	340	86.5	29.4	12,700	7.99	2,370	413
<b>Jul</b> 11...	1100	.011	2.8	1,170	18.0	5.0	330	81.3	31.4	17,900	17.8	2,330	474
<b>Aug</b> 30...	0900	.006	3.0	1,770	17.5	4.5	350	86.6	31.7	16,400	3.97	822	395

## 462120112173701 BULLION MINE ADIT NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Chrom- ium, water, fltrd, µg/L (01030)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan- ese, water, fltrd, µg/L (01056)	Mercury water, fltrd, µg/L (71890)	Nickel, water, fltrd, µg/L (01065)	Silver, water, fltrd, µg/L (01075)	Zinc, water, fltrd, µg/L (01090)
	<b>Mar</b> 06...	E1.4	3,840	159,000	355	17,600	<.01	71.1	<1.5
<b>May</b> 09...	.90	3,010	165,000	330	17,600	<.01	68.9	<.1	28,700
<b>Jun</b> 12...	1.6	5,510	231,000	351	21,100	<.01	70.3	.1	51,100
<b>Jul</b> 11...	3.4	9,940	232,000	469	23,400	<.01	104	<2.0	48,900
<b>Aug</b> 30...	2.3	7,410	198,000	400	21,500	<.01	82.0	E.1	42,100



## Water-Data Report 2007

**462153112181701 BULLION MINE TRIBUTARY AT MOUTH, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°21'53", long 112°18'17" referenced to North American Datum of 1927, in SE ¼ NW ¼ sec.13, T.7 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, near confluence with Jack Creek, 2.2 mi upstream from Basin Creek, and 6.7 mi northwest of Basin.

DRAINAGE AREA.--1.19 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,595 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, μg/L (01000)	Arsenic water, unfltrd, μg/L (01002)	Cadmium water, fltrd, μg/L (01025)	Cadmium water, unfltrd, μg/L (01027)
<b>Mar</b> 06...	1110	.12	7.5	198	1.0	0.0	71	19.9	5.07	.40	6.9	26.5	24.4
<b>May</b> 09...	1100	2.0	7.3	76	15.5	1.5	29	8.39	1.94	5.2	8.3	4.64	4.83
<b>Jun</b> 12...	1230	2.8	6.9	66	9.0	7.0	23	6.70	1.52	6.5	18.3	4.25	6.27
<b>Jul</b> 11...	1030	.49	5.9	164	16.0	9.0	54	15.2	3.86	.96	21.3	24.8	23.8
<b>Aug</b> 29...	1400	.09	4.5	315	17.0	9.5	120	32.3	8.43	.51	7.6	61.5	54.8

## Water-Data Report 2007

## 462153112181701 BULLION MINE TRIBUTARY AT MOUTH, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Mar</b> 06...	108	163	E.06	2.80	3,140	2,980	97	5	<.01
<b>May</b> 09...	59.7	68.0	1.21	3.04	624	608	75	3	.02
<b>Jun</b> 12...	56.9	77.7	1.21	6.93	501	590	67	1	.01
<b>Jul</b> 11...	267	338	.20	4.89	3,480	2,790	98	11	.01
<b>Aug</b> 29...	736	724	4.33	6.63	6,850	6,550	93	8	<.01



## Water-Data Report 2007

**462047112201901 JACK CREEK AT MOUTH, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°20'47", long 112°20'19" referenced to North American Datum of 1927, in NW ¼ SE ¼ SE ¼ sec.22, T.7 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10020006, at Basin Creek road crossing, 7 mi northwest of Basin.

DRAINAGE AREA.--8.55 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,260 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--January 2000 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
<b>Mar</b> 06...	0930	1.0	7.0	106	3.5	0.0	41	11.5	2.97	2.3	3.3	2.16	2.06
<b>May</b> 09...	1300	12	7.6	61	17.0	5.0	25	7.22	1.65	4.1	5.8	.95	.94
<b>Jul</b> 11...	1200	2.9	7.6	89	18.0	12.5	31	8.97	2.17	4.0	6.7	2.14	2.06
<b>Aug</b> 30...	1000	.91	7.9	104	16.0	7.5	40	11.4	2.80	3.4	4.7	2.25	2.27



## 462047112201901 JACK CREEK AT MOUTH, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concentra- tion	Sus- pended sedi- ment dis- charge,
	µg/L (01040)	µg/L (01042)	µg/L (01049)	µg/L (01051)	µg/L (01090)	µg/L (01092)	(70331)	mg/L (80154)	tons/d (80155)
<b>Mar</b> 06...	8.5	13.2	.16	.43	312	293	89	1	<.01
<b>May</b> 09...	17.6	19.2	.36	1.75	127	131	66	4	.13
<b>Jul</b> 11...	16.7	27.0	.19	.76	264	261	64	1	.01
<b>Aug</b> 30...	6.5	14.9	<.12	.27	299	295	75	1	<.01



## Water-Data Report 2007

**06031600 BASIN CREEK AT BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°16'16", long 112°15'42" referenced to North American Datum of 1927, in NE ¼ NW ¼ SW ¼ sec.17, T.6 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, at county bridge on old Interstate 15 in Basin.

DRAINAGE AREA.--41.1 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,340 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Mar</b> <b>06...</b>	1030	3.5	7.5	103	8.5	0.0	38	10.7	2.64	2.9	3.1	.26	.25
<b>May</b> <b>08...</b>	1300	78	7.4	48	22.0	6.5	17	4.95	1.09	3.7	5.1	.25	.33
<b>Jul</b> <b>11...</b>	1245	7.9	7.8	82	22.0	17.5	29	8.26	1.94	6.1	6.4	.21	.20
<b>Aug</b> <b>30...</b>	1100	2.2	7.8	108	20.0	11.5	42	11.9	2.91	5.1	5.1	.23	.22

**06031600 BASIN CREEK AT BASIN, MT—Continued****WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: E, estimated.]

<b>Date</b>	<b>Copper, water, unfltrd, recovery, µg/L (01040)</b>	<b>Copper, water, unfltrd, recovery, µg/L (01042)</b>	<b>Lead, water, unfltrd, recovery, µg/L (01049)</b>	<b>Lead, water, unfltrd, recovery, µg/L (01051)</b>	<b>Zinc, water, unfltrd, recovery, µg/L (01090)</b>	<b>Zinc, water, unfltrd, recovery, µg/L (01092)</b>	<b>Suspnd. sedi- ment, sieve diametr percent &lt;.063mm (70331)</b>	<b>Sus- pended sedi- ment concentra- tion mg/L (80154)</b>	<b>Sus- pended sedi- ment dis- charge, tons/d (80155)</b>
<b>Mar 06...</b>	2.0	2.5	E.10	.24	67.2	63	89	1	.01
<b>May 08...</b>	6.0	7.3	.28	1.62	44.9	48.2	73	7	1.5
<b>Jul 11...</b>	4.0	4.5	.15	.39	32.3	32.2	83	1	.02
<b>Aug 30...</b>	2.4	2.5	E.07	.12	38.2	33.5	70	1	.01



## Water-Data Report 2007

**461905112144201 CATARACT CREEK ABOVE UNCLE SAM GULCH, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°19'05", long 112°14'42" referenced to North American Datum of 1927, in SE ¼ SE ¼ NE ¼ sec.32, T.7 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, 100 ft upstream from Uncle Sam Gulch and 3.4 mi northeast of Basin.

DRAINAGE AREA.--22.2 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,320 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to September 2003, May 2005 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf, µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
<b>Apr</b> <b>03...</b>	1100	3.8	7.5	103	5.5	0.0	45	13.7	2.56	2.1	2.0	.26	.24
<b>May</b> <b>10...</b>	1130	52	6.2	46	9.0	4.5	19	5.92	1.12	2.4	3.0	.13	.20
<b>Jul</b> <b>12...</b>	0940	3.6	7.8	102	19.0	11.5	43	13.3	2.41	3.1	3.0	.18	.22
<b>Aug</b> <b>31...</b>	1100	1.1	8.1	130	21.0	10.5	59	18.2	3.26	2.8	2.9	.19	.22

## Water-Data Report 2007

## 461905112144201 CATARACT CREEK ABOVE UNCLE SAM GULCH, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Apr</b> 03...	7.1	7.1	.25	.39	62.4	59	57	1	.01
<b>May</b> 10...	7.8	8.5	.36	1.53	45.4	48.4	66	4	.56
<b>Jul</b> 12...	4.7	5.1	E.11	.25	46.0	44.1	75	1	.01
<b>Aug</b> 31...	2.8	2.6	<.12	.08	46.5	40.0	75	1	<.01



## Water-Data Report 2007

**462053112153601 CRYSTAL MINE ADIT NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°20'53", long 112°15'36" referenced to North American Datum of 1927, in NE ¼ SW ¼ NW ¼ sec.20, T.7 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, adit discharge from Cystal Mine, about 3 mi upstream from the mouth of Uncle Sam Gulch, and 5.25 mi north of Basin.

DRAINAGE AREA.--Indeterminate (subsurface).

GAGE.--None. Elevation at site is 7,600 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--June 2003 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Alum- inum, water, fltrd, µg/L (01106)	Anti- mony, water, fltrd, µg/L (01095)	Arsenic water, fltrd, µg/L (01000)	Cadmium water, fltrd, µg/L (01025)
<b>Apr</b> 03...	0915	.03	4.8	655	3.0	4.0	170	45.5	14.7	1,460	1.05	110	530
<b>May</b> 10...	1000	.05	3.8	582	11.0	5.5	170	45.9	13.8	1,020	1.30	64.4	429
<b>Jun</b> 12...	1000	.08	5.4	682	9.5	5.0	210	57.4	16.7	1,120	1.76	210	451
<b>Jul</b> 12...	1100	.07	5.0	743	--	7.0	210	56.5	15.8	3,140	3.00	169	551
<b>Aug</b> 31...	0930	.04	3.9	725	14.0	5.5	210	56.0	16.5	3,470	.99	115	592

## Water-Data Report 2007

## 462053112153601 CRYSTAL MINE ADIT NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Chrom- ium, water, fltrd, µg/L (01030)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan- ese, water, fltrd, µg/L (01056)	Mercury water, fltrd, µg/L (71890)	Nickel, water, fltrd, µg/L (01065)	Silver, water, fltrd, µg/L (01075)	Zinc, water, fltrd, µg/L (01090)
	<b>Apr</b> 03...	<.12	3,980	40,000	23.6	11,300	<.010	32.0	<.1
<b>May</b> 10...	<1.8	3,550	30,600	16.7	9,250	<.010	26.8	<.1	32,700
<b>Jun</b> 12...	<.12	5,000	35,100	24.0	9,640	<.010	27.7	<.1	37,200
<b>Jul</b> 12...	<2.4	5,980	38,200	35.6	10,700	<.010	33.4	<2.0	39,500
<b>Aug</b> 31...	<.12	6,190	46,000	46.1	11,900	<.010	35.8	<.1	44,600



## Water-Data Report 2007

**461904112144401 UNCLE SAM GULCH AT MOUTH, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°19'04", long 112°14'44" referenced to North American Datum of 1927, in SE ¼ SE ¼ NE ¼ sec.32, T.7 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, at confluence with Cataract Creek, 3.4 mi northeast of Basin.

DRAINAGE AREA.--3.06 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,315 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Apr</b> 03...	1030	.70	7.7	135	5.5	0.0	52	15.5	3.15	6.6	8.8	11.0	10.6
<b>May</b> 10...	1100	4.5	6.0	61	9.0	4.5	25	7.82	1.44	9.0	51.6	5.07	7.37
<b>Jun</b> 12...	0830	4.1	7.0	63	11.5	5.0	23	6.83	1.37	7.6	7.6	6.52	6.15
<b>Jul</b> 12...	0930	.47	7.4	122	19.0	10.5	47	14.1	2.85	6.8	8.6	13.3	13.2
<b>Aug</b> 31...	1030	.23	8.0	163	21.0	9.5	73	21.9	4.48	6.0	6.1	13.0	12.4



## Water-Data Report 2007

## 461904112144401 UNCLE SAM GULCH AT MOUTH, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, unfltrd	Copper, water, recover- able, fltrd, µg/L (01040)	Lead, water, unfltrd	Lead, water, recover- able, fltrd, µg/L (01049)	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd, µg/L (01090)	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
	<b>Apr</b> 03...	41.9	45.8	.64	2.49	1,140	1,080	56	2	<.01	
<b>May</b> 10...	83.2	149	2.66	48.1	566	633	25	65	.79		
<b>Jun</b> 12...	73.2	75.9	2.35	2.47	628	615	67	3	.03		
<b>Jul</b> 12...	41.5	52.2	.65	2.28	1,290	1,190	75	1	<.01		
<b>Aug</b> 31...	23.0	23.4	.15	.53	1,230	1,100	40	1	<.01		



## Water-Data Report 2007

**06031960 CATARACT CREEK AT BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°16'17", long 112°14'28" referenced to North American Datum of 1927, in NE ¼ NW ¼ SW ¼ sec.16, T.6 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, at county bridge, 0.1 mi upstream from the Boulder River, and 1 mi east of Basin.

DRAINAGE AREA.--29.3 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,270 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, μg/L (01000)	Arsenic water, unfltrd, μg/L (01002)	Cadmium water, fltrd, μg/L (01025)	Cadmium water, unfltrd, μg/L (01027)
<b>Mar</b> 06...	1230	3.0	7.6	137	10.5	0.0	58	17.5	3.49	3.5	3.7	1.49	1.45
<b>May</b> 08...	1200	51	7.6	55	21.0	6.0	23	6.91	1.31	2.9	5.7	.74	.89
<b>Jul</b> 12...	0830	5.0	7.4	117	17.0	12.5	49	15.0	2.87	4.8	4.9	1.61	1.65
<b>Aug</b> 30...	1200	1.2	8.1	153	24.0	13.5	66	20.0	4.01	4.6	4.6	1.36	1.33

## 06031960 CATARACT CREEK AT BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concentra- tion mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Mar</b> 06...	5.5	6.4	.12	.68	168	165	98	6	.05
<b>May</b> 08...	15.1	18.6	.27	3.97	99.9	104	72	6	.83
<b>Jul</b> 12...	9.5	10.5	.19	.58	159	148	50	1	.01
<b>Aug</b> 30...	4.6	4.7	<.12	.14	121	105	56	1	<.01



## Water-Data Report 2007

**06032400 BOULDER RIVER BELOW LITTLE GALENA GULCH, NEAR BASIN, MT**

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°14'58", long 112°10'27" referenced to North American Datum of 1927, in NE ¼ NE ¼ NW ¼ sec.25, T.6 N., R.5 W., Jefferson County, MT, Hydrologic Unit 10020006, at county bridge, 0.2 mi downstream from Little Galena Gulch, and 2.5 mi northeast of Basin.

DRAINAGE AREA.--318 mi<sup>2</sup>.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 1996 to current year.

GAGE.--None. Elevation at site is 5,020 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, μg/L (01000)	Arsenic water, unfltrd, μg/L (01002)	Cadmium water, fltrd, μg/L (01025)	Cadmium water, unfltrd, μg/L (01027)
<b>Mar</b> 06...	1330	24	7.5	160	10.5	0.0	55	16.1	3.68	3.9	4.2	.41	.40
<b>May</b> 08...	1100	205	7.8	69	18.0	7.0	26	7.77	1.60	3.6	4.9	.22	.29
<b>Jul</b> 11...	1345	33	8.4	132	25.0	20.0	48	14.3	3.06	7.3	7.1	.27	.28
<b>Aug</b> 30...	1330	10	8.7	173	29.0	18.0	66	19.2	4.40	7.7	7.8	.22	.29

## 06032400 BOULDER RIVER BELOW LITTLE GALENA GULCH, NEAR BASIN, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: E, estimated.]

Date	Copper, water, unfltrd	Copper, water, recover- able, fltrd,	Lead, water, unfltrd	Lead, water, recover- able, fltrd,	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Mar</b> 06...	6.9	8.3	.12	.66	84.2	85.3	82	3	.20
<b>May</b> 08...	7.1	8.9	.17	1.99	39.5	54.0	69	11	6.1
<b>Jul</b> 11...	7.8	8.1	.15	.43	30.6	35.9	85	2	.18
<b>Aug</b> 30...	6.4	7.4	E.08	.34	25.0	35.4	85	2	.06



Water-Data Report 2007

## 06033000 BOULDER RIVER NEAR BOULDER, MT

Missouri Headwaters Basin  
Boulder Subbasin

LOCATION.--Lat 46°12'40", long 112°05'27" referenced to North American Datum of 1927, in SE ¼ NE ¼ SW ¼ sec.3, T.5 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10020006, on left bank 40 ft downstream from county bridge, 1.1 mile downstream from Muskrat Creek, 2.0 mi southeast of Boulder, and at river mile 44.1.

DRAINAGE AREA.--381 mi<sup>2</sup>.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1929 to December 1932, March 1934 to September 1972, October 1984 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.-- WSP 1279: 1931.

GAGE.--Water-stage recorder. Elevation of gage is 4,810 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Aug. 29, 1946, nonrecording gage at present site and elevation.

REMARKS.--Records are good. Diversions for irrigation of about 3,500 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 22, 1981, reached a discharge of 7,000 ft<sup>3</sup>/s, gage height, 12.3 ft, from floodmarks.

## Water-Data Report 2007

## 06033000 BOULDER RIVER NEAR BOULDER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	19	20	23	25	21	28	78	347	331	54	14	10
2	18	25	31	25	22	28	76	377	303	51	14	9.9
3	18	33	30	26	22	27	65	424	279	45	14	9.8
4	17	38	31	27	21	28	66	347	249	42	14	9.8
5	18	41	31	28	22	31	69	288	247	40	14	9.2
6	19	44	30	26	23	35	69	250	367	37	13	9.8
7	28	74	30	29	24	42	70	227	385	46	13	11
8	41	138	30	27	24	46	70	240	418	59	12	10
9	37	96	30	28	24	43	82	263	389	46	12	11
10	31	64	30	28	25	40	83	306	351	37	12	11
11	28	55	30	30	26	43	73	327	362	35	12	11
12	27	39	31	30	28	57	68	327	305	29	12	11
13	24	44	31	25	27	111	65	324	261	26	11	10
14	23	44	31	21	27	175	69	300	231	25	11	10
15	23	29	32	18	27	146	78	257	208	22	11	10
16	25	51	28	16	27	143	79	242	194	21	11	10
17	29	28	25	15	27	127	89	241	204	21	11	10
18	29	32	22	15	28	187	104	228	186	27	11	10
19	27	29	22	16	28	181	100	218	169	30	12	11
20	39	44	22	17	28	172	87	209	150	25	13	12
21	45	46	22	17	29	126	93	246	137	22	13	11
22	41	42	22	18	29	96	98	283	120	21	13	12
23	40	25	22	20	29	83	97	252	106	21	13	14
24	40	24	23	22	28	85	111	280	95	18	13	25
25	41	25	23	23	28	113	130	307	88	17	13	24
26	37	29	24	23	28	114	157	306	82	17	12	20
27	37	22	26	23	27	120	156	334	78	16	12	18
28	36	20	26	23	28	101	171	417	71	16	11	16
29	34	19	27	23	---	74	252	398	64	15	10	18
30	29	21	26	22	---	77	327	390	60	15	10	19
31	16	---	25	22	---	83	---	349	---	15	10	---
<b>Total</b>	916	1,241	836	708	727	2,762	3,132	9,304	6,490	911	377	383.5
<b>Mean</b>	29.5	41.4	27.0	22.8	26.0	89.1	104	300	216	29.4	12.2	12.8
<b>Max</b>	45	138	32	30	29	187	327	424	418	59	14	25
<b>Min</b>	16	19	22	15	21	27	65	209	60	15	10	9.2
<b>Ac-ft</b>	1,820	2,460	1,660	1,400	1,440	5,480	6,210	18,450	12,870	1,810	748	761

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	36.0	34.6	28.4	26.2	30.1	48.3	165	456	399	92.2	30.2	27.8
<b>Max</b>	113	71.2	53.0	42.1	68.5	121	511	961	1,027	374	194	156
<b>(WY)</b>	(1966)	(1966)	(1996)	(1969)	(1971)	(1986)	(1930)	(1948)	(1965)	(1938)	(1993)	(1993)
<b>Min</b>	5.85	9.09	7.45	10.1	7.71	20.7	46.0	126	70.4	10.9	7.11	5.69
<b>(WY)</b>	(1936)	(1936)	(1936)	(1937)	(1937)	(1937)	(1967)	(1992)	(2000)	(1931)	(1931)	(1935)

\* During periods of operation (May 1929 to December 1932, March 1934 to September 1972, October 1984 to current year).

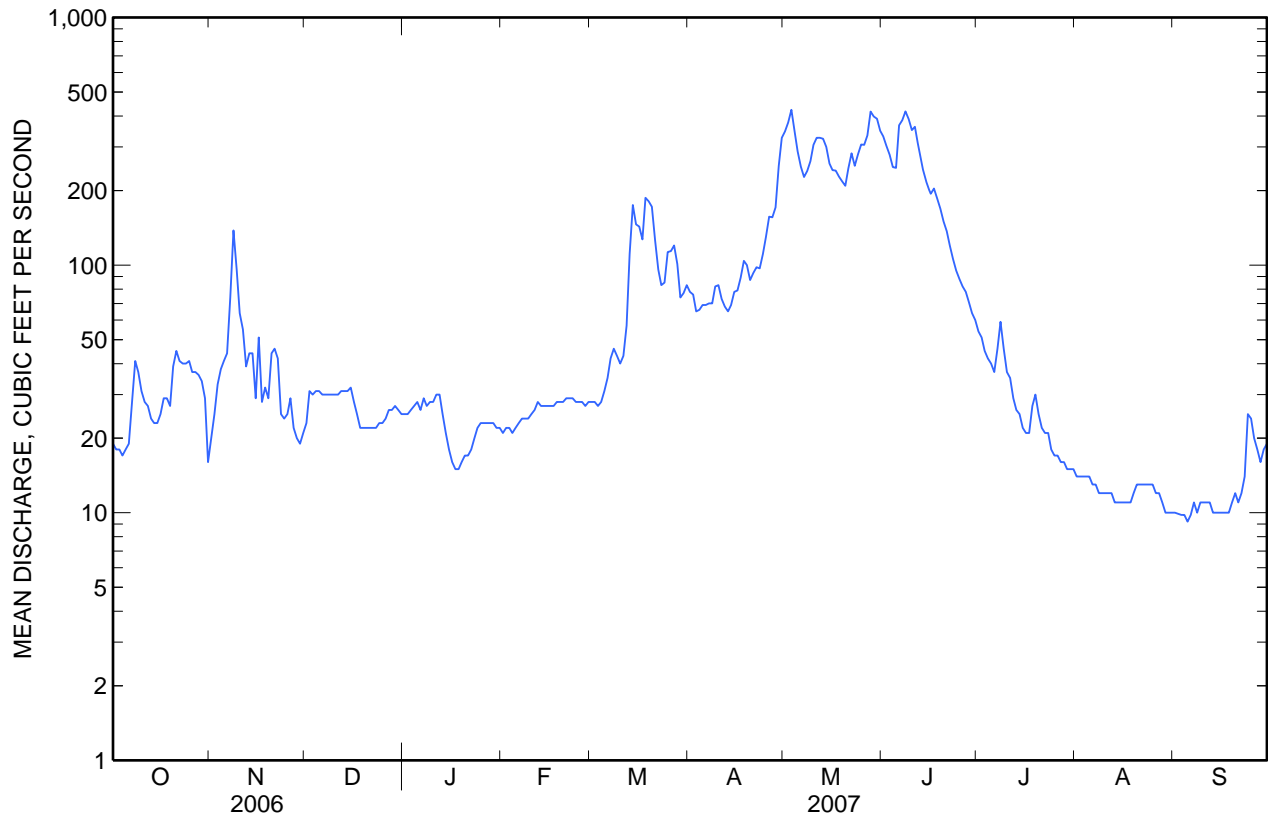
06033000 BOULDER RIVER NEAR BOULDER, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1929 - 2007*	
<b>Annual total</b>	37,667.8		27,787.5			
<b>Annual mean</b>	103		76.1		115	
<b>Highest annual mean</b>					211	1965
<b>Lowest annual mean</b>					48.2	2000
<b>Highest daily mean</b>	878	May 19	424	May 3	2,400	May 22, 1948
<b>Lowest daily mean</b>	8.9	Sep 13	9.2	Sep 5	0.00	Jul 15, 1931
<b>Annual seven-day minimum</b>	9.4	Sep 8	9.8	Aug 31	1.0	Jan 21, 1930
<b>Maximum peak flow</b>			446	Jun 8	3,490	Jun 9, 1964
<b>Maximum peak stage</b>			6.69	Jun 8	10.90	Jun 9, 1964
<b>Instantaneous low flow</b>			<sup>a</sup> 8.8	Sep 5	0.00	Jul 15, 1931
<b>Annual runoff (ac-ft)</b>	74,710		55,120		83,240	
<b>10 percent exceeds</b>	339		249		332	
<b>50 percent exceeds</b>	29		29		36	
<b>90 percent exceeds</b>	13		12		16	

\* During periods of operation (May 1929 to December 1932, March 1934 to September 1972, October 1984 to current year).

<sup>a</sup> Gage height, 4.75 ft.







Water-Data Report 2007

## 06035000 WILLOW CREEK NEAR HARRISON, MT

Missouri Headwaters Basin  
Jefferson Subbasin

LOCATION.--Lat 45°43'23", long 111°44'25" referenced to North American Datum of 1927, in SE ¼ SW ¼ NW ¼ sec.28, T.1 S., R.1 W., Madison County, MT, Hydrologic Unit 10020005, on right bank 2.2 mi upstream from Willow Creek Dam, 2.5 mi northeast of Harrison, and at river mile 13.6.

DRAINAGE AREA.--83.8 mi<sup>2</sup>.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 1938 to September 1982, October 1982 to October 2002, March 2004 to current year (seasonal records only). Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.-- WSP 1559: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,750 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Oct. 8, 1946, water-stage recorder at elevation 0.22 ft higher, with different concrete control.

REMARKS.--Seasonal records are good except those for Mar. 6 to Apr. 28, which are fair. Diversions for irrigation include about 12,500 acres of which 3,500 acres are in Norwegian Creek drainage. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the season.

## 06035000 WILLOW CREEK NEAR HARRISON, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND  
CALENDAR YEAR JANUARY TO DECEMBER 2007  
DAILY MEAN VALUES**

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			33	39	41	15	4.8					
2			40	39	44	13	4.9					
3			35	37	52	15	8.2					
4			35	38	49	19	9.8					
5			25	38	39	30	9.0					
6			27	35	36	79	7.3					
7			26	34	32	104	5.0					
8			24	33	32	60	5.8					
9			22	34	31	52	5.1					
10			23	34	40	53	5.5					
11			26	33	43	66	4.9					
12			35	33	47	67	4.3					
13			39	25	54	63	4.0					
14			30	26	59	63	4.2					
15			25	27	46	62	4.1					
16			23	28	35	61	3.8					
17			24	26	27	64	4.0					
18			27	41	25	57	4.0					
19			28	49	24	47	3.5					
20			28	43	26	38	3.3					
21			26	36	40	34	4.0					
22			26	34	33	29	3.5					
23			25	36	28	28	2.3					
24			25	37	20	25	2.2					
25			26	36	25	21	2.5					
26			28	43	19	16	2.5					
27			40	42	16	13	2.3					
28			47	42	20	11	2.0					
29			38	44	24	8.8	1.7					
30			37	45	19	6.1	1.5					
31			39	---	17	---	1.5					
<b>Total</b>			932	1,087	1,043	1,219.9	131.5					
<b>Mean</b>			30.1	36.2	33.6	40.7	4.24					
<b>Max</b>			47	49	59	104	9.8					
<b>Min</b>			22	25	16	6.1	1.5					
<b>Ac-ft</b>			1,850	2,160	2,070	2,420	261					

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 – 1982 AND SEASONS 1983 – 2007\***

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>	24.7	27.4	31.1	40.9	61.5	110	58.7	12.3	18.9	29.1	33.7	29.9
<b>Max</b>	43.6	60.9	44.7	72.5	167	300	278	61.0	62.4	80.1	56.5	47.4
<b>(WY)</b>	(1976)	(1963)	(1974)	(1996)	(1984)	(1995)	(1975)	(1993)	(1965)	(1983)	(1947)	(1948)
<b>Min</b>	10.0	12.0	18.0	11.1	11.1	10.1	1.52	1.12	2.01	2.01	9.40	11.5
<b>(WY)</b>	(1940)	(1940)	(1940)	(1961)	(2002)	(1966)	(1988)	(1988)	(1956)	(1989)	(1955)	(1955)

\* During periods of operation (water years April 1938 to September 1982; seasonal records only October 1982 to October 2002, March 2004 to current year).

06035000 WILLOW CREEK NEAR HARRISON, MT—Continued

SUMMARY STATISTICS

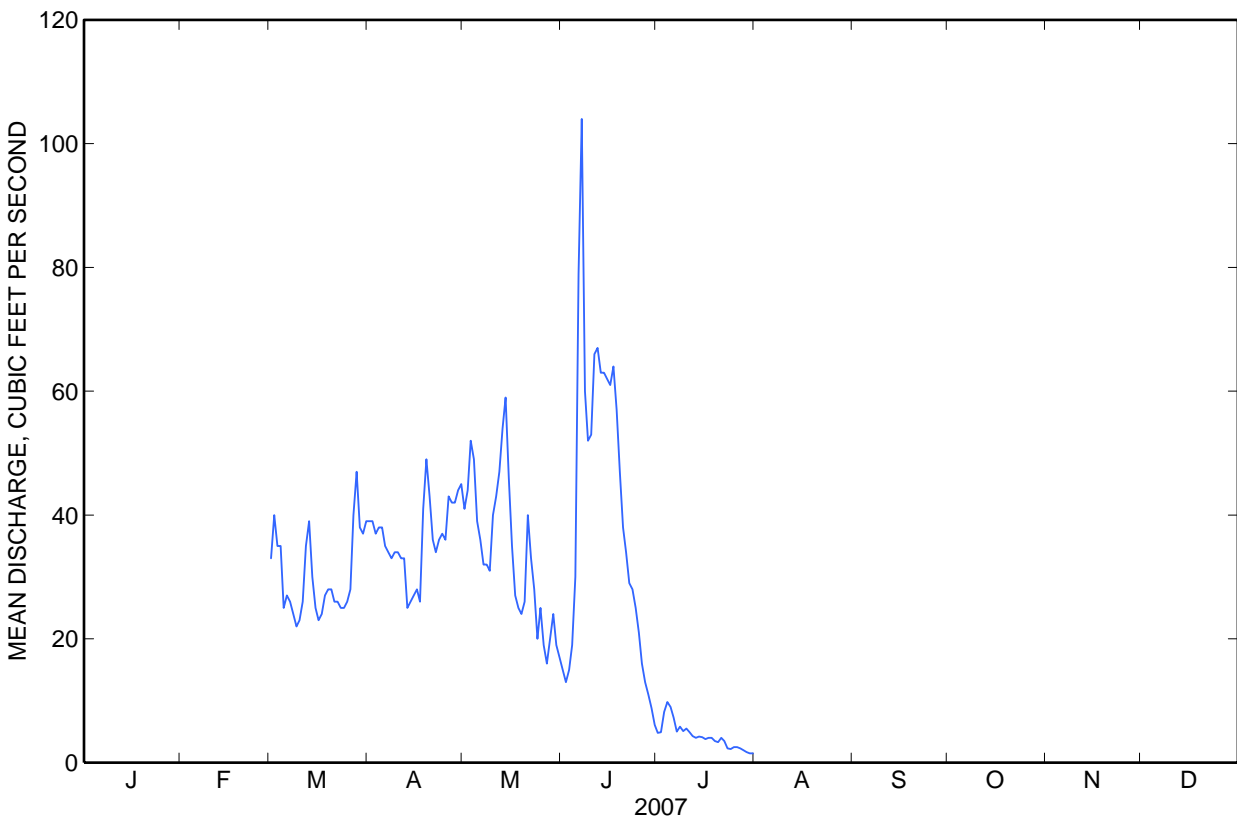
	2007 Season		Water Years 1938 - 1982*		Seasons 1983 - 2007*	
Annual mean			40.7			
Highest annual mean			76.0	1975		
Lowest annual mean			19.2	1954		
Highest daily mean	104	Jun 7	591	Jun 27, 1944	423	Jun 6, 1995
Lowest daily mean	1.5	Jul 30	1.6	Sep 16, 1952	0.59	Jul 23, 1988
Maximum peak flow	139	Jun 6	813	Feb 3, 1963	448	Jun 6, 1995
Maximum peak stage	1.5	Jun 30	4.24	Feb 3, 1963	3.38	Jun 6, 1995
Instantaneous low flow	<sup>a</sup> 0.82	Jul 31	<sup>b</sup> 1.4	Sep 17, 1956	<sup>c</sup> 0.32	Jul 21, 1988
Annual runoff (ac-ft)			29,480			
10 percent exceeds			79			
50 percent exceeds			30			
90 percent exceeds			6.9			

\* During periods of operation (water years April 1938 to September 1982; seasonal records only October 1982 to October 2002, March 2004 to current year).

<sup>a</sup> Gage height, 0.32 ft.

<sup>b</sup> Gage height, 0.39 ft.

<sup>c</sup> Gage height, 0.26 ft.



**06035000 WILLOW CREEK NEAR HARRISON, MT—Continued****WATER-QUALITY RECORDS**

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (seasonal records): April 2002 to September 2002, March 2004 to current year.

INSTRUMENTATION.--Temperature probe installed Apr. 23, 2002.

REMARKS.--Daily water temperature record is rated good for the season. Several unpublished observations of water temperature and specific conductance were made during the year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE (seasonal records): Maximum, 29.5°C, July 13 and 14, 2002 and July 6 and 18, 2007; minimum, 0.0°C Oct. 24-27, 2002 and many days in March most years.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: During period of seasonal operation, maximum, 29.5°C, July 6 and 18; minimum, 0.0°C, many days in March.

**TEMPERATURE, WATER, DEGREES CELSIUS  
SEASON MARCH 2007 TO JULY 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	March			April			May		
<b>1</b>	0.5	0.0	0.0	9.0	3.5	6.0	16.0	7.0	11.5
<b>2</b>	0.5	0.0	0.0	8.0	2.0	4.5	14.0	9.0	11.5
<b>3</b>	0.5	0.0	0.0	9.5	1.5	5.0	11.0	5.5	8.5
<b>4</b>	1.0	0.0	0.5	7.5	2.0	4.5	10.0	3.5	6.5
<b>5</b>	3.5	0.0	1.5	6.5	3.0	4.5	11.0	4.5	7.5
<b>6</b>	5.0	1.0	2.5	5.0	2.5	3.5	14.0	4.5	8.5
<b>7</b>	5.0	1.0	2.5	8.0	1.5	4.0	15.5	5.5	10.5
<b>8</b>	5.5	2.0	3.0	11.0	0.5	5.5	17.5	7.5	12.0
<b>9</b>	5.5	1.5	3.0	9.0	4.5	6.0	16.0	8.5	12.0
<b>10</b>	6.5	1.5	3.5	7.0	2.0	4.0	14.5	9.5	12.0
<b>11</b>	5.5	2.5	3.5	7.5	1.0	4.0	16.5	7.5	12.0
<b>12</b>	8.5	3.0	5.0	8.0	1.0	4.5	16.5	9.0	12.5
<b>13</b>	8.0	3.5	5.0	11.5	0.5	6.0	14.0	8.5	11.0
<b>14</b>	8.0	3.0	4.5	12.0	3.5	7.5	13.0	6.5	9.5
<b>15</b>	7.0	0.5	3.5	9.5	5.0	7.0	15.0	5.5	10.0
<b>16</b>	6.5	3.0	4.5	14.5	5.5	9.5	16.5	7.0	12.0
<b>17</b>	11.0	2.5	6.0	11.0	5.5	8.5	18.5	8.5	13.0
<b>18</b>	10.0	4.0	6.5	8.0	3.5	5.5	19.0	9.5	14.0
<b>19</b>	10.5	2.5	6.0	7.0	2.5	4.5	16.5	9.0	13.0
<b>20</b>	9.0	4.5	6.0	10.0	1.5	5.5	13.5	9.5	11.5
<b>21</b>	9.5	2.0	5.5	11.0	3.5	7.0	12.0	7.5	9.5
<b>22</b>	8.5	2.0	5.0	11.5	4.0	7.5	7.5	5.0	6.5
<b>23</b>	11.5	4.5	7.5	9.5	6.5	8.0	13.5	4.5	8.5
<b>24</b>	11.5	2.5	7.0	14.0	4.0	8.5	13.5	5.0	9.0
<b>25</b>	9.5	5.0	7.0	14.5	5.5	9.5	13.5	6.5	10.0
<b>26</b>	10.5	3.5	6.5	13.5	7.0	10.0	19.0	6.0	12.0
<b>27</b>	7.0	3.0	4.5	12.0	6.5	9.0	19.5	9.5	13.5
<b>28</b>	5.0	1.0	2.5	15.0	6.5	11.0	13.0	7.5	9.5
<b>29</b>	5.5	0.0	2.0	15.5	8.0	11.5	14.0	6.0	9.5
<b>30</b>	8.5	0.0	3.5	15.0	9.0	12.0	19.0	6.5	12.0
<b>31</b>	7.5	2.5	5.0	---	---	---	17.5	8.0	13.0
<b>Month</b>	11.5	0.0	4.0	15.5	0.5	7.0	19.5	3.5	10.5

## Water-Data Report 2007

## 06035000 WILLOW CREEK NEAR HARRISON, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**SEASON MARCH 2007 TO JULY 2007**

Day	Max	Min	Mean	Max	Min	Mean
	<b>June</b>			<b>July</b>		
<b>1</b>	22.0	9.0	15.0	27.0	13.0	20.0
<b>2</b>	22.5	10.0	16.0	26.0	13.5	19.5
<b>3</b>	22.5	10.5	16.0	27.0	13.0	19.5
<b>4</b>	21.5	11.0	16.0	27.0	13.5	20.0
<b>5</b>	15.5	11.5	13.0	28.0	14.5	21.0
<b>6</b>	12.0	7.0	9.0	29.5	15.0	21.5
<b>7</b>	11.5	6.5	8.5	24.0	16.0	19.0
<b>8</b>	14.5	7.0	10.5	27.5	13.0	19.5
<b>9</b>	17.0	8.5	12.5	27.0	13.5	20.0
<b>10</b>	13.5	11.0	12.0	26.5	13.5	19.5
<b>11</b>	17.0	9.5	12.5	27.5	12.5	19.5
<b>12</b>	17.5	9.0	13.0	27.5	13.5	20.5
<b>13</b>	16.5	9.5	13.0	28.0	15.5	21.5
<b>14</b>	16.0	11.0	13.0	27.5	17.0	21.0
<b>15</b>	17.5	9.5	13.5	28.0	14.0	20.5
<b>16</b>	18.5	10.0	14.0	27.0	14.5	20.5
<b>17</b>	16.0	11.5	13.5	26.5	17.0	21.5
<b>18</b>	15.5	9.5	12.5	29.5	16.5	22.5
<b>19</b>	18.5	8.5	13.5	26.5	16.5	21.5
<b>20</b>	19.5	10.5	14.5	27.5	14.0	20.5
<b>21</b>	21.5	10.5	15.5	28.0	14.5	20.5
<b>22</b>	22.5	11.5	17.0	28.5	14.5	21.5
<b>23</b>	20.5	12.0	16.0	28.5	15.5	22.0
<b>24</b>	22.0	11.5	16.5	22.5	18.0	20.0
<b>25</b>	19.5	11.0	15.0	28.0	16.0	21.0
<b>26</b>	20.5	8.0	14.0	26.0	16.5	21.0
<b>27</b>	22.5	10.0	16.0	28.5	16.5	21.5
<b>28</b>	24.0	11.5	17.5	29.0	14.5	21.0
<b>29</b>	24.0	12.5	17.5	27.5	16.0	21.5
<b>30</b>	25.5	12.5	18.5	26.0	15.0	20.5
<b>31</b>	---	---	---	28.0	15.5	21.0
<b>Month</b>	25.5	6.5	14.0	29.5	12.5	20.5

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Water-Data Report 2007

**06036650 JEFFERSON RIVER NEAR THREE FORKS, MT**

Missouri Headwaters Basin  
Jefferson Subbasin

LOCATION.--Lat 45°53'52", long 111°35'45" referenced to North American Datum of 1927, in SW ¼ SW ¼ NW ¼ sec.27, T.2 N., R.1 E., Broadwater County, MT, Hydrologic Unit 10020005, on left bank 50 ft downstream from bridge on U.S. Highway 10, 2.5 mi northwest of Three Forks, and at river mile 2,329.3.

DRAINAGE AREA.--9,532 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1978 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,076.76 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Some regulation occurs by Ruby River Reservoir (station number 06020500) and Clark Canyon Reservoir (station number 06015300). Diversions for irrigation of about 390,000 acres occurs upstream from station. U.S. Army Corps of Engineers satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06036650 JEFFERSON RIVER NEAR THREE FORKS, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	752	1,270	e850	e700	e750	e950	1,660	1,920	2,440	696	156	138
2	745	1,220	e850	e900	e700	e850	1,660	2,270	2,140	681	145	140
3	747	1,180	e900	e1,000	e700	e850	1,610	2,620	1,990	640	143	145
4	740	1,280	e1,000	e1,000	e800	e950	1,580	3,270	1,920	618	145	144
5	784	1,380	e1,100	e900	e950	e1,000	1,500	3,720	1,970	582	153	141
6	831	1,400	e1,300	e800	e1,000	e1,100	1,420	3,550	2,370	493	160	174
7	958	1,400	e1,350	e750	e1,000	1,150	1,400	3,200	3,490	364	164	181
8	1,270	1,410	e1,400	e800	e1,000	1,240	1,420	2,730	4,230	321	174	205
9	1,380	1,680	e1,450	e1,000	e1,000	1,300	1,470	2,390	4,600	309	173	211
10	1,370	2,020	e1,450	e950	e1,000	1,280	1,510	2,220	4,640	318	170	199
11	1,360	1,920	e1,450	e800	e1,000	1,270	1,560	2,270	3,920	304	163	230
12	1,310	1,760	e1,500	e600	e950	1,290	1,540	2,450	3,770	286	164	249
13	1,260	1,640	e1,600	e480	e950	1,360	1,450	2,650	3,810	265	159	249
14	1,230	1,550	e1,600	e500	e1,000	1,510	1,360	2,900	3,500	245	152	256
15	1,210	1,520	e1,600	e600	e1,100	1,890	1,310	3,020	3,030	230	144	266
16	1,320	1,500	e1,400	e650	e1,200	2,010	1,290	2,830	2,660	229	141	277
17	1,480	1,430	e1,100	e750	e1,200	2,160	1,330	2,600	2,390	239	140	301
18	1,480	1,490	e800	e750	e1,200	2,350	1,390	2,440	2,200	238	142	321
19	1,440	1,430	e650	e750	e1,200	2,550	1,510	2,370	2,020	216	146	346
20	1,430	1,400	e750	e750	e1,200	2,850	1,620	2,400	1,760	225	142	386
21	1,430	1,370	e800	e800	e1,200	3,050	1,600	2,540	1,540	227	154	439
22	1,460	1,450	e900	e850	e1,200	2,480	1,530	2,800	1,430	215	164	491
23	1,450	1,490	e850	e850	e1,200	2,110	1,530	3,250	1,330	196	168	530
24	1,460	1,420	e850	e850	e1,100	1,930	1,550	3,350	1,220	187	168	e600
25	1,440	1,330	e850	e850	e1,100	1,830	1,540	3,470	1,140	181	173	e700
26	1,410	1,320	e1,000	e900	e1,100	1,840	1,500	3,380	1,060	188	167	778
27	1,390	e1,100	e1,000	e900	e1,000	1,960	1,500	3,060	944	190	164	798
28	1,360	e700	e1,000	e850	e1,000	2,070	1,540	2,830	856	184	154	792
29	1,340	e400	e900	e800	---	2,080	1,510	3,030	801	176	149	810
30	1,350	e700	e800	e800	---	1,900	1,630	3,160	729	172	144	850
31	1,300	---	e700	e800	---	1,730	---	2,810	---	168	136	---
<b>Total</b>	38,487	41,160	33,750	24,680	28,800	52,890	45,020	87,500	69,900	9,583	4,817	11,347
<b>Mean</b>	1,242	1,372	1,089	796	1,029	1,706	1,501	2,823	2,330	309	155	378
<b>Max</b>	1,480	2,020	1,600	1,000	1,200	3,050	1,660	3,720	4,640	696	174	850
<b>Min</b>	740	400	650	480	700	850	1,290	1,920	729	168	136	138
<b>Ac-ft</b>	76,340	81,640	66,940	48,950	57,120	104,900	89,300	173,600	138,600	19,010	9,550	22,510

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,507	1,571	1,293	1,167	1,238	1,490	2,282	3,622	4,797	1,860	800	1,038
<b>Max</b>	3,163	2,805	1,993	1,929	1,964	2,295	4,444	7,679	11,420	5,505	3,030	3,303
<b>(WY)</b>	(1985)	(1984)	(1999)	(1983)	(1984)	(1996)	(1996)	(1997)	(1997)	(1995)	(1984)	(1984)
<b>Min</b>	698	1,039	805	553	728	824	954	990	988	309	59.1	262
<b>(WY)</b>	(2004)	(1989)	(1993)	(2004)	(2004)	(2002)	(2005)	(1992)	(1992)	(2007)	(1988)	(1994)

06036650 JEFFERSON RIVER NEAR THREE FORKS, MT—Continued

SUMMARY STATISTICS

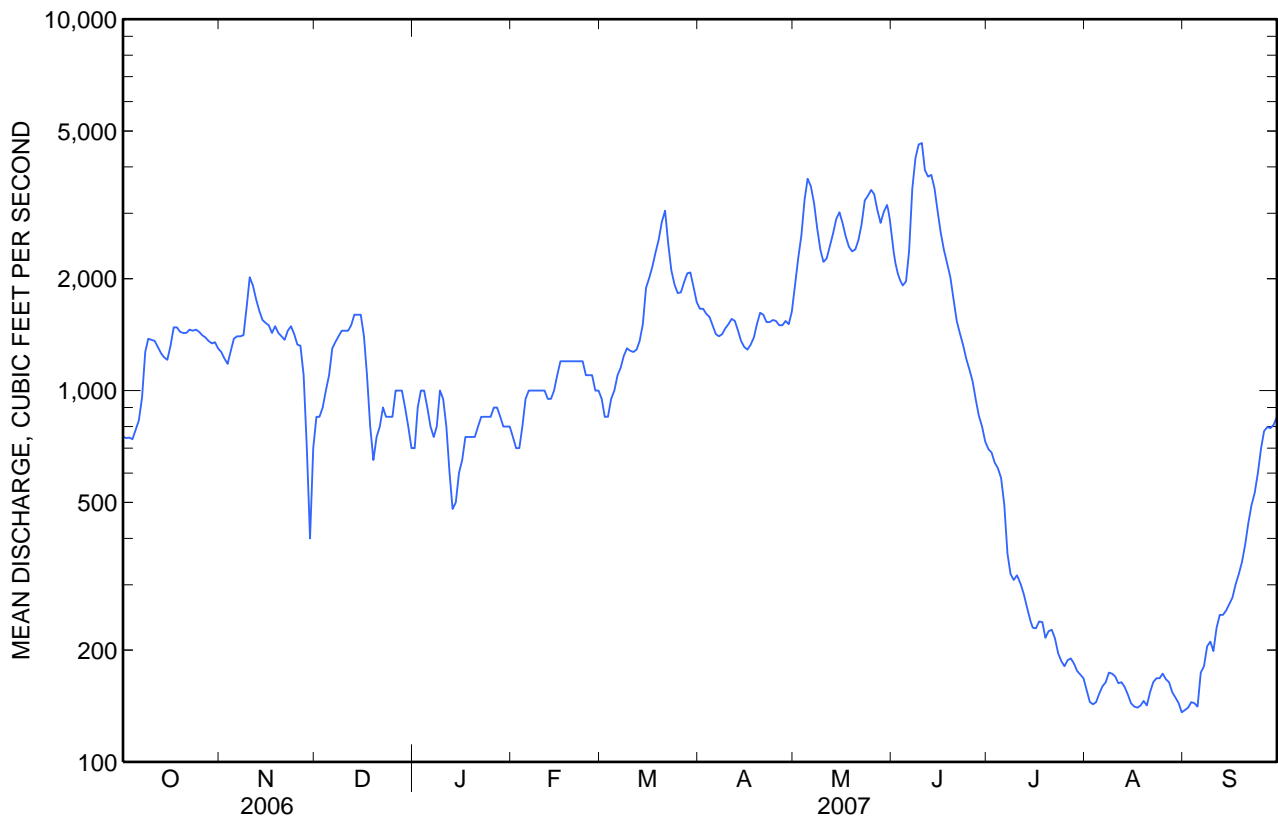
	Calendar Year 2006		Water Year 2007		Water Years 1978 - 2007	
<b>Annual total</b>	575,024		447,934			
<b>Annual mean</b>	1,575		1,227		1,888	
<b>Highest annual mean</b>					3,650	1984
<b>Lowest annual mean</b>					936	2004
<b>Highest daily mean</b>	8,370	Jun 12	4,640	Jun 10	16,800	Jun 9, 1995
<b>Lowest daily mean</b>	156	Aug 15	136	Aug 31	44	Aug 19, 1988
<b>Annual seven-day minimum</b>	162	Aug 10	141	Aug 30	48	Aug 19, 1988
<b>Maximum peak flow</b>			4,900	Jun 10	<sup>b</sup> 17,000	Jun 9, 1995
<b>Maximum peak stage</b>			5.68	Jun 10	<sup>c</sup> 9.88	Jan 3, 1997
<b>Instantaneous low flow</b>			<sup>a</sup> 129	Aug 18	<sup>d</sup> 43	Aug 19, 1988
<b>Annual runoff (ac-ft)</b>	1,141,000		888,500		1,368,000	
<b>10 percent exceeds</b>	3,500		2,460		3,620	
<b>50 percent exceeds</b>	1,100		1,100		1,390	
<b>90 percent exceeds</b>	214		173		550	

<sup>a</sup> Gage height, 1.67 ft.

<sup>b</sup> Gage height, 9.00 ft.

<sup>c</sup> Backwater from ice.

<sup>d</sup> Gage height, 1.31 ft.





Water-Data Report 2007

**06036805 FIREHOLE RIVER AT OLD FAITHFUL, YELLOWSTONE NATIONAL PARK**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°27'35", long 110°49'18" referenced to North American Datum of 1927, Park County, WY, Hydrologic Unit 10020007, Yellowstone National Park, at Old Faithful, on left bank 10 ft downstream from East Fork, 0.9 mi upstream from Myriad Creek, and at river mile 17.3.

DRAINAGE AREA.--91.4 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 2006 to September 2007.

GAGE.--Water-stage recorder. Elevation at gage is 7,350 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except for estimated daily discharges, which are poor. No regulation or diversions are upstream from the station. U.S. Geological Survey satellite telemeter is located at the station.

## 06036805 FIREHOLE RIVER AT OLD FAITHFUL, YELLOWSTONE NATIONAL PARK—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49	45	46	44	40	41	44	120	65	41	39	38
2	51	46	46	44	40	41	45	123	66	40	39	37
3	68	48	46	45	41	40	43	128	68	40	40	36
4	53	48	46	45	40	40	43	92	64	40	42	37
5	56	48	46	44	41	41	46	81	66	40	40	40
6	55	55	46	42	42	41	47	71	71	40	41	39
7	67	64	45	45	42	42	47	74	78	40	39	38
8	60	81	45	45	42	42	48	88	69	40	38	37
9	55	68	45	44	42	41	50	103	60	39	38	37
10	53	55	45	45	42	41	47	117	56	39	38	37
11	52	51	45	44	43	40	44	129	55	39	37	37
12	51	51	45	e40	42	42	43	137	53	39	37	36
13	50	51	45	43	43	47	42	139	52	40	37	36
14	50	48	45	43	42	47	44	138	51	41	37	37
15	50	48	47	43	42	44	46	127	50	40	37	37
16	63	52	45	43	41	42	49	126	49	39	36	36
17	55	51	42	44	41	43	57	132	48	39	40	36
18	51	51	42	42	42	45	61	137	47	39	40	37
19	51	49	44	44	42	46	54	143	46	38	42	37
20	54	49	46	43	41	47	50	139	45	38	40	37
21	51	49	47	42	41	45	49	160	45	38	39	36
22	50	48	49	42	41	43	47	111	44	37	38	38
23	50	48	47	42	42	43	53	84	43	38	39	47
24	50	46	46	42	41	43	54	76	43	38	38	44
25	50	47	45	42	42	45	58	75	43	41	37	40
26	48	47	46	42	42	46	63	78	42	43	37	39
27	48	48	46	41	42	49	66	80	42	41	37	38
28	48	46	45	41	42	46	81	83	42	41	37	38
29	49	44	44	41	---	42	101	78	41	40	36	38
30	48	46	44	41	---	41	116	68	41	39	36	37
31	46	---	44	41	---	41	---	66	---	39	37	---
<b>Total</b>	1,632	1,528	1,405	1,329	1,164	1,337	1,638	3,303	1,585	1,226	1,188	1,137
<b>Mean</b>	52.6	50.9	45.3	42.9	41.6	43.1	54.6	107	52.8	39.5	38.3	37.9
<b>Max</b>	68	81	49	45	43	49	116	160	78	43	42	47
<b>Min</b>	46	44	42	40	40	40	42	66	41	37	36	36
<b>Ac-ft</b>	3,240	3,030	2,790	2,640	2,310	2,650	3,250	6,550	3,140	2,430	2,360	2,260

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2007 - 2007, BY WATER YEAR (WY)**

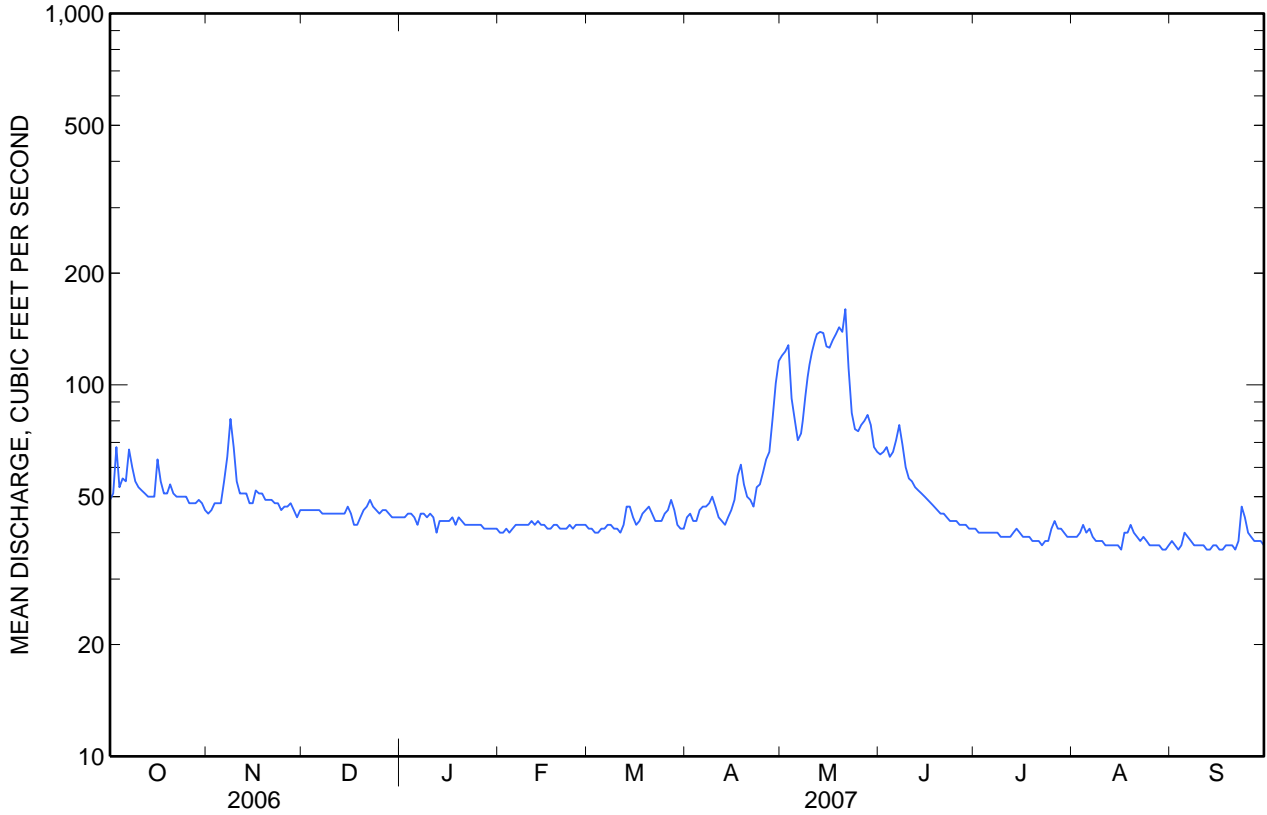
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	52.6	50.9	45.3	42.9	41.6	43.1	54.6	107	52.8	39.5	38.3	37.9
<b>Max</b>	52.6	50.9	45.3	42.9	41.6	43.1	54.6	107	52.8	39.5	38.3	37.9
<b>(WY)</b>	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)
<b>Min</b>	52.6	50.9	45.3	42.9	41.6	43.1	54.6	107	52.8	39.5	38.3	37.9
<b>(WY)</b>	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)	(2007)

06036805 FIREHOLE RIVER AT OLD FAITHFUL, YELLOWSTONE NATIONAL PARK—Continued

SUMMARY STATISTICS

	Water Year 2007	
<b>Annual total</b>	18,472	
<b>Annual mean</b>	50.6	
<b>Highest daily mean</b>	160	May 21
<b>Lowest daily mean</b>	36	Aug 16
<b>Annual seven-day minimum</b>	36	Sep 11
<b>Maximum peak flow</b>	184	May 21
<b>Maximum peak stage</b>	3.19	May 21
<b>Instantaneous low flow</b>	<sup>a</sup> 31	Feb 2
<b>Annual runoff (ac-ft)</b>	36,640	
<b>10 percent exceeds</b>	68	
<b>50 percent exceeds</b>	44	
<b>90 percent exceeds</b>	38	

<sup>a</sup> Gage height, 2.32 ft, result of freezeup.



**06036805 FIREHOLE RIVER AT OLD FAITHFUL, YELLOWSTONE NATIONAL PARK—Continued****WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 2006 to September 2007.

INSTRUMENTATION.--Temperature probe installed September 26, 2006.

REMARKS.--Daily water temperature record is rated excellent. Several unpublished observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 23.5°C, July 19, 2007; minimum, 0.0°C, many days November 2006 through March, 2007.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 23.5°C, July 19; minimum, 0.0°C, many days November through March.

**TEMPERATURE, WATER, DEGREES CELSIUS  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	12.0	6.5	9.5	3.5	0.5	2.0	1.5	1.0	1.5	3.5	1.5	2.5
2	9.5	6.5	8.5	5.5	1.0	3.0	1.5	0.5	1.0	4.5	2.5	3.5
3	11.0	8.0	9.0	7.0	4.5	6.0	2.5	1.0	2.0	4.0	2.0	3.5
4	10.5	6.5	8.5	7.0	6.0	6.5	3.5	1.0	2.5	3.5	1.5	2.5
5	11.5	8.0	10.0	6.5	5.5	6.0	4.0	2.0	3.0	2.0	1.0	1.5
6	11.0	9.0	10.0	7.5	6.0	7.0	4.5	1.5	3.0	1.5	0.5	1.0
7	10.5	8.0	9.0	8.0	6.5	7.0	4.5	3.0	4.0	1.0	0.0	1.0
8	9.0	6.5	7.5	7.0	3.5	5.5	4.5	1.5	3.0	4.0	1.0	2.0
9	8.0	6.0	7.0	5.0	3.5	4.0	4.0	2.0	3.5	5.5	3.5	4.5
10	9.0	4.5	7.0	4.5	3.0	4.0	5.0	3.0	4.0	5.0	2.5	4.0
11	10.0	7.0	8.5	4.0	3.5	3.5	5.5	4.0	5.0	2.5	0.0	1.0
12	9.5	5.5	7.5	4.0	1.5	3.0	4.5	3.5	4.0	0.5	0.0	0.0
13	10.0	5.5	8.0	3.0	2.0	2.5	4.0	2.5	3.5	1.0	0.0	0.5
14	10.0	6.0	8.0	4.5	2.5	3.5	5.5	3.0	4.5	1.5	0.0	0.5
15	9.5	6.0	7.5	4.5	2.5	3.5	5.0	0.0	3.0	1.5	0.5	0.5
16	8.5	6.0	7.5	5.0	3.5	4.0	1.5	0.0	0.5	1.5	0.5	1.0
17	6.5	4.5	5.5	6.0	3.5	4.5	0.5	0.0	0.0	2.0	0.5	1.0
18	6.0	3.0	4.5	5.5	4.0	4.5	1.0	0.0	0.5	1.5	0.5	1.0
19	7.5	4.5	6.0	5.5	2.0	4.0	1.5	0.5	1.0	2.0	1.0	1.5
20	7.0	5.0	6.0	6.0	4.0	5.5	1.5	0.5	1.0	4.0	1.0	2.5
21	5.5	3.5	4.5	6.5	5.5	6.0	1.5	0.5	1.0	3.0	1.5	2.5
22	6.0	2.0	4.5	6.0	4.5	5.0	3.5	1.0	2.0	4.0	1.0	2.5
23	7.0	3.0	5.0	5.0	1.5	4.0	4.0	1.5	2.5	4.5	2.5	3.5
24	7.5	3.5	5.5	3.5	1.5	2.5	3.0	2.0	2.5	4.5	2.5	4.0
25	6.0	4.0	5.5	4.0	2.5	3.0	5.0	1.5	3.5	4.5	1.5	3.5
26	5.5	2.0	4.0	4.5	2.5	3.5	4.5	3.5	4.0	4.0	1.5	3.0
27	6.5	3.5	5.0	3.5	1.5	2.5	6.0	4.0	5.0	3.0	0.5	2.0
28	7.0	3.5	5.5	2.5	1.0	1.5	5.0	3.0	4.5	2.5	0.5	1.5
29	7.0	4.0	5.5	1.0	0.0	0.5	3.0	1.5	2.5	3.5	0.5	2.0
30	5.0	2.5	4.0	1.5	0.5	1.0	2.5	0.5	1.5	3.5	0.5	2.0
31	4.0	1.0	2.5	---	---	---	3.5	0.5	2.0	3.5	1.0	2.0
Month	12.0	1.0	6.5	8.0	0.0	4.0	6.0	0.0	2.5	5.5	0.0	2.0

## 06036805 FIREHOLE RIVER AT OLD FAITHFUL, YELLOWSTONE NATIONAL PARK—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	2.5	0.0	1.0	4.0	1.5	2.5	8.0	5.0	6.5	12.5	4.5	8.0
<b>2</b>	1.0	0.0	0.5	3.5	0.0	2.0	6.0	2.5	4.0	12.5	5.0	8.5
<b>3</b>	2.0	1.0	1.5	3.5	0.0	1.5	9.0	2.5	5.5	8.0	5.0	6.0
<b>4</b>	5.0	1.5	3.5	7.0	3.5	5.0	10.0	4.5	7.5	10.5	3.5	6.5
<b>5</b>	6.5	5.0	5.5	7.5	2.5	5.0	13.0	6.5	9.5	7.5	4.5	6.0
<b>6</b>	8.0	5.5	6.5	9.0	5.5	7.5	13.0	6.0	9.0	13.0	4.5	8.5
<b>7</b>	7.0	4.5	6.0	8.5	3.5	6.5	12.5	5.0	8.5	14.0	5.0	9.5
<b>8</b>	7.5	5.0	6.0	7.5	4.5	6.0	12.0	6.0	9.0	14.0	5.5	9.5
<b>9</b>	6.5	4.5	5.5	7.5	4.5	6.0	9.5	5.0	7.0	14.0	5.0	9.0
<b>10</b>	7.0	4.5	6.0	9.0	5.5	7.0	8.5	3.5	5.5	13.5	5.0	9.0
<b>11</b>	7.5	5.5	6.5	8.0	6.0	7.0	8.0	3.5	6.0	13.5	5.0	9.0
<b>12</b>	6.5	4.5	5.5	10.5	5.5	8.0	9.0	3.0	6.0	13.0	5.0	9.0
<b>13</b>	6.0	4.0	5.0	10.0	6.5	8.0	11.0	3.0	7.0	13.0	4.5	8.5
<b>14</b>	5.0	2.5	4.0	9.0	5.5	7.0	12.5	4.5	8.5	12.0	4.5	8.0
<b>15</b>	5.5	3.5	4.5	8.0	4.0	6.0	10.0	5.5	8.0	12.5	4.0	8.0
<b>16</b>	5.5	2.5	4.0	8.5	5.0	6.5	14.0	6.5	9.5	13.0	4.5	8.5
<b>17</b>	5.0	1.5	3.5	11.0	5.0	8.0	12.0	5.0	8.5	13.0	4.5	8.5
<b>18</b>	5.5	2.5	4.0	10.0	5.0	8.0	9.0	6.0	7.5	13.5	5.0	9.0
<b>19</b>	6.0	3.0	4.5	10.5	5.0	8.0	8.0	5.0	6.0	12.5	5.0	8.5
<b>20</b>	4.5	2.0	3.0	8.5	5.0	7.0	9.5	2.5	6.0	12.0	5.0	8.5
<b>21</b>	4.0	1.5	3.0	10.0	6.0	7.5	11.5	5.0	8.0	9.5	6.0	7.5
<b>22</b>	7.5	3.5	5.5	9.5	4.5	7.0	10.0	5.5	8.0	6.0	4.0	5.0
<b>23</b>	6.5	3.5	5.0	9.5	5.5	7.5	9.0	4.5	7.0	9.5	4.5	6.5
<b>24</b>	4.5	1.5	3.0	11.0	4.0	7.5	14.0	5.5	9.5	10.5	5.5	8.0
<b>25</b>	5.5	2.0	4.0	9.5	5.0	7.5	13.0	6.0	9.5	14.0	7.0	10.0
<b>26</b>	4.5	1.5	3.0	12.0	6.0	8.5	12.5	6.5	9.0	15.0	7.0	11.0
<b>27</b>	4.0	1.0	2.5	9.0	6.5	7.5	13.5	5.5	9.5	16.0	9.0	12.5
<b>28</b>	5.5	1.5	3.5	6.5	4.0	5.5	14.0	5.5	9.5	15.0	9.5	12.0
<b>29</b>	---	---	---	8.0	2.0	5.0	12.5	5.0	8.5	11.5	7.0	9.5
<b>30</b>	---	---	---	9.0	3.5	6.0	13.0	4.5	8.5	12.5	6.5	9.0
<b>31</b>	---	---	---	9.5	4.5	7.0	---	---	---	14.5	7.0	10.5
<b>Month</b>	8.0	0.0	4.0	12.0	0.0	6.5	14.0	2.5	7.5	16.0	3.5	8.5

**06036805 FIREHOLE RIVER AT OLD FAITHFUL, YELLOWSTONE NATIONAL PARK—Continued**

**TEMPERATURE, WATER, DEGREES CELSIUS  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>
	<b>June</b>			<b>July</b>			<b>August</b>			<b>September</b>		
<b>1</b>	16.0	8.5	12.5	21.5	12.0	17.0	19.5	13.5	16.5	19.0	12.5	16.0
<b>2</b>	16.5	9.0	12.5	21.5	12.5	17.0	18.0	13.5	16.0	19.0	11.5	15.5
<b>3</b>	16.5	9.0	13.0	20.5	12.0	16.5	21.0	14.5	17.0	19.5	12.5	16.0
<b>4</b>	17.0	10.5	14.0	20.0	13.0	17.0	20.0	12.5	16.0	16.0	11.5	14.5
<b>5</b>	16.5	11.5	14.0	22.5	14.0	18.0	18.0	12.5	15.5	15.5	13.0	14.5
<b>6</b>	14.0	7.5	11.0	23.0	14.0	18.5	20.5	12.5	16.5	14.5	11.5	13.0
<b>7</b>	11.5	6.0	8.5	22.5	15.0	18.5	20.5	13.0	16.5	16.5	10.0	13.5
<b>8</b>	12.5	7.5	10.0	21.0	14.0	17.5	19.5	12.0	16.0	15.5	9.5	12.5
<b>9</b>	16.5	7.5	12.0	22.0	13.5	17.5	19.0	11.5	15.5	12.5	9.5	10.5
<b>10</b>	16.0	10.0	13.0	21.5	13.5	17.5	19.5	12.0	15.5	14.5	6.5	10.5
<b>11</b>	17.5	11.5	14.5	22.0	12.5	17.5	19.5	11.5	15.5	15.5	8.0	12.0
<b>12</b>	18.5	11.0	14.5	21.5	14.0	18.0	20.0	12.0	16.0	15.5	8.5	12.5
<b>13</b>	18.0	10.0	14.0	21.0	15.0	18.0	20.0	13.0	16.5	14.5	8.5	12.0
<b>14</b>	17.5	11.0	14.5	20.5	14.0	17.5	19.5	13.0	16.0	14.5	8.0	11.5
<b>15</b>	19.0	10.5	15.0	21.0	13.5	17.0	20.0	12.5	16.5	15.5	9.0	12.5
<b>16</b>	17.0	11.0	14.5	20.5	14.0	17.5	19.0	12.0	16.0	14.5	8.0	11.5
<b>17</b>	18.0	11.5	14.5	20.0	15.0	17.5	17.5	14.5	16.0	14.5	8.5	11.5
<b>18</b>	15.0	9.0	12.5	22.5	13.5	18.0	16.0	12.5	14.5	13.0	10.0	11.5
<b>19</b>	19.0	9.0	14.0	23.5	15.5	19.0	16.0	11.0	14.0	13.0	8.5	11.0
<b>20</b>	20.5	11.0	16.0	22.5	13.5	18.0	17.0	11.0	13.5	14.5	9.0	12.0
<b>21</b>	20.0	12.5	16.5	22.0	13.5	17.5	18.0	12.5	15.0	14.5	8.5	11.5
<b>22</b>	21.0	12.0	16.5	22.0	13.0	17.5	15.5	11.0	13.5	13.5	8.0	11.5
<b>23</b>	19.5	12.0	16.0	19.5	14.0	17.0	14.0	10.0	12.5	12.0	9.5	11.0
<b>24</b>	20.0	11.0	15.5	22.5	15.0	18.0	17.5	10.5	14.0	9.5	8.0	9.0
<b>25</b>	19.0	11.5	15.0	19.5	15.5	17.5	18.0	10.0	14.0	11.0	8.0	9.0
<b>26</b>	19.5	9.0	14.5	20.5	14.0	17.0	18.0	11.0	14.5	12.0	6.5	9.0
<b>27</b>	19.5	10.5	15.0	20.5	15.0	17.5	18.5	11.0	15.0	12.5	6.5	9.5
<b>28</b>	21.5	11.5	16.5	18.5	13.5	16.0	18.5	11.0	14.5	12.0	7.0	9.5
<b>29</b>	21.5	12.5	17.0	20.0	13.5	16.5	18.5	10.0	14.5	11.0	8.5	9.5
<b>30</b>	21.5	12.5	17.0	21.5	13.0	17.0	17.5	10.5	14.0	11.0	7.0	9.0
<b>31</b>	---	---	---	19.0	15.0	17.0	17.0	13.0	15.0	---	---	---
<b>Month</b>	21.5	6.0	14.0	23.5	12.0	17.5	21.0	10.0	15.0	19.5	6.5	12.0



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Water-Data Report 2007

**06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°37'13", long 110°51'44" referenced to North American Datum of 1927, Park County, WY, Hydrologic Unit 10020007, Yellowstone National Park, on right bank 1.6 mi south of Madison Junction, 12 mi east of West Yellowstone, and at river mile 1.8.

DRAINAGE AREA.--282 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1983 to March 1996, October 2002 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 7,050 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Discharge records are good. No regulation or diversions occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	269	262	281	280	264	274	290	584	280	235	240	230
2	276	265	279	279	258	267	302	568	278	233	240	221
3	340	279	278	280	268	264	289	587	288	234	252	219
4	290	282	280	283	265	268	290	440	279	235	245	220
5	297	284	281	287	269	269	304	413	288	233	237	238
6	294	292	278	271	277	275	303	369	306	231	239	239
7	337	316	280	273	278	280	303	362	325	230	229	231
8	320	363	281	277	278	287	305	398	300	233	224	227
9	304	361	281	291	278	277	325	435	284	232	223	226
10	293	302	282	293	277	280	313	450	274	228	222	226
11	286	298	281	294	285	275	293	457	269	226	219	226
12	281	289	282	269	280	287	284	452	263	226	218	224
13	280	294	290	279	282	332	280	444	259	238	217	224
14	280	290	290	275	278	337	287	430	260	242	218	224
15	279	285	308	273	275	301	303	402	261	235	217	225
16	320	294	294	276	266	288	298	390	259	231	217	225
17	301	292	280	278	275	291	330	385	260	230	244	226
18	282	289	277	271	278	311	347	384	258	229	244	233
19	287	282	280	276	279	313	327	387	255	225	239	231
20	295	285	282	280	273	319	306	379	247	223	233	229
21	286	290	280	275	280	311	308	419	244	221	231	225
22	281	286	289	272	284	298	298	376	242	221	227	231
23	280	286	283	273	286	293	341	341	241	223	227	262
24	282	273	284	273	275	290	337	321	240	226	228	262
25	286	280	282	274	278	301	325	309	239	243	222	241
26	271	285	291	274	280	314	337	306	239	279	219	236
27	278	291	297	271	279	330	341	304	243	287	220	236
28	276	287	290	268	276	319	371	303	242	246	219	237
29	278	276	283	269	---	283	453	300	237	242	218	241
30	275	278	280	269	---	283	563	289	237	236	218	236
31	264	---	280	271	---	282	---	285	---	240	223	---
<b>Total</b>	8,968	8,736	8,804	8,574	7,721	9,099	9,753	12,269	7,897	7,293	7,069	6,951
<b>Mean</b>	289	291	284	277	276	294	325	396	263	235	228	232
<b>Max</b>	340	363	308	294	286	337	563	587	325	287	252	262
<b>Min</b>	264	262	277	268	258	264	280	285	237	221	217	219
<b>Ac-ft</b>	17,790	17,330	17,460	17,010	15,310	18,050	19,350	24,340	15,660	14,470	14,020	13,790

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	277	274	267	263	261	270	329	482	412	288	267	268
<b>Max</b>	356	348	316	298	304	336	398	613	756	415	371	368
<b>(WY)</b>	(1984)	(1984)	(1984)	(1985)	(1986)	(1986)	(1986)	(1986)	(1986)	(1986)	(1986)	(1986)
<b>Min</b>	225	227	220	223	226	239	276	367	263	221	212	217
<b>(WY)</b>	(1989)	(1993)	(1993)	(1993)	(1993)	(1992)	(1993)	(1987)	(2007)	(1988)	(1994)	(1988)

\* During periods of operation (October 1983 to March 1996, October 2002 to current year).



06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1984 - 2007*	
<b>Annual total</b>	115,772		103,134			
<b>Annual mean</b>	317		283		304	
<b>Highest annual mean</b>					399	1986
<b>Lowest annual mean</b>					264	1988
<b>Highest daily mean</b>	794	May 19	587	May 3	1,240	May 31, 1986
<b>Lowest daily mean</b>	244	Feb 18	217	Aug 13	201	Dec 4, 1992
<b>Annual seven-day minimum</b>	248	Feb 16	218	Aug 10	205	Aug 15, 1994
<b>Maximum peak flow</b>			718	May 1	<sup>b</sup> 2,050	May 18, 1996
<b>Maximum peak stage</b>			4.15	May 1	<sup>c</sup> 6.10	May 18, 1996
<b>Instantaneous low flow</b>			<sup>a</sup> 208	Aug 12	<sup>d</sup> 190	Dec 4, 1992
<b>Annual runoff (ac-ft)</b>	229,600		204,600		220,400	
<b>10 percent exceeds</b>	445		334		413	
<b>50 percent exceeds</b>	280		279		272	
<b>90 percent exceeds</b>	258		226		235	

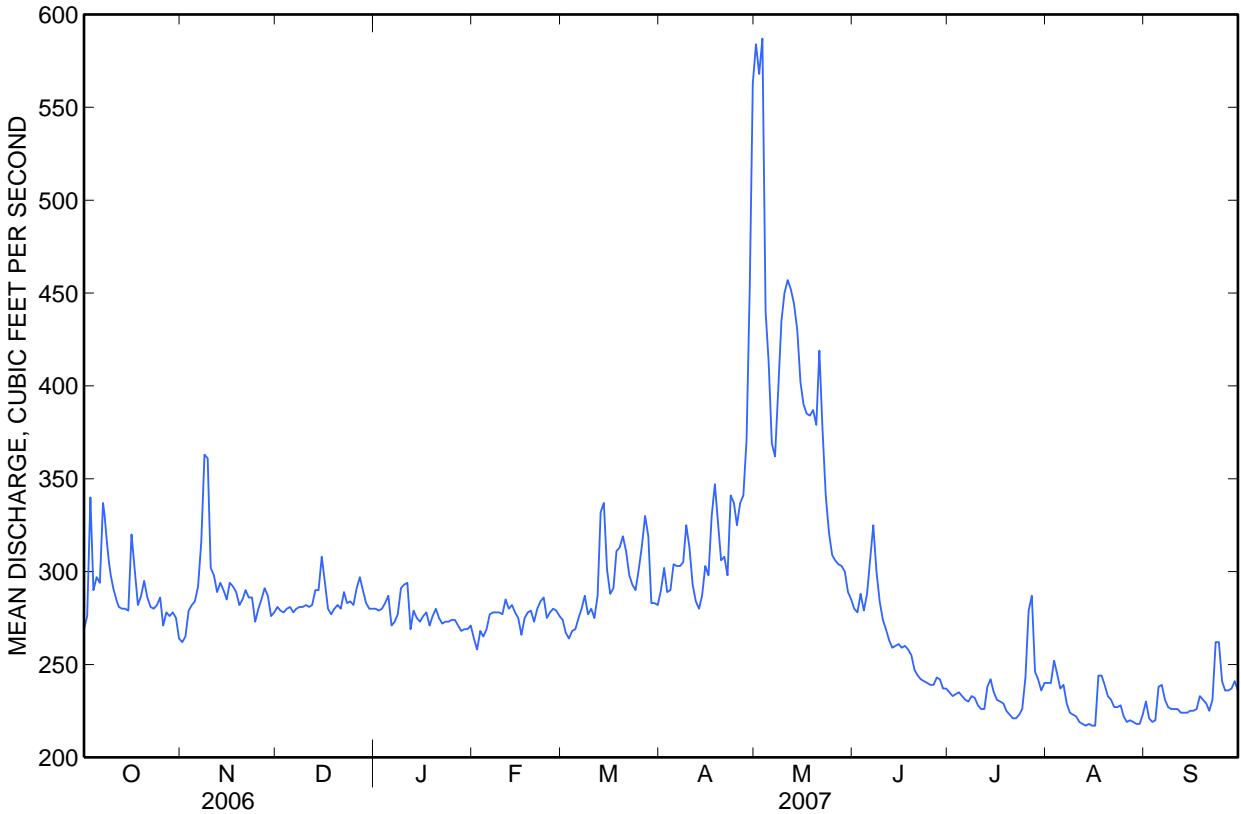
\* During periods of operation (October 1983 to March 1996, October 2002 to current year).

<sup>a</sup> Gage height, 2.89 ft.

<sup>b</sup> From rating curve extended above 1,540 ft<sup>3</sup>/s.

<sup>c</sup> From floodmark.

<sup>d</sup> Gage height, 3.03 ft.



**06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1983 to 1993, October 2002 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1983 to September 1986, October 1987 to September 1988.

WATER TEMPERATURE: October 1983 to September 1993, October 2002 to current year.

INSTRUMENTATION.--Temperature recorder installed Sept. 18, 2002.

REMARKS.--Daily water temperature record is rated excellent. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum 633 microsiemens per centimeter ( $\mu\text{S}/\text{cm}$ ) at 25.0°C, Apr. 1, 1988; minimum 140  $\mu\text{S}/\text{cm}$  at 25.0°C, June 5, 1986.

WATER TEMPERATURE: Maximum, 30.0°C, June 24, 1988, July 5, 2007; minimum, 0.5°C Dec. 21, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 30.0°C, July 5; minimum, 1.5°C, Jan. 12.

## Water-Data Report 2007

## 06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	18.5	14.0	16.5	11.0	6.5	9.0	7.5	5.5	6.5	10.0	8.0	9.0
2	16.0	14.0	15.5	12.0	7.5	10.0	8.0	6.0	7.0	10.5	8.0	9.0
3	17.5	15.0	16.0	13.5	11.5	12.5	9.0	6.0	7.5	10.0	6.5	8.5
4	17.5	14.5	16.0	13.5	13.0	13.0	9.5	6.5	8.0	9.5	6.5	8.0
5	18.5	15.5	17.0	13.0	11.5	12.0	9.0	8.0	8.5	8.0	6.5	7.0
6	18.5	16.5	17.5	13.0	12.0	13.0	10.0	7.0	8.5	6.5	3.5	5.0
7	18.0	14.5	16.5	14.5	12.5	13.0	11.5	9.5	10.5	6.0	4.0	5.5
8	16.5	13.5	15.0	13.5	10.0	12.0	11.0	8.5	10.0	8.5	3.0	5.5
9	15.5	12.0	13.5	11.5	9.5	10.5	11.0	8.5	9.5	10.5	8.0	9.0
10	16.0	11.0	13.5	10.5	9.5	10.0	11.5	9.0	10.0	10.5	6.5	8.5
11	17.0	14.5	15.5	11.0	10.0	10.5	12.0	10.0	11.5	6.5	3.0	5.0
12	17.5	12.5	15.0	10.5	8.0	9.5	10.5	9.5	10.0	4.5	1.5	3.0
13	18.0	13.0	15.5	9.5	7.5	8.5	9.5	8.0	9.0	5.5	2.5	4.0
14	18.5	13.0	15.5	10.5	7.5	9.5	10.5	7.5	9.0	5.5	3.0	4.5
15	16.5	13.5	14.5	11.0	8.0	9.5	10.0	6.5	8.0	6.0	3.0	4.5
16	15.0	13.5	14.5	11.0	10.0	10.5	7.0	5.0	6.0	7.5	4.0	6.0
17	13.5	10.5	12.0	12.0	10.0	11.0	6.0	3.5	5.0	7.5	5.5	6.5
18	13.5	9.5	11.5	12.5	10.5	11.5	6.0	3.0	4.5	7.0	3.5	5.5
19	13.0	11.0	12.0	12.0	9.5	11.0	7.0	4.0	6.0	10.5	6.5	8.5
20	14.0	11.0	12.5	13.5	10.5	12.0	8.5	6.0	7.5	10.5	8.5	9.0
21	12.5	10.0	11.5	12.5	11.0	12.0	8.0	5.5	7.0	10.0	7.5	8.5
22	14.0	10.0	12.0	11.0	9.0	10.5	10.0	8.0	9.0	9.5	6.0	8.0
23	15.0	10.0	12.5	11.0	7.0	9.5	9.0	7.0	8.0	11.0	8.5	9.5
24	15.0	11.0	13.0	8.5	6.0	7.0	9.5	7.5	8.5	12.0	9.0	10.5
25	13.5	10.0	12.0	11.0	8.0	9.5	10.0	7.0	8.5	11.5	8.5	10.0
26	13.0	9.0	10.5	11.0	8.5	9.5	10.5	9.0	10.0	11.5	8.0	10.0
27	14.0	10.5	12.0	9.0	8.0	8.5	13.0	10.0	11.5	10.0	6.5	8.5
28	14.5	10.5	12.0	8.5	7.0	8.0	11.5	8.5	10.5	9.0	5.5	7.0
29	13.5	10.5	12.0	7.5	5.0	6.0	10.0	8.5	9.0	9.0	5.0	7.5
30	11.0	9.0	10.0	7.0	5.0	6.0	8.5	6.0	7.5	10.0	6.5	8.5
31	11.0	7.5	9.0	---	---	---	9.0	6.0	7.5	9.5	6.5	8.0
<b>Month</b>	18.5	7.5	13.5	14.5	5.0	10.0	13.0	3.0	8.5	12.0	1.5	7.5

## 06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	8.5	3.5	6.0	10.0	8.0	9.0	15.5	13.0	14.0	18.0	9.0	13.5
<b>2</b>	6.5	2.5	4.5	11.0	5.5	8.0	13.5	10.0	12.0	17.5	10.5	14.0
<b>3</b>	9.0	5.0	7.0	10.0	5.0	7.5	16.0	9.5	12.5	16.5	10.5	12.0
<b>4</b>	11.0	7.0	9.0	14.5	9.0	11.5	17.0	12.0	14.0	17.0	9.0	12.5
<b>5</b>	13.5	10.5	11.5	15.5	9.5	12.5	19.5	14.0	16.0	14.5	10.0	11.0
<b>6</b>	14.5	12.0	13.0	18.0	12.5	15.0	20.0	13.0	16.5	18.5	10.0	14.0
<b>7</b>	14.5	11.0	13.0	16.0	11.0	13.5	20.0	12.0	16.0	20.5	12.5	16.5
<b>8</b>	13.5	12.0	12.5	14.0	11.5	12.5	19.5	13.5	16.5	21.0	14.0	18.0
<b>9</b>	12.5	11.5	12.0	14.0	10.5	12.0	17.0	12.0	14.5	20.0	13.5	17.5
<b>10</b>	13.5	11.0	12.5	15.5	12.0	13.5	12.5	9.0	11.0	20.0	14.5	17.5
<b>11</b>	14.0	12.5	13.0	15.5	12.5	14.0	14.5	10.0	12.5	20.5	14.5	17.5
<b>12</b>	13.0	10.5	11.5	17.5	12.5	14.5	17.0	10.5	13.5	20.0	15.0	18.0
<b>13</b>	13.0	10.5	11.5	15.0	11.5	13.0	19.0	10.5	14.5	20.0	14.0	17.5
<b>14</b>	11.5	8.5	10.0	14.5	10.0	12.0	19.5	12.0	15.5	20.0	14.0	17.0
<b>15</b>	11.5	9.5	10.5	14.5	10.0	12.0	17.0	13.5	15.5	20.5	13.5	17.0
<b>16</b>	10.0	7.0	8.5	13.5	11.5	12.5	21.0	13.5	17.0	22.0	14.5	18.0
<b>17</b>	12.0	7.0	9.5	18.0	12.0	14.5	18.0	13.0	16.0	21.5	14.5	18.5
<b>18</b>	12.0	9.0	10.5	16.5	12.0	14.5	16.0	13.5	15.0	21.0	15.5	18.5
<b>19</b>	12.5	9.5	10.5	17.5	12.0	14.5	13.5	11.0	12.5	20.5	15.5	18.0
<b>20</b>	9.5	7.0	8.0	16.0	11.5	13.5	16.5	9.5	13.0	20.5	15.0	17.5
<b>21</b>	10.0	5.0	7.5	17.0	11.5	13.5	18.0	13.0	15.5	18.0	14.0	16.0
<b>22</b>	14.0	9.5	11.5	16.5	11.5	14.0	17.5	13.5	15.5	14.0	12.0	12.5
<b>23</b>	11.5	10.0	11.0	17.0	12.5	15.0	16.0	13.5	14.5	17.5	10.5	13.5
<b>24</b>	10.5	7.5	9.0	19.0	11.5	15.0	20.5	11.5	15.5	17.5	13.0	15.0
<b>25</b>	12.0	8.0	10.0	16.0	12.5	14.5	20.5	14.0	17.5	20.5	14.0	17.0
<b>26</b>	10.5	7.5	9.5	18.0	12.5	15.0	19.0	14.5	16.5	22.0	15.0	18.5
<b>27</b>	10.0	7.5	8.5	15.5	13.0	14.5	20.0	13.5	17.0	23.0	17.5	20.0
<b>28</b>	12.0	7.0	9.0	13.5	7.5	10.5	20.0	13.5	17.0	21.0	17.5	19.0
<b>29</b>	---	---	---	12.5	6.0	9.0	19.0	13.0	16.5	18.5	15.0	17.0
<b>30</b>	---	---	---	16.5	9.5	12.5	17.5	10.0	14.5	20.5	14.0	17.5
<b>31</b>	---	---	---	15.5	11.5	13.5	---	---	---	21.0	15.0	18.0
<b>Month</b>	14.5	2.5	10.0	19.0	5.0	13.0	21.0	9.0	15.0	23.0	9.0	16.5

## 06036905 FIREHOLE RIVER NEAR WEST YELLOWSTONE, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>June</b>			<b>July</b>			<b>August</b>			<b>September</b>		
<b>1</b>	24.0	16.0	20.0	27.0	19.0	23.0	27.5	21.0	24.5	25.5	19.5	22.0
<b>2</b>	23.5	17.0	20.5	27.0	19.5	23.0	25.5	21.0	23.0	25.5	19.0	22.0
<b>3</b>	23.5	16.5	20.5	29.0	19.0	23.5	27.5	21.0	23.5	26.5	20.0	23.0
<b>4</b>	25.5	18.5	22.0	29.0	21.0	24.5	25.5	20.5	23.0	23.0	18.5	21.0
<b>5</b>	23.5	19.5	21.5	30.0	21.5	25.5	24.5	19.0	22.0	22.0	19.5	20.5
<b>6</b>	21.0	15.5	18.5	29.5	22.0	26.0	27.0	20.0	23.0	21.0	18.5	19.5
<b>7</b>	18.0	14.0	16.0	27.5	21.5	24.5	26.5	20.0	23.0	22.5	17.0	19.5
<b>8</b>	19.5	14.5	17.0	27.0	21.0	24.0	25.5	19.0	22.0	22.0	17.0	19.5
<b>9</b>	23.5	15.5	19.0	28.0	20.5	24.0	24.5	18.5	21.5	19.0	16.0	17.5
<b>10</b>	21.0	17.5	19.5	28.5	21.0	24.5	24.5	19.0	21.5	21.5	14.0	17.5
<b>11</b>	23.5	18.0	20.5	28.0	20.0	24.0	25.5	18.0	21.5	22.0	15.5	19.0
<b>12</b>	25.0	18.0	21.5	27.5	21.0	24.0	25.5	18.5	22.0	22.0	15.5	18.5
<b>13</b>	25.0	17.5	21.5	28.5	22.0	24.5	26.5	19.5	22.5	22.0	16.5	19.0
<b>14</b>	21.5	18.5	20.0	27.0	21.5	24.0	26.0	19.5	22.5	21.5	15.5	18.5
<b>15</b>	25.5	17.5	21.0	29.0	20.5	24.5	26.0	19.5	22.5	23.0	16.0	19.5
<b>16</b>	24.0	18.5	21.5	27.0	21.0	24.5	25.5	19.0	22.5	21.0	15.5	18.5
<b>17</b>	21.0	18.0	19.5	27.0	22.0	24.5	24.0	21.5	22.5	20.5	15.5	18.0
<b>18</b>	21.0	16.0	18.5	29.5	21.0	25.0	23.0	19.5	21.5	19.5	17.0	18.0
<b>19</b>	25.0	15.5	20.0	28.5	23.0	25.5	23.0	17.5	20.5	20.0	15.5	17.5
<b>20</b>	27.0	18.5	22.5	27.5	20.5	24.0	20.0	16.5	18.5	20.0	16.5	18.0
<b>21</b>	27.0	20.0	23.5	27.5	20.5	24.0	24.0	19.0	21.0	20.5	14.5	17.0
<b>22</b>	26.5	19.5	23.0	29.0	20.0	24.5	22.5	18.5	20.5	18.5	15.5	17.5
<b>23</b>	25.5	19.5	22.0	25.5	21.0	23.5	23.0	17.5	20.5	18.0	16.0	17.5
<b>24</b>	25.0	18.0	21.5	28.0	21.5	24.5	24.5	18.0	21.0	16.0	14.5	15.5
<b>25</b>	23.5	18.5	21.0	26.0	23.5	24.5	24.0	17.5	20.5	17.0	13.5	15.0
<b>26</b>	26.5	16.0	21.0	27.0	21.5	23.5	23.5	18.0	20.5	18.0	13.5	15.5
<b>27</b>	25.5	18.5	22.0	29.0	21.5	24.5	24.0	17.5	20.5	19.5	13.5	16.5
<b>28</b>	27.5	19.0	23.0	26.5	21.5	24.5	25.0	17.5	21.0	18.5	14.0	16.5
<b>29</b>	26.5	20.0	23.5	27.0	21.0	24.0	25.0	17.5	21.5	17.0	15.0	16.0
<b>30</b>	26.5	19.5	23.0	28.0	20.5	24.0	23.5	17.5	21.0	17.5	13.0	15.0
<b>31</b>	---	---	---	26.5	22.5	24.5	24.0	20.0	21.5	---	---	---
<b>Month</b>	27.5	14.0	21.0	30.0	19.0	24.5	27.5	16.5	21.5	26.5	13.0	18.5



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Water-Data Report 2007

**06036940 TANTALUS CREEK AT NORRIS JUNCTION, YELLOWSTONE NATIONAL PARK**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°43'59", long 110°42'49" referenced to North American Datum of 1927, Park County, WY, Hydrologic Unit 10020007, Yellowstone National Park, on right bank 0.9 mi northwest of Norris Junction, Yellowstone National Park, and at river mile 0.3.

DRAINAGE AREA.--1.29 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 2004 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 7,460 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good. No regulation or diversion occurs upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06036940 TANTALUS CREEK AT NORRIS JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.7	3.4	4.8	4.8	2.9	4.1	4.6	4.0	3.6	3.0	4.0	3.6
2	4.9	3.9	4.3	5.0	2.9	3.3	5.4	4.1	3.5	3.0	3.8	3.2
3	5.1	4.6	4.3	5.8	2.9	3.1	4.0	5.4	3.6	3.0	3.7	3.0
4	4.2	4.2	4.7	5.7	2.7	3.8	4.2	4.2	3.6	3.0	3.6	3.2
5	4.4	4.1	4.7	4.3	3.1	4.2	4.2	4.1	5.1	3.2	4.5	3.5
6	5.4	5.4	4.3	4.8	3.7	4.2	4.1	3.8	5.6	3.2	3.8	3.0
7	7.0	4.9	4.5	4.7	3.6	4.3	4.5	3.7	3.6	3.2	3.5	2.6
8	4.6	6.3	4.8	5.1	3.6	4.9	4.3	3.9	3.6	3.2	3.3	2.4
9	5.7	5.8	5.0	5.7	3.7	4.1	5.2	4.0	3.5	3.1	3.4	2.4
10	4.8	4.4	4.8	5.9	3.7	4.1	4.5	3.7	3.8	2.9	3.3	2.3
11	4.4	5.5	4.2	5.3	5.0	3.7	4.3	3.6	3.6	3.0	3.1	2.4
12	4.2	4.9	4.5	4.7	4.1	4.3	4.1	3.7	3.4	3.2	3.1	2.4
13	4.1	5.6	5.0	4.8	4.0	4.7	3.7	3.6	3.4	3.1	3.2	2.3
14	4.1	5.2	5.2	4.4	3.8	4.5	4.1	3.4	3.6	3.3	3.4	2.3
15	4.5	4.6	5.9	4.9	4.0	3.8	4.2	3.6	3.4	3.3	3.3	2.2
16	5.3	5.0	4.3	5.2	4.0	3.9	3.9	3.7	3.5	3.2	3.4	2.2
17	3.8	4.6	4.0	5.0	3.6	4.1	4.2	3.7	3.8	3.2	4.9	2.2
18	3.7	4.3	3.9	4.1	4.7	4.3	5.0	3.6	3.5	3.2	4.3	2.6
19	4.7	4.4	4.5	4.5	4.3	4.2	5.0	3.6	3.2	3.0	3.9	2.3
20	4.7	4.7	4.5	4.9	4.4	4.2	4.4	3.9	3.3	2.9	3.4	2.1
21	3.9	4.7	4.6	4.0	4.7	3.9	4.3	4.2	3.3	2.8	4.0	2.0
22	4.0	4.3	5.0	3.7	5.2	3.8	4.3	4.4	3.3	2.9	3.8	2.6
23	4.2	4.6	4.8	3.6	5.2	3.9	5.5	3.8	3.4	3.3	3.9	3.4
24	4.4	4.4	4.7	3.6	3.9	3.9	4.2	4.0	3.3	3.3	3.6	2.7
25	4.0	4.5	5.0	3.7	4.8	4.0	4.2	4.1	2.9	5.8	3.4	2.5
26	3.5	4.5	6.1	3.7	4.6	4.1	4.4	3.9	3.1	5.6	3.4	2.6
27	3.6	5.4	6.3	3.1	4.6	5.5	3.8	3.9	3.3	4.8	3.3	2.8
28	4.1	4.9	5.0	3.0	4.3	4.2	3.9	3.5	3.3	4.0	3.2	3.1
29	4.5	3.9	4.7	3.0	---	3.6	4.0	3.5	3.2	3.8	3.4	3.0
30	3.8	4.5	4.9	3.2	---	4.3	4.0	3.7	3.1	3.7	4.3	2.4
31	3.6	---	5.0	3.3	---	4.3	---	3.8	---	3.6	4.7	---
<b>Total</b>	136.9	141.5	148.3	137.5	112.0	127.3	130.5	120.1	106.4	105.8	113.9	79.3
<b>Mean</b>	4.42	4.72	4.78	4.44	4.00	4.11	4.35	3.87	3.55	3.41	3.67	2.64
<b>Max</b>	7.0	6.3	6.3	5.9	5.2	5.5	5.5	5.4	5.6	5.8	4.9	3.6
<b>Min</b>	3.5	3.4	3.9	3.0	2.7	3.1	3.7	3.4	2.9	2.8	3.1	2.0
<b>Ac-ft</b>	272	281	294	273	222	252	259	238	211	210	226	157

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	3.96	4.52	4.39	4.73	4.47	4.49	4.86	3.99	3.75	3.35	3.61	3.63
<b>Max</b>	4.42	5.09	4.78	4.90	4.91	4.87	5.83	4.67	4.27	3.95	3.97	4.33
<b>(WY)</b>	(2007)	(2006)	(2007)	(2006)	(2006)	(2006)	(2006)	(2006)	(2005)	(2004)	(2004)	(2004)
<b>Min</b>	3.22	3.74	4.05	4.44	4.00	4.11	4.35	3.43	3.42	2.59	3.06	2.64
<b>(WY)</b>	(2005)	(2005)	(2006)	(2007)	(2007)	(2007)	(2007)	(2005)	(2006)	(2006)	(2006)	(2007)

06036940 TANTALUS CREEK AT NORRIS JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

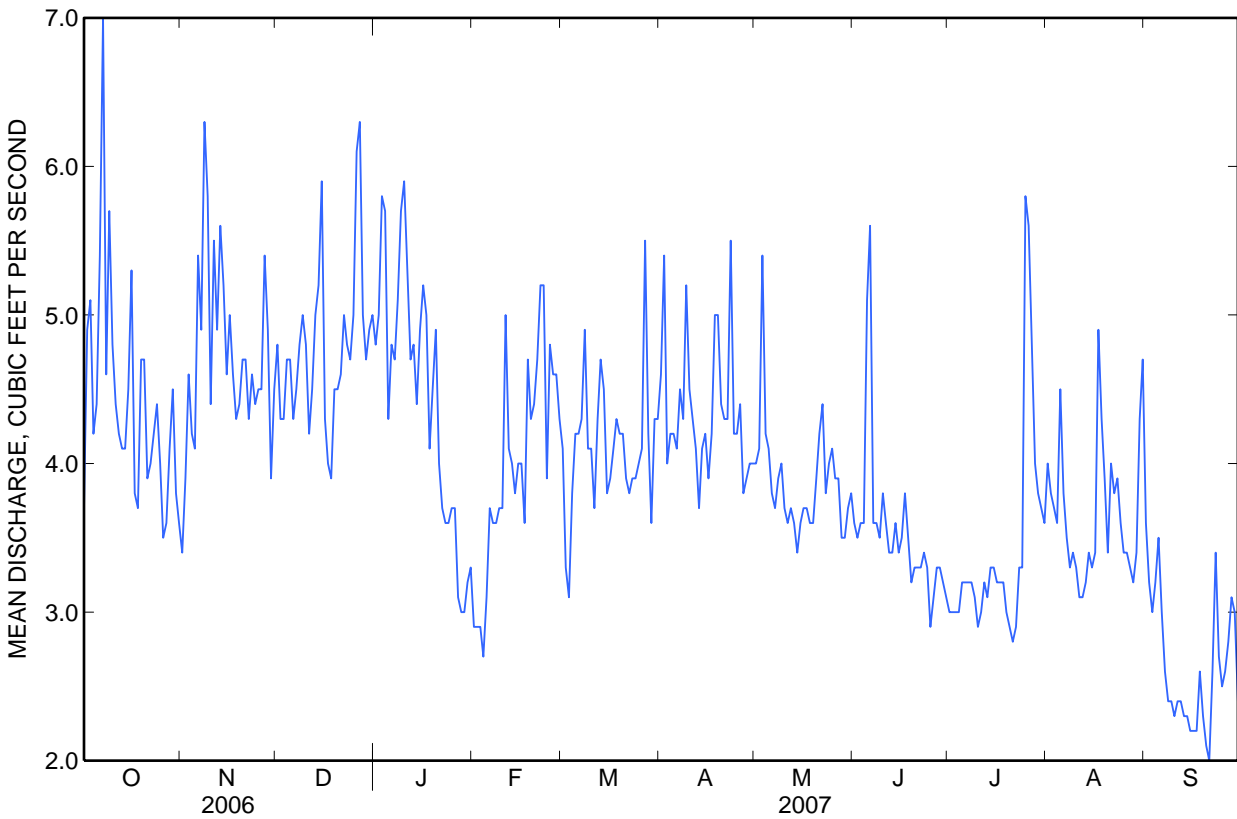
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 2004 - 2007	
<b>Annual total</b>	1,575.3		1,459.5			
<b>Annual mean</b>	4.32		4.00		4.10	
<b>Highest annual mean</b>					4.27	2006
<b>Lowest annual mean</b>					4.00	2007
<b>Highest daily mean</b>	8.8	Apr 17	7.0	Oct 7	9.7	Sep 14, 2004
<b>Lowest daily mean</b>	2.1	Jun 24	2.0	Sep 21	2.0	Sep 21, 2007
<b>Annual seven-day minimum</b>	2.3	Jun 23	2.2	Sep 15	2.2	Sep 15, 2007
<b>Maximum peak flow</b>			20	Jul 25	<sup>b</sup> 22	Jul 3, 2004
<b>Maximum peak stage</b>			2.48	Jul 25	<sup>b</sup> 2.60	Jul 3, 2004
<b>Instantaneous low flow</b>			<sup>a</sup> 1.7	Sep 20	1.7	Jun 23, 2006 <sup>c</sup>
<b>Annual runoff (ac-ft)</b>	3,120		2,890		2,970	
<b>10 percent exceeds</b>	5.5		5.0		5.2	
<b>50 percent exceeds</b>	4.5		4.0		4.1	
<b>90 percent exceeds</b>	2.8		3.0		3.0	

<sup>a</sup> Gage height, 1.29 ft.

<sup>b</sup> For period of U.S. Geological Survey record only.

<sup>c</sup> Also Sept. 20, 2007.





**06036940 TANTALUS CREEK AT NORRIS JUNCTION, YELLOWSTONE NATIONAL PARK—Continued****WATER-QUALITY RECORDS**

## PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 2004 to current year.

REMARKS.--Daily water temperature records are rated excellent, except those for Oct. 1-12, which are rated poor. Missing daily water temperature data for Oct. 13 to Jan. 9 are due to equipment malfunction. Several unpublished observations of specific conductance and water temperature were made during the year.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 37.5°C, several days in July 2004 and 2006 and July and August 2007; minimum, 10.5°C, Feb. 2, 2007.

## EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 37.5°C, July 27-29 and Aug. 1 and 2; minimum, 10.5°C, Feb. 2.

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	30.0	23.0	25.0	---	---	---	---	---	---	---	---	---
2	30.0	23.0	25.5	---	---	---	---	---	---	---	---	---
3	29.5	24.5	26.5	---	---	---	---	---	---	---	---	---
4	30.5	24.0	26.5	---	---	---	---	---	---	---	---	---
5	31.0	25.0	27.5	---	---	---	---	---	---	---	---	---
6	30.5	26.5	28.0	---	---	---	---	---	---	---	---	---
7	29.0	24.5	26.5	---	---	---	---	---	---	---	---	---
8	29.0	24.0	26.0	---	---	---	---	---	---	---	---	---
9	25.5	20.5	23.0	---	---	---	---	---	---	---	---	---
10	29.0	21.5	24.0	---	---	---	---	---	---	17.5	14.5	15.5
11	26.0	22.0	23.5	---	---	---	---	---	---	17.0	13.0	14.5
12	27.5	22.5	24.5	---	---	---	---	---	---	18.5	11.0	13.5
13	---	---	---	---	---	---	---	---	---	18.0	12.5	14.0
14	---	---	---	---	---	---	---	---	---	18.5	12.0	14.0
15	---	---	---	---	---	---	---	---	---	17.5	12.0	14.5
16	---	---	---	---	---	---	---	---	---	21.0	14.0	16.5
17	---	---	---	---	---	---	---	---	---	20.0	14.0	16.5
18	---	---	---	---	---	---	---	---	---	17.5	13.5	15.5
19	---	---	---	---	---	---	---	---	---	22.0	16.0	18.5
20	---	---	---	---	---	---	---	---	---	22.0	17.5	19.5
21	---	---	---	---	---	---	---	---	---	22.0	16.0	18.0
22	---	---	---	---	---	---	---	---	---	19.5	16.5	17.5
23	---	---	---	---	---	---	---	---	---	21.0	16.5	18.5
24	---	---	---	---	---	---	---	---	---	24.0	17.0	20.0
25	---	---	---	---	---	---	---	---	---	25.0	17.0	20.0
26	---	---	---	---	---	---	---	---	---	24.5	17.5	20.0
27	---	---	---	---	---	---	---	---	---	23.0	15.0	18.0
28	---	---	---	---	---	---	---	---	---	22.5	14.5	17.0
29	---	---	---	---	---	---	---	---	---	22.0	13.5	17.0
30	---	---	---	---	---	---	---	---	---	22.5	14.5	17.5
31	---	---	---	---	---	---	---	---	---	22.0	15.5	18.0
Month	---	---	---	---	---	---	---	---	---	---	---	---

## 06036940 TANTALUS CREEK AT NORRIS JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	17.5	11.5	14.5	19.0	15.0	17.0	23.5	18.5	21.0	31.0	23.5	26.5
<b>2</b>	15.5	10.5	13.0	22.0	13.5	16.5	24.0	16.5	20.5	29.5	25.0	26.5
<b>3</b>	17.0	12.0	14.5	19.0	12.5	16.0	25.0	18.5	21.0	26.5	17.0	23.0
<b>4</b>	21.5	14.0	17.5	24.5	17.5	20.0	26.5	20.0	22.5	29.5	17.0	22.5
<b>5</b>	22.0	16.0	19.0	26.0	18.0	21.5	29.5	21.5	24.5	21.5	19.5	20.5
<b>6</b>	25.5	20.0	22.0	28.0	21.0	23.0	30.5	21.5	24.0	28.5	19.5	23.5
<b>7</b>	26.5	20.5	22.5	27.0	20.0	22.0	31.0	21.0	24.5	31.5	21.5	25.5
<b>8</b>	23.0	19.0	21.5	24.0	17.5	21.0	28.5	22.0	24.5	32.5	23.0	26.5
<b>9</b>	23.0	19.0	21.0	23.0	18.5	21.0	25.0	15.0	21.5	31.5	24.0	26.5
<b>10</b>	23.0	20.0	21.5	26.5	19.5	22.5	23.5	18.0	20.0	31.0	21.5	25.5
<b>11</b>	24.5	21.5	23.0	23.0	19.5	21.5	25.5	18.0	20.5	31.5	23.5	27.0
<b>12</b>	22.5	17.5	20.0	25.5	22.0	23.0	29.0	19.0	22.5	30.0	23.0	26.0
<b>13</b>	23.5	19.5	21.0	24.0	18.0	21.5	29.0	18.5	22.5	30.0	20.5	25.5
<b>14</b>	22.5	17.5	19.5	23.5	17.0	20.0	28.0	21.0	24.0	32.0	22.5	26.0
<b>15</b>	20.5	15.5	19.0	23.0	18.0	20.0	27.5	22.5	24.0	32.0	22.5	26.5
<b>16</b>	17.5	13.5	16.0	24.0	18.0	21.5	32.0	21.5	25.5	33.5	24.0	27.5
<b>17</b>	21.5	13.5	18.0	27.5	21.0	23.5	28.0	23.0	24.5	32.5	24.0	27.0
<b>18</b>	22.5	17.5	19.5	26.5	22.0	23.5	28.0	20.5	23.5	31.0	25.0	27.0
<b>19</b>	23.0	14.5	19.0	27.0	22.0	24.0	22.5	18.5	20.5	31.0	22.0	26.0
<b>20</b>	17.5	12.5	16.0	24.0	16.5	20.5	27.5	18.5	22.5	29.0	21.5	25.5
<b>21</b>	20.5	12.5	18.0	27.0	19.0	22.0	27.0	21.5	23.5	26.0	20.0	23.0
<b>22</b>	24.5	19.0	21.0	27.0	19.0	22.0	29.0	22.5	24.5	24.0	20.0	22.5
<b>23</b>	21.5	18.0	19.0	28.0	19.5	23.5	28.0	21.0	24.0	29.0	22.5	24.5
<b>24</b>	22.0	14.5	17.5	30.0	21.0	24.0	31.0	22.0	25.5	25.5	22.0	23.5
<b>25</b>	24.5	17.5	19.5	26.0	18.0	22.0	31.5	22.5	25.5	28.5	22.0	25.0
<b>26</b>	20.0	15.0	17.5	26.5	21.0	23.5	28.5	23.0	25.0	30.5	23.0	26.0
<b>27</b>	22.0	14.5	18.0	27.0	19.0	23.5	30.5	22.0	25.0	30.5	21.5	26.5
<b>28</b>	24.0	16.0	19.0	24.0	16.0	19.0	30.0	22.5	25.5	26.0	21.0	24.5
<b>29</b>	---	---	---	23.0	15.0	18.0	31.0	23.0	25.5	28.5	22.5	24.5
<b>30</b>	---	---	---	27.0	17.5	20.5	30.5	23.0	25.5	29.5	22.5	25.0
<b>31</b>	---	---	---	24.5	20.0	21.5	---	---	---	29.0	23.5	25.5
<b>Month</b>	26.5	10.5	19.0	30.0	12.5	21.5	32.0	15.0	23.5	33.5	17.0	25.0

## 06036940 TANTALUS CREEK AT NORRIS JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
<b>1</b>	32.0	23.5	26.5	33.0	24.5	27.5	37.5	27.5	31.0	33.5	26.5	28.5
<b>2</b>	33.5	23.5	27.5	32.5	24.0	27.5	37.5	25.0	30.0	33.5	25.0	27.5
<b>3</b>	33.5	24.0	28.0	35.0	24.0	29.0	36.0	25.5	30.5	33.0	25.0	28.5
<b>4</b>	34.5	25.0	29.0	36.5	25.5	29.5	34.0	22.0	29.0	32.5	24.5	26.5
<b>5</b>	33.0	26.5	29.5	36.5	26.5	30.5	34.5	24.0	29.0	32.5	25.5	28.0
<b>6</b>	29.0	25.5	27.5	36.0	26.0	30.5	36.0	26.0	29.5	30.0	24.0	26.0
<b>7</b>	27.5	21.0	24.0	35.0	26.5	29.5	33.5	23.0	28.0	29.5	20.5	25.0
<b>8</b>	27.0	22.5	24.5	33.0	26.5	29.0	31.0	23.0	27.0	30.5	20.5	24.0
<b>9</b>	31.5	23.0	26.0	32.5	26.0	29.0	33.5	24.0	27.0	26.0	19.0	22.0
<b>10</b>	29.5	23.0	25.5	35.5	24.5	28.5	30.5	21.0	26.0	31.5	19.0	24.0
<b>11</b>	29.5	23.0	25.5	36.0	24.5	29.0	31.5	22.0	26.0	29.0	20.5	24.0
<b>12</b>	30.5	23.5	26.5	35.0	25.5	28.5	30.5	21.0	26.0	29.0	20.5	24.0
<b>13</b>	30.5	23.0	26.5	35.5	26.5	30.5	33.5	24.5	27.5	31.5	22.0	24.0
<b>14</b>	29.0	22.5	25.5	37.0	25.0	29.5	33.5	24.5	28.0	32.5	20.5	24.5
<b>15</b>	31.0	23.0	26.5	36.0	26.5	30.0	34.0	24.5	27.5	31.0	21.5	24.5
<b>16</b>	32.0	22.0	26.0	35.5	27.0	30.0	34.5	24.0	28.0	29.5	18.0	23.0
<b>17</b>	27.5	20.0	24.0	33.5	27.0	29.5	34.5	23.0	29.5	29.5	18.5	22.5
<b>18</b>	29.0	22.0	24.0	35.0	27.0	30.5	33.0	26.5	29.0	27.0	21.5	23.5
<b>19</b>	31.0	22.5	26.0	32.0	26.5	29.5	33.0	21.0	26.5	29.0	21.5	23.5
<b>20</b>	34.5	23.5	27.5	33.5	25.0	28.5	27.0	20.5	23.5	27.5	15.5	21.5
<b>21</b>	33.0	24.5	28.0	33.0	25.0	28.0	31.0	25.5	27.0	26.0	15.0	21.0
<b>22</b>	34.0	24.5	28.0	36.0	24.5	29.5	31.5	25.0	27.5	27.5	20.5	23.0
<b>23</b>	30.0	23.0	26.5	35.5	26.0	30.0	33.0	24.5	27.5	25.5	20.5	23.5
<b>24</b>	30.5	23.0	26.5	35.0	27.0	30.0	33.5	25.0	27.5	25.5	20.5	22.5
<b>25</b>	28.0	20.0	25.0	35.5	29.0	31.0	30.5	24.0	26.5	25.0	18.5	20.5
<b>26</b>	33.5	21.5	26.5	37.0	28.5	31.0	31.0	21.5	25.5	24.5	17.5	21.5
<b>27</b>	35.5	23.5	28.0	37.5	29.5	32.0	30.5	22.5	26.0	28.0	20.0	23.0
<b>28</b>	35.0	24.5	29.0	37.5	28.0	31.0	32.0	23.5	26.5	28.0	20.0	23.0
<b>29</b>	33.5	24.5	27.5	37.5	27.0	31.0	31.5	23.0	27.0	25.5	18.0	22.0
<b>30</b>	32.0	23.5	27.5	37.0	27.0	31.0	34.0	24.5	28.5	24.0	16.5	20.0
<b>31</b>	---	---	---	36.5	28.0	31.0	33.0	25.0	29.0	---	---	---
<b>Month</b>	35.5	20.0	26.5	37.5	24.0	29.5	37.5	20.5	27.5	33.5	15.0	24.0

Water-Data Report 2007

**06037100 GIBBON RIVER AT MADISON JUNCTION, YELLOWSTONE NATIONAL PARK**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°38'26", long 110°51'38" referenced to North American Datum of 1927, Park County, WY, Hydrologic Unit 10020007, Yellowstone National Park, on left bank 40 ft downstream from highway bridge, 0.4 mi south of Madison Junction, 14 mi east of West Yellowstone, and at river mile 0.2.

DRAINAGE AREA.--126 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 2001 to September 2001, October 2002 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 6,800 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. No regulation or diversions are upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## 06037100 GIBBON RIVER AT MADISON JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	89	81	93	87	e77	85	101	318	114	78	75	76
2	92	83	89	86	e75	77	107	318	111	78	80	70
3	127	91	90	89	79	79	97	339	110	77	78	68
4	104	91	91	92	78	81	95	296	107	78	75	68
5	101	90	91	85	78	82	100	245	108	76	77	73
6	102	99	89	85	81	84	104	220	127	75	80	77
7	150	124	89	e86	82	85	110	201	141	75	74	72
8	134	127	88	88	82	90	118	195	119	76	71	69
9	117	128	88	91	82	88	133	196	113	75	70	69
10	111	106	88	93	83	88	127	196	109	73	70	68
11	107	104	88	e80	86	86	114	191	107	73	66	68
12	100	101	89	e70	88	89	108	187	102	74	65	67
13	96	103	92	e72	85	107	110	183	99	77	64	67
14	95	106	92	e74	82	115	127	175	99	79	65	67
15	96	96	100	76	83	102	146	166	96	77	65	66
16	111	104	87	79	85	96	146	161	94	76	64	66
17	112	100	e84	83	80	96	176	155	95	75	76	66
18	98	97	e82	79	85	106	191	149	97	74	81	71
19	101	94	84	81	88	109	177	144	93	72	76	70
20	113	95	85	87	86	112	154	141	90	69	72	68
21	103	95	83	82	90	109	148	151	89	66	74	66
22	96	94	90	79	89	105	139	146	88	66	72	69
23	95	94	85	79	92	103	160	151	87	67	71	77
24	94	90	87	80	84	101	167	147	86	70	73	83
25	95	94	86	80	86	106	181	142	82	74	70	74
26	88	94	91	79	89	113	205	137	81	93	68	72
27	90	95	94	79	85	126	204	130	82	106	66	70
28	89	96	94	77	86	126	230	124	82	84	66	71
29	91	85	88	78	---	105	278	119	80	77	65	73
30	91	88	84	78	---	104	312	118	79	76	66	70
31	82	---	86	79	---	102	---	116	---	75	70	---
<b>Total</b>	3,170	2,945	2,747	2,533	2,346	3,057	4,565	5,657	2,967	2,361	2,205	2,111
<b>Mean</b>	102	98.2	88.6	81.7	83.8	98.6	152	182	98.9	76.2	71.1	70.4
<b>Max</b>	150	128	100	93	92	126	312	339	141	106	81	83
<b>Min</b>	82	81	82	70	75	77	95	116	79	66	64	66
<b>Ac-ft</b>	6,290	5,840	5,450	5,020	4,650	6,060	9,050	11,220	5,890	4,680	4,370	4,190

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	96.5	93.8	89.5	88.3	87.1	91.5	143	251	161	107	91.0	88.9
<b>Max</b>	102	98.5	92.5	94.2	93.6	98.6	168	370	216	127	99.6	104
<b>(WY)</b>	(2007)	(2006)	(2003)	(2003)	(2003)	(2007)	(2006)	(2006)	(2003)	(2006)	(2006)	(2004)
<b>Min</b>	89.9	84.7	86.7	81.7	83.0	82.4	114	182	98.9	76.2	71.1	70.4
<b>(WY)</b>	(2004)	(2004)	(2004)	(2007)	(2005)	(2005)	(2005)	(2007)	(2007)	(2007)	(2007)	(2007)

\* During periods of operation (April 2001 to September 2001, October 2002 to current year).

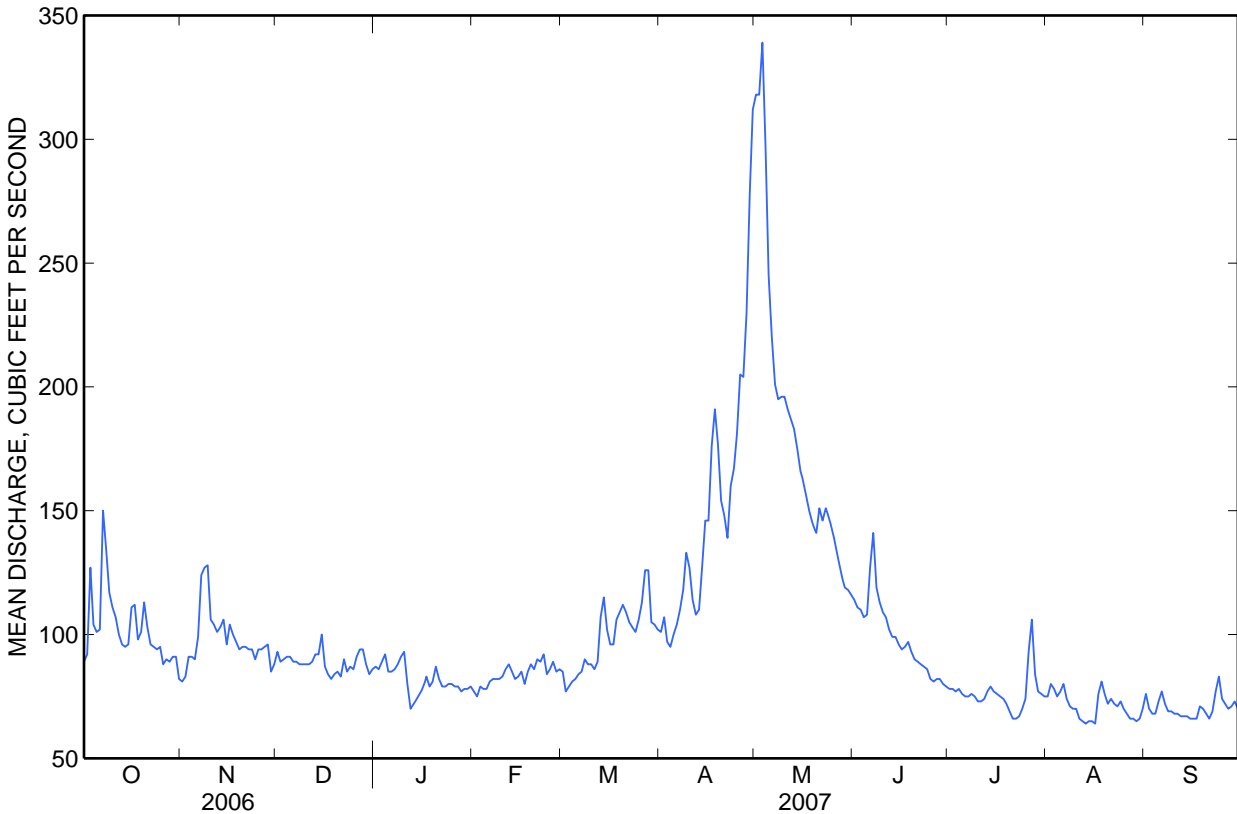
06037100 GIBBON RIVER AT MADISON JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 2001 - 2007*	
<b>Annual total</b>	49,146		36,664			
<b>Annual mean</b>	135		100		117	
<b>Highest annual mean</b>					134	2006
<b>Lowest annual mean</b>					100	2007
<b>Highest daily mean</b>	549	May 20	339	May 3	584	May 16, 2001
<b>Lowest daily mean</b>	80	Feb 11	64	Aug 13	64	Aug 13, 2007
<b>Annual seven-day minimum</b>	84	Feb 16	66	Aug 10	66	Aug 10, 2007
<b>Maximum peak flow</b>			360	May 1	674	May 16, 2001
<b>Maximum peak stage</b>			5.04	May 1	5.93	May 16, 2001
<b>Instantaneous low flow</b>			<sup>a</sup> 55	Jan 8	<sup>a</sup> 55	Jan 8, 2007
<b>Annual runoff (ac-ft)</b>	97,480		72,720		84,550	
<b>10 percent exceeds</b>	238		146		184	
<b>50 percent exceeds</b>	96		89		94	
<b>90 percent exceeds</b>	87		70		81	

\* During periods of operation (April 2001 to September 2001, October 2002 to current year).

<sup>a</sup> Gage height, 3.90 ft, result of freezeup.



**06037100 GIBBON RIVER AT MADISON JUNCTION, YELLOWSTONE NATIONAL PARK—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 2002 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 2002 to current year.

INSTRUMENTATION.--Temperature recorder installed Sept. 19, 2002.

REMARKS.--Daily water temperature records are rated excellent. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.5°C, July 5, 2007; minimum, 0.0°C, several days during winter months.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 27.5°C, July 5; minimum, 0.0°C, many days during winter period.

**TEMPERATURE, WATER, DEGREES CELSIUS  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	15.0	9.5	12.0	5.5	1.0	3.5	2.5	1.0	2.0	4.0	3.0	3.5
2	12.0	9.5	11.0	7.0	2.0	4.5	3.0	0.5	2.0	5.0	2.5	4.0
3	14.5	11.0	12.0	9.0	6.5	7.5	3.5	1.0	2.5	5.5	4.5	5.0
4	14.0	9.5	12.0	9.5	8.0	8.5	4.0	1.0	2.5	5.0	2.0	4.0
5	15.0	11.0	13.0	9.0	8.0	8.5	5.0	2.5	3.5	3.0	1.5	2.0
6	15.0	12.5	14.0	9.5	8.0	9.0	5.0	1.5	3.0	1.5	0.5	1.0
7	14.0	10.5	12.5	11.5	9.5	10.0	5.5	3.5	4.5	1.0	0.0	0.5
8	13.0	10.0	11.0	9.5	7.5	9.0	5.0	2.0	3.5	3.0	0.0	2.0
9	11.5	8.0	10.0	8.0	5.5	7.0	5.5	2.5	4.0	6.0	3.0	5.0
10	12.0	6.5	9.0	6.5	5.5	6.0	6.0	3.0	4.5	6.0	3.5	5.0
11	14.0	10.0	11.5	6.5	5.0	5.5	7.0	5.5	6.0	3.5	0.0	1.0
12	13.5	8.0	10.5	5.5	3.0	4.5	6.0	5.5	5.5	0.5	0.0	0.0
13	14.0	8.5	11.0	5.5	4.0	4.5	5.5	5.0	5.5	0.5	0.0	0.5
14	14.0	8.5	11.0	5.5	3.5	4.5	6.0	4.5	5.5	0.5	0.0	0.5
15	12.0	9.0	10.5	6.5	3.0	4.5	6.5	2.5	5.0	1.0	0.5	0.5
16	11.0	9.5	10.5	7.0	4.5	5.5	2.5	0.0	1.0	1.5	0.5	0.5
17	10.0	6.5	8.5	8.0	4.5	6.5	0.5	0.0	0.5	1.5	0.5	1.0
18	8.5	5.0	6.5	8.5	6.0	6.5	1.0	0.0	0.5	2.0	0.5	1.0
19	9.0	6.5	8.0	7.5	4.5	6.0	1.5	0.5	0.5	2.5	0.5	1.5
20	9.5	7.5	8.5	8.0	5.5	7.0	1.5	0.5	1.0	3.0	0.5	1.5
21	8.5	6.5	7.5	8.5	7.0	7.5	2.0	0.5	1.0	4.5	2.0	3.0
22	9.5	4.5	7.0	8.0	6.0	7.0	4.0	1.0	2.0	3.5	1.0	2.5
23	10.0	5.0	7.5	6.5	3.5	5.0	4.0	2.0	3.0	5.5	3.0	4.5
24	10.5	6.0	8.0	5.0	2.5	3.5	4.0	2.0	3.5	6.0	3.0	4.5
25	9.0	6.5	8.0	6.5	3.5	4.5	5.0	2.0	3.5	6.0	2.5	4.0
26	8.0	4.0	6.0	6.5	3.5	5.0	6.0	5.0	5.5	5.5	2.0	3.5
27	9.0	6.0	7.5	5.5	3.0	4.0	7.0	6.0	6.5	4.5	1.5	2.5
28	10.0	5.5	7.5	4.0	2.0	3.0	6.5	3.5	5.5	2.0	0.0	1.0
29	9.5	5.5	7.5	2.0	0.0	1.0	4.5	2.0	3.5	3.0	0.0	1.0
30	6.5	3.5	5.5	1.0	0.5	1.0	2.5	0.5	1.5	3.5	0.0	2.0
31	5.0	1.5	3.5	---	---	---	3.5	0.5	1.5	4.0	1.0	2.5
Month	15.0	1.5	9.5	11.5	0.0	5.7	7.0	0.0	3.0	6.0	0.0	2.5

## 06037100 GIBBON RIVER AT MADISON JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	3.0	0.0	1.5	4.0	2.5	3.5	11.0	8.5	9.5	14.0	9.0	11.5
<b>2</b>	1.0	0.0	0.5	5.0	0.0	2.5	9.5	6.5	8.0	14.0	11.0	12.0
<b>3</b>	2.0	0.5	1.0	3.5	0.0	1.5	12.0	5.0	8.0	12.5	7.5	10.0
<b>4</b>	6.0	0.5	3.5	8.5	3.5	5.5	11.5	7.0	9.0	11.5	5.5	8.0
<b>5</b>	8.5	5.5	7.0	9.5	3.5	6.5	15.0	9.5	12.0	9.5	7.5	8.5
<b>6</b>	9.5	6.5	8.0	12.5	7.0	9.5	15.5	8.0	11.5	14.5	6.5	10.0
<b>7</b>	9.5	5.5	7.5	11.5	5.5	8.0	16.0	7.0	11.0	16.5	8.5	12.5
<b>8</b>	8.5	7.0	7.5	8.5	6.0	7.5	15.5	9.0	11.5	18.5	10.5	14.0
<b>9</b>	8.0	6.5	7.0	10.0	6.0	7.5	11.5	7.0	10.0	18.0	11.0	14.0
<b>10</b>	9.0	6.0	7.5	12.0	7.0	9.0	10.0	5.0	7.0	17.5	11.5	14.5
<b>11</b>	9.0	7.5	8.0	11.0	8.0	9.0	9.5	5.5	7.5	19.0	11.5	15.0
<b>12</b>	8.0	6.5	7.0	13.0	8.0	10.0	12.0	5.0	8.5	19.0	12.0	15.5
<b>13</b>	8.5	6.0	7.0	12.5	8.5	10.0	14.0	6.0	9.5	18.5	11.5	15.0
<b>14</b>	7.0	3.5	5.5	10.0	7.5	8.5	14.5	7.0	10.5	18.5	11.5	14.5
<b>15</b>	6.0	4.5	5.5	9.5	5.5	7.5	11.5	8.0	10.0	18.5	10.5	14.5
<b>16</b>	6.0	3.0	5.0	10.0	7.0	8.5	15.5	8.0	11.5	20.0	11.5	15.5
<b>17</b>	6.5	1.5	4.0	14.0	7.0	10.0	13.0	8.5	10.5	19.0	12.0	15.5
<b>18</b>	7.0	4.0	5.0	12.5	7.5	10.0	10.5	8.0	9.5	20.0	12.5	16.0
<b>19</b>	6.5	4.5	5.5	14.0	7.5	10.5	8.0	6.0	6.5	19.0	13.0	16.0
<b>20</b>	5.0	3.5	4.0	12.0	8.0	9.5	11.0	4.0	7.5	18.5	12.0	15.0
<b>21</b>	5.0	2.0	3.5	13.0	7.5	10.0	12.5	8.0	10.0	15.5	11.5	14.0
<b>22</b>	9.5	4.5	6.5	12.5	7.0	9.5	12.5	8.5	10.5	11.5	8.5	10.0
<b>23</b>	7.5	5.0	6.5	13.0	8.5	10.0	12.5	8.5	10.5	13.5	7.5	10.5
<b>24</b>	6.0	2.0	4.0	14.5	7.0	10.5	16.0	8.0	11.5	14.0	9.0	11.5
<b>25</b>	6.5	3.0	4.5	12.0	8.0	10.0	16.0	9.5	12.5	17.0	10.0	13.0
<b>26</b>	7.0	3.5	5.0	14.0	8.0	10.5	13.0	9.5	11.0	17.5	10.5	14.0
<b>27</b>	5.5	2.5	3.5	11.0	8.5	10.0	15.0	8.5	11.5	19.0	13.5	16.0
<b>28</b>	6.5	2.5	4.0	8.5	5.5	7.5	16.0	9.0	12.0	18.5	13.5	15.5
<b>29</b>	---	---	---	9.5	3.5	6.0	14.5	9.5	12.0	16.0	11.0	13.5
<b>30</b>	---	---	---	11.5	4.5	8.0	14.5	10.0	12.0	16.5	10.0	13.5
<b>31</b>	---	---	---	11.5	7.0	9.0	---	---	---	18.5	11.0	14.5
<b>Month</b>	9.5	0.0	5.0	14.5	0.0	8.0	16.0	4.0	10.0	20.0	5.5	13.5



## 06037100 GIBBON RIVER AT MADISON JUNCTION, YELLOWSTONE NATIONAL PARK—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	21.0	11.5	16.0	24.0	14.5	19.5	25.5	17.5	21.0	22.0	15.0	18.5
2	20.0	12.5	16.5	23.0	15.0	19.0	22.0	17.5	20.0	22.0	14.5	18.0
3	21.0	12.5	16.5	25.5	15.0	20.0	24.0	18.0	20.5	23.0	15.5	19.0
4	21.5	14.0	17.5	26.5	16.5	21.5	22.5	16.5	19.5	19.0	14.0	17.0
5	20.0	16.0	18.0	27.5	17.5	22.0	21.0	15.5	18.5	18.5	15.5	17.0
6	17.0	12.0	14.5	26.5	18.0	22.0	24.0	15.5	19.5	18.5	14.5	16.0
7	15.0	11.0	13.0	24.0	18.5	21.0	23.0	16.0	19.5	19.5	12.5	16.0
8	14.5	10.5	12.5	24.0	16.0	20.0	22.5	15.0	18.5	19.5	13.0	16.0
9	19.5	10.5	15.0	24.5	16.0	20.0	20.5	14.0	17.5	16.0	12.5	14.0
10	17.0	13.0	15.0	25.5	16.5	21.0	22.0	14.5	18.0	18.0	9.0	13.5
11	19.5	13.5	16.0	25.5	15.5	20.5	22.5	13.5	18.0	18.5	10.5	14.5
12	21.5	13.5	17.0	24.0	16.0	20.0	22.5	14.0	18.5	18.5	11.0	14.5
13	21.5	13.0	17.5	25.0	17.0	20.5	23.5	14.5	19.0	18.5	12.0	15.0
14	18.0	14.0	16.5	24.5	17.5	21.0	23.0	15.0	19.0	18.0	11.5	14.5
15	22.5	13.0	17.5	25.5	16.5	21.0	22.5	14.5	18.5	18.5	11.5	15.0
16	20.0	14.0	17.0	23.5	17.0	20.5	22.0	14.0	18.0	17.0	10.5	14.0
17	17.5	13.5	15.5	23.5	18.0	21.0	20.5	17.0	18.5	16.0	10.5	13.5
18	17.0	11.0	14.0	26.0	17.0	21.0	20.0	15.5	18.0	15.5	12.5	13.5
19	21.5	11.0	16.0	26.0	19.0	22.0	20.5	14.0	17.0	16.0	11.0	13.5
20	23.0	14.0	18.5	25.0	16.0	20.5	18.5	13.5	16.0	17.0	11.5	14.0
21	23.5	15.5	19.5	25.0	16.0	20.5	20.5	15.0	17.5	17.0	10.5	13.5
22	23.5	15.0	19.0	26.0	15.5	20.5	19.0	14.5	17.0	15.0	10.5	13.0
23	22.0	15.0	18.5	22.0	16.5	20.0	20.0	13.0	16.5	15.0	12.5	13.5
24	22.5	14.0	18.0	24.0	17.0	20.5	21.5	14.0	17.0	13.0	10.5	11.5
25	21.0	14.0	17.5	23.0	19.0	20.5	21.0	13.0	17.0	13.5	9.0	11.0
26	23.0	12.0	17.0	24.0	17.0	20.0	21.0	13.5	17.0	14.5	9.0	11.5
27	22.5	14.0	18.0	25.5	18.0	21.5	21.0	13.5	17.0	15.5	8.5	12.0
28	24.0	14.5	19.5	24.5	17.5	21.0	21.5	13.0	17.5	15.0	9.5	12.0
29	23.5	15.0	19.5	24.5	18.0	21.0	21.5	13.0	17.5	13.0	11.5	12.0
30	24.0	15.0	19.0	25.0	16.5	20.5	20.5	13.0	17.0	14.5	9.5	11.5
31	---	---	---	24.0	18.5	21.0	20.0	15.5	17.5	---	---	---
<b>Month</b>	24.0	10.5	17.0	27.5	14.5	20.5	25.5	13.0	18.0	23.0	8.5	14.5



Water-Data Report 2007

**06037500 MADISON RIVER NEAR WEST YELLOWSTONE, MT**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°39'25", long 111°04'03" referenced to North American Datum of 1927, in NE ¼ NW ¼ SW ¼ sec.36, T.13 S., R.5 E., Gallatin County, MT, Hydrologic Unit 10020007, Yellowstone National Park, on left bank 0.7 mi downstream from Montana-Wyoming stateline, 1.5 mi east of West Yellowstone, 16.4 mi downstream from Gibbon River, and at river mile 132.7.

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

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--June 1913 to December 1917, July 1918 to October 1921, June 1922 to September 1973, August 1983 to September 1986, October 1988 to current year. Monthly discharge only for some periods, published in Water Supply Paper 1309.

GAGE.--Water-stage recorder. Elevation of gage is 6,650 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Oct. 20, 1918, nonrecording gage, and Oct. 20, 1918 to June 29, 1930, nonrecording gage or water-stage recorder at sites 2.5 mi upstream at different elevations. Supplementary nonrecording gage at site 0.3 mi downstream at different elevation used at time during 1927-30.

REMARKS.--Records are good except those for estimated daily discharges, which are fair. No regulation or diversions occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.

## 06037500 MADISON RIVER NEAR WEST YELLOWSTONE, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	391	381	410	396	383	396	419	895	430	347	360	351
2	397	384	405	392	e340	383	440	886	423	345	358	337
3	482	400	404	400	e370	376	422	915	431	344	370	333
4	433	404	404	400	382	385	418	796	423	345	363	332
5	427	404	405	402	382	387	434	703	424	346	360	352
6	426	410	401	395	389	393	437	637	452	344	365	358
7	482	456	401	e390	394	400	438	596	497	343	349	348
8	496	482	402	e400	394	414	445	615	454	345	342	340
9	445	541	403	409	394	402	471	652	432	342	339	338
10	437	448	402	415	395	404	470	670	416	339	338	338
11	426	436	403	420	403	397	438	672	411	339	334	336
12	416	428	404	e300	407	402	422	664	399	340	332	334
13	411	428	416	e350	404	457	421	656	391	349	330	333
14	407	431	417	e340	397	494	434	638	389	360	332	332
15	407	414	441	e340	392	448	466	604	387	351	331	333
16	444	426	e420	e360	386	426	460	584	382	344	331	330
17	452	425	e380	e370	387	420	514	572	382	342	356	331
18	415	419	e370	e370	392	449	551	564	384	342	373	339
19	418	411	e380	e390	401	455	536	562	377	335	364	340
20	432	412	e390	e400	392	462	493	551	370	332	355	335
21	425	417	e390	395	403	453	488	585	367	330	351	329
22	413	416	e400	388	410	436	471	565	363	329	348	333
23	409	417	396	388	414	427	501	530	360	331	348	361
24	411	401	400	389	395	421	548	503	358	338	351	379
25	412	405	393	389	396	432	528	489	356	348	341	351
26	397	409	404	390	406	451	558	480	353	399	336	344
27	398	413	416	385	400	473	565	470	355	435	333	340
28	398	418	415	382	399	485	605	464	356	371	333	340
29	399	e400	399	390	---	423	705	458	351	360	331	344
30	399	414	392	383	---	417	851	449	348	354	331	341
31	384	---	396	385	---	417	---	439	---	349	338	---
<b>Total</b>	13,089	12,650	12,459	11,903	11,007	13,185	14,949	18,864	11,821	10,818	10,723	10,232
<b>Mean</b>	422	422	402	384	393	425	498	609	394	349	346	341
<b>Max</b>	496	541	441	420	414	494	851	915	497	435	373	379
<b>Min</b>	384	381	370	300	340	376	418	439	348	329	330	329
<b>Ac-ft</b>	25,960	25,090	24,710	23,610	21,830	26,150	29,650	37,420	23,450	21,460	21,270	20,300

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	431	422	414	403	398	405	496	845	799	494	430	424
<b>Max</b>	710	697	641	586	572	539	671	1,725	1,479	917	759	704
<b>(WY)</b>	(1914)	(1914)	(1997)	(1997)	(1914)	(1917)	(1925)	(1997)	(1997)	(1913)	(1913)	(1913)
<b>Min</b>	297	297	304	304	303	313	369	388	341	282	273	282
<b>(WY)</b>	(1935)	(1932)	(1932)	(1932)	(1932)	(1943)	(1941)	(1934)	(1931)	(1931)	(1934)	(1934)

\* During periods of operation (June 1913 to December 1917, July 1918 to October 1921, June 1922 to September 1973, August 1983 to September 1986, and October 1988 to current year).

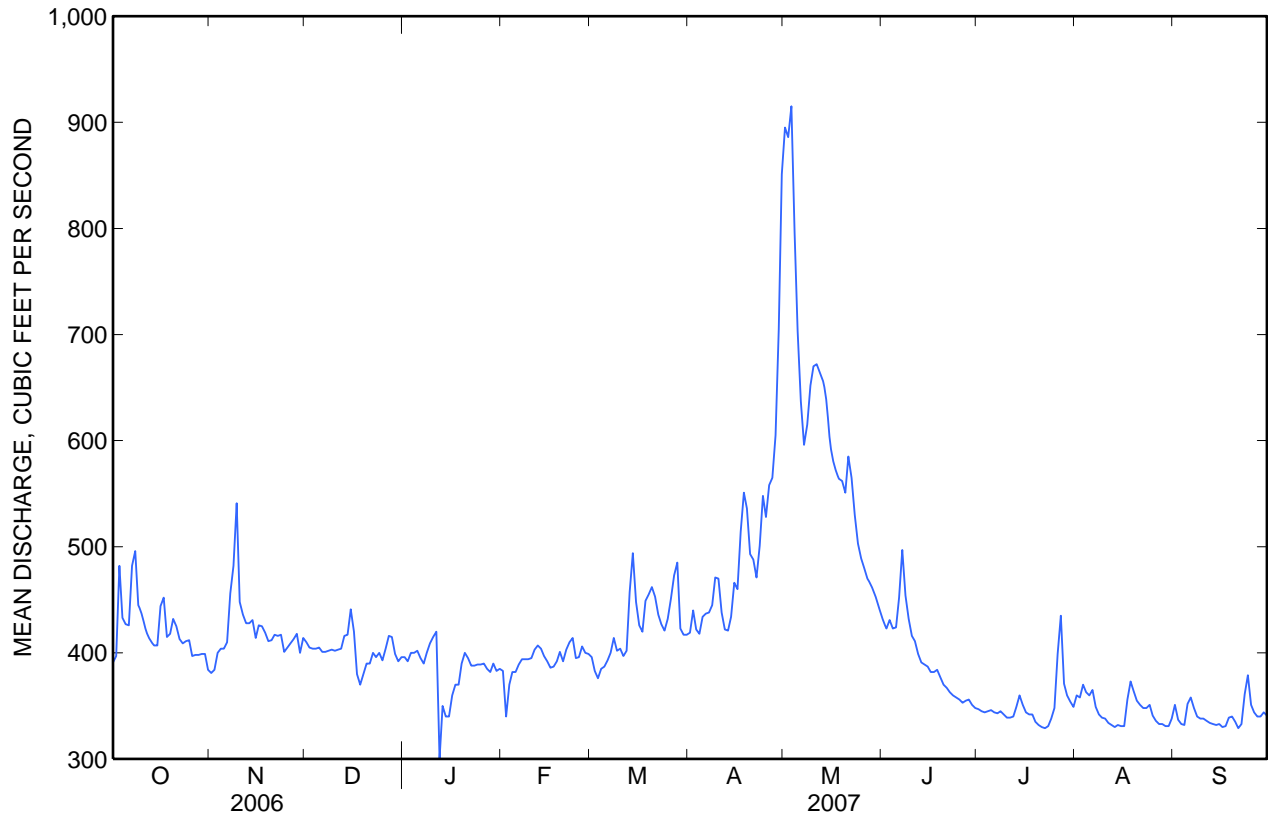
06037500 MADISON RIVER NEAR WEST YELLOWSTONE, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1913 - 2007*	
<b>Annual total</b>	174,557		151,700			
<b>Annual mean</b>	478		416		495	
<b>Highest annual mean</b>					789	1997
<b>Lowest annual mean</b>					337	1934
<b>Highest daily mean</b>	1,310	May 20	915	May 3	2,750	May 18, 1996
<b>Lowest daily mean</b>	330	Feb 17	300	Jan 12	245	Jan 1, 1942
<b>Annual seven-day minimum</b>	356	Feb 16	333	Aug 10	267	Aug 6, 1931
<b>Maximum peak flow</b>			<sup>a</sup> 992	May 1	<sup>c</sup> 2,820	May 18, 1996
<b>Maximum peak stage</b>			<sup>b</sup> 3.24	Jan 17	<sup>d</sup> 10.00	Jan 8, 1937
<b>Instantaneous low flow</b>					<sup>e</sup> 100	Feb 7, 1933
<b>Annual runoff (ac-ft)</b>	346,200		300,900		358,900	
<b>10 percent exceeds</b>	739		499		734	
<b>50 percent exceeds</b>	405		400		427	
<b>90 percent exceeds</b>	379		339		340	

\* During periods of operation (June 1913 to December 1917, July 1918 to October 1921, June 1922 to September 1973, August 1983 to September 1986, and October 1988 to current year).

- <sup>a</sup> Gage height, 2.43 ft.
- <sup>b</sup> Backwater from ice.
- <sup>c</sup> Gage height, 3.78 ft.
- <sup>d</sup> About, backwater from ice.
- <sup>e</sup> Result of freezeup.





## Water-Data Report 2007

**06038000 HEBGEN LAKE NEAR WEST YELLOWSTONE, MT**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°51'51", long 111°20'09" referenced to North American Datum of 1927, in SW ¼ NW ¼ sec.23, T.11 S., R.3 E., Gallatin County, MT, Hydrologic Unit 10020007, at Hebgen Dam on Madison River, 18 mi northwest of West Yellowstone, and at river mile 103.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1936 to current year. Records prior to October 1939, published only in Water Supply Paper (WSP) 1309. Figures of contents published in WSP 1629, 1709, and 1729 have been found to be in error and should not be used. Prior to Oct. 1, 1949, published as Hebgen Reservoir near West Yellowstone. Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana.

REVISED RECORDS.--WSP 1916: 1959-60.

COOPERATION.--Records furnished by PPL EnergyPlus, LLC.

REMARKS.--Elevation of gage is at sea level (levels by The Montana Power Co.). Prior to earthquake of Aug. 17, 1959, elevation of gage was 9.74 ft higher, also at sea level. Reservoir is formed by earthfill dam with concrete core and spillway completed in 1915, repaired in 1960 following severe earthquake of Aug. 17, 1959, that lowered dam 9.74 ft and deformed reservoir area. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Subsequent usable capacity is 377,500 acre-ft, between elevation 6,473.00 ft, bottom of outlet tower, and 6,534.87 ft, spillway crest. Dead storage is 7,340 acre-ft below elevation 6,473.00 ft. Prior to Aug. 17, 1959, usable capacity, 344,700 acre-ft between 6,483.11 ft, bottom of outlet tower, and 6,544.61 ft, spillway crest. Observations of reservoir level prior and subsequent to earthquake indicate smaller increases in capacity than indicated by new capacity table. Figures given herein represent usable contents. Water is used for power and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 380,500 acre-ft, July 21, 1987, elevation, 6,535.0 ft; minimum monthend, 670 acre-ft, Dec. 31, 1936, by capacity table used prior to August 1959.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 351,300 acre-ft, June 25-27, elevation, 6,532.73 ft; minimum observed, 273,600 acre-ft, Mar. 31, elevation, 6,525.95 ft.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	6,530.89	328,800	--
October 31	6,530.38	322,800	-6,000
November 30	6,529.68	314,700	-8,100
December 31	6,528.67	303,400	-11,300
Calendar Year 2006	--	--	-8,400
January 31	6,527.54	290,900	-12,500
February 28	6,526.62	280,900	-10,000
March 31	6,525.95	273,600	-7,300
April 30	6,526.97	284,700	+11,100
May 31	6,531.30	333,700	+49,000
June 30	6,532.63	350,000	+16,300
July 31	6,529.14	308,600	-41,400
August 31	6,526.88	283,700	-24,900
September 30	6,526.05	274,700	-9,000
Water Year 2007	--	--	-54,100



Water-Data Report 2007

## 06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°52'00", long 111°20'15" referenced to North American Datum of 1927, in NE ¼ NE ¼ NE ¼ sec.22, T.11 S., R.3 E., Gallatin County, MT, Hydrologic Unit 10020007, Gallatin National Forest, on right bank 1,500 ft downstream from Hebgen Dam, 8 mi northwest of Grayling, 17 mi upstream from West Fork, and at river mile 108.8.

DRAINAGE AREA.--905 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--June 1909 to current year. Prior to October 1938 adjusted runoff only, published in Water Supply Paper (WSP) 1309. Prior to October 1949, published as "below Hebgen Reservoir".

REVISED RECORDS.-- WSP 1509: 1948. WSP 1559: Drainage area. WSP 1629: 1943. WSP 1709: 1959. WSP 1729: 1943.

GAGE.--Water-stage recorder. Elevation of gage is 6,448.47 ft (after 1959 earthquake) referenced to the National Geodetic Vertical Datum of 1929. Prior to July 13, 1943, nonrecording gage in stilling well.

REMARKS.--Records are excellent. Flow is completely regulated by Hebgen Lake (station number 06038000). Diversions for irrigation include about 1,100 acres upstream from station. Bureau of Reclamation satellite telemeter is located at the station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--98 years, 1,015 ft<sup>3</sup>/s, 15.23 in/yr, 735,400 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,200 ft<sup>3</sup>/s, Aug. 17, 1959, caused by wave over Hebgen Dam during earthquake, gage height, 5.3 ft, from floodmark, from rating curve extended above 3,500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; maximum observed unaffected by wave over dam, 5,090 ft<sup>3</sup>/s, June 3, 1943, gage height, 3.69 ft; minimum daily, 5.0 ft<sup>3</sup>/s, May 9-12, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,880 ft<sup>3</sup>/s, Aug. 1, gage height, 2.40 ft; minimum daily, 344 ft<sup>3</sup>/s, June 7.

## Water-Data Report 2007

## 06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	932	927	996	984	957	942	921	646	421	1,050	1,690	857
2	944	923	996	983	954	942	921	650	421	1,030	1,770	853
3	932	922	998	979	953	942	868	653	421	1,020	1,660	852
4	932	921	996	978	953	938	825	654	394	1,010	1,430	853
5	932	922	996	977	953	935	828	654	366	997	1,340	853
6	931	921	996	976	953	932	829	654	367	984	1,230	852
7	932	924	996	974	953	931	827	654	344	974	1,070	852
8	932	924	997	974	953	931	823	654	350	1,040	999	854
9	932	927	996	974	952	931	824	657	408	1,230	997	855
10	932	924	996	975	950	931	827	663	432	1,470	997	854
11	932	922	996	974	949	931	826	664	432	1,600	996	853
12	931	923	996	974	950	931	823	671	433	1,690	991	855
13	931	923	996	974	948	931	822	671	406	1,770	931	854
14	931	923	996	974	944	930	822	671	396	1,600	826	852
15	931	921	994	974	945	930	822	671	415	1,390	788	852
16	931	921	991	974	945	928	823	671	440	1,310	793	853
17	931	921	989	974	942	926	822	629	440	1,290	792	801
18	931	921	987	974	944	924	775	563	440	1,280	789	740
19	931	921	985	974	944	925	740	528	460	1,480	789	740
20	931	959	985	973	944	928	740	530	487	1,580	789	740
21	931	1,010	985	973	942	927	740	531	487	1,560	789	707
22	931	1,010	985	970	942	924	740	530	487	1,550	790	671
23	931	1,010	985	964	942	923	693	500	487	1,530	789	671
24	931	1,010	985	963	942	921	639	468	487	1,450	787	671
25	931	1,010	985	963	942	922	641	473	516	1,220	786	671
26	931	1,010	985	963	942	922	645	474	577	1,130	786	671
27	931	1,000	985	963	942	921	646	474	643	1,120	825	671
28	931	1,000	985	963	942	927	646	474	719	1,120	861	670
29	931	999	985	961	---	923	646	447	827	1,120	859	670
30	931	998	985	959	---	922	646	421	1,010	1,250	858	671
31	928	---	985	960	---	921	---	421	---	1,470	859	---
<b>Total</b>	28,880	28,547	30,713	30,115	26,522	28,792	23,190	18,021	14,513	40,315	30,656	23,419
<b>Mean</b>	932	952	991	971	947	929	773	581	484	1,300	989	781
<b>Max</b>	944	1,010	998	984	957	942	921	671	1,010	1,770	1,770	857
<b>Min</b>	928	921	985	959	942	921	639	421	344	974	786	670
<b>Ac-ft</b>	57,280	56,620	60,920	59,730	52,610	57,110	46,000	35,740	28,790	79,960	60,810	46,450

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 – 2007 (UNADJUSTED), BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,329	1,366	978	899	843	843	922	855	1,243	1,032	1,075	1,118
<b>Max</b>	2,477	2,535	2,838	1,407	1,905	1,574	2,343	2,494	2,940	2,058	1,722	1,688
<b>(WY)</b>	(1962)	(1960)	(1960)	(1944)	(1943)	(1947)	(1948)	(1996)	(1943)	(1965)	(1939)	(1982)
<b>Min</b>	215	501	410	180	181	291	217	45.5	96.0	503	662	368
<b>(WY)</b>	(1942)	(1941)	(1940)	(1940)	(1940)	(1941)	(1961)	(1962)	(1960)	(1978)	(1960)	(1941)

06038500 MADISON RIVER BELOW HEBGEN LAKE, NEAR GRAYLING, MT—Continued

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEAR 2007, ADJUSTED FOR CHANGE IN CONTENTS IN HEBGEN LAKE

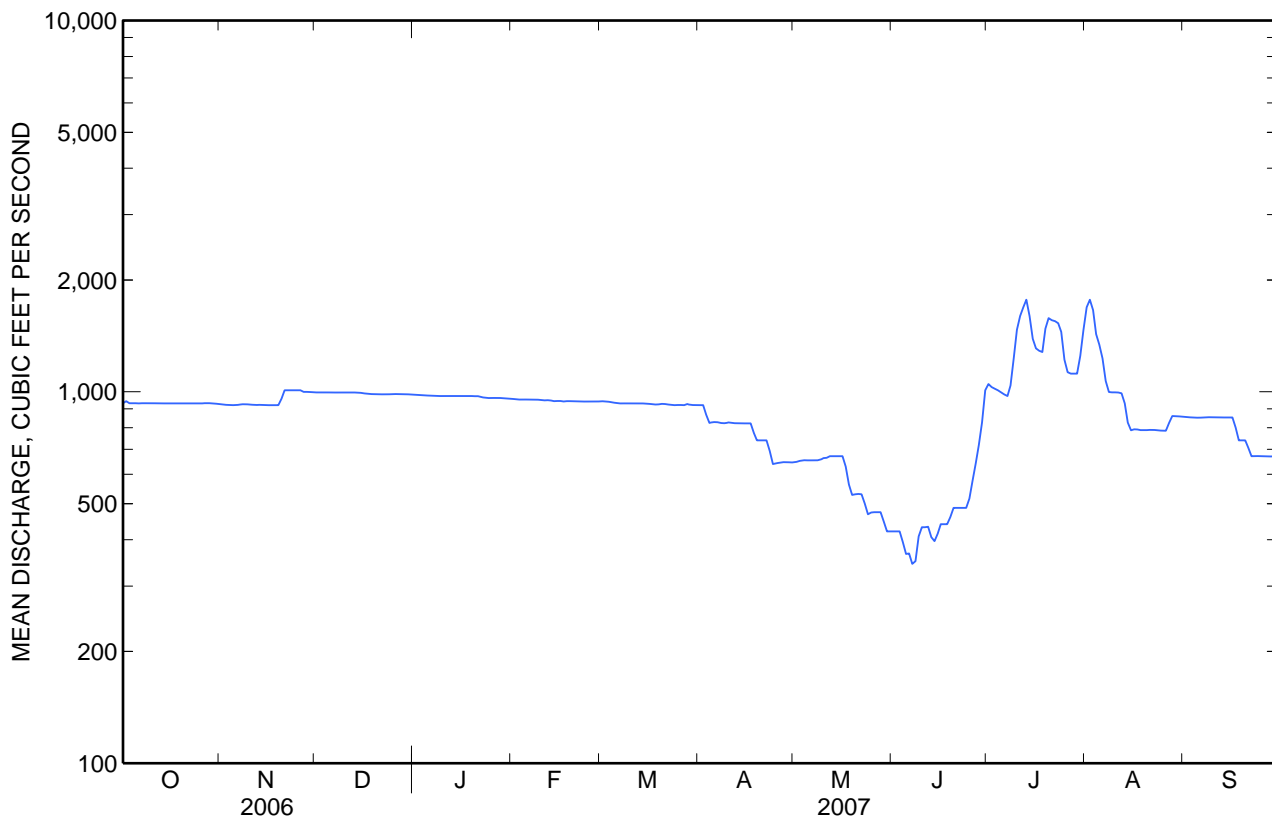
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	834	815	807	768	767	810	960	1,378	758	627	584	629
<b>Cfsm</b>	0.92	0.90	0.89	0.85	0.85	0.90	1.06	1.52	0.84	0.69	0.65	0.70
<b>In</b>	1.06	1.01	1.03	0.98	0.88	1.03	1.18	1.76	0.93	0.80	0.74	0.78
<b>Ac-ft</b>	51,280	48,520	49,620	47,230	42,610	49,810	57,100	84,740	45,090	38,560	35,910	37,450

OBSERVED

<b>Calendar Year 2006</b>	<b>Total</b>	388,940	<b>Mean</b>	1,066	<b>Max</b>	2,400	<b>Min</b>	749	<b>Ac-ft</b>	771,500
<b>Water Year 2007</b>	<b>Total</b>	323,683	<b>Mean</b>	887	<b>Max</b>	1,770	<b>Min</b>	344	<b>Ac-ft</b>	642,000

ADJUSTED

<b>Calendar Year 2006</b>	<b>Total</b>	384,724	<b>Mean</b>	1,054	<b>Cfsm</b>	1.16	<b>In</b>	15.81	<b>Ac-ft</b>	763,100
<b>Water Year 2007</b>	<b>Total</b>	296,395	<b>Mean</b>	812	<b>Cfsm</b>	0.90	<b>In</b>	12.18	<b>Ac-ft</b>	587,900







Water-Data Report 2007

**06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 44°53'22", long 111°34'46" referenced to North American Datum of 1927, in NE ¼ NE ¼ SE ¼ sec.10, T.11 S., R.13., Madison County, MT, Hydrologic Unit 10020007, 75 ft upstream from county bridge, 0.2 mi upstream from West Fork Madison River, and 22 mi south of Cameron, and at river mile 89.8.

DRAINAGE AREA.--1,065 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--September 1959 to September 1963, May 1978 to September 1994 (seasonal records only), October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 5,860 ft, referenced to the National Geodetic Vertical Datum of 1929. Aug. 31, 1959 to Oct. 2, 1959, nonrecording gage 75 ft downstream at elevation 0.96 ft lower. Oct. 3, 1959 to September 1963, water-stage recorder at present site and elevation. May 1978 to September 1994, nonrecording gage 75 ft downstream at present elevation.

REMARKS.--Records are good. Flow is regulated by Hebgen Lake (station 06038000). Diversions for irrigation of about 1,500 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,010	988	1,070	1,070	1,050	1,030	1,020	1,040	663	1,190	1,700	970
2	1,020	994	1,070	1,070	1,040	1,040	1,020	1,100	688	1,190	1,910	959
3	1,040	1,010	1,070	1,070	1,060	e1,030	1,000	1,170	714	1,180	1,900	954
4	1,020	1,010	1,060	1,070	1,050	1,040	938	1,060	721	1,170	1,690	957
5	1,020	1,010	1,060	1,070	1,050	1,040	917	978	702	1,160	1,510	970
6	1,020	1,010	1,060	1,070	1,040	1,050	925	910	734	1,140	1,430	967
7	1,060	1,010	1,070	1,070	1,050	1,050	935	889	735	1,130	1,260	955
8	1,040	1,030	1,070	1,070	1,050	1,060	951	931	642	1,140	1,120	944
9	1,050	1,030	1,070	1,070	1,050	1,050	965	1,010	631	1,280	1,080	945
10	1,020	1,010	1,070	1,080	1,050	1,050	951	1,060	655	1,500	1,080	942
11	1,020	1,020	1,080	e1,030	1,050	1,060	933	1,090	672	1,730	1,070	942
12	1,020	1,010	1,080	e1,000	1,050	1,060	918	1,180	679	1,790	1,070	938
13	1,020	1,010	1,080	e1,020	1,030	1,050	908	1,260	671	1,940	1,070	933
14	1,020	1,010	1,080	e1,040	1,030	1,040	909	1,280	645	1,880	974	939
15	1,020	1,000	1,080	e1,040	1,040	1,040	913	1,220	639	1,670	878	935
16	1,040	1,010	1,070	e1,050	1,030	1,040	930	1,170	662	1,510	856	928
17	1,030	1,010	e1,050	e1,050	1,030	1,040	960	1,150	675	1,470	868	913
18	1,010	1,010	e1,030	e1,050	1,030	1,040	982	1,080	660	1,450	881	847
19	1,020	1,010	e1,050	1,060	1,020	1,040	912	1,020	640	1,500	862	816
20	1,030	1,010	1,070	1,060	1,020	1,040	868	990	656	1,700	850	809
21	1,020	1,070	1,070	1,060	1,020	1,030	855	974	675	1,720	855	797
22	1,020	1,080	1,070	1,060	1,020	1,030	850	918	677	1,700	863	763
23	1,010	1,080	1,080	1,060	1,040	1,030	845	848	670	1,680	879	763
24	1,020	1,080	1,080	1,050	1,030	1,030	788	779	664	1,650	881	768
25	1,020	1,080	1,070	1,060	1,030	1,030	780	739	657	1,480	877	750
26	1,010	1,080	1,080	1,050	1,040	1,030	794	717	701	1,310	875	745
27	1,020	1,090	1,080	e1,040	1,040	1,050	800	703	754	1,280	881	745
28	1,010	1,070	1,080	e1,020	1,030	1,040	835	722	814	1,260	936	743
29	1,010	1,070	1,080	e1,020	---	1,010	921	725	889	1,250	953	761
30	1,000	1,070	1,070	e1,040	---	1,010	1,000	681	1,050	1,270	956	755
31	988	---	1,070	1,050	---	1,010	---	663	---	1,480	969	---
<b>Total</b>	31,658	30,972	33,170	32,620	29,070	32,190	27,323	30,057	21,035	44,800	33,984	26,153
<b>Mean</b>	1,021	1,032	1,070	1,052	1,038	1,038	911	970	701	1,445	1,096	872
<b>Max</b>	1,060	1,090	1,080	1,080	1,060	1,060	1,020	1,280	1,050	1,940	1,910	970
<b>Min</b>	988	988	1,030	1,000	1,020	1,010	780	663	631	1,130	850	743
<b>Ac-ft</b>	62,790	61,430	65,790	64,700	57,660	63,850	54,200	59,620	41,720	88,860	67,410	51,870

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,415	1,412	1,155	1,025	1,017	1,022	993	1,361	1,804	1,319	1,122	1,124
<b>Max</b>	2,570	2,780	3,005	1,449	1,521	1,611	1,527	2,865	3,862	2,125	1,672	1,567
<b>(WY)</b>	(1962)	(1960)	(1960)	(1999)	(1999)	(1999)	(1995)	(1997)	(1997)	(1982)	(1997)	(1996)
<b>Min</b>	854	736	739	737	626	525	370	445	619	716	734	732
<b>(WY)</b>	(2004)	(1961)	(1961)	(1961)	(1963)	(1963)	(1961)	(1961)	(1960)	(1979)	(1960)	(1960)

\* During periods of operation [September 1959 to September 1963; May 1978 to September 1994 (seasonal records only), October 1994 to current year.]

06038800 MADISON RIVER AT KIRBY RANCH, NEAR CAMERON, MT—Continued

SUMMARY STATISTICS

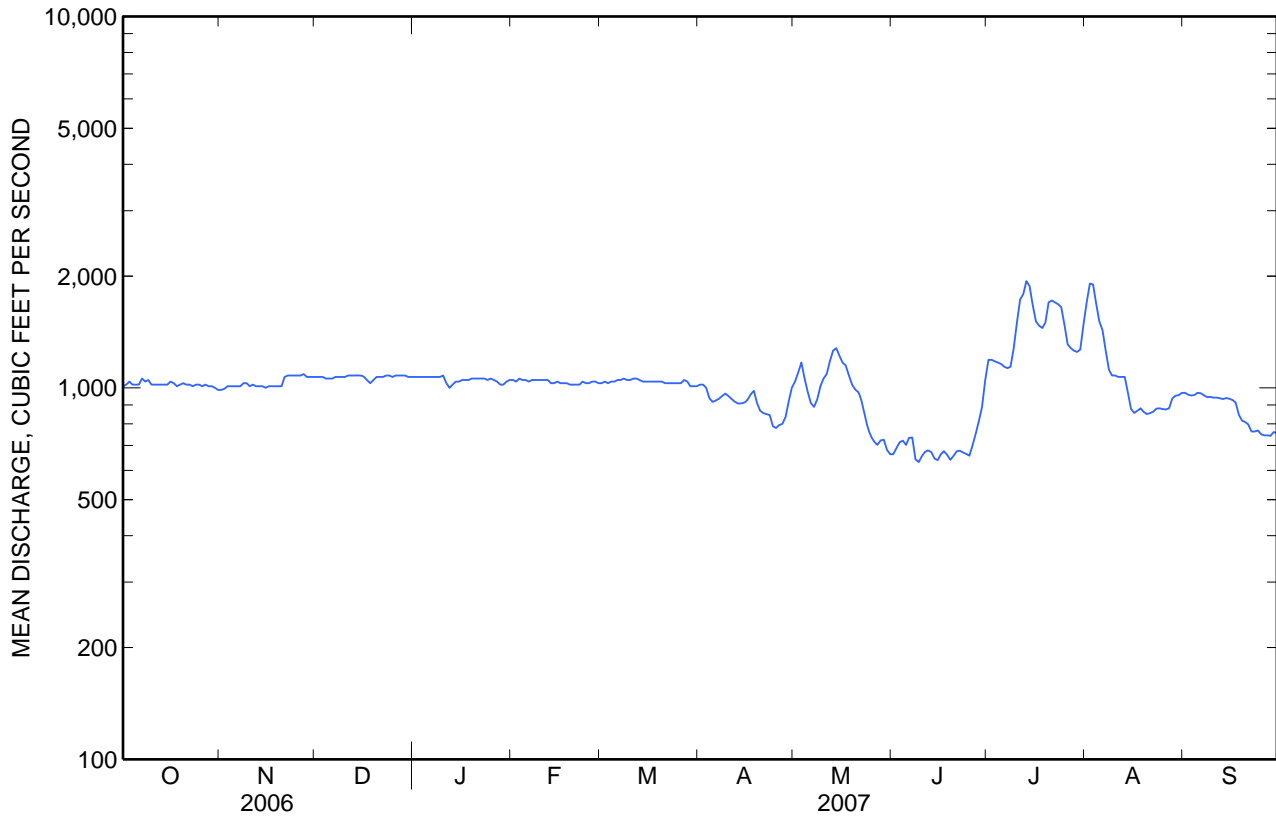
	Calendar Year 2006		Water Year 2007		Water Years 1959 - 2007*	
<b>Annual total</b>	456,210		373,032			
<b>Annual mean</b>	1,250		1,022		1,239	
<b>Highest annual mean</b>					1,896	1997
<b>Lowest annual mean</b>					733	1961
<b>Highest daily mean</b>	3,360	May 26	1,940	Jul 13	5,030	May 31, 1993
<b>Lowest daily mean</b>	988	Oct 31	631	Jun 9	139	Sep 1, 1959
<b>Annual seven-day minimum</b>	1,000	Oct 28	654	Jun 14	152	Sep 1, 1959
<b>Maximum peak flow</b>			1,960	Jul 13	<sup>b</sup> 5,030	May 30, 1993
<b>Maximum peak stage</b>			2.60	Jul 13	3.97	Jun 7, 1996
<b>Instantaneous low flow</b>			<sup>a</sup> 627	Jun 8	<sup>c</sup> 139	Sep 1, 1959
<b>Annual runoff (ac-ft)</b>	904,900		739,900		897,800	
<b>10 percent exceeds</b>	1,640		1,180		1,930	
<b>50 percent exceeds</b>	1,100		1,030		1,090	
<b>90 percent exceeds</b>	1,020		748		746	

\* During periods of operation [September 1959 to September 1963; May 1978 to September 1994 (seasonal records only), October 1994 to current year.]

<sup>a</sup> Gage height, 1.58 ft.

<sup>b</sup> Observed, gage height, 3.15 ft; previous site at present datum.

<sup>c</sup> Observed, present site and datum.



## Water-Data Report 2007

**06040500 ENNIS LAKE NEAR MCALLISTER, MT**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 45°28'12", long 111°38'15" referenced to North American Datum of 1927, in NW ¼ SW ¼ sec.20, T.4 S., R.1 E., Madison County, MT, Hydrologic Unit 10020007, at Madison Dam on Madison River, 5 mi northeast of McAllister, and at river mile 40.3.

DRAINAGE AREA.--2,181 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1936 to September 1975 (total contents), October 1975 to current year (usable contents). Records prior to October 1939, published only in Water Supply Paper 1309. Prior to 1949, published as Madison Reservoir near McAllister. Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana.

GAGE.--Elevation of gage is at sea level (levels by the Montana Power Company).

COOPERATION.--Records furnished by PPL EnergyPlus, LLC.

REMARKS.--Reservoir is formed by timber crib dam completed in 1900. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity is 41,020 acre-ft between elevation 4,826.5 ft, bottom of penstock, and 4,841.5 ft, top of flashboard. Dead storage is 1,040 acre-ft below elevation 4,826.5 ft. Storage is not normally drawn below 4,831.0 ft, 6,810 acre-ft. Figures given herein represent usable contents. Water is used for power and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 40,830 acre-ft, June 20, 1968, elevation, 4,841.45 ft; minimum observed, 2,600 acre-ft, Mar. 31, 1937, elevation, 4,828.8 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 38,080 acre-ft, July 14-16, elevation, 4,841.00 ft; minimum observed, 27,450 acre-ft, Nov. 30, Dec. 1, and Feb. 3, elevation, 4,838.10 ft.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	4,840.20	35,070	--
October 31	4,840.40	32,120	-2,950
November 30	4,838.10	27,450	-4,670
December 31	4,838.30	28,160	+710
Calendar Year 2006	--	--	-1,430
January 31	4,838.70	29,590	+1,430
February 28	4,838.30	28,160	-1,430
March 31	4,838.60	29,230	+1,070
April 30	4,839.40	32,120	+2,890
May 31	4,840.50	36,200	+4,080
June 30	4,840.20	35,070	-1,130
July 31	4,840.10	34,690	-380
August 31	4,840.40	35,820	+1,130
September 30	4,840.20	35,070	-750
Water Year 2007	--	--	0

Water-Data Report 2007

**06040800 MADISON RIVER ABOVE POWERPLANT, NEAR MCALLISTER, MT**

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 45°29'12", long 111°37'59" referenced to North American Datum of 1927, in NW ¼ NE ¼ SW ¼ sec.17, T.4 S., R.1 E., Madison County, MT, Hydrologic Unit 10020007, on right bank 160 ft upstream from Madison powerplant, 1.4 mi downstream from Ennis Lake, 5.6 mi northeast of McAllister, and at river mile 38.9.

DRAINAGE AREA.--2,186 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 2002 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,690 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except for estimated daily discharges, which are poor. Flow is regulated by Hebgen Lake (station number 06038000) and Ennis Lake (station number 06040500). Diversions for irrigation of about 23,000 acres occur upstream from station. Flow through Madison Powerplant bypasses the station. U.S. Geological Survey satellite telemeter is installed at station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06040800 MADISON RIVER ABOVE POWERPLANT, NEAR MCALLISTER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	137	120	e100	100	131	112	217	227	227	188	562	109
2	135	120	e100	101	129	114	219	238	223	157	432	109
3	135	119	e100	128	125	e110	220	244	224	164	320	108
4	133	117	e100	126	126	113	220	376	224	218	479	109
5	132	115	e100	e110	128	113	220	452	376	344	246	109
6	130	114	e100	e110	130	113	220	447	739	198	265	109
7	135	115	139	110	249	114	218	440	1,260	354	216	110
8	134	114	161	119	327	116	218	430	934	499	115	110
9	132	113	190	138	327	119	220	313	276	320	101	110
10	132	114	212	141	325	119	221	261	219	132	88	112
11	129	113	213	e140	324	119	222	370	218	570	91	114
12	129	113	214	e135	323	120	222	452	222	251	99	112
13	129	112	214	e135	317	313	222	516	223	337	104	112
14	130	109	214	135	259	511	222	926	219	305	106	113
15	129	110	214	135	162	484	221	1,550	213	479	110	113
16	131	108	212	135	162	246	222	1,400	214	393	105	112
17	131	175	183	136	130	115	223	1,070	217	383	106	108
18	132	219	e100	137	111	105	224	683	216	298	110	108
19	133	219	116	138	112	105	228	489	214	542	117	107
20	133	235	125	139	114	105	230	539	211	631	114	111
21	132	265	126	141	114	104	231	882	209	624	114	115
22	132	202	128	239	152	104	230	767	207	625	113	115
23	131	165	130	269	222	104	230	819	206	636	113	110
24	130	165	158	134	219	103	216	615	204	314	115	107
25	129	164	234	110	156	103	207	365	200	584	110	106
26	128	125	133	111	116	101	208	223	208	461	107	106
27	126	e105	199	111	115	101	207	210	215	696	107	105
28	125	e100	270	110	113	101	208	225	213	577	108	104
29	124	e100	281	117	---	100	210	388	213	576	108	105
30	122	e100	e160	128	---	99	214	570	214	576	109	105
31	121	---	e100	132	---	129	---	337	---	579	109	---
<b>Total</b>	4,041	4,165	5,026	4,150	5,218	4,515	6,590	16,824	8,958	13,011	5,099	3,283
<b>Mean</b>	130	139	162	134	186	146	220	543	299	420	164	109
<b>Max</b>	137	265	281	269	327	511	231	1,550	1,260	696	562	115
<b>Min</b>	121	100	100	100	111	99	207	210	200	132	88	104
<b>Ac-ft</b>	8,020	8,260	9,970	8,230	10,350	8,960	13,070	33,370	17,770	25,810	10,110	6,510

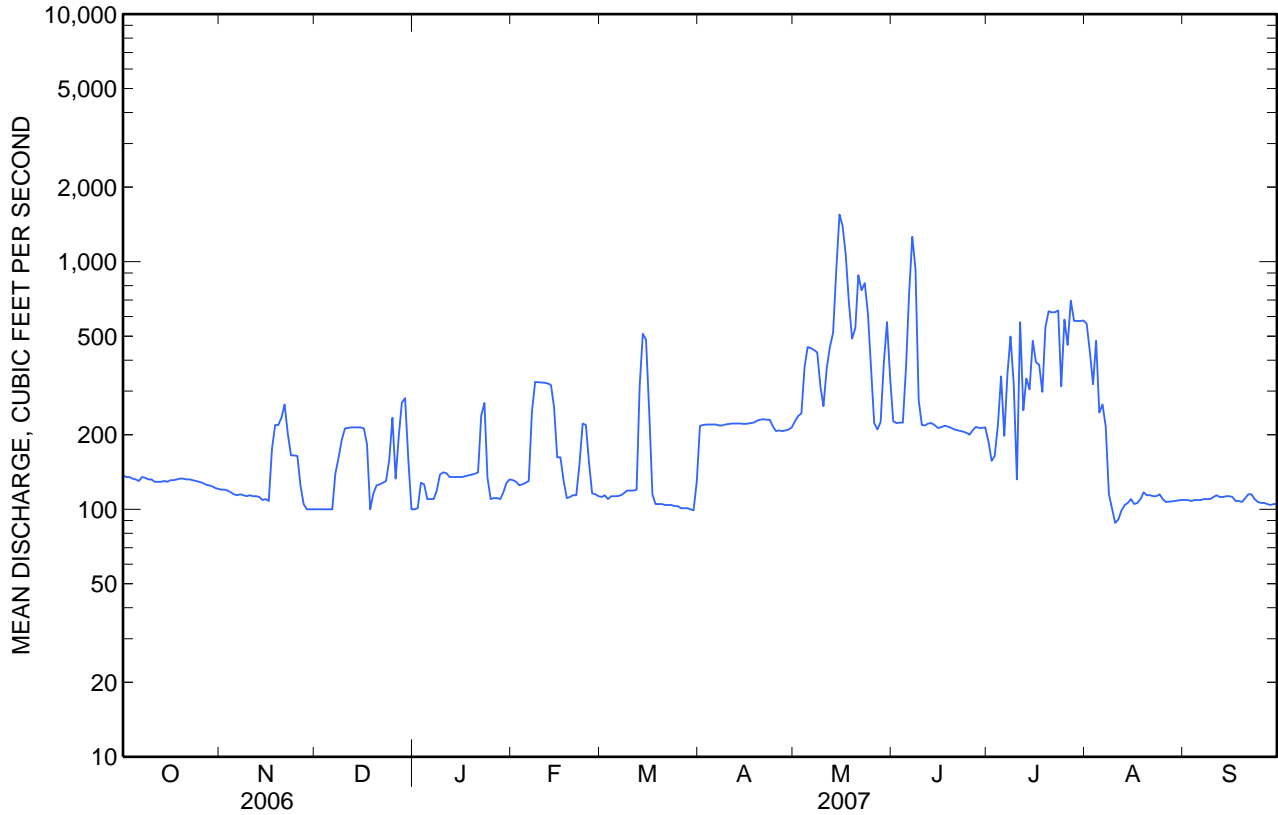
## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2007, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	221	192	145	151	146	135	246	767	1,068	418	155	144
<b>Max</b>	279	343	209	219	206	169	351	1,815	1,746	560	203	247
<b>(WY)</b>	(2005)	(2005)	(2005)	(2005)	(2005)	(2006)	(2002)	(2006)	(2005)	(2002)	(2002)	(2002)
<b>Min</b>	130	110	85.7	113	103	111	213	216	299	292	115	98.4
<b>(WY)</b>	(2007)	(2004)	(2003)	(2006)	(2003)	(2004)	(2005)	(2004)	(2007)	(2005)	(2005)	(2005)

06040800 MADISON RIVER ABOVE POWERPLANT, NEAR MCALLISTER, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 2002 - 2007	
<b>Annual total</b>	162,242		80,880			
<b>Annual mean</b>	444		222		316	
<b>Highest annual mean</b>					448	2006
<b>Lowest annual mean</b>					217	2004
<b>Highest daily mean</b>	3,860	May 27	1,550	May 15	3,860	May 27, 2006
<b>Lowest daily mean</b>	78	Jan 10	88	Aug 10	73	Dec 27, 2002
<b>Annual seven-day minimum</b>	86	Jan 4	100	Aug 9	77	Dec 22, 2002
<b>Maximum peak flow</b>			2,060	Jul 23	4,000	Jun 5, 2006
<b>Maximum peak stage</b>			7.36	Jul 23	9.47	Jun 5, 2006
<b>Annual runoff (ac-ft)</b>	321,800		160,400		229,100	
<b>10 percent exceeds</b>	913		452		600	
<b>50 percent exceeds</b>	139		136		139	
<b>90 percent exceeds</b>	100		105		95	





Water-Data Report 2007

## 06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT

Missouri Headwaters Basin  
Madison Subbasin

LOCATION.--Lat 45°29'25", long 111°38'00" referenced to North American Datum of 1927, in SW ¼ SE ¼ NW ¼ sec.17, T.4 S., R.1 E., Madison County, MT, Hydrologic Unit 10020007, on right bank 500 ft downstream from Madison powerplant, 1.5 mi downstream from Ennis Lake, 5.7 mi northeast of McAllister, and at river mile 38.8.

DRAINAGE AREA.--2,186 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1901 to December 1905, October 1906 to current year. Prior to October 1938 adjusted monthly runoff only, published in Water Supply Paper (WSP) 1309. Published as "below Madison Reservoir" 1938-49. Records published as "near Red Bluff" 1890-94 and as "near Norris" 1910 are not equivalent and are published as "near Norris" in WSP 1309.

REVISED RECORDS.-- WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,689.03 ft (levels by U.S. Army Corps of Engineers), referenced to the National Geodetic Vertical Datum of 1929. Prior to May 7, 1941, nonrecording gage in wooden stilling well at present site at different elevation. May 7, 1941, to Jan. 13, 1945, nonrecording gages in concrete stilling well at present site and elevation.

REMARKS.--Records are excellent. Flow is regulated by Hebgen Lake (station number 06038000) and Ennis Lake (station number 06040500). Diversions for irrigation of about 23,000 acres occur upstream from the station. U.S. Army Corps of Engineers satellite telemeter is located at the station.



## Water-Data Report 2007

## 06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,440	1,510	1,240	1,270	1,520	1,280	1,370	1,490	1,310	1,180	1,590	1,130
2	1,440	1,510	1,240	1,310	1,510	1,380	1,370	1,590	1,200	1,180	1,530	1,130
3	1,440	1,500	1,240	1,410	1,270	1,450	1,370	1,600	1,190	1,290	1,430	1,140
4	1,420	1,500	1,230	1,430	1,280	1,440	1,370	1,720	1,270	1,320	1,580	1,130
5	1,440	1,490	1,330	1,420	1,510	1,430	1,370	1,800	1,490	1,450	1,360	1,130
6	1,440	1,490	1,450	1,320	1,520	1,440	1,380	1,800	1,810	1,270	1,550	1,130
7	1,450	1,490	1,510	1,230	1,630	1,440	1,350	1,790	2,240	1,400	1,600	1,130
8	1,440	1,490	1,530	1,200	1,700	1,440	1,300	1,770	1,950	1,580	1,500	1,130
9	1,450	1,490	1,560	1,170	1,700	1,480	1,310	1,670	1,360	1,400	1,300	1,140
10	1,440	1,490	1,580	1,180	1,690	1,500	1,310	1,630	1,300	1,090	1,120	1,140
11	1,440	1,490	1,580	1,180	1,690	1,490	1,320	1,570	1,300	1,610	1,120	1,140
12	1,440	1,490	1,580	1,170	1,700	1,490	1,310	1,540	1,400	1,310	1,220	1,140
13	1,450	1,480	1,580	1,170	1,690	1,670	1,310	1,600	1,470	1,490	1,270	1,140
14	1,460	1,480	1,580	1,170	1,630	1,850	1,300	1,960	1,390	1,660	1,270	1,140
15	1,460	1,480	1,580	1,170	1,540	1,830	1,300	2,560	1,240	1,830	1,280	1,150
16	1,470	1,470	1,580	1,160	1,540	1,610	1,300	2,410	1,180	1,750	1,190	1,160
17	1,480	1,540	1,550	1,170	1,510	1,480	1,300	2,080	1,180	1,720	1,150	1,150
18	1,500	1,580	1,300	1,170	1,300	1,470	1,300	1,760	1,180	1,460	1,150	1,140
19	1,530	1,580	1,200	1,170	1,240	1,470	1,300	1,580	1,180	1,640	1,150	1,140
20	1,530	1,590	1,180	1,170	1,320	1,470	1,320	1,620	1,180	1,730	1,150	1,150
21	1,530	1,620	1,160	1,390	1,340	1,470	1,340	1,980	1,160	1,740	1,150	1,150
22	1,530	1,560	1,170	1,600	1,470	1,470	1,340	1,910	1,150	1,730	1,140	1,150
23	1,530	1,530	1,200	1,630	1,590	1,470	1,330	1,920	1,150	1,740	1,130	1,150
24	1,530	1,530	1,450	1,510	1,590	1,470	1,310	1,700	1,140	1,480	1,120	1,140
25	1,530	1,530	1,610	1,480	1,530	1,470	1,300	1,500	1,130	1,860	1,120	1,140
26	1,520	1,490	1,520	1,480	1,490	1,460	1,300	1,230	1,130	1,630	1,130	1,140
27	1,520	1,470	1,580	1,490	1,490	1,460	1,300	1,140	1,140	1,720	1,130	1,140
28	1,520	1,460	1,650	1,480	1,370	1,470	1,300	1,170	1,130	1,620	1,130	1,140
29	1,520	1,460	1,650	1,310	---	1,460	1,300	1,450	1,130	1,620	1,130	1,140
30	1,520	1,370	1,540	1,160	---	1,390	1,300	1,690	1,190	1,620	1,140	1,130
31	1,510	---	1,350	1,280	---	1,290	---	1,460	---	1,610	1,130	---
<b>Total</b>	45,920	45,160	44,500	40,450	42,360	45,990	39,680	52,690	39,270	47,730	38,960	34,200
<b>Mean</b>	1,481	1,505	1,435	1,305	1,513	1,484	1,323	1,700	1,309	1,540	1,257	1,140
<b>Max</b>	1,530	1,620	1,650	1,630	1,700	1,850	1,380	2,560	2,240	1,860	1,600	1,160
<b>Min</b>	1,420	1,370	1,160	1,160	1,240	1,280	1,300	1,140	1,130	1,090	1,120	1,130
<b>Ac-ft</b>	91,080	89,570	88,270	80,230	84,020	91,220	78,710	104,500	77,890	94,670	77,280	67,840

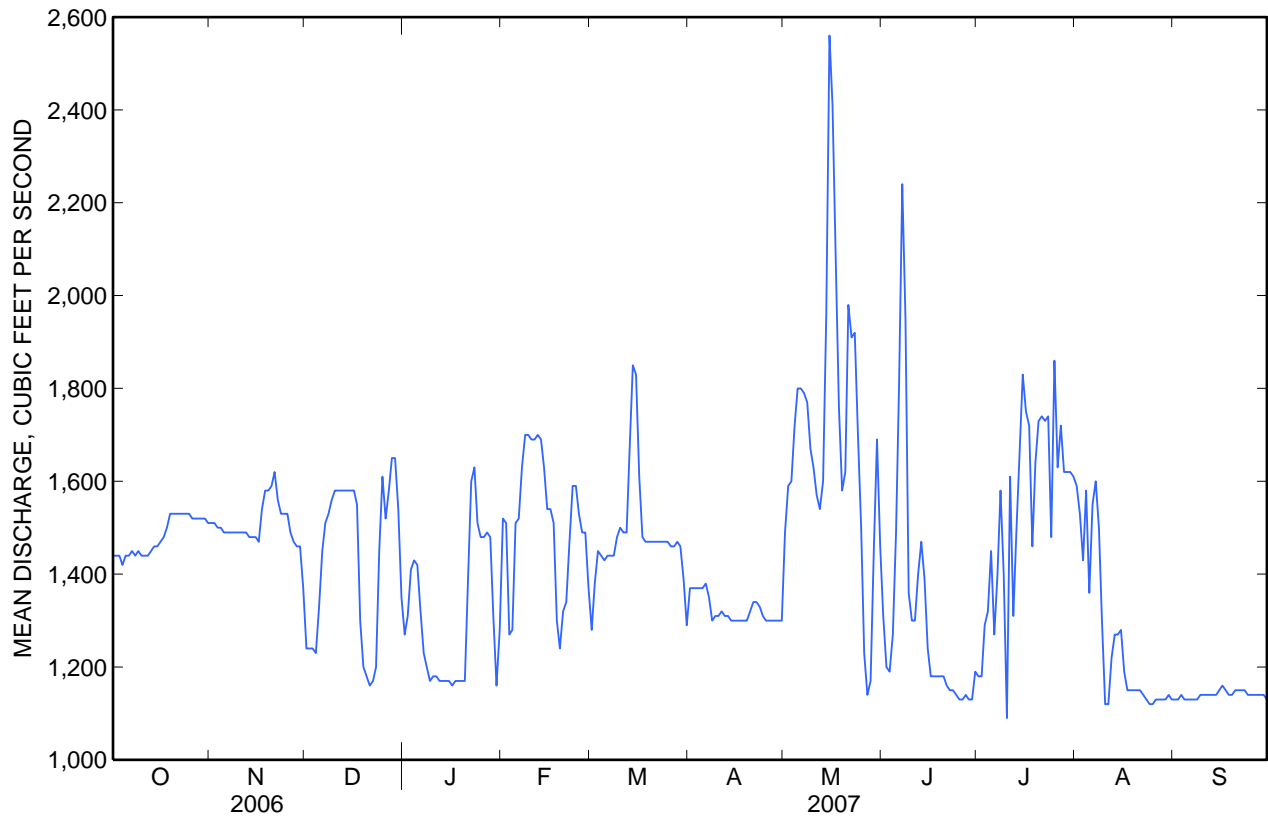
**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	1,894	1,963	1,510	1,387	1,395	1,445	1,544	2,015	2,946	1,844	1,514	1,596
<b>Max</b>	2,963	3,318	3,243	2,061	2,336	2,087	3,008	4,189	6,135	3,454	2,339	2,298
<b>(WY)</b>	(1960)	(1960)	(1960)	(1999)	(1943)	(1939)	(1948)	(1969)	(1997)	(1965)	(1971)	(1972)
<b>Min</b>	810	961	974	767	781	891	717	859	1,122	972	1,044	934
<b>(WY)</b>	(1942)	(1941)	(1940)	(1940)	(1940)	(1941)	(1941)	(1961)	(1992)	(1961)	(1961)	(1941)

06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1939 - 2007	
<b>Annual total</b>	647,510		516,910			
<b>Annual mean</b>	1,774		1,416		1,754	
<b>Highest annual mean</b>					2,530	1997
<b>Lowest annual mean</b>					1,047	1941
<b>Highest daily mean</b>	5,230	May 27	2,560	May 15	9,210	Jun 11, 1970
<b>Lowest daily mean</b>	1,160	Aug 31	1,090	Jul 10	210	Aug 25, 1959
<b>Annual seven-day minimum</b>	1,170	Aug 30	1,130	Aug 23	390	Aug 23, 1959
<b>Maximum peak flow</b>			3,400	Jul 23	9,550	Jun 12, 1970
<b>Maximum peak stage</b>			4.67	Jul 23	8.01	Jun 12, 1970
<b>Annual runoff (ac-ft)</b>	1,284,000		1,025,000		1,271,000	
<b>10 percent exceeds</b>	2,210		1,670		2,660	
<b>50 percent exceeds</b>	1,530		1,440		1,550	
<b>90 percent exceeds</b>	1,290		1,140		1,100	



**06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1972-73, 1977 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1977 to current year.

INSTRUMENTATION.--Temperature recorder since June 21, 1977.

REMARKS.--Daily water temperature records are rated excellent. Missing daily temperature data for July 9-11 are due to equipment problems. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 24.5°C, July 22 and 23, 2003 and July 28 and 29, 2006; minimum, 0.0°C several to many days during winter months most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 24.0°C, July 6, 7, 30, and 31; minimum, 0.0°C, Nov. 27-29.

## 06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	13.5	13.0	13.0	3.0	2.0	2.5	0.5	0.5	0.5	1.0	1.0	1.0
2	13.5	13.0	13.0	3.0	2.5	2.5	0.5	0.5	0.5	1.0	1.0	1.0
3	13.5	13.0	13.0	2.5	2.0	2.0	0.5	0.5	0.5	1.0	1.0	1.0
4	13.5	13.0	13.0	2.5	2.0	2.5	1.0	0.5	0.5	1.0	1.0	1.0
5	13.5	13.0	13.0	3.5	2.0	2.5	1.0	0.5	0.5	1.0	1.0	1.0
6	13.5	13.0	13.5	4.5	3.5	4.0	1.0	0.5	1.0	1.0	0.5	1.0
7	13.5	13.0	13.0	6.5	4.5	5.5	1.0	1.0	1.0	1.0	0.5	1.0
8	13.0	12.0	12.5	6.5	6.0	6.0	1.0	1.0	1.0	1.0	1.0	1.0
9	12.0	9.5	11.0	6.0	5.5	5.5	1.5	1.0	1.0	1.5	1.0	1.0
10	9.5	9.0	9.0	6.0	5.0	5.5	1.5	1.0	1.0	1.5	1.0	1.0
11	9.5	9.0	9.0	5.0	4.0	4.5	1.5	1.0	1.0	1.0	0.5	0.5
12	9.5	9.0	9.0	4.0	3.0	3.5	1.0	1.0	1.0	1.0	1.0	1.0
13	10.0	9.5	9.5	3.0	2.0	2.5	1.5	1.0	1.0	1.0	1.0	1.0
14	9.5	9.0	9.5	2.5	2.0	2.0	1.0	1.0	1.0	1.5	1.0	1.5
15	9.5	9.0	9.5	2.0	1.0	1.5	1.5	1.0	1.0	1.5	1.0	1.5
16	9.5	9.0	9.0	1.0	0.5	1.0	1.0	1.0	1.0	1.5	1.5	1.5
17	9.0	8.0	8.5	1.0	1.0	1.0	1.0	1.0	1.0	2.0	1.5	2.0
18	8.0	7.5	7.5	1.5	1.0	1.0	1.5	1.0	1.0	2.0	1.5	2.0
19	7.5	7.0	7.5	2.0	1.5	1.5	1.5	1.5	1.5	2.0	1.5	2.0
20	7.5	7.0	7.0	1.5	1.0	1.5	1.5	1.5	1.5	2.0	2.0	2.0
21	7.0	6.0	6.5	3.0	1.0	2.0	2.0	1.5	1.5	2.0	1.5	2.0
22	6.5	6.0	6.0	2.5	1.5	2.5	2.0	1.5	2.0	2.0	1.5	1.5
23	6.0	5.0	5.5	2.5	2.0	2.5	1.5	1.5	1.5	1.5	1.5	1.5
24	6.0	5.0	5.5	2.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
25	6.0	6.0	6.0	1.5	1.0	1.0	1.5	1.0	1.5	2.0	1.5	1.5
26	6.0	5.0	5.5	1.0	0.5	0.5	1.5	1.0	1.5	2.0	1.5	1.5
27	5.0	4.5	5.0	1.0	0.0	0.5	1.5	1.0	1.0	1.5	1.5	1.5
28	5.0	4.0	4.5	0.5	0.0	0.0	1.0	1.0	1.0	2.0	1.5	1.5
29	5.0	4.0	4.5	0.5	0.0	0.5	1.0	1.0	1.0	2.0	1.5	1.5
30	4.5	4.0	4.0	0.5	0.5	0.5	1.0	0.5	1.0	2.0	1.5	1.5
31	4.0	3.0	3.0	---	---	---	1.0	0.5	1.0	2.0	1.5	1.5
Month	13.5	3.0	8.5	6.5	0.0	2.5	2.0	0.5	1.0	2.0	0.5	1.5

## Water-Data Report 2007

## 06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	2.0	1.5	1.5	1.0	1.0	1.0	5.5	5.0	5.0	15.0	13.5	14.0
<b>2</b>	1.5	1.5	1.5	1.0	0.5	1.0	5.5	5.0	5.5	15.0	14.5	14.5
<b>3</b>	1.5	1.5	1.5	1.0	0.5	1.0	5.5	5.5	5.5	15.0	13.0	14.0
<b>4</b>	2.0	1.5	1.5	1.5	1.0	1.0	6.5	5.5	6.0	13.0	12.5	12.5
<b>5</b>	1.5	1.5	1.5	1.5	1.0	1.0	6.5	6.0	6.5	12.5	12.0	12.0
<b>6</b>	2.0	1.5	1.5	2.0	1.0	1.5	7.0	6.5	7.0	12.0	11.5	11.5
<b>7</b>	1.5	1.5	1.5	2.5	1.5	2.0	7.0	5.5	6.0	13.0	11.0	11.5
<b>8</b>	1.5	1.5	1.5	2.5	2.0	2.5	7.0	6.0	6.5	13.0	11.5	12.5
<b>9</b>	1.5	1.0	1.5	3.0	2.5	2.5	8.0	6.5	7.0	14.0	12.5	13.0
<b>10</b>	1.5	1.0	1.0	3.5	3.0	3.0	7.0	6.5	6.5	14.5	13.5	14.0
<b>11</b>	1.5	1.0	1.0	4.0	3.5	3.5	7.0	6.0	6.5	14.5	14.0	14.0
<b>12</b>	1.0	0.5	1.0	4.5	4.0	4.0	7.0	6.5	6.5	15.5	13.5	14.5
<b>13</b>	1.0	1.0	1.0	5.0	4.5	4.5	7.0	6.0	6.5	16.0	14.5	15.0
<b>14</b>	1.0	1.0	1.0	5.0	4.5	5.0	8.0	7.0	7.5	14.5	14.0	14.5
<b>15</b>	1.0	1.0	1.0	4.5	4.0	4.5	8.0	8.0	8.0	15.0	14.0	14.5
<b>16</b>	1.0	1.0	1.0	4.5	4.0	4.0	9.0	8.0	8.5	16.0	13.5	15.0
<b>17</b>	1.0	0.5	1.0	5.0	4.0	4.5	10.0	9.0	10.0	16.5	15.0	15.5
<b>18</b>	1.0	1.0	1.0	5.0	4.5	4.5	10.0	9.0	9.5	16.5	15.5	16.0
<b>19</b>	1.0	0.5	1.0	5.0	4.0	4.5	9.0	8.5	8.5	16.5	16.0	16.0
<b>20</b>	1.5	1.0	1.0	4.5	2.5	3.5	8.5	8.0	8.0	16.0	15.5	16.0
<b>21</b>	1.5	1.0	1.5	2.5	2.0	2.5	8.5	8.5	8.5	15.5	15.0	15.5
<b>22</b>	1.5	1.5	1.5	4.0	2.0	3.0	9.5	8.5	9.0	15.0	12.5	14.0
<b>23</b>	1.5	1.0	1.5	6.0	4.0	5.0	9.5	9.0	9.0	12.5	11.5	12.0
<b>24</b>	1.5	1.0	1.0	7.5	5.0	6.0	9.5	8.5	9.0	13.0	12.0	12.5
<b>25</b>	1.5	1.0	1.0	8.0	7.0	7.5	10.5	9.5	10.0	13.0	12.5	12.5
<b>26</b>	1.5	1.0	1.0	8.0	6.5	7.0	11.0	10.5	10.5	13.0	12.0	12.5
<b>27</b>	1.0	1.0	1.0	7.5	7.0	7.0	11.5	11.0	11.0	13.5	12.5	13.0
<b>28</b>	1.0	1.0	1.0	7.0	6.5	7.0	12.0	11.0	11.5	13.5	12.5	13.0
<b>29</b>	---	---	---	6.5	4.0	5.5	13.0	12.0	12.0	12.5	12.0	12.5
<b>30</b>	---	---	---	4.0	2.0	3.0	13.5	12.5	13.0	13.5	12.5	13.0
<b>31</b>	---	---	---	5.0	3.5	4.5	---	---	---	14.0	12.5	13.5
<b>Month</b>	2.0	0.5	1.0	8.0	0.5	4.0	13.5	5.0	8.0	16.5	11.0	13.5

## 06041000 MADISON RIVER BELOW ENNIS LAKE, NEAR MCALLISTER, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>June</b>			<b>July</b>			<b>August</b>			<b>September</b>		
<b>1</b>	14.5	13.0	14.0	21.0	20.0	20.5	23.5	22.5	23.0	19.5	19.0	19.0
<b>2</b>	16.0	13.5	15.0	21.5	20.0	21.0	22.5	22.0	22.0	19.5	18.5	19.0
<b>3</b>	17.0	14.5	16.0	21.5	20.5	21.5	22.5	22.0	22.0	20.5	19.5	20.0
<b>4</b>	17.5	15.5	17.0	21.5	21.0	21.5	22.5	22.0	22.5	20.0	19.5	19.5
<b>5</b>	18.0	17.0	17.5	22.5	21.0	21.5	22.0	21.0	21.5	19.5	19.0	19.5
<b>6</b>	17.5	16.0	16.5	24.0	22.0	23.0	21.5	20.5	21.0	19.0	18.5	19.0
<b>7</b>	16.0	6.0	15.0	24.0	23.0	23.5	21.0	20.0	20.5	19.0	18.5	18.5
<b>8</b>	16.0	15.0	15.5	23.5	22.5	23.0	20.5	19.5	20.0	18.5	17.5	18.0
<b>9</b>	15.5	15.0	15.5	---	---	---	20.5	20.0	20.5	17.5	15.5	16.5
<b>10</b>	15.5	15.0	15.5	---	---	---	20.0	19.5	20.0	15.5	14.5	15.0
<b>11</b>	16.0	15.0	15.5	---	---	---	20.0	19.0	19.5	15.5	15.0	15.0
<b>12</b>	17.0	15.5	16.0	22.5	21.0	22.0	19.5	18.5	19.0	16.0	15.0	15.5
<b>13</b>	17.5	16.5	17.0	22.0	21.5	22.0	20.0	19.5	19.5	15.5	14.5	15.0
<b>14</b>	17.5	17.0	17.5	22.5	21.5	21.5	19.5	19.0	19.0	15.0	14.5	14.5
<b>15</b>	17.0	16.5	17.0	22.5	22.0	22.5	19.5	19.0	19.5	15.0	14.5	14.5
<b>16</b>	18.5	16.5	17.5	23.0	22.0	22.5	20.0	19.0	19.5	15.0	14.5	14.5
<b>17</b>	18.0	17.0	17.5	23.0	22.5	22.5	19.5	19.5	19.5	15.0	14.5	15.0
<b>18</b>	18.0	17.5	17.5	23.0	23.0	23.0	19.5	18.5	19.0	14.5	14.0	14.5
<b>19</b>	18.5	17.5	18.0	23.5	22.0	23.0	19.0	18.5	18.5	14.5	13.5	14.0
<b>20</b>	19.5	18.5	19.0	23.0	22.5	22.5	18.5	17.5	18.0	13.5	13.0	13.5
<b>21</b>	19.5	18.0	18.5	23.0	22.5	22.5	17.5	17.0	17.5	13.5	13.0	13.5
<b>22</b>	20.0	18.5	19.5	23.0	22.5	23.0	18.0	17.0	17.5	13.5	13.0	13.5
<b>23</b>	21.0	19.5	20.5	23.0	22.0	22.5	17.5	17.0	17.0	13.5	12.5	13.0
<b>24</b>	20.5	20.0	20.0	23.0	22.5	23.0	17.5	17.0	17.0	12.5	12.0	12.0
<b>25</b>	20.0	19.0	20.0	23.5	22.5	23.0	18.0	17.0	17.5	12.0	11.5	12.0
<b>26</b>	19.5	19.0	19.5	23.5	23.0	23.0	18.5	17.5	18.0	11.5	11.5	11.5
<b>27</b>	19.5	18.5	19.0	23.5	22.0	23.0	18.5	18.0	18.0	11.5	11.0	11.5
<b>28</b>	20.5	18.5	19.5	23.5	22.5	23.0	18.0	17.0	17.5	11.5	11.0	11.5
<b>29</b>	21.0	20.5	20.5	23.5	22.5	23.0	18.0	17.0	17.5	11.0	10.5	11.0
<b>30</b>	21.0	20.5	20.5	24.0	23.0	23.5	19.0	17.5	18.0	10.5	9.5	10.0
<b>31</b>	---	---	---	24.0	23.0	23.5	19.5	19.0	19.0	---	---	---
<b>Month</b>	21.0	6.0	17.5	---	---	---	23.5	17.0	19.5	20.5	9.5	15.0

Water-Data Report 2007

**06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT**

Missouri Headwaters Basin  
Gallatin Subbasin

LOCATION.--Lat 45°29'51", long 111°16'11" referenced to North American Datum of 1927, in SE ¼ SE ¼ SE ¼ sec.7, T.4 S., R.4 E., Gallatin County, MT, Hydrologic Unit 10020008, on left bank 0.3 mi downstream from Spanish Creek, 7.3 mi south of Gallatin Gateway and at river mile 47.7.

DRAINAGE AREA.--825 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--August 1889 to September 1894, June 1930 to September 1969, annual maximum, water years 1970-71, October 1971 to September 1981, October 1984 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309. Published as West Gallatin River near Bozeman 1889-94.

REVISED RECORDS.-- WSP 1389: 1892, maximum discharge (M); 1893-94. WSP 1559: Drainage area. Water Data Report (WDR) MT-85-1 (M), WDR MT-02-1: 1970-71 (M).

GAGE.--Water-stage recorder. Elevation of gage is 5,167.67 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Oct. 20, 1932, nonrecording gages at several different sites and elevations within 0.8 mi of present site.

REMARKS.--Records are good. Diversions for irrigation of about 1,400 acres are upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and conductance were made during the year.

## 06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	379	269	275	274	273	255	408	1,690	1,850	920	459	368
2	372	326	284	298	259	241	403	1,970	2,050	877	453	355
3	441	426	231	295	264	230	375	2,270	2,200	840	468	347
4	420	412	264	305	278	236	370	1,830	2,320	815	458	343
5	395	391	318	285	276	258	382	1,510	2,460	789	474	374
6	391	390	309	274	295	276	393	1,300	2,760	764	517	405
7	545	489	305	263	289	297	414	1,190	2,560	743	468	386
8	529	705	306	276	283	301	442	1,300	2,230	735	447	364
9	484	635	308	286	280	303	510	1,570	2,210	703	436	360
10	453	504	304	294	275	296	495	1,860	2,250	676	425	360
11	445	497	308	262	279	299	450	2,140	2,370	657	422	352
12	435	434	309	226	288	333	421	2,510	2,290	637	410	345
13	425	438	318	229	276	395	410	3,010	2,150	638	396	339
14	417	463	324	249	271	383	416	2,960	2,090	619	394	342
15	412	375	338	265	267	333	439	2,510	2,040	614	391	341
16	487	429	301	278	268	322	459	2,390	2,010	595	388	334
17	469	410	206	287	249	327	538	2,460	1,970	593	413	335
18	420	401	211	286	248	373	635	2,520	1,750	574	491	345
19	430	390	216	295	271	373	635	2,580	1,590	545	470	346
20	464	417	262	306	265	400	555	2,610	1,530	525	419	344
21	442	410	278	291	264	414	537	2,520	1,490	512	418	345
22	404	400	303	277	257	375	514	2,110	1,440	503	405	333
23	405	390	288	288	276	369	530	1,860	1,390	493	399	351
24	422	336	295	302	261	368	535	1,660	1,310	510	405	394
25	431	337	302	281	247	402	574	1,660	1,230	537	388	368
26	391	364	299	271	256	477	719	1,510	1,140	552	376	355
27	412	358	300	266	254	507	706	1,600	1,080	580	368	346
28	398	291	301	258	255	512	797	2,000	1,040	520	366	339
29	395	244	283	252	---	397	1,180	1,890	996	500	363	368
30	390	212	263	260	---	408	1,520	1,790	960	486	356	374
31	277	---	253	276	---	417	---	1,780	---	475	355	---
<b>Total</b>	13,180	12,143	8,862	8,555	7,524	10,877	16,762	62,560	54,756	19,527	12,998	10,658
<b>Mean</b>	425	405	286	276	269	351	559	2,018	1,825	630	419	355
<b>Max</b>	545	705	338	306	295	512	1,520	3,010	2,760	920	517	405
<b>Min</b>	277	212	206	226	247	230	370	1,190	960	475	355	333
<b>Ac-ft</b>	26,140	24,090	17,580	16,970	14,920	21,570	33,250	124,100	108,600	38,730	25,780	21,140

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1889 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	450	379	318	305	301	310	502	1,807	2,906	1,266	602	486
<b>Max</b>	743	589	549	468	430	465	899	3,135	5,110	3,669	1,162	788
<b>(WY)</b>	(1893)	(1960)	(1893)	(1893)	(1893)	(1960)	(1990)	(1976)	(1997)	(1975)	(1993)	(1968)
<b>Min</b>	238	247	214	200	220	206	263	873	643	345	269	233
<b>(WY)</b>	(1932)	(1937)	(1935)	(1931)	(1935)	(1935)	(1937)	(1953)	(1934)	(1934)	(1934)	(1931)

\* During periods of operation (August 1889 to September 1894, June 1930 to September 1969, October 1971 to September 1981, October 1984 to current year).



06043500 GALLATIN RIVER NEAR GALLATIN GATEWAY, MT—Continued

SUMMARY STATISTICS

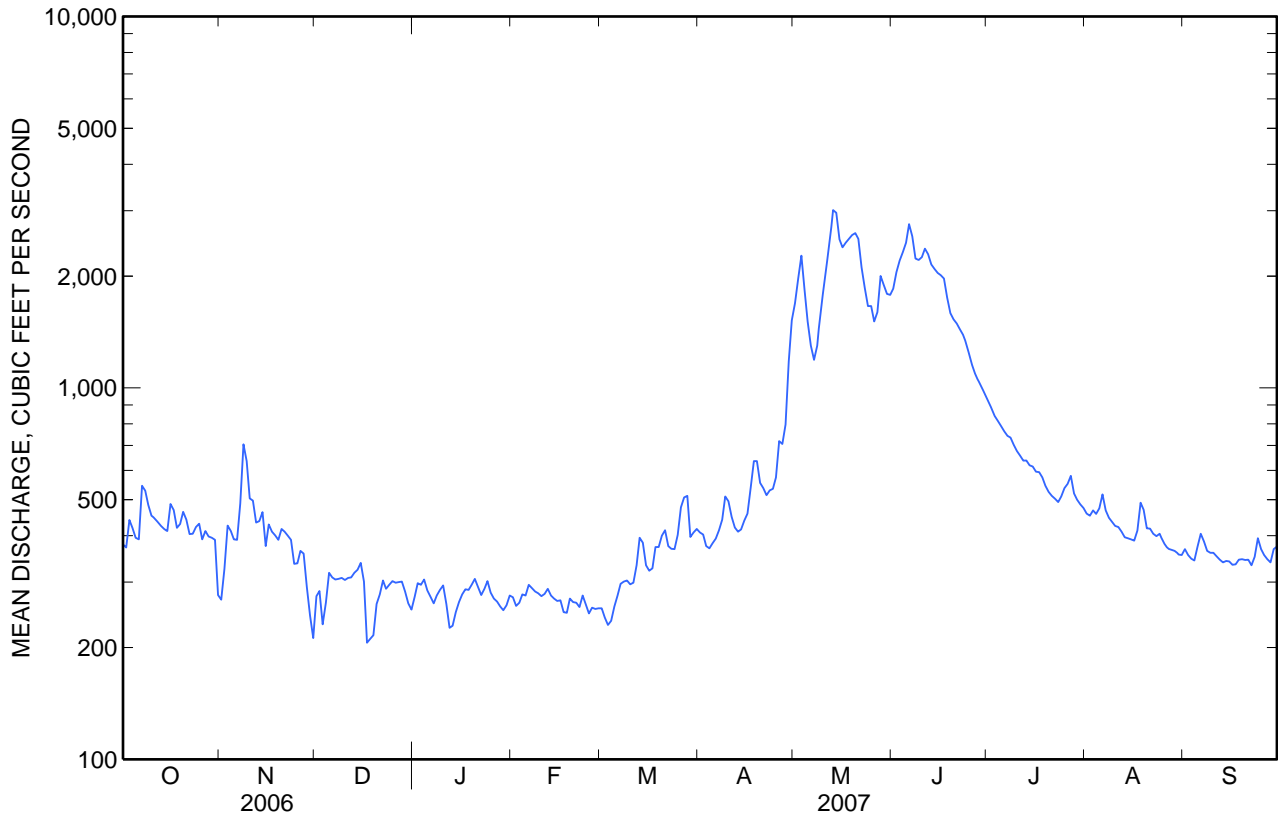
	Calendar Year 2006		Water Year 2007		Water Years 1889 - 2007*	
<b>Annual total</b>	290,743		238,402			
<b>Annual mean</b>	797		653		805	
<b>Highest annual mean</b>					1,184	1976
<b>Lowest annual mean</b>					408	1934
<b>Highest daily mean</b>	5,040	May 21	3,010	May 13	8,970	Jun 17, 1974
<b>Lowest daily mean</b>	180	Feb 18	206	Dec 17	153	Dec 25, 2002
<b>Annual seven-day minimum</b>	218	Feb 16	247	Feb 26	182	Jan 18, 1931
<b>Maximum peak flow</b>			3,350	May 14	<sup>b</sup> 9,160	Jun 2, 1997
<b>Maximum peak stage</b>			4.04	May 14	7.38	Jun 17, 1974
<b>Instantaneous low flow</b>			<sup>a</sup> 178	Dec 17	<sup>c</sup> 117	Jan 19, 1935
<b>Annual runoff (ac-ft)</b>	576,700		472,900		583,200	
<b>10 percent exceeds</b>	2,130		1,810		2,020	
<b>50 percent exceeds</b>	410		400		425	
<b>90 percent exceeds</b>	252		266		265	

\* During periods of operation (August 1889 to September 1894, June 1930 to September 1969, October 1971 to September 1981, October 1984 to current year).

<sup>a</sup> Gage height, 1.02 ft, result of freezeup.

<sup>b</sup> Gage height, 6.71 ft.

<sup>c</sup> Gage height, 0.68 ft, result of freezeup.





Water-Data Report 2007

**06048700 EAST GALLATIN RIVER BELOW BRIDGER CREEK, NEAR BOZEMAN, MT**

Missouri Headwaters Basin  
Gallatin Subbasin

LOCATION.--Lat 45°43'30", long 111°04'08" referenced to North American Datum of 1927, in NE ¼ SW ¼ NE ¼ sec.26, T.1 S., R.5 E., Gallatin County, MT, Hydrologic Unit 10020008, on left bank 600 ft downstream from Bozeman Wastewater Treatment Plant, 0.2 mi downstream from bridge on Montana Secondary Highway 411, 3.2 mi downstream from Bridger Creek, 2.0 mi northwest of Bozeman, and at river mile 33.0.

DRAINAGE AREA.--226 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 2001 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,610 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are fair. Some regulation or diurnal effect occurs from wastewater treatment plant upstream. Numerous diversions for irrigation occurs upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Measurement made May 12, 1976 was at a stage of 5.15 ft, 1,240 ft<sup>3</sup>/s, site and datum then in use.

## Water-Data Report 2007

## 06048700 EAST GALLATIN RIVER BELOW BRIDGER CREEK, NEAR BOZEMAN, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	26	e42	46	e40	e32	e37	188	425	425	111	36	25
2	26	e45	46	47	e30	e35	204	409	375	103	36	24
3	30	54	43	47	e35	e35	179	428	332	95	36	23
4	32	59	46	46	37	e38	175	391	298	88	35	22
5	31	56	48	42	43	42	193	323	283	82	39	28
6	29	56	47	e40	87	48	188	283	388	78	62	41
7	60	62	48	e38	65	60	168	255	767	88	48	34
8	55	83	47	45	56	85	163	234	586	89	43	29
9	44	85	47	42	49	92	180	225	543	75	37	31
10	43	72	47	41	47	96	191	231	488	70	36	32
11	41	67	46	e35	47	111	174	234	438	68	37	27
12	41	63	46	e33	46	192	170	230	397	63	35	27
13	39	60	49	e35	e40	322	166	239	367	63	31	28
14	39	60	49	e38	e42	242	170	266	345	58	30	30
15	40	53	52	e38	44	176	179	243	313	57	31	29
16	84	58	e43	e40	44	156	205	221	290	60	30	27
17	88	56	e37	41	41	173	222	206	315	58	32	27
18	66	52	e38	41	44	209	254	193	280	56	36	30
19	70	50	e40	42	46	204	283	187	248	45	44	32
20	103	53	e42	42	45	202	251	180	233	43	38	36
21	99	53	45	41	43	231	247	197	223	40	36	45
22	79	52	44	40	43	189	236	218	204	40	36	39
23	70	53	42	40	47	176	240	247	190	41	33	42
24	65	48	43	40	44	178	264	219	178	42	32	49
25	66	50	43	39	43	179	269	331	170	51	32	44
26	63	48	46	39	42	215	408	283	159	55	29	40
27	59	42	46	36	e38	215	393	271	141	51	27	39
28	57	e35	47	35	e38	226	369	355	134	44	27	38
29	56	e37	e38	34	---	180	412	521	127	41	27	50
30	56	e42	e37	34	---	181	438	506	116	39	24	53
31	e40	---	e38	37	---	173	---	476	---	38	23	---
<b>Total</b>	1,697	1,646	1,376	1,228	1,258	4,698	7,179	9,027	9,353	1,932	1,078	1,021
<b>Mean</b>	54.7	54.9	44.4	39.6	44.9	152	239	291	312	62.3	34.8	34.0
<b>Max</b>	103	85	52	47	87	322	438	521	767	111	62	53
<b>Min</b>	26	35	37	33	30	35	163	180	116	38	23	22
<b>Ac-ft</b>	3,370	3,260	2,730	2,440	2,500	9,320	14,240	17,910	18,550	3,830	2,140	2,030

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2002 - 2007, BY WATER YEAR (WY)**

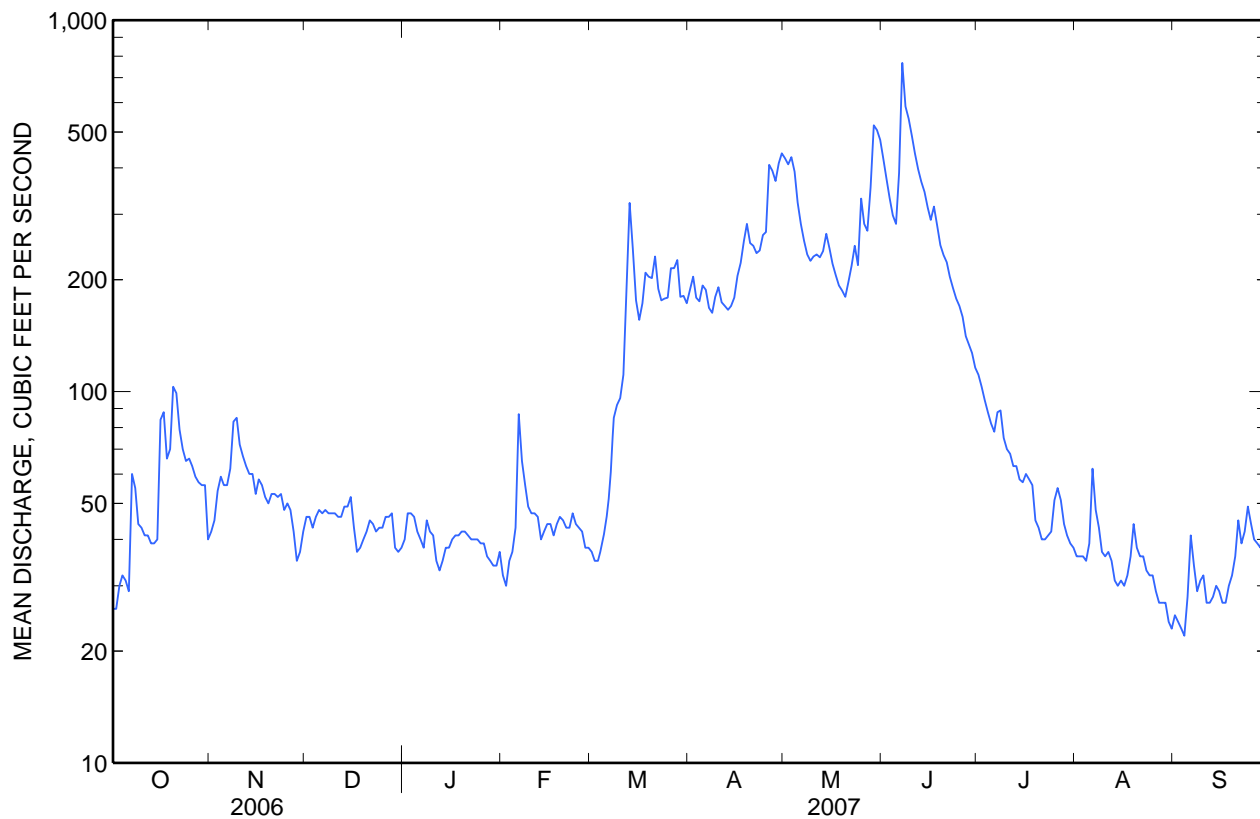
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	41.9	42.1	36.8	37.5	36.9	72.9	188	246	225	58.2	29.2	29.0
<b>Max</b>	54.7	54.9	44.4	46.6	44.9	152	350	328	312	70.6	37.5	36.5
<b>(WY)</b>	(2007)	(2007)	(2007)	(2006)	(2007)	(2007)	(2006)	(2003)	(2007)	(2002)	(2002)	(2002)
<b>Min</b>	30.2	32.1	30.4	30.2	33.4	37.0	99.8	109	121	38.5	19.7	19.9
<b>(WY)</b>	(2004)	(2004)	(2003)	(2004)	(2004)	(2002)	(2004)	(2004)	(2006)	(2006)	(2006)	(2003)

06048700 EAST GALLATIN RIVER BELOW BRIDGER CREEK, NEAR BOZEMAN, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 2002 - 2007	
Annual total	34,748		41,493			
Annual mean	95.2		114		87.0	
Highest annual mean					114	2007
Lowest annual mean					66.6	2004
Highest daily mean	594	Apr 17	767	Jun 7	834	Jun 11, 2004
Lowest daily mean	14	Aug 30	22	Sep 4	14	Aug 30, 2006
Annual seven-day minimum	15	Sep 3	24	Aug 29	15	Sep 3, 2006
Maximum peak flow			870	Jun 7	1,100	Jun 11, 2004
Maximum peak stage			4.40	Jun 7	5.60	Jun 11, 2004
Instantaneous low flow					46.5	Feb 12, 2004
Annual runoff (ac-ft)	68,920		82,300		63,060	
10 percent exceeds	306		281		240	
50 percent exceeds	47		50		42	
90 percent exceeds	20		32		26	

<sup>a</sup> Gage height, 1.38 ft, result of freezeup.



Water-Data Report 2007

**06052500 GALLATIN RIVER AT LOGAN, MT**

Missouri Headwaters Basin  
Gallatin Subbasin

LOCATION.--Lat 45°53'07", long 111°26'15" referenced to North American Datum of 1927, in SE ¼ NW ¼ NE ¼ sec.35, T.2 N., R.2 E., Gallatin County, MT, Hydrologic Unit 10020008, on right bank at former county road bridge site, 0.2 mi upstream from present county bridge, 0.5 mi west of Logan, and at river mile 6.3.

DRAINAGE AREA.--1,795 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--September 1893 to December 1905, August 1928 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.-- WSP 1389: 1898-99; 1903; 1905; 1929, maximum discharge (M); 1935-36 (M); 1938-39 (M); 1941 (M). WSP 1559: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 4,086.42 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Aug. 10, 1928, nonrecording gages at several sites within 0.5 mi of present site at various elevations. Aug. 10, 1928, to Oct. 7, 1941, nonrecording gage at present site and elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Some regulation occurs by Middle Creek Reservoir (station number 06049500). Diversions for irrigation include about 110,000 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter is located at the station.

## 06052500 GALLATIN RIVER AT LOGAN, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	425	e620	e500	e620	e520	602	853	1,970	2,020	441	254	272
2	422	659	e550	e640	e480	575	901	2,160	2,070	411	254	268
3	421	758	e520	658	e500	e550	886	2,480	2,140	418	252	265
4	455	843	e580	658	e550	579	834	2,430	2,210	365	251	264
5	456	819	623	640	e600	585	875	2,020	2,280	350	266	296
6	449	797	658	e620	718	623	878	1,740	2,680	333	325	332
7	560	806	667	e600	710	805	857	1,500	3,560	322	332	344
8	696	953	670	e620	662	1,110	850	1,370	3,220	350	315	318
9	622	1,110	672	631	637	1,070	893	1,400	2,930	334	297	319
10	590	989	683	634	629	929	987	1,570	2,810	301	287	338
11	577	917	699	e500	625	848	924	1,860	2,860	317	288	333
12	571	894	699	e380	650	909	883	2,070	2,750	312	274	320
13	557	841	700	e400	612	1,180	847	2,490	2,570	302	262	318
14	555	864	714	e450	610	1,030	828	2,840	2,440	293	244	332
15	548	825	734	e500	607	875	831	2,510	2,320	290	257	341
16	668	813	e700	e550	625	788	858	2,290	2,220	292	262	340
17	890	828	e620	e580	606	772	863	2,220	2,220	283	264	340
18	775	802	e550	e600	588	812	1,030	2,170	2,110	283	293	359
19	763	784	e570	e630	646	837	1,250	2,150	1,810	261	337	370
20	820	806	e600	e650	640	831	1,180	2,170	1,550	236	325	388
21	871	817	e600	e620	665	878	1,050	2,220	1,420	231	310	402
22	830	808	e620	e600	626	855	991	2,050	1,320	236	305	406
23	778	801	e620	e620	637	807	962	1,930	1,210	232	303	412
24	768	767	e640	e620	634	787	956	1,670	1,100	235	296	448
25	776	734	e640	e600	605	787	937	1,670	990	263	293	463
26	777	744	648	e580	605	852	1,080	1,570	900	280	280	428
27	750	724	661	e560	594	946	1,250	1,450	807	285	276	421
28	772	e600	668	e550	588	1,010	1,220	1,750	690	286	267	412
29	755	e500	e640	e540	---	925	1,390	2,200	560	273	267	444
30	765	e450	e620	e560	---	852	1,730	2,160	491	265	274	494
31	706	---	e600	e580	---	837	---	2,040	---	262	268	---
<b>Total</b>	20,368	23,673	19,666	17,991	17,169	25,846	29,874	62,120	58,258	9,342	8,778	10,787
<b>Mean</b>	657	789	634	580	613	834	996	2,004	1,942	301	283	360
<b>Max</b>	890	1,110	734	658	718	1,180	1,730	2,840	3,560	441	337	494
<b>Min</b>	421	450	500	380	480	550	828	1,370	491	231	244	264
<b>Ac-ft</b>	40,400	46,960	39,010	35,690	34,050	51,270	59,260	123,200	115,600	18,530	17,410	21,400

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1894 - 2007, BY WATER YEAR (WY)\***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	758	811	738	682	695	783	1,034	2,109	2,941	985	480	631
<b>Max</b>	1,265	1,186	1,049	971	1,249	1,290	1,993	4,686	5,957	3,899	1,658	1,269
<b>(WY)</b>	(1983)	(1976)	(1976)	(1976)	(1963)	(1960)	(1952)	(1901)	(1997)	(1975)	(1993)	(1968)
<b>Min</b>	333	328	450	400	385	478	429	176	280	162	167	238
<b>(WY)</b>	(1935)	(1935)	(1894)	(1894)	(1936)	(1904)	(1934)	(1934)	(1934)	(1934)	(1934)	(1934)

\* During periods of operation (October 1893 to December 1905, August 1928 to current year).

06052500 GALLATIN RIVER AT LOGAN, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1894 - 2007*	
<b>Annual total</b>	347,955		303,872			
<b>Annual mean</b>	953		833		1,054	
<b>Highest annual mean</b>					1,673	1997
<b>Lowest annual mean</b>					454	1934
<b>Highest daily mean</b>	4,820	Jun 10	3,560	Jun 7	9,840	Jun 21, 1899
<b>Lowest daily mean</b>	253	Aug 12	231	Jul 21	130	Jul 19, 1939
<b>Annual seven-day minimum</b>	271	Aug 25	242	Jul 19	147	Jul 16, 1934
<b>Maximum peak flow</b>			<sup>a</sup> 3,720	Jun 7	<sup>d</sup> 9,840	Jun 21, 1899
<b>Maximum peak stage</b>			<sup>b</sup> 7.22	Feb 3	<sup>e</sup> 11.88	Feb 5, 1963
<b>Instantaneous low flow</b>			<sup>c</sup> 222	Jul 23	<sup>f</sup> 130	Jul 19, 1939
<b>Annual runoff (ac-ft)</b>	690,200		602,700		763,400	
<b>10 percent exceeds</b>	1,990		1,990		2,100	
<b>50 percent exceeds</b>	632		640		749	
<b>90 percent exceeds</b>	295		287		411	

\* During periods of operation (October 1893 to December 1905, August 1928 to current year).

<sup>a</sup> Gage height, 6.95 ft.

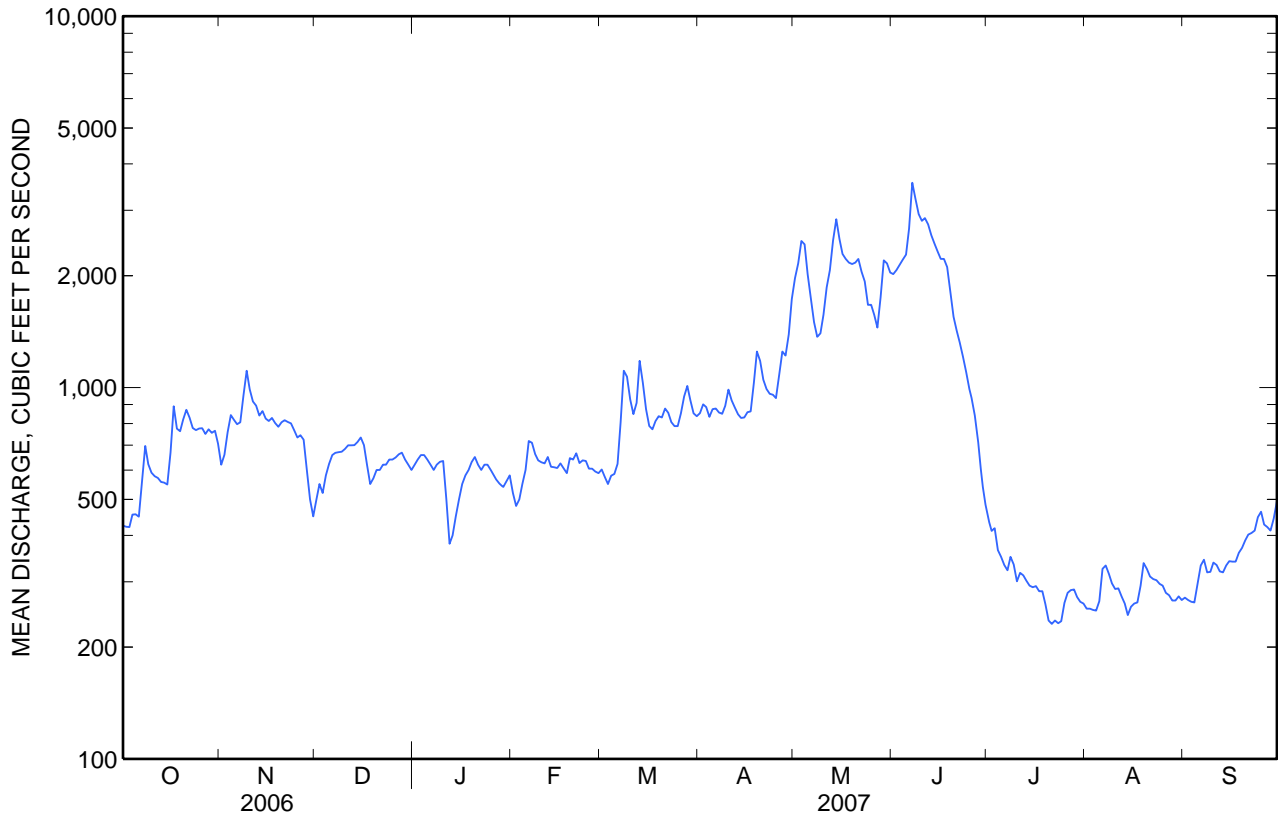
<sup>b</sup> Backwater from ice.

<sup>c</sup> Gage height, 3.49 ft.

<sup>d</sup> Observed, gage height, 6.25 ft, site and datum then in use.

<sup>e</sup> From floodmark, backwater from ice.

<sup>f</sup> Observed, gage height, 2.04 ft.



**06052500 GALLATIN RIVER AT LOGAN, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1949, 1951, 1957, 1965, 1979-86, 1999 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1979 to September 1985, October 1999 to current year (varies between water year and seasonal records).

INSTRUMENTATION.--Temperature probe installed Sept. 14, 1999.

REMARKS.--Seasonal period for water temperature record is Apr. 1 to Sept. 30. Daily water temperature records are rated good except those for the period for July 1-18, which are rated fair due to partial sedimentation of the probe. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 28.5°C, July 19-21, 2003; minimum, 0.0°C, on many days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: During seasonal period of operation, maximum, 26.5°C, July 18; minimum 4.0°C, Apr. 8 and 11.



## Water-Data Report 2007

## 06052500 GALLATIN RIVER AT LOGAN, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**APRIL 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>April</b>			<b>May</b>			<b>June</b>			<b>July</b>		
<b>1</b>	8.5	6.5	7.5	15.5	10.0	13.0	16.0	10.5	13.0	24.0	18.0	20.5
<b>2</b>	8.0	5.5	6.5	15.0	10.5	13.0	17.0	12.0	14.5	23.5	18.5	21.0
<b>3</b>	9.0	4.5	6.5	13.0	9.0	10.5	17.5	13.0	15.0	23.5	17.5	20.5
<b>4</b>	8.0	5.0	6.5	10.5	6.5	8.5	17.5	13.0	15.5	24.5	18.5	21.5
<b>5</b>	7.5	6.0	7.0	10.0	7.0	8.5	16.5	13.5	14.5	25.5	19.5	22.5
<b>6</b>	7.0	5.0	6.0	12.0	6.5	9.0	13.5	9.5	11.5	26.0	20.5	23.0
<b>7</b>	8.5	5.0	6.5	14.0	8.5	11.0	10.0	8.0	9.0	23.5	20.5	22.0
<b>8</b>	10.5	4.0	7.0	16.0	10.0	13.0	13.5	8.5	11.0	23.5	18.0	21.0
<b>9</b>	9.5	7.0	7.5	15.5	11.5	13.5	15.0	10.0	12.5	24.0	19.5	21.5
<b>10</b>	7.0	4.5	5.5	15.0	12.0	13.5	14.0	12.0	13.0	23.5	17.5	20.5
<b>11</b>	8.0	4.0	6.0	14.5	10.0	12.5	16.0	11.0	13.0	24.0	18.0	21.0
<b>12</b>	9.0	4.5	7.0	15.5	10.5	13.0	16.5	12.0	14.0	24.5	19.0	21.5
<b>13</b>	10.5	5.0	8.0	14.0	11.0	12.5	16.0	12.0	14.0	24.5	19.5	22.0
<b>14</b>	11.5	7.0	9.0	13.0	9.5	11.0	16.0	12.5	14.5	24.0	20.0	22.0
<b>15</b>	12.0	8.0	10.0	14.0	8.5	11.0	17.5	12.5	15.0	24.0	19.0	21.5
<b>16</b>	13.5	9.0	11.0	15.0	9.5	12.0	17.5	13.5	15.5	23.5	19.0	21.5
<b>17</b>	12.5	9.5	11.0	16.0	11.0	13.5	16.0	13.5	15.0	23.5	20.0	22.0
<b>18</b>	11.5	7.5	9.0	16.0	11.5	13.5	15.5	12.0	14.0	26.5	20.0	23.0
<b>19</b>	7.5	6.0	6.5	14.5	11.5	13.0	17.5	11.5	14.5	25.5	20.5	23.0
<b>20</b>	9.5	4.5	7.0	13.5	11.0	12.0	18.5	14.0	16.0	25.0	19.0	22.0
<b>21</b>	11.0	6.5	9.0	12.5	10.5	11.5	20.0	14.0	17.0	25.0	18.5	22.0
<b>22</b>	11.5	7.0	9.5	11.5	8.0	9.0	21.0	15.5	18.5	25.5	19.0	22.5
<b>23</b>	11.0	9.0	10.0	10.5	6.5	8.5	20.5	16.0	18.5	25.5	19.5	22.5
<b>24</b>	13.5	7.5	10.5	11.0	8.0	9.5	21.0	15.5	18.0	23.5	20.0	21.0
<b>25</b>	14.5	9.5	12.0	11.5	8.5	10.0	19.0	16.0	17.5	25.5	18.5	21.5
<b>26</b>	14.0	10.0	12.0	14.5	8.5	11.0	18.5	13.5	16.0	25.5	20.0	22.5
<b>27</b>	13.5	9.0	11.5	15.5	11.5	13.5	20.0	14.5	17.0	25.5	20.0	22.5
<b>28</b>	15.0	9.5	12.0	14.5	10.0	12.0	22.0	16.0	19.0	25.0	18.5	22.0
<b>29</b>	14.5	10.5	12.5	10.0	8.0	9.5	21.5	17.0	19.5	25.5	19.5	22.5
<b>30</b>	15.5	11.0	13.0	14.0	8.5	11.0	22.5	17.0	19.5	24.5	19.0	22.0
<b>31</b>	---	---	---	13.5	10.5	12.0	---	---	---	24.5	18.5	21.5
<b>Month</b>	15.5	4.0	9.0	16.0	6.5	11.5	22.5	8.0	15.0	26.5	17.5	22.0

## 06052500 GALLATIN RIVER AT LOGAN, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**APRIL 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean
	<b>August</b>			<b>September</b>		
<b>1</b>	23.5	18.0	20.5	21.0	15.0	18.0
<b>2</b>	24.5	18.0	21.0	22.0	15.5	18.5
<b>3</b>	23.5	19.0	21.0	22.0	16.5	19.0
<b>4</b>	22.0	17.5	20.0	19.5	15.5	17.0
<b>5</b>	21.5	16.5	19.0	18.5	14.5	16.5
<b>6</b>	22.5	15.5	19.0	19.0	15.5	17.0
<b>7</b>	21.0	16.5	19.0	19.0	14.0	16.5
<b>8</b>	21.5	15.5	18.5	18.0	12.5	15.0
<b>9</b>	22.0	16.5	19.0	15.5	12.0	13.5
<b>10</b>	20.0	16.5	18.5	16.0	10.0	13.0
<b>11</b>	21.5	14.5	18.0	16.5	11.0	14.0
<b>12</b>	22.5	15.5	19.0	16.5	11.5	14.0
<b>13</b>	22.0	16.0	19.0	16.5	11.5	13.5
<b>14</b>	21.5	16.0	18.5	16.0	11.0	13.5
<b>15</b>	20.5	15.5	18.0	17.0	11.5	14.0
<b>16</b>	20.5	15.5	18.0	16.0	11.5	14.0
<b>17</b>	19.5	16.5	18.0	14.5	11.5	13.0
<b>18</b>	18.5	15.5	17.0	15.0	11.5	13.0
<b>19</b>	20.0	14.5	17.0	13.0	11.0	12.0
<b>20</b>	17.5	14.0	16.0	14.5	10.5	12.0
<b>21</b>	19.5	14.5	16.5	15.5	10.5	13.0
<b>22</b>	19.5	14.0	16.5	13.0	11.0	12.0
<b>23</b>	19.5	13.5	16.5	13.0	10.5	11.5
<b>24</b>	20.0	13.5	16.5	12.0	9.5	10.5
<b>25</b>	20.0	13.5	17.0	13.0	8.5	10.5
<b>26</b>	20.0	14.5	17.0	13.5	10.0	11.5
<b>27</b>	20.0	14.0	17.0	14.0	9.5	11.5
<b>28</b>	20.5	14.0	17.0	14.0	10.5	12.0
<b>29</b>	21.0	14.5	17.5	12.0	10.0	11.0
<b>30</b>	20.5	14.5	17.5	12.0	8.0	10.0
<b>31</b>	19.0	15.5	17.5	---	---	---
<b>Month</b>	24.5	13.5	18.0	22.0	8.0	13.5

Water-Data Report 2007

**461322111482901 Local number 05N02W02AAAB01**

Elkhorn Mountains Volcanics

Jefferson County, MT

LOCATION.--Lat 46°13'22.4", long 111°48'29.1" referenced to North American Datum of 1927, in NE ¼ NE ¼ NE ¼ sec.2, T.5 N., R.2 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 100 ft. Upper casing diameter 6.0 in, top of first opening 90 ft, bottom of last opening 100 ft.

DATUM.--Land-surface datum is 6280 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 21...	1200	100	30	10.2	7.8	376	6.5	200	66.8	7.75	1.66	.1	3.94

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than; E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)
Sep 21...	186	1.37	E.09	14.3	10.7	222	.824	<.002	.034

461322111482901 Local number 05N02W02AAAB01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanad- ium, water, fltrd, µg/L (01085)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>					
<b>21...</b>	6	10	4.7	.81	.877

Water-Data Report 2007

**462155112002001 Local number 07N03W08DCCD01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°21'55.3", long 112°00'20.1" referenced to North American Datum of 1927, in SW ¼ SW ¼ SE ¼ sec.8, T.7 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 163 ft. Upper casing diameter 6.0 in, top of first opening 63 ft, bottom of last opening 163 ft.

DATUM.--Land-surface datum is 4880 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 25...	1730	163	67	5.0	7.2	415	7.5	190	53.0	14.5	2.38	.4	13.6

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 25...	136	7.77	.16	18.6	58.5	255	1.08	<.002	.007	22	<6	.13

462155112002001 Local number 07N03W08DCCD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: &lt;, less than.]

Date	Radon-222	Radon-222,	Uranium	Uranium
	2-sigma water, unfltrd pCi/L (76002)	water, unfltrd pCi/L (82303)	natural water, fltrd, µg/L (22703)	natural water, unfltrd µg/L (28011)
<b>Sep</b>				
25...	120	15,100	10.0	10.4

Water-Data Report 2007

**462109112055001 Local number 07N04W15CCAC01**

Elkhorn Mountains Volcanics

Jefferson County, MT

LOCATION.--Lat 46°21'09.2", long 112°05'50.5" referenced to North American Datum of 1927, in NE ¼ SW ¼ SW ¼ sec.15, T.7 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10030101.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 70 ft. Upper casing diameter 2.0 in, top of first opening 50 ft, bottom of last opening 70 ft.

DATUM.--Land-surface datum is 5140 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of casing, 0.68 ft above land-surface datum, Dec. 17, 1997, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: V, calibrated electric tape--accuracy of instrument has been checked. Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measurement method</b>	<b>Water level status</b>
Sep 20	38.75	V	--

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 20...	1200	70	46	1.2	7.2	713	9.0	310	88.5	21.5	9.57	.7	28.5

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than.]

Date	Alkalinity, water fltrd field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents mg/L (70301)	Nitrate + nitrite, water fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanadium, water, fltrd, μg/L (01085)
Sep 20...	156	1.39	2.51	25.3	202	474	<.016	<.002	.008	16	1,550	.04

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Radon-222 2-sigma, water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural, water, fltrd, μg/L (22703)	Uranium natural, water, unfltrd μg/L (28011)
Sep 20...	25	540	3.75	4.13



Water-Data Report 2007

**462807111592501 Local number 08N03W04CDCA01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°28'07.3", long 111°59'25" referenced to North American Datum of 1927, in SW ¼ SE ¼ SW ¼ sec.4, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 400 ft. Upper casing diameter 8.0 in, top of first opening 310 ft, bottom of last opening 400 ft.

DATUM.--Land-surface datum is 4320 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 19...	1400	400	168	.6	8.3	338	11.5	96	26.0	7.61	6.46	1.5	34.4

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanad-ium, water, fltrd, µg/L (01085)
Sep 19...	167	8.30	1.16	13.8	<.18	E198	<.016	<.002	E.006	58	1,250	<.04

462807111592501 Local number 08N03W04CDCA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

[Remark codes: &lt;, less than; E, estimated.]

Date	Alpha radioac 30 day, wat flt Th-230, pCi/L (62639)	Alpha radioac 72 hr, wat flt Th-230, pCi/L (62636)	Beta radioac 30 day, wat flt Cs-137, pCi/L (62645)	Beta radioac 72 hr, wat flt Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 19...	3.01	16.0	7.06	7.89	1.910	1.45	18

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

[Remark codes: &lt;, less than.]

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
	Sep 19...	<.04	.015	.022	<sup>a</sup> .0044

<sup>a</sup> This value is considered a non detect. Detection is based on sample specific critical level.

Water-Data Report 2007

**462745111593501 Local number 08N03W09BCAC01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°27'44.7", long 111°59'34.9" referenced to North American Datum of 1927, in NE ¼ SW ¼ NW ¼ sec.9, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 130 ft. Upper casing diameter 6.0 in, top of first opening 130 ft, bottom of last opening 130 ft.

DATUM.--Land-surface datum is 4420 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 10...	0900	130	30	1.9	7.4	467	10.5	200	49.9	18.2	8.84	.8	25.5

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 10...	205	3.88	.80	26.6	27.0	285	.373	<.002	.007	8	<6	.18

462745111593501 Local number 08N03W09BCAC01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: &lt;, less than.]

Date	Radon-222	Radon-222,	Uranium	Uranium
	2-sigma	natural	natural	natural
	water,	water,	water,	water,
	unfltrd	unfltrd	fltrd,	unfltrd
	pCi/L	pCi/L	µg/L	µg/L
	(76002)	(82303)	(22703)	(28011)
<b>Sep</b>				
<b>10...</b>	100	11,900	42.7	38.5

Water-Data Report 2007

**462717111580701 Local number 08N03W10CDAC01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°27'17", long 111°58'06.6" referenced to North American Datum of 1927, in NE ¼ SE ¼ SW ¼ sec.10, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 920 ft. Upper casing diameter 6.0 in, top of first opening 700 ft, bottom of last opening 920 ft.

DATUM.--Land-surface datum is 4690 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

[Remark codes: <, less than.]

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd std units (00400)	Specific conduc-tance, wat un-filtrd, µS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 19...	0900	920	40	2.5	7.6	467	17.0	220	45.4	26.3	5.12	.4	13.0

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanad-ium, water, fltrd, µg/L (01085)
Sep 19...	223	4.06	.41	20.8	28.5	279	.267	<.002	.009	43	<6	.76

462717111580701 Local number 08N03W10CDAC01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 19...	32.2	35.3	29.1	8.10	1.026	.39	180

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)	
	Sep 19...		61.6	56.9	17.92	.948



## Water-Data Report 2007

**462640111582801 Local number 08N03W15CBBA01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°26'39.8", long 111°58'27.6" referenced to North American Datum of 1927, in NW ¼ NW ¼ SW ¼ sec.15, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 220 ft. Upper casing diameter 6.0 in, top of first opening 180 ft, bottom of last opening 220 ft.

DATUM.--Land-surface datum is 4360 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 16...	1330	220	30	6.0	7.2	510	13.5	170	46.2	14.0	5.05	1.4	41.8

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: &lt;, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanad-ium, water, fltrd, $\mu$ g/L (01085)
Sep 16...	218	4.33	1.72	28.1	35.9	317	2.13	<.002	.019	33	<6	.36

462640111582801 Local number 08N03W15CBBA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

[Remark codes: &lt;, less than.]

Date	Alpha radioac 30 day, wat flt Th-230, pCi/L (62639)	Alpha radioac 72 hr, wat flt Th-230, pCi/L (62636)	Beta radioac 30 day, wat flt Cs-137, pCi/L (62645)	Beta radioac 72 hr, wat flt Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 16...	4.6	7.8	6.7	4.25	.066	.317	67

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

[Remark codes: &lt;, less than.]

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
	Sep 16...	10.7	10.5	4.50	.209





## Water-Data Report 2007

**462634111581501 Local number 08N03W15CBDA01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°26'33.6", long 111°58'14.7" referenced to North American Datum of 1927, in SE ¼ NW ¼ SW ¼ sec.15, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 340 ft. Upper casing diameter 6.0 in, top of first opening 18 ft, bottom of last opening 300 ft.

DATUM.--Land-surface datum is 4400 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

[Remark codes: &gt;, greater than.]

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd std units (00400)	Specific conductance, wat unfiltered, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 16...	1500	340	>53	.0	7.7	490	18.0	150	36.3	14.9	3.02	1.7	48.2

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: E, estimated.]

Date	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 16...	226	4.09	.87	26.0	23.5	298	1.26	E.002	.008	93	20	.06

462634111581501 Local number 08N03W15CBDA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 44

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 16...	35.0	95	19.2	45.0	.299	.42	130

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)	
	Sep 16...		11.6	10.8	18.30	.089

Water-Data Report 2007

**462651111584101 Local number 08N03W16ADAC01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°26'50.8", long 111°58'40.8" referenced to North American Datum of 1927, in NE ¼ SE ¼ NE ¼ sec.16, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 340 ft. Upper casing diameter undefined, top of first opening 305 ft, bottom of last opening 340 ft.

DATUM.--Land-surface datum is 4320 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unfltrd, µS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium, adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 16...	1030	340	70	3.2	6.9	986	44.5	56	17.0	3.26	8.95	11	190

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanad-ium, water, fltrd, µg/L (01085)
Sep 16...	374	9.24	7.76	60.0	82.8	604	<.016	<.002	.018	33	443	.04

462651111584101 Local number 08N03W16ADAC01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 16...	118	112	58.2	40.6	.752	.77	87

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

[Remark codes: &lt;, less than.]

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)	
	Sep 16...		.22	.206	.244	.016



## Water-Data Report 2007

**462555111580601 Local number 08N03W22BDDB01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°25'55.4", long 111°58'06.5" referenced to North American Datum of 1927, in SE ¼ SE ¼ NW ¼ sec.22, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 600 ft. Upper casing diameter 6.0 in, top of first opening 200 ft, bottom of last opening 600 ft.

DATUM.--Land-surface datum is 4850 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 13...	1400	600	30	2.8	7.8	413	13.5	200	39.5	24.6	4.15	.5	17.5

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: E, estimated.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 13...	209	1.88	.40	24.5	20.9	259	.101	E.001	.009	50	19	E.02

462555111580601 Local number 08N03W22BDD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	<b>Sep</b> <b>13...</b>	17.5	33.3	10.0	9.2	3.62	2.92	98

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
	<b>Sep</b> <b>13...</b>	9.89	9.71	6.54	.125

Water-Data Report 2007

**462432112013301 Local number 08N03W30DCCD01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°24'31.8", long 112°01'33.3" referenced to North American Datum of 1927, in SW ¼ SW ¼ SE ¼ sec.30, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 221 ft. Upper casing diameter 6.0 in, top of first opening 161 ft, bottom of last opening 221 ft.

DATUM.--Land-surface datum is 4740 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conduc-tance, wat unf μS/cm 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 10...	1300	221	35	1.1	7.7	464	11.5	200	50.3	17.2	3.81	1.0	33.5

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 10...	179	5.91	.50	26.1	55.1	301	.332	<.002	.006	34	49	E.04

462432112013301 Local number 08N03W30DCCD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, wat flt Th-230, pCi/L (62639)	Alpha radioac 72 hr, wat flt Th-230, pCi/L (62636)	Beta radioac 30 day, wat flt Cs-137, pCi/L (62645)	Beta radioac 72 hr, wat flt Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 10...	46.6	117	27.6	31.8	6.11	15.74	120

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 44

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)	
	Sep 10...		14.9	14.1	22.11	.265





Water-Data Report 2007

**462422112012701 Local number 08N03W31ABDA01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°24'22.1", long 112°01'26.6" referenced to North American Datum of 1927, in SE ¼ NW ¼ NE ¼ sec.31, T.8 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 340 ft. Upper casing diameter 6.0 in, top of first opening 300 ft, bottom of last opening 340 ft.

DATUM.--Land-surface datum is 4700 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd std units (00400)	Specific conductance, wat unfltrd μS/cm 25 degC (00095)	Temperature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 10...	1500	340	27	.8	8.0	420	12.5	170	42.0	15.0	2.43	1.1	31.7

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: <, less than; E, estimated.]

Date	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved solids, sum of consti-tuents mg/L (70301)	Nitrate + nitrite water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phos-phate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, μg/L (01005)	Iron, water, fltrd, μg/L (01046)	Vanad-ium, water, fltrd, μg/L (01085)
Sep 10...	168	7.38	.47	16.4	42.8	259	<.016	<.002	E.005	29	483	<.04

462422112012701 Local number 08N03W31ABDA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>10...</b>	56	3,330	11.5	11.5



## Water-Data Report 2007

**462507112170601 Local number 08N05W30BBCD01 (LUTTRELL WELL EPA-6)**

Boulder Batholith Intrusives

Lewis and Clark County, MT

LOCATION.--Lat 46°25'07", long 112°17'06" referenced to North American Datum of 1983, in SW ¼ NW ¼ NW ¼ sec.30, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10020006.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 84.5 ft. Upper casing diameter 2.0 in., top of first opening 44.5 ft, bottom of last opening 84.5 ft. Drilled June 10, 2000.

DATUM.--Land-surface datum is 7689.44 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of PVC casing, 2.6 ft above land-surface datum, Oct. 11, 2001, to present.

PERIOD OF RECORD.--June 2000 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 11	27.19	T	--	Aug 28	36.48	T	--
Jul 17	33.55	T	--	Sep 5	36.80	T	--

Water year 2007 - highest: 27.19 Jun 11, 2007; lowest: 36.80 Sep 05, 2007

Period of record - highest: 22.95 Jun 07, 2002; lowest: 44.24 Jun 16, 2005

## 462507112170601 Local number 08N05W30BBCD01 (LUTTRELL WELL EPA-6)—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 2001 to current year.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sam-pling depth, feet (00003)	Turbdty white light, det ang 90+/-30 corrctd NTRU (63676)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specif-ic conduc-tance, wat unf 25 degC (00095)	Temper-ature, deg C (00010)	Hard-ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes-ium, water, fltrd, mg/L (00925)	Potas-sium, water, fltrd, mg/L (00935)
Jun 11...	1700	1.0	60	80.0	24	--	6.8	120	8.5	42	10.6	3.84	1.69
Sep 05...	1000	.40	50	80.0	20	.9	6.7	115	5.0	43	10.6	3.96	1.55

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

Date	Sodium adsorp-tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alka-linity, wat flt fxd end lab, mg/L as CaCO3 (29801)	Alka-linity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chlor-ide, water, fltrd, mg/L (00940)	Fluor-ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis-solved-solids, sum of consti-tuents mg/L (70301)
Jun 11...	.3	4.65	47	52	.31	.33	28.1	8.65	93
Sep 05...	.3	4.91	47	49	.29	.29	27.1	8.42	91

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Alum-inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Cadmium water, fltrd, µg/L (01025)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan-ese, water, fltrd, µg/L (01056)	Zinc, water, fltrd, µg/L (01090)
Jun 11...	3.2	.37	<.04	E.26	3,970	<.12	332	4.5
Sep 05...	1.7	.15	<.04	<.40	4,320	<.12	356	4.3



## Water-Data Report 2007

**462522112172401 Local number 08N06W24DDCD01 (LUTTRELL WELL EPA-3)**

Boulder Batholith Intrusives

Lewis and Clark County, MT

LOCATION.--Lat 46°25'22", long 112°17'24" referenced to North American Datum of 1983, in SW ¼ SE ¼ SE ¼ sec.24, T.8 N., R.6 W., Lewis and Clark County, MT, Hydrologic Unit 10030101.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 227 ft. Upper casing diameter 4.0 in., top of first opening 197 ft, bottom of last opening 227 ft. Drilled June 16, 1999.

DATUM.--Land-surface datum is 7579.8 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of PVC at mark, 1.70 ft above land-surface datum, Oct. 10, 2001, to present.

PERIOD OF RECORD.--October 2001 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 12	127.46	T	--	Aug 28	119.41	T	--
Jul 17	122.02	T	--	Sep 4	120.20	T	--

Water year 2007 - highest: 119.41 Aug 28, 2007; lowest: 127.46 Jun 12, 2007

Period of record - highest: 115.26 Aug 05, 2002; lowest: 140.05 Jun 07, 2002

## 462522112172401 Local number 08N06W24DDCD01 (LUTTRELL WELL EPA-3)—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 2001 to current year.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	Turbidity white light, det ang 90+/-30 corrctd NTRU (63676)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
Jun 12...	1600	.70	50	--	74	--	6.7	279	6.0	14	4.33	.789	4.67
Sep 04...	1300	1.0	90	190	42	1.1	6.3	272	8.5	18	5.53	1.06	5.23

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

Date	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt fxd end lab, mg/L as CaCO3 (29801)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solids, sum of constituents mg/L (70301)
Jun 12...	5.8	50.2	58	53	1.31	.28	25.2	66.5	185
Sep 04...	4.9	48.5	57	54	1.11	.31	26.2	66.3	187

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 3 of 3

[Remark codes: &lt;, less than.]

Date	Aluminum, water, fltrd, µg/L (01106)	Arsenic, water, fltrd, µg/L (01000)	Cadmium, water, fltrd, µg/L (01025)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Manganese, water, fltrd, µg/L (01056)	Zinc, water, fltrd, µg/L (01090)
Jun 12...	2.0	.94	.08	2.6	15	.13	47.4	27.4
Sep 04...	3.8	.58	.13	.85	19	<.12	143	28.0

Water-Data Report 2007

**462522112172402 Local number 08N06W24DDCD02 (LUTTRELL WELL EPA-3S)**

Other aquifers  
Volcanics

Lewis and Clark County, MT

LOCATION.--Lat 46°25'22", long 112°17'24" referenced to North American Datum of 1983, in SW ¼ SE ¼ SE ¼ sec.24, T.8 N., R.6 W., Lewis and Clark County, MT, Hydrologic Unit 10030101.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 84 ft. Upper casing diameter 2.0 in., top of first opening 33 ft, bottom of last opening 84 ft. Drilled June 4, 2000.

DATUM.--Land-surface datum is 7579.6 ft above National Geodetic Vertical Datum of 1929. Measuring point: Top of PVC at mark on east side, 3.10 ft above land-surface datum, Oct. 10, 2001, to present.

PERIOD OF RECORD.--October 2001 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape; . Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 12	25.31	T	--	Aug 28	56.52	T	--
Jul 17	34.22	T	--	Sep 4	57.52	T	--
20	35.14	T	--				

Water year 2007 - highest: 25.31 Jun 12, 2007; lowest: 57.52 Sep 04, 2007

Period of record - highest: 24.27 Jun 16, 2005; lowest: 66.41 Oct 22, 2003

462522112172402 Local number 08N06W24DDCD02 (LUTTRELL WELL EPA-3S)—Continued

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--October 2001 to current year.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	Turbidity white light, 90+/-30 corrctd NTRU (63676)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)
Jun 12...	1500	.50	35	80.0	9.5	9.8	5.9	91	4.5	34	10.8	1.74	2.29
Jul 20...	1400	.30	62	75.0	17	8.7	4.6	48	12.0	10	2.95	.643	2.14
Sep 04...	1200	.20	18	80.0	61	8.7	2.6	96	8.0	14	4.17	.802	2.67

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Sodium adsorption ratio (00931)	Sodium water, fltrd, mg/L (00930)	Alkalinity, water fltrd lab, mg/L as CaCO3 (29801)	Alkalinity, water fltrd inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)
Jun 12...	.1	1.01	16	15	.70	<.10	5.01	18.3	49
Jul 20...	.1	.85	<5	<2	1.01	<.10	8.67	12.6	30
Sep 04...	.1	1.01	--	<2	1.03	E.06	11.2	24.9	E47



462522112172402 Local number 08N06W24DDCD02 (LUTTRELL WELL EPA-3S)—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Alum- inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Cadmium water, fltrd, µg/L (01025)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan- ese, water, fltrd, µg/L (01056)	Zinc, water, fltrd, µg/L (01090)
<b>Jun</b>								
12...	61.4	.47	.08	1.5	16	.33	11.6	10.9
<b>Jul</b>								
20...	243	.20	.06	1.4	61	2.18	3.4	13.2
<b>Sep</b>								
04...	797	.52	.35	8.3	322	7.38	12.9	80.8



## Water-Data Report 2007

**462517112173001 Local number 08N06W25AABB01 (LUTTRELL WELL EPA-1)**

Volcanics

Jefferson County, MT

LOCATION.--Lat 46°25'17", long 112°17'30" referenced to North American Datum of 1983, in NW ¼ NE ¼ NE ¼ sec.25, T.8 N., R.6 W., Jefferson County, MT, Hydrologic Unit 10030101.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 108 ft. Upper casing diameter 4.0 in., top of first opening 78 ft, bottom of last opening 108 ft. Drilled May 19, 1999.

DATUM.--Land-surface datum is 7564.23 ft above National Geodetic Vertical Datum of 1929. Measuring point: Edge of PVC casing at mark, 1.20 ft above land-surface datum, Oct. 10, 2001, to present.

PERIOD OF RECORD.--October 2001 to current year.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water level status	Date	Water level	Measure-ment method	Water level status
Jun 12	55.89	T	--	Aug 28	67.11	T	--
Jul 17	60.70	T	--	Sep 5	67.94	T	--

Water year 2007 - highest: 55.89 Jun 12, 2007; lowest: 67.94 Sep 05, 2007

Period of record - highest: 54.41 Jun 17, 2005; lowest: 84.27 Apr 05, 2004

## 462517112173001 Local number 08N06W25AABB01 (LUTTRELL WELL EPA-1)—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 2001 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Flow rate, instantaneous gal/min (00059)	Pump or flow period prior to sampling, minutes (72004)	Sampling depth, feet (00003)	Turbidity white light, det ang 90+/-30 corrctd NTRU (63676)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, mg/L fltrd, (00915)
Jun 12...	1100	1.0	90	100	.3	.2	3.9	144	6.0	1	.36
Jul 17...	1100	.50	90	105	.4	.2	3.8	157	7.5	2	.57
Sep 05...	1200	1.0	90	100	.4	.4	3.7	140	5.0	1	.33

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents mg/L (70301)
Jun 12...	.116	4.91	1.3	3.43	<2	.41	<.10	57.0	51.6	E119
Jul 17...	.172	5.38	1.1	3.81	<2	.46	<.10	57.8	55.5	E125
Sep 05...	.096	4.73	1.2	3.14	<2	.34	<.10	56.4	43.3	E110

462517112173001 Local number 08N06W25AABB01 (LUTTRELL WELL EPA-1)—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Alum- inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Cadmium water, fltrd, µg/L (01025)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Mangan- ese, water, fltrd, µg/L (01056)	Zinc, water, fltrd, µg/L (01090)
<b>Jun</b>								
12...	4,200	.84	.57	1.1	266	9.40	5.8	169
<b>Jul</b>								
17...	4,550	1.1	.59	1.8	357	10.9	11.8	216
<b>Sep</b>								
05...	3,890	.49	.48	1.8	268	7.32	5.1	172



Water-Data Report 2007

**463402111571801 Local number 09N03W02BCCB01**

Volcanics

Jefferson County, MT

LOCATION.--Lat 46°34'01.9", long 111°57'17.8" referenced to North American Datum of 1927, in SW ¼ SW ¼ NW ¼ sec.2, T.9 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 340 ft. Upper casing diameter 6.0 in, top of first opening 280 ft, bottom of last opening 340 ft.

DATUM.--Land-surface datum is 4200 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfiltered, µS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 24...	0930	340	68	8.1	7.7	484	12.0	160	46.9	11.1	11.4	1.1	32.2

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Alkalinity, water filtered, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanadium, water, fltrd, µg/L (01085)
Sep 24...	143	23.2	.81	58.7	56.3	335	1.99	<.002	.056	30	E3	20.2

463402111571801 Local number 09N03W02BCCB01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 24...	17.0	24.3	14.2	13.4	.028	1.05	41

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
	Sep 24...	9.69	9.89	17.42	.229



## Water-Data Report 2007

**463346111590401 Local number 09N03W04DBDC01**

Jefferson Limestone Dolomite Formation or Group

Jefferson County, MT

LOCATION.--Lat 46°33'45.8", long 111°59'04.1" referenced to North American Datum of 1927, in SE ¼ NW ¼ SE ¼ sec.4, T.9 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 414 ft. Upper casing diameter 6.0 in, top of first opening 374 ft, bottom of last opening 414 ft.

DATUM.--Land-surface datum is 4470 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF DAILY RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 19...	1100	414	50	6.6	7.6	423	11.5	210	50.3	20.9	2.27	.2	7.81

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 19...	186	5.03	.22	18.0	32.7	252	.880	<.002	.015	17	<6	1.7

463346111590401 Local number 09N03W04DBDC01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>19...</b>	19	100	2.03	1.89



Water-Data Report 2007

**46291111593701 Local number 09N03W33CCDD01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°29'10.6", long 111°59'36.9" referenced to North American Datum of 1927, in SE ¼ SW ¼ SW ¼ sec.33, T.9 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 300 ft. Upper casing diameter 6.0 in, top of first opening 260 ft, bottom of last opening 300 ft.

DATUM.--Land-surface datum is 4380 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

[Remark codes: <, less than; E, estimated.]

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dissolved oxygen, mg/L (00300)	pH, water, unfltrd std units (00400)	Specific conductance, wat unfiltered, µS/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 10...	1100	300	30	4.1	7.5	1,030	12.0	530	116	59.8	6.63	.3	14.9

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Alkalinity, water field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, µg/L (01005)	Iron, water, fltrd, µg/L (01046)	Vanadium, water, fltrd, µg/L (01085)
Sep 10...	245	70.7	.20	20.9	204	663	5.29	E.002	.007	20	<6	.95

46291111593701 Local number 09N03W33CCDD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

[Remark codes: &lt;, less than; E, estimated.]

Date	Alpha radioac 30 day, wat flt Th-230, pCi/L (62639)	Alpha radioac 72 hr, wat flt Th-230, pCi/L (62636)	Beta radioac 30 day, wat flt Cs-137, pCi/L (62645)	Beta radioac 72 hr, wat flt Cs-137, pCi/L (62642)	Gross alpha 30 day recount wat unf Th-230, pCi/L (63016)	Gross alpha 72 hr, recount wat unf Th-230, pCi/L (63014)	Gross beta 30 day recount wat unf Cs-137, pCi/L (63017)	Gross beta 72 hr, recount wat unf Cs-137, pCi/L (63015)	Radium-226, water, fltrd, radon method pCi/L (09511)	Radium-226, water, unfltrd pCi/L (09501)	Radium-228, water, fltrd, pCi/L (81366)	Radium-228, water, unfltrd pCi/L (11501)
Sep 10...	392	472	156	32.3	390	440	176	34.8	5.05	4.20	1.59	1.68

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

[Remark codes: &lt;, less than; E, estimated.]

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
Sep 10...	150	27,700	651	629	215.2	10.26	199.6

Water-Data Report 2007

**462931111590501 Local number 09N03W33DBBD01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°29'30.6", long 111°59'05.4" referenced to North American Datum of 1927, in NW ¼ NW ¼ SE ¼ sec.33, T.9 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**GROUND-WATER RECORDS**

WELL CHARACTERISTICS.--Depth 224 ft. Upper casing diameter 6.0 in, top of first opening 144 ft, bottom of last opening 224 ft.

DATUM.--Land-surface datum is 4480 ft above National Geodetic Vertical Datum of 1929. Measuring point: edge of casing, 1.5 ft above land-surface datum, Sep. 13, 2007, to present.

PERIOD OF RECORD.--September 2007.

REMARKS.--All water levels are reported as distance, in feet below land-surface datum.

**WATER LEVELS IN FEET BELOW LAND SURFACE DATUM  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

[Measurement method: V, calibrated electric tape-- accuracy of instrument has been checked.  
Water-level status: --, static.]

<b>Date</b>	<b>Water level</b>	<b>Measure- ment method</b>	<b>Water level status</b>
Sep 13	53.82	V	--

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 13...	1200	224	44	5.1	7.8	541	11.0	290	49.4	40.8	5.13	.3	13.0

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: <, less than; E, estimated.]

Date	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 13...	272	7.81	.27	15.8	26.5	322	<.016	E.001	.007	48	106	<.04

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

[Remark codes: <, less than; E, estimated.]

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, radon method, pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma, water, unfltrd, pCi/L (76002)	Radon-222, water, unfltrd, pCi/L (82303)
Sep 13...	26.9	36.8	15.1	10.2	1.828	3.43	95	10,300

462931111590501 Local number 09N03W33DBBD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
<b>Sep</b>					
<b>13...</b>	27.4	26.5	11.85	.426	8.39



## Water-Data Report 2007

**462944111575001 Local number 09N03W34BCBD01**

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°29'44.4", long 111°57'50.3" referenced to North American Datum of 1927, in NW ¼ SW ¼ NW ¼ sec.34, T.9 N., R.3 W., Jefferson County, MT, Hydrologic Unit 10030101.

**WATER-QUALITY RECORDS**

WELL CHARACTERISTICS.--Depth 194 ft. Upper casing diameter 10.0 in, top of first opening 139 ft, bottom of last opening 179 ft.

DATUM.--Land-surface datum is 4155 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 4

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 13...	1000	194	70	8.7	7.4	1,230	11.0	470	102	52.2	10.7	1.7	82.3

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 4

[Remark codes: E, estimated.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 13...	388	130	1.36	20.1	86.4	720	.304	E.001	.011	44	8	.62

462944111575001 Local number 09N03W34BCBD01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 4

Date	Alpha radioac 30 day, Th-230, pCi/L (62639)	Alpha radioac 72 hr, Th-230, pCi/L (62636)	Beta radioac 30 day, Cs-137, pCi/L (62645)	Beta radioac 72 hr, Cs-137, pCi/L (62642)	Radium-226, water, fltrd, method pCi/L (09511)	Radium-228, water, fltrd, pCi/L (81366)	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)
	Sep 13...	45.1	69.9	32.9	14.2	.758	.767	73

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 4 of 4

Date	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)	Ura- nium-234, water, fltrd, pCi/L (22610)	Ura- nium-235, water, fltrd, pCi/L (22620)	Ura- nium-238, water, fltrd, pCi/L (22603)
	Sep 13...	82.4	78.2	26.12	1.37



## Water-Data Report 2007

## 46301112090001 Local number 09N04W30DCAA01

Boulder Batholith Intrusives

Jefferson County, MT

LOCATION.--Lat 46°30'11.1", long 112°09'00.0" referenced to North American Datum of 1927, in NE ¼ SW ¼ SE ¼ sec.30, T.9 N., R.4 W., Jefferson County, MT, Hydrologic Unit 10030101.

## WATER-QUALITY RECORDS

WELL CHARACTERISTICS.--Depth 220 ft. Upper casing diameter 6.0 in, top of first opening 180 ft, bottom of last opening 220 ft.

DATUM.--Land-surface datum is 5445 ft above National Geodetic Vertical Datum of 1929. Measuring point: Undefined.

PERIOD OF RECORD.--September 2007.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Depth of well, feet below LSD (72008)	Pump or flow period prior to sampling, minutes (72004)	Dis-solved oxygen, mg/L (00300)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, $\mu$ S/cm 25 degC (00095)	Temperature, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)
Sep 17...	0900	220	32	.8	7.3	503	8.5	230	73.6	11.0	4.82	.3	10.1

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: &lt;, less than.]

Date	Alkalinity, wat fltrd, mg/L as CaCO3 (39086)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Nitrate + nitrite, water, fltrd, mg/L as N (00631)	Nitrite, water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)	Barium, water, fltrd, $\mu$ g/L (01005)	Iron, water, fltrd, $\mu$ g/L (01046)	Vanadium, water, fltrd, $\mu$ g/L (01085)
Sep 17...	88	2.41	.42	24.7	157	337	<.016	<.002	.008	19	553	<.04



46301112090001 Local number 09N04W30DCAA01—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Radon-222 2-sigma water, unfltrd pCi/L (76002)	Radon-222, water, unfltrd pCi/L (82303)	Uranium natural water, fltrd, µg/L (22703)	Uranium natural water, unfltrd µg/L (28011)
<b>Sep</b>				
<b>17...</b>	62	4,120	2.13	2.03



Water-Data Report 2007

## 06054500 MISSOURI RIVER AT TOSTON, MT

Missouri River Main Stem  
Upper Missouri Subbasin

LOCATION.--Lat 46°08'46", long 111°25'11" referenced to North American Datum of 1927, in NW ¼ SE ¼ NW ¼ sec.36, T.5 N., R.2 E., Broadwater County, MT, Hydrologic Unit 10030101, on left bank 2.2 mi southeast of Toston, 4.8 mi upstream from Crow Creek, 7.8 mi downstream from Sixteenmile Creek, and at river mile 2,296.1.

DRAINAGE AREA.--14,669 mi<sup>2</sup>.

### **SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 1890 to February 1891, April 1910 to December 1916, April 1941 to current year. Monthly discharge only for some periods, published in Water Supply Paper 1309.

GAGE.--Water-stage recorder. Elevation of gage is 3,905.68 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Dec. 20, 1916, nonrecording gages at site 2.5 mi downstream at different elevations.

REMARKS.--Records are good. Some regulation occurs from six reservoirs on tributaries and Clark Canyon Reservoir (station 06015300). Diversions for irrigation include about 555,400 acres of which 12,000 acres lies downstream from station. U.S. Army Corps of Engineers satellite telemeter is located at the station.

## 06054500 MISSOURI RIVER AT TOSTON, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2,530	3,550	e2,600	2,650	2,910	3,210	4,120	5,190	6,210	2,140	1,630	1,220
2	2,520	3,510	2,500	3,010	2,750	3,030	4,230	5,910	5,720	2,050	1,620	1,220
3	2,550	3,570	2,690	3,390	2,740	3,170	4,150	6,520	5,360	2,030	1,530	1,220
4	2,580	3,710	2,980	3,580	2,900	3,260	4,050	7,220	5,310	2,020	1,490	1,220
5	2,610	3,790	3,160	3,400	3,080	3,370	4,000	7,670	5,370	2,010	1,610	1,270
6	2,650	3,800	3,290	2,930	3,690	3,470	3,930	7,340	6,370	2,050	1,510	1,370
7	2,960	3,800	3,600	2,600	3,740	3,810	3,870	6,710	8,830	1,720	1,770	1,380
8	3,270	3,910	3,620	2,900	3,670	4,330	3,800	6,040	10,100	1,840	1,740	1,390
9	3,440	4,200	3,750	3,240	3,710	4,350	3,850	5,520	9,320	1,870	1,630	1,420
10	3,400	4,580	3,760	3,490	3,590	4,160	4,020	5,270	9,030	1,650	1,380	1,460
11	3,410	4,410	3,790	3,190	3,670	4,010	4,030	5,530	8,450	1,410	1,250	1,470
12	3,410	4,290	3,900	2,000	3,620	4,190	3,980	5,740	7,950	1,750	1,230	1,490
13	3,360	4,100	3,980	1,900	3,410	4,580	3,850	6,270	7,940	1,480	1,310	1,490
14	3,340	4,010	3,990	1,930	3,410	4,800	3,730	7,160	7,610	1,670	1,340	1,500
15	3,320	3,960	4,150	2,070	3,370	4,900	3,660	7,700	6,930	1,760	1,350	1,530
16	3,510	3,910	3,690	2,280	3,630	4,920	3,690	7,770	6,220	1,910	1,370	1,560
17	3,920	3,860	3,200	2,470	3,530	4,660	3,690	7,000	5,880	1,890	1,280	1,580
18	3,890	3,990	2,800	2,720	3,520	4,880	3,930	6,480	5,620	1,800	1,280	1,610
19	3,840	3,920	2,410	2,690	3,350	5,080	4,260	5,950	5,160	1,520	1,350	1,650
20	3,940	3,920	2,490	2,850	3,360	5,380	4,350	5,820	4,570	1,630	1,320	1,720
21	4,000	3,930	2,530	2,820	3,470	5,720	4,260	6,330	4,180	1,710	1,300	1,810
22	3,980	3,980	2,970	2,940	3,460	5,340	4,140	6,760	3,880	1,730	1,310	1,900
23	3,910	3,960	2,840	3,280	3,670	4,790	4,060	7,110	3,650	1,700	1,320	1,950
24	3,890	3,880	3,040	3,470	3,660	4,510	4,100	6,960	3,450	1,670	1,310	2,050
25	3,900	3,740	3,270	3,340	3,590	4,360	4,050	6,980	3,210	1,550	1,300	2,150
26	3,860	3,560	3,630	3,340	3,460	4,370	4,110	6,700	3,020	1,940	1,270	2,210
27	3,800	e3,200	3,760	3,270	3,370	4,620	4,280	5,930	2,840	1,600	1,270	2,230
28	3,800	e2,200	3,780	3,120	3,340	4,800	4,330	5,780	2,620	1,770	1,240	2,230
29	3,750	e2,000	3,610	3,120	---	4,780	4,240	6,490	2,360	1,640	1,240	2,280
30	3,810	e2,300	3,160	2,880	---	4,550	4,660	7,350	2,190	1,660	1,230	2,420
31	3,640	---	2,890	2,760	---	4,210	---	6,960	---	1,630	1,230	---
<b>Total</b>	106,790	111,540	101,830	89,630	95,670	135,610	121,420	202,160	169,350	54,800	43,010	50,000
<b>Mean</b>	3,445	3,718	3,285	2,891	3,417	4,375	4,047	6,521	5,645	1,768	1,387	1,667
<b>Max</b>	4,000	4,580	4,150	3,580	3,740	5,720	4,660	7,770	10,100	2,140	1,770	2,420
<b>Min</b>	2,520	2,000	2,410	1,900	2,740	3,030	3,660	5,190	2,190	1,410	1,230	1,220
<b>Ac-ft</b>	211,800	221,200	202,000	177,800	189,800	269,000	240,800	401,000	335,900	108,700	85,310	99,180

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1890 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	4,315	4,623	3,708	3,346	3,660	4,080	5,511	8,645	12,110	5,024	2,661	3,308
<b>Max</b>	6,778	7,028	5,968	4,893	5,217	6,900	10,090	18,400	24,520	14,240	5,729	5,813
<b>(WY)</b>	(1977)	(1984)	(1960)	(1984)	(1915)	(1916)	(1969)	(1976)	(1997)	(1975)	(1975)	(1984)
<b>Min</b>	2,242	2,815	2,569	2,165	2,268	2,835	2,388	2,850	3,175	1,243	896	1,448
<b>(WY)</b>	(2004)	(1891)	(1891)	(1891)	(1989)	(1955)	(1961)	(2004)	(1987)	(1988)	(1988)	(1994)

\* During periods of operation (April 1910 to December 1916, April 1941 to current year).

06054500 MISSOURI RIVER AT TOSTON, MT—Continued

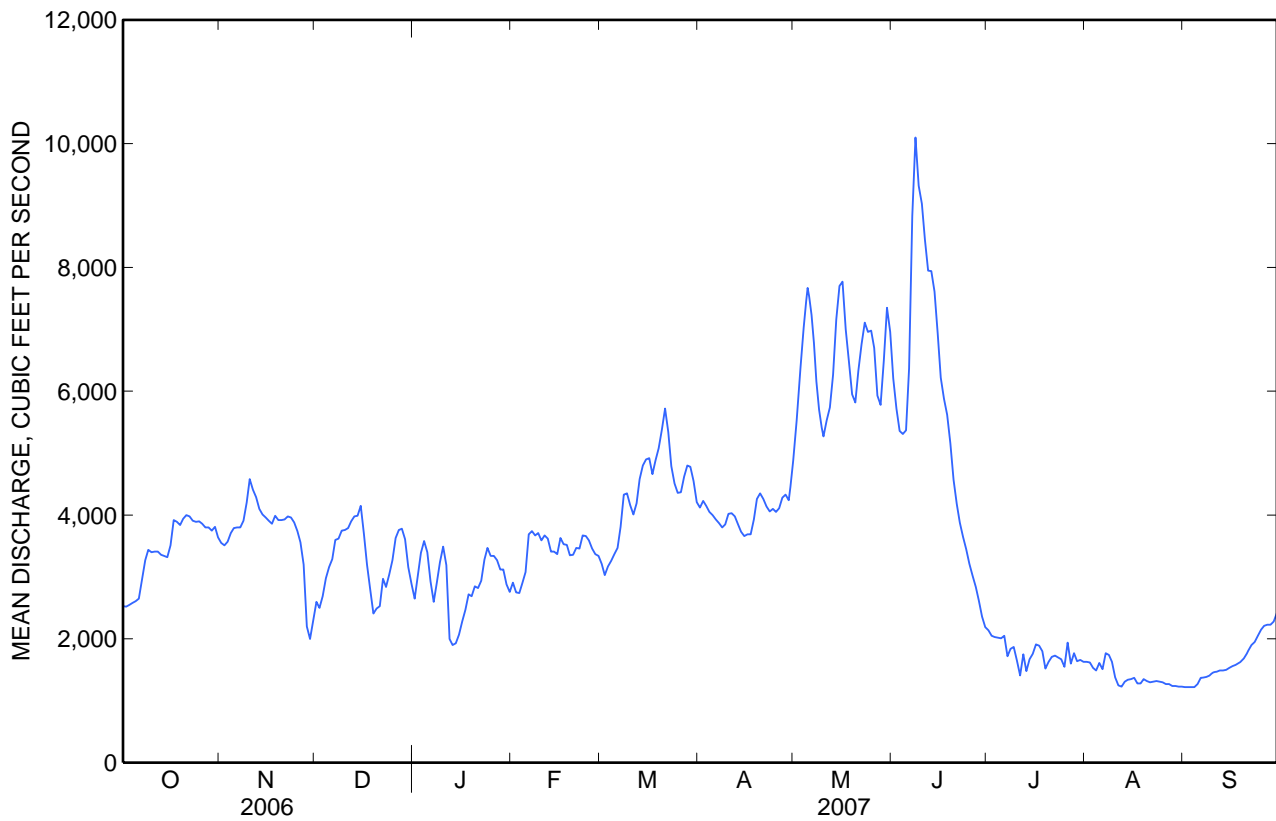
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1890 - 2007*	
<b>Annual total</b>	1,539,940		1,281,810			
<b>Annual mean</b>	4,219		3,512		5,099	
<b>Highest annual mean</b>					7,742	1997
<b>Lowest annual mean</b>					2,830	2004
<b>Highest daily mean</b>	16,700	Jun 11	10,100	Jun 8	33,400	Jun 12, 1997
<b>Lowest daily mean</b>	1,230	Aug 15	1,220	Sep 1	700	Jan 12, 1963
<b>Annual seven-day minimum</b>	1,280	Aug 11	1,230	Aug 29	811	Jul 31, 1961
<b>Maximum peak flow</b>			10,300	Jun 8	34,000	Jun 12, 1997
<b>Maximum peak stage</b>			7.00	Jun 8	12.22	Jun 12, 1997
<b>Instantaneous low flow</b>			<sup>a</sup> 1,020	Jul 30	<sup>b</sup> 450	Jul 31, 1989
<b>Annual runoff (ac-ft)</b>	3,054,000		2,542,000		3,694,000	
<b>10 percent exceeds</b>	7,740		5,890		9,130	
<b>50 percent exceeds</b>	3,420		3,470		4,030	
<b>90 percent exceeds</b>	1,460		1,490		2,290	

\* During periods of operation (April 1910 to December 1916, April 1941 to current year).

<sup>a</sup> Gage height, 2.44 ft, result of regulation.

<sup>b</sup> Gage height, 1.68 ft, result of regulation.



**06054500 MISSOURI RIVER AT TOSTON, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1949-53, 1965, 1972 to current year. Sampling location moved in October 1978, from old bridge on U.S. Highway 287 at Toston, to cableway 2.4 miles upstream.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1973 to September 1981.

WATER TEMPERATURE: May 1949 to June 1953, April 1973 to current year.

SUSPENDED-SEDIMENT DISCHARGE: March 1949 to June 1953.

INSTRUMENTATION.--Temperature recorder since July 6, 1977.

REMARKS.--Daily water temperature records are rated good. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SPECIFIC CONDUCTANCE : Maximum daily, 524 microsiemens per centimeter ( $\mu\text{S}/\text{cm}$ ) at 25°C, Mar. 4, 1978; minimum daily, 159  $\mu\text{S}/\text{cm}$  at 25°C, May 28, 1979.

WATER TEMPERATURE: Maximum, 29.0°C, July 31, 1988, July 20, 1989; minimum, 0.0°C on many days during winter.

SEDIMENT CONCENTRATION: Maximum daily mean, 670 mg/L, Mar. 22, 25, 1951; minimum daily mean, 5 mg/L, Jul. 12, 1951.

SEDIMENT LOAD: Maximum daily, 16,100 tons, May 5, 1952; minimum daily, 51 tons Feb. 1, 1951.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 28.0°C, July 23; minimum, 0.0°C, many days November through March.

## 06054500 MISSOURI RIVER AT TOSTON, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	14.5	13.5	14.0	1.0	0.5	0.5	0.5	0.0	0.5	0.5	0.0	0.5
2	14.0	13.0	13.5	1.0	0.0	0.5	0.5	0.0	0.5	0.5	0.5	0.5
3	13.0	12.0	12.5	4.0	1.0	2.0	0.5	0.0	0.5	0.5	0.5	0.5
4	14.0	13.0	13.5	5.5	4.0	5.0	0.5	0.5	0.5	0.5	0.0	0.5
5	13.5	12.5	13.0	6.0	5.0	5.5	0.5	0.0	0.5	0.5	0.0	0.5
6	14.5	13.5	14.0	7.0	5.5	6.0	0.5	0.0	0.5	0.5	0.0	0.0
7	14.5	13.0	14.0	9.5	7.0	8.0	0.5	0.0	0.5	0.5	0.0	0.5
8	13.0	11.0	11.5	10.0	8.5	9.5	0.5	0.0	0.5	0.5	0.5	0.5
9	11.0	9.5	10.5	8.5	6.5	7.5	0.5	0.0	0.5	1.0	0.5	0.5
10	9.5	8.5	9.0	6.5	5.0	5.5	0.5	0.0	0.5	0.5	0.0	0.5
11	9.5	8.5	9.0	5.0	4.0	4.5	0.5	0.5	0.5	0.0	0.0	0.0
12	10.0	9.0	9.5	4.0	3.0	3.5	0.5	0.5	0.5	0.0	0.0	0.0
13	10.5	9.5	10.0	3.0	2.5	2.5	0.5	0.5	0.5	0.0	0.0	0.0
14	11.0	10.0	10.5	3.0	2.5	2.5	0.5	0.0	0.5	0.0	0.0	0.0
15	11.0	9.5	10.5	2.5	2.0	2.0	0.5	0.0	0.5	0.5	0.0	0.0
16	9.5	8.5	9.0	2.5	1.5	2.0	0.5	0.0	0.0	0.5	0.0	0.0
17	8.5	7.0	7.5	2.5	2.0	2.5	0.5	0.0	0.0	0.5	0.0	0.0
18	7.0	6.5	6.5	2.0	1.5	1.5	0.5	0.0	0.0	0.5	0.0	0.0
19	7.5	6.5	7.5	2.0	1.5	1.5	0.5	0.0	0.5	0.5	0.0	0.5
20	8.0	7.5	8.0	3.0	1.5	2.0	0.5	0.0	0.5	0.5	0.0	0.5
21	7.5	6.5	7.0	4.5	3.0	4.0	0.5	0.0	0.5	0.5	0.0	0.5
22	6.5	6.0	6.0	4.5	4.0	4.0	0.5	0.0	0.5	0.5	0.0	0.5
23	6.5	6.0	6.5	4.0	3.0	3.5	0.5	0.0	0.5	0.5	0.0	0.5
24	7.0	6.0	6.5	3.0	1.0	2.0	0.5	0.0	0.5	0.5	0.0	0.5
25	7.0	6.5	6.5	1.0	0.0	0.5	0.5	0.5	0.5	1.0	0.0	0.5
26	7.0	5.5	6.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.5
27	5.5	5.0	5.5	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.0	0.0
28	7.0	5.0	6.0	0.0	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.5
29	7.5	6.5	7.0	0.5	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0
30	6.5	2.5	4.5	0.5	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.5
31	2.5	1.0	1.5	---	---	---	0.5	0.0	0.0	0.5	0.0	0.5
Month	14.5	1.0	9.0	10.0	0.0	3.0	0.5	0.0	0.5	1.0	0.0	0.5

## 06054500 MISSOURI RIVER AT TOSTON, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	0.5	0.0	0.0	1.0	0.0	0.5	8.5	7.0	8.0	16.0	15.5	15.5
<b>2</b>	0.0	0.0	0.0	1.0	0.0	0.5	8.5	7.5	7.5	16.0	15.5	16.0
<b>3</b>	1.0	0.0	0.5	0.5	0.0	0.5	7.5	6.5	7.0	15.5	12.5	14.0
<b>4</b>	1.0	0.0	0.5	1.0	0.0	0.5	8.0	7.5	7.5	12.5	10.0	11.0
<b>5</b>	1.0	0.5	0.5	1.0	0.0	0.5	7.5	7.0	7.5	11.0	10.5	10.5
<b>6</b>	0.5	0.0	0.5	1.5	0.5	1.0	7.5	6.5	7.0	12.0	10.5	11.0
<b>7</b>	0.5	0.0	0.5	3.0	1.5	2.0	7.0	6.5	6.5	13.5	12.0	12.5
<b>8</b>	0.5	0.0	0.0	5.0	3.0	4.0	8.0	6.5	7.5	15.5	13.5	14.0
<b>9</b>	0.5	0.0	0.5	5.0	4.5	5.0	9.5	8.0	8.5	16.0	15.5	16.0
<b>10</b>	0.5	0.0	0.5	6.0	5.0	5.5	8.5	6.5	7.5	16.5	16.0	16.0
<b>11</b>	0.5	0.0	0.5	6.5	6.0	6.0	7.0	6.0	6.5	16.0	15.5	16.0
<b>12</b>	0.5	0.0	0.0	7.5	6.0	6.5	7.5	6.5	7.0	17.0	16.0	16.5
<b>13</b>	0.5	0.0	0.0	8.0	7.5	7.5	9.0	7.5	8.0	17.0	15.0	16.0
<b>14</b>	0.5	0.0	0.0	7.5	6.5	7.0	10.5	9.0	9.5	15.0	13.5	14.0
<b>15</b>	1.0	0.0	0.5	6.5	5.5	6.0	11.0	10.0	10.5	15.0	13.5	14.0
<b>16</b>	1.0	0.0	0.5	6.5	6.0	6.5	12.0	10.5	11.0	16.0	15.0	15.5
<b>17</b>	1.0	0.0	0.5	7.5	6.0	6.5	12.5	12.0	12.0	17.0	16.0	16.5
<b>18</b>	1.0	0.0	0.5	8.5	7.5	8.5	12.0	9.0	10.5	17.5	17.0	17.0
<b>19</b>	0.5	0.0	0.5	8.5	8.5	8.5	9.0	8.0	8.0	17.5	16.5	17.0
<b>20</b>	1.0	0.0	0.5	8.5	7.5	8.5	8.0	7.0	7.5	16.5	14.5	15.5
<b>21</b>	1.0	0.0	0.5	7.5	7.0	7.5	10.0	8.0	9.0	14.5	14.0	14.5
<b>22</b>	0.5	0.0	0.5	7.0	6.5	6.5	11.0	10.0	10.5	14.0	10.5	12.0
<b>23</b>	0.5	0.0	0.5	8.5	6.5	7.5	11.5	11.0	11.0	11.5	10.0	10.5
<b>24</b>	1.0	0.0	0.5	9.0	8.5	9.0	12.0	10.5	11.0	12.0	11.0	11.5
<b>25</b>	1.0	0.0	0.5	10.0	9.0	9.5	13.5	12.0	13.0	12.5	11.5	12.0
<b>26</b>	0.5	0.0	0.5	9.5	9.0	9.0	14.0	13.5	13.5	14.5	12.0	13.0
<b>27</b>	0.5	0.0	0.5	10.0	8.5	9.5	13.5	12.5	13.0	16.5	14.5	15.5
<b>28</b>	1.0	0.0	0.5	8.5	6.0	7.0	14.0	12.0	13.0	16.5	13.5	15.5
<b>29</b>	---	---	---	6.0	4.5	5.0	15.0	14.0	14.5	13.5	11.5	12.0
<b>30</b>	---	---	---	6.5	5.0	5.5	15.5	14.5	15.0	14.5	12.0	13.0
<b>31</b>	---	---	---	7.5	6.5	7.0	---	---	---	15.5	14.5	15.0
<b>Month</b>	1.0	0.0	0.5	10.0	0.0	5.5	15.5	6.0	9.5	17.5	10.0	14.0

## 06054500 MISSOURI RIVER AT TOSTON, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	17.0	15.0	16.0	23.5	21.0	22.0	24.5	22.0	23.0	21.0	18.5	19.5
2	18.5	17.0	18.0	24.5	22.0	23.0	24.5	22.0	23.0	21.5	18.0	20.0
3	19.0	18.5	18.5	24.0	22.0	23.0	25.5	22.5	23.5	22.5	19.0	20.5
4	19.5	19.0	19.5	25.0	22.0	23.5	25.5	21.5	23.0	21.0	19.5	20.0
5	19.5	17.5	19.0	26.0	23.0	24.5	23.0	20.5	22.0	20.0	17.5	19.0
6	17.5	13.0	15.0	27.0	24.0	25.5	23.0	20.0	21.0	19.5	17.5	18.0
7	13.0	11.0	12.0	26.5	23.5	24.5	23.0	20.0	21.5	20.0	17.5	18.5
8	14.5	12.0	13.0	25.5	22.5	24.0	22.0	20.0	21.0	18.5	16.0	17.5
9	16.0	14.0	15.0	26.0	22.0	23.5	22.0	19.5	20.5	17.0	15.0	16.0
10	16.0	15.0	15.5	24.5	20.5	23.0	22.5	20.0	21.0	16.5	14.5	15.0
11	17.0	14.5	15.0	25.0	19.5	22.0	22.0	19.0	20.5	16.5	14.0	15.0
12	17.5	16.5	17.0	26.5	22.0	24.0	22.5	18.5	20.0	17.0	14.5	15.5
13	18.0	17.0	17.5	26.5	22.5	24.0	22.5	19.5	20.5	16.5	14.0	15.0
14	17.5	16.5	17.0	27.0	23.5	24.5	22.0	19.0	20.0	15.5	13.5	14.5
15	18.0	17.0	17.5	25.5	23.0	24.0	22.5	19.0	20.5	16.5	14.0	15.0
16	19.5	18.0	18.5	25.5	23.0	24.0	22.5	19.5	20.5	17.0	14.5	15.5
17	19.5	17.5	18.5	26.0	23.5	24.5	21.5	19.0	20.0	16.5	15.0	15.5
18	17.5	16.5	16.5	26.0	24.0	24.5	20.5	18.5	19.5	15.5	13.5	14.5
19	18.0	16.5	17.0	27.5	23.5	25.5	20.5	18.0	19.0	14.5	13.0	13.5
20	20.0	18.0	19.0	26.5	23.0	25.0	20.0	17.5	18.5	13.0	12.0	12.5
21	20.5	19.5	20.0	26.5	23.0	24.0	19.0	16.0	17.5	14.0	11.5	13.0
22	22.0	20.5	21.5	27.0	23.0	24.5	19.0	16.0	17.0	13.5	13.0	13.5
23	22.5	21.5	22.0	28.0	24.0	25.0	20.0	16.5	18.0	13.0	12.0	12.5
24	22.0	21.0	21.5	25.0	23.5	24.5	20.0	17.0	18.0	12.0	11.0	11.5
25	21.0	19.5	20.5	25.5	22.5	23.5	20.0	17.0	18.0	12.0	11.0	11.5
26	19.5	18.0	18.5	25.5	22.5	24.0	20.5	17.5	18.5	12.5	11.5	12.0
27	20.5	18.5	19.5	26.5	23.0	24.5	20.5	17.5	18.5	13.0	12.0	12.5
28	22.5	20.0	21.0	26.5	23.5	25.0	20.0	16.5	18.0	13.0	12.0	12.5
29	23.0	21.5	22.0	27.0	24.0	25.0	20.5	16.5	18.5	12.5	11.5	12.0
30	22.5	20.5	21.5	27.0	23.5	25.0	21.5	17.5	19.0	11.5	10.0	11.0
31	---	---	---	26.5	22.0	24.5	21.0	18.5	19.5	---	---	---
<b>Month</b>	23.0	11.0	18.0	28.0	19.5	24.0	25.5	16.0	20.0	22.5	10.0	15.0





## Water-Data Report 2007

**06058500 CANYON FERRY LAKE NEAR HELENA, MT**

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°38'57", long 111°43'39" referenced to North American Datum of 1927, in SE ¼ SE ¼ sec.4, T.10 N., R.1 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, in block 17 of Canyon Ferry Dam, 15 mi east of Helena, and at river mile 2,252.8.

DRAINAGE AREA.--15,904 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 1953 to current year (monthend contents only). Prior to October 1981, published as Canyon Ferry Reservoir near Helena.

Records of monthend contents in Lake Sewell, submerged by present reservoir Apr. 8, 1953, available January 1936 to March 1953. Scattered daily elevations and contents for April to July 1953, published in Water Supply Paper (WSP) 1320-B. Daily elevations and contents for May to June 1964, published in WSP 1840-B. Daily elevations and contents on file in Helena district office.

REVISED RECORDS.-- WSP 1559: Drainage area.

GAGE.--Water-stage recorder in powerhouse control room. Elevation of gage is 3,650.0 ft, referenced to the National Geodetic Vertical Datum of 1929.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

REMARKS.--Reservoir is formed by concrete dam; construction began in 1949 and was completed in 1953. Storage began in March 1953. Usable capacity is 1,993,000 acre-ft between elevation 3,770.00 ft, invert of outlet works, and 3,800.00 ft, controlled spillway elevation. Dead storage is 1,060 acre-ft, below elevation 3,650.00 ft. Minimum operating level is 396,000 acre-ft, at elevation 3,728.00 ft, for on-site power generation. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, recreation, and supplemental water supply for city of Helena.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 2,043,000 acre-ft, July 15-29, 31, 1955, July 2, 5, 6, 8, 1956, July 16, 17, 1962, June 23, 1964, elevation, 3,800.0 ft; minimum since first filling, 1,017,000 acre-ft, Apr. 11, 1967, elevation, 3,764.70 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,884,000 acre-ft, June 21, elevation, 3,796.80 ft; minimum, 1,482,000 acre-ft, Feb. 5, elevation, 3,784.21 ft.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	3,785.63	1,525,000	--
October 31	3,785.87	1,532,000	+7,000
November 30	3,786.41	1,549,000	+17,000
December 31	3,786.22	1,543,000	-6,000
Calendar Year 2006	--	--	+114,000
January 31	3,784.58	1,493,000	-50,000
February 28	3,784.85	1,501,000	+8,000
March 31	3,787.14	1,572,000	+71,000
April 30	3,788.17	1,604,000	+32,000
May 31	3,793.44	1,774,000	+170,000
June 30	3,796.20	1,864,000	+90,000
July 31	3,792.03	1,728,000	-136,000
August 31	3,787.77	1,592,000	-136,000
September 30	3,784.80	1,500,000	-92,000
Water Year 2007	--	--	-25,000



## Water-Data Report 2007

## 462720112165101 TENMILE CREEK ABOVE MONITOR CREEK, NEAR RIMINI, MT

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°27'20", long 112°16'51" referenced to North American Datum of 1927, in SW ¼ NE ¼ SW ¼ sec.7, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 30 ft above confluence with Monitor Creek and 2.9 mi south of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling site is 6,230 ft, referenced to the National Geodetic Vertical Datum of 1929.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 2003 to current year.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt lab, mg/L as CaCO3 (29801)
Jun 14...	0940	6.1	6.9	24	13.0	7.5	8	2.35	.463	.82	.3	1.95	10
Sep 06...	0840	.08	6.8	50	13.0	10.5	16	4.65	.964	1.12	.4	3.93	20

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: <, less than.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dissolved solids, sum of constituents, mg/L (70301)	Dissolved solids, tons/acre-ft (70303)	Dissolved solids, tons/d (70302)	Aluminum, water, fltrd, μg/L (01106)	Arsenic, water, fltrd, μg/L (01000)	Arsenic, water, unfltrd, μg/L (01002)	Cadmium, water, fltrd, μg/L (01025)	Cadmium, water, unfltrd, μg/L (01027)
Jun 14...	.16	<.10	14.5	2.65	29	.04	.48	135	2.0	2.0	.05	.04
Sep 06...	.22	.10	13.3	5.48	42	.06	.01	18.4	1.2	1.3	<.04	.02

462720112165101 TENMILE CREEK ABOVE MONITOR CREEK, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: <, less than; E, estimated.]

Date	Copper,		Iron,		Lead,		Mangan-		Zinc,	
	Copper,	water,	Iron,	water,	Lead,	water,	ese,	water,	Zinc,	water,
	water,	unfltrd	water,	unfltrd	water,	unfltrd	ese,	unfltrd	water,	unfltrd
	filtrd,	recover	filtrd,	recover	filtrd,	recover	filtrd,	recover	filtrd,	recover
	-able,	-able,	-able,	-able,	-able,	-able,	-able,	-able,	-able,	-able,
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	(01040)	(01042)	(01046)	(01045)	(01049)	(01051)	(01056)	(01055)	(01090)	(01092)
<b>Jun</b>										
<b>14...</b>	2.1	3.5	112	169	.27	.45	1.9	3.8	6.3	6.4
<b>Sep</b>										
<b>06...</b>	.81	E.71	61	92	<.12	.09	8.3	9.7	5.9	3.2



## Water-Data Report 2007

**462542112173101 MONITOR CREEK SS 12 NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°25'42", long 112°17'31" referenced to North American Datum of 1927, in NW ¼ NE ¼ SE ¼ sec.24, T.8 N., R.6 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 1.95 mi upstream of confluence with Tenmile Creek, 5.4 mi south of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling site is 7,230 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--July 2003 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)
Jun 12...	1300	.30	4.2	176	10.5	40	11.8	2.55	4.39	.1	1.33	.35	.20
Jul 18...	1130	.09	3.8	267	12.5	50	14.5	3.38	6.46	.1	1.72	.47	.23
Sep 05...	1400	.06	3.7	265	10.0	45	12.8	3.21	6.98	.2	2.34	.48	.23

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

Date	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Alum- inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)	Copper, water, fltrd, µg/L (01040)	Copper, water, unfltrd recover- able, µg/L (01042)	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover- able, µg/L (01045)
Jun 12...	17.3	71.6	3,590	1.2	1.7	4.22	3.89	14.5	15.1	204	201
Jul 18...	28.7	109	4,740	1.5	3.5	6.90	6.49	25.2	24.7	593	591
Sep 05...	36.0	97.5	5,580	.65	1.8	5.65	5.28	20.8	21.2	720	858

## 462542112173101 MONITOR CREEK SS 12 NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

Date	Lead,	Lead,	Mangan-	Mangan-	Zinc,	Zinc,
	water,	water,	ese,	ese,	water,	water,
	recover	unfltrd	water,	water,	recover	unfltrd
	-able,	able,	fltrd,	fltrd,	-able,	-able,
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	(01049)	(01051)	(01056)	(01055)	(01090)	(01092)
<b>Jun</b>						
<b>12...</b>	17.3	16.2	330	325	318	304
<b>Jul</b>						
<b>18...</b>	38.2	40.0	600	578	602	526
<b>Sep</b>						
<b>05...</b>	34.6	35.9	566	562	567	515



## Water-Data Report 2007

**462721112164801 MONITOR CREEK AT MOUTH (MCM), NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°27'21", long 112°16'48" referenced to North American Datum of 1927, in SW ¼ NE ¼ SW ¼ sec.7, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 20 ft upstream from mouth and 4.0 mi southwest of Rimini.

DRAINAGE AREA.--1.7 mi<sup>2</sup>.

GAGE.--None. Elevation at sampling site is 6,220 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--July and October 1997, July 2003 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 3

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alkalinity, wat flt lab, mg/L as CaCO3 (29801)
Jun 14...	0950	5.1	6.5	51	13.0	6.5	16	4.61	1.11	1.31	.2	1.72	6
Jul 18...	0930	.68	6.1	100	--	12.0	31	8.92	2.22	2.86	.2	2.27	<5
Sep 06...	0850	.14	6.6	124	13.0	10.0	42	12.1	2.94	3.00	.2	3.01	6

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 3

[Remark codes: E, estimated.]

Date	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Dis-solved solids, sum of constituents, mg/L (70301)	Dis-solved solids, tons/ acre-ft (70303)	Dis-solved solids, tons/d (70302)	Aluminum, water, fltrd, μg/L (01106)	Arsenic, water, fltrd, μg/L (01000)	Arsenic, water, unfltrd, μg/L (01002)	Cadmium, water, fltrd, μg/L (01025)	Cadmium, water, unfltrd, μg/L (01027)
Jun 14...	.18	.15	16.2	14.9	44	.06	.61	221	.94	1.4	.84	.77
Jul 18...	.34	.20	20.6	36.2	E77	E.10	E.14	142	.58	1.0	2.45	2.21
Sep 06...	.32	.22	23.6	45.3	94	.13	.04	31.2	.51	.39	1.43	1.44

## 462721112164801 MONITOR CREEK AT MOUTH (MCM), NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 3 of 3

[Remark codes: E, estimated.]

Date	Copper, water, unfltrd		Iron, water, unfltrd		Lead, water, unfltrd		Mangan- ese, water, unfltrd		Zinc, water, unfltrd	
	recover- able, fltrd, µg/L (01040)	able, fltrd, µg/L (01042)	recover- able, fltrd, µg/L (01046)	able, fltrd, µg/L (01045)	recover- able, fltrd, µg/L (01049)	able, fltrd, µg/L (01051)	recover- able, fltrd, µg/L (01056)	able, fltrd, µg/L (01055)	recover- able, fltrd, µg/L (01090)	able, fltrd, µg/L (01092)
<b>Jun</b> 14...	3.5	4.5	46	102	1.18	2.31	56.9	58.8	71.6	71.9
<b>Jul</b> 18...	4.1	5.1	26	79	1.39	2.78	138	140	231	208
<b>Sep</b> 06...	1.2	1.5	17	23	E.06	.17	31.4	32.7	193	160

## Water-Data Report 2007

## 462544112162001 RUBY CREEK RC2A ABOVE SCOTT RESERVOIR, NEAR RIMINI, MT

 Upper Missouri Basin  
 Tenmile Subbasin

LOCATION.--Lat 46°25'44", long 112°16'20" referenced to North American Datum of 1927, in NE ¼ NW ¼ SE ¼ sec.19, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 200 ft above confluence with unnamed tributary, 0.3 mi upstream from Scott Reservoir, and 0.45 mi south of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at sampling site is 7,380 ft, referenced to the National Geodetic Vertical Datum of 1929.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--July 2003 to current year.

REMARKS.--Site was visited on Sept. 6 but sample was not collected due to no flow.

 WATER-QUALITY DATA  
 WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 3

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium, water, fltrd, mg/L (00930)	Alka- linity, wat flt
													Alka- linity, wat flt mg/L as CaCO3 (29801)
Jun 14...	1200	1.1	6.2	15	9.5	6.5	5	1.74	.271	.47	.2	.83	7

 WATER-QUALITY DATA  
 WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 3

[Remark codes: &lt;, less than; E, estimated.]

Date	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate water, fltrd, mg/L (00945)	Dis- solved solids, sum of consti- tuents mg/L (70301)	Dis- solved solids, tons/ acre-ft (70303)	Dis- solved solids, tons/d (70302)	Alum- inum, water, fltrd, µg/L (01106)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)



## 462544112162001 RUBY CREEK RC2A ABOVE SCOTT RESERVOIR, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
 Part 3 of 3

Date	Copper, water, unfltrd		Iron, water, unfltrd		Lead, water, unfltrd		Mangan- ese, water, unfltrd		Zinc, water, unfltrd	
	recovery filtration, µg/L (01040)	filtration, µg/L (01042)	recovery filtration, µg/L (01046)	filtration, µg/L (01045)	recovery filtration, µg/L (01049)	filtration, µg/L (01051)	recovery filtration, µg/L (01056)	filtration, µg/L (01055)	recovery filtration, µg/L (01090)	filtration, µg/L (01092)
Jun 14...	2.2	1.8	50	59	.21	.24	1.3	1.4	2.4	2.4



## Water-Data Report 2007

**462657112143501 BANNER CREEK AT BRIDGE, 0.5 MILE ABOVE CITY DIVERSION, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°26'57", long 112°14'35" referenced to North American Datum of 1927, in NW ¼ NW ¼ SW ¼ sec.16, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at bridge near the downstream edge of meadow, about 0.5 mi upstream from city diversion, and 2.5 mi south of Rimini.

DRAINAGE AREA.--2.6 mi<sup>2</sup>.

GAGE--None. Elevation at site is 6,700 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--April 2000 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Apr</b> 04...	0930	.64	7.5	69	2.0	0.0	28	8.51	1.56	.87	1.2	.12	.14
<b>May</b> 17...	0900	9.2	6.8	39	16.5	4.0	16	4.94	.913	1.1	1.6	.07	.09
<b>Jul</b> 09...	0900	.77	7.2	62	17.0	9.0	24	7.43	1.39	1.0	1.1	.10	.10
<b>Aug</b> 29...	1100	.10	7.4	83	18.5	7.5	35	10.9	2.01	.79	.99	.06	.05

## 462657112143501 BANNER CREEK AT BRIDGE, 0.5 MILE ABOVE CITY DIVERSION, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper, water, filtrd, µg/L (01040)	Copper, water, unfiltrd recover- able, µg/L (01042)	Lead, water, filtrd, µg/L (01049)	Lead, water, unfiltrd recover- able, µg/L (01051)	Zinc, water, filtrd, µg/L (01090)	Zinc, water, unfiltrd recover- able, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concentra- tion mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
<b>Apr</b> 04...	2.5	2.6	.28	.52	27.6	27	75	2	<.01
<b>May</b> 17...	2.9	3.7	.19	1.30	15.4	17.5	65	11	.27
<b>Jul</b> 09...	2.1	2.7	.13	.40	16.2	14.1	85	2	<.01
<b>Aug</b> 29...	1.0	E.93	E.07	.21	7.5	7.5	40	1	<.01



## Water-Data Report 2007

**462838112143901 POISON CREEK AT MOUTH, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°28'38", long 112°14'39" referenced to North American Datum of 1927, in SW ¼ NW ¼ NW ¼ sec.4, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at culvert crossing on Rimini Road about 1 mi south of Rimini.

DRAINAGE AREA.--0.32 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,500 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--May 1999 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Mar</b> 08...	0930	.01	5.4	206	-2.0	0.0	75	22.4	4.71	11.7	11.9	14.0	12.8
<b>May</b> 17...	1030	.17	5.9	86	17.0	7.0	28	8.52	1.61	20.5	21.3	6.62	7.02
<b>Jul</b> 09...	1000	.17	6.0	116	17.5	11.0	38	11.4	2.25	19.1	23.1	10.2	9.52
<b>Aug</b> 29...	1000	.02	6.0	107	13.0	8.5	37	11.0	2.21	18.5	21.7	8.60	7.92

## 462838112143901 POISON CREEK AT MOUTH, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, unfltrd	Copper, water, recover- able, fltrd, µg/L (01040)	Lead, water, unfltrd	Lead, water, recover- able, fltrd, µg/L (01049)	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd, µg/L (01090)	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
	<b>Mar</b> 08...	32.0	34.1	1.27	1.70	2,500	2,500	53	3	<.01	
<b>May</b> 17...	27.9	27.6	1.07	2.93	1,120	1,090	75	1	<.01		
<b>Jul</b> 09...	33.4	34.8	1.31	3.45	1,540	1,490	9	19	.01		
<b>Aug</b> 29...	27.0	26.0	.98	2.61	1,560	1,300	60	1	<.01		



## Water-Data Report 2007

**462853112144101 TENMILE CREEK ABOVE CITY DIVERSION, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°28'53", long 112°14'41" referenced to North American Datum of 1927, in NW ¼ NW ¼ NW ¼ sec.4, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, about 0.25 mile upstream from city diversion, about 100 feet west of Rimini road, and 0.125 mi south of Rimini.

DRAINAGE AREA.--15.2 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,350 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--May 1999 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf μS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, μg/L (01000)	Arsenic water, unfltrd, μg/L (01002)	Cadmium water, fltrd, μg/L (01025)	Cadmium water, unfltrd, μg/L (01027)
<b>Mar</b> 08...	1000	2.4	7.0	67	-0.5	0.0	25	7.32	1.55	4.5	5.6	1.04	.92
<b>May</b> 17...	1130	24	7.1	40	21.5	7.0	15	4.44	.932	2.7	2.8	.40	.50
<b>Jul</b> 09...	1030	4.3	7.4	62	19.5	11.0	22	6.39	1.35	4.7	5.0	.98	.94
<b>Aug</b> 29...	0915	2.5	7.5	55	10.0	7.0	21	6.20	1.30	4.7	6.1	.85	.87

## 462853112144101 TENMILE CREEK ABOVE CITY DIVERSION, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

Date	Copper, water, unfltrd	Copper, water, recover- able, fltrd	Lead, water, unfltrd	Lead, water, recover- able, fltrd	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Mar</b> 08...	2.4	3.6	.69	1.58	249	240	80	1	.01
<b>May</b> 17...	3.6	3.9	.63	1.42	79.9	75.5	76	3	.20
<b>Jul</b> 09...	3.6	4.0	.66	1.51	199	187	83	2	.02
<b>Aug</b> 29...	4.3	--	.59	2.25	227	207	86	2	.01



## Water-Data Report 2007

**462758112123001 BEAVER CREEK TRIBUTARY NO. 2 NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°27'58", long 112°12'30" referenced to North American Datum of 1927, in SW ¼ SE ¼ SE ¼ sec.3, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, about 40 ft upstream from inlet structure to Banner Creek flume, about 100 ft. upstream from Banner Creek flume, and about 2.5 mi southwest of Rimini.

DRAINAGE AREA.--0.67 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 6,330 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--April 2000 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, water unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Apr</b> <b>04...</b>	1130	.14	7.3	57	1.0	0.5	18	5.80	.958	7.0	6.8	1.59	1.52
<b>May</b> <b>18...</b>	0900	.69	7.1	50	12.5	4.0	17	5.22	.861	6.6	6.5	1.99	1.99
<b>Jul</b> <b>12...</b>	1320	1.0	6.8	56	27.0	10.0	17	5.38	.891	7.2	7.5	2.38	2.29
<b>Aug</b> <b>31...</b>	1400	.11	6.9	59	24.0	8.5	21	6.50	1.06	7.5	7.7	1.99	1.90



## Water-Data Report 2007

## 462758112123001 BEAVER CREEK TRIBUTARY NO. 2 NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, unfltrd	Copper, water, recover- able, fltrd, µg/L (01040)	Lead, water, unfltrd	Lead, water, recover- able, fltrd, µg/L (01049)	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd, µg/L (01090)	Zinc, water, unfltrd	Zinc, water, recover- able, fltrd, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
	<b>Apr</b> 04...	5.5	5.5	.13	.22	302	279	29	1	<.01	
<b>May</b> 18...	9.4	9.7	.39	.92	369	354	75	1	<.01		
<b>Jul</b> 12...	7.5	8.3	.30	.91	385	359	67	1	<.01		
<b>Aug</b> 31...	5.8	5.6	.17	.59	337	286	43	1	<.01		



## Water-Data Report 2007

**462922112145401 TENMILE CREEK BELOW SPRING CREEK, AT RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°29'22", long 112°14'54" referenced to North American Datum of 1927, in NW ¼ SW ¼ SW ¼ sec.33, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at bridge crossing on road to private residence in Rimini.

DRAINAGE AREA.--22.8 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,220 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--May 1997 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Mar</b> 08...	1130	.07	6.4	235	4.0	0.0	89	24.9	6.53	71.7	88.8	10.7	10.2
<b>May</b> 17...	1230	24	7.1	44	24.5	8.5	16	4.66	1.00	6.3	7.9	.51	.53
<b>Jul</b> 09...	1130	3.0	7.3	79	19.5	14.5	27	7.78	1.72	23.5	29.1	1.70	1.78
<b>Aug</b> 28...	1310	.20	6.7	185	19.0	14.0	69	19.3	5.11	73.9	123	8.12	8.00

## 462922112145401 TENMILE CREEK BELOW SPRING CREEK, AT RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, unfltrd	Copper, water, recover able,	Lead, water, unfltrd	Lead, water, recover able,	Zinc, water, unfltrd	Zinc, water, recover able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040) µg/L	(01042) µg/L	(01049) µg/L	(01051) µg/L	(01090) µg/L	(01092) µg/L	(70331)	(80154)	(80155)
<b>Mar</b> 08...	4.1	5.5	.95	2.84	2,500	2,370	92	4	<.01
<b>May</b> 17...	6.2	4.8	1.05	1.99	116	110	79	3	.19
<b>Jul</b> 09...	7.4	5.7	1.55	2.54	406	391	65	2	.02
<b>Aug</b> 28...	3.0	4.2	.39	1.66	1,870	1,650	90	2	<.01



## Water-Data Report 2007

**462932112145801 MOORES SPRING CREEK AT MOUTH, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Creek Subbasin

LOCATION.--Lat 46°29'32", long 112°14'58" referenced to North American Datum of 1927, in NW ¼ NW ¼ SW ¼ sec.33, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at culvert crossing on Rimini Road in Rimini.

DRAINAGE AREA.--0.60 mi<sup>2</sup>.

GAGE.--None. Elevation at site if 5,180 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--May 2000 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unf µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO <sub>3</sub> (00900)	Calcium water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
<b>Mar</b> 08...	1200	.04	7.4	207	3.0	0.0	84	22.1	6.89	70.6	80.3	3.44	3.73
<b>May</b> 17...	1300	.02	7.8	185	12.5	10.5	86	23.3	6.80	73.0	69.7	2.93	2.79
<b>Jul</b> 09...	1215	.03	7.8	239	20.0	13.0	97	26.0	7.65	79.0	74.6	3.72	3.56
<b>Aug</b> 28...	1345	.003	7.9	261	21.5	12.0	120	31.3	9.34	89.7	82.5	3.71	3.54

## 462932112145801 MOORES SPRING CREEK AT MOUTH, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concen- tration mg/L	Sus- pended sedi- ment dis- charge, tons/d
	(01040)	(01042)	(01049)	(01051)	(01090)	(01092)	(70331)	(80154)	(80155)
<b>Mar</b> 08...	3.8	6.7	.14	6.28	678	695	60	60	.01
<b>May</b> 17...	5.9	5.8	E.09	.39	516	496	67	1	<.01
<b>Jul</b> 09...	5.3	5.4	<.12	.37	561	513	75	1	<.01
<b>Aug</b> 28...	4.2	3.1	<.12	.12	622	527	50	1	<.01



## Water-Data Report 2007

**462818112171001 MINNEHAHA CREEK ABOVE JUSTICE MINE, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°28'18", long 112°17'10" referenced to North American Datum of 1927, in SW ¼ SW ¼ SW ¼ sec.6, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at culvert 0.10 mi upstream from Justice mine and 2.3 mi southwest of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at site is 6,320 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--April 1998 to October 1998, May 2005 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

[Remark codes: E, estimated.]

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat un- f µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
May 18...	0830	.19	7.2	36	14.0	5.5	11	3.34	.627	.95	.97	.04	.02
Aug 28...	0900	.01	7.5	53	7.0	7.0	16	4.71	.949	.74	.67	E.04	.03

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: <, less than; E, estimated.]

Date	Copper, water, recover- able, fltrd, µg/L (01040)	Copper, water, unfltrd recover- able, µg/L (01042)	Lead, water, fltrd, µg/L (01049)	Lead, water, unfltrd recover- able, µg/L (01051)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover- able, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
May 18...	10.9	10.6	E.08	.10	4.3	4.3	75	1	<.01
Aug 28...	5.2	4.5	<.12	.06	4.9	4.4	71	1	<.01



Water-Data Report 2007

**462844112165401 MINNEHAHA CREEK ABOVE ARMSTRONG MINE, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°28'44", long 112°16'54" referenced to North American Datum of 1927, in NW ¼ SE ¼ SW ¼ sec.6, T.8 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at Armstrong mine road, 0.40 mi downstream from Justice mine, and 1.8 mi southwest of Rimini.

DRAINAGE AREA.--Not determined.

GAGE.--None. Elevation at site is 5,910 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--April 1998 to October 1998, May 2005 to current year.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unfltrd µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
Aug 28...	0930	.15	7.2	51	9.5	6.0	15	4.64	.871	21.4	21.1	.83	.87

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: <, less than.]

Date	Copper, water, fltrd, µg/L (01040)	Copper, water, recover- able, µg/L (01042)	Lead, water, fltrd, µg/L (01049)	Lead, water, recover- able, µg/L (01051)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, recover- able, µg/L (01092)	Suspd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
Aug 28...	5.6	5.3	1.21	2.25	70.5	63.7	50	1	<.01



## Water-Data Report 2007

**462917112165601 MINNEHAHA CREEK BELOW ARMSTRONG MINE, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°29'17", long 112°16'56" referenced to North American Datum of 1927, in SW ¼ SW ¼ NW ¼ sec.31, T.9 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 0.6 mi downstream from the Armstrong mine road and 1.4 mi southwest of Rimini.

DRAINAGE AREA.--1.75 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,650 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--April 1998 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unfltrd µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
May 18...	1050	1.7	7.3	59	19.5	6.5	18	5.16	1.33	6.8	6.7	3.88	4.05
Aug 28...	1100	.15	7.2	89	7.0	7.0	28	7.73	2.17	9.1	9.2	6.59	6.47

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: <, less than.]

Date	Copper, water, fltrd, µg/L (01040)	Copper, water, unfltrd recover- able, µg/L (01042)	Lead, water, fltrd, µg/L (01049)	Lead, water, unfltrd recover- able, µg/L (01051)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover- able, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concen- tration mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
May 18...	18.1	18.7	.93	1.87	689	638	62	1	<.01
Aug 28...	13.0	12.7	.20	.66	1,220	1,070	58	1	<.01



Water-Data Report 2007

**462918112170801 BEATRICE MINE TRIBUTARY AT MOUTH, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°29'18", long 112°17'08" referenced to North American Datum of 1927, in SW ¼ SW ¼ SW ¼ sec.31, T.9 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 400 ft upstream from old logging road crossing, about 1,000 ft upstream from confluence with Minnehaha Creek, and 1.5 mi southwest of Rimini.

DRAINAGE AREA.--0.24 mi<sup>2</sup>.

GAGE.--None. Elevation at site is 5,660 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--May 2000 to current year.

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instantaneous discharge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd, µS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, fltrd, mg/L (00915)	Magnesium, water, fltrd, mg/L (00925)	Arsenic, water, fltrd, µg/L (01000)	Arsenic, water, unfltrd, µg/L (01002)	Cadmium, water, fltrd, µg/L (01025)	Cadmium, water, unfltrd, µg/L (01027)
May 18...	1100	.27	7.4	67	--	6.5	22	7.01	1.17	1.1	1.0	E.03	.04
Aug 28...	1045	.04	7.3	106	9.0	8.5	16	4.81	.958	.61	.57	.06	.05

**WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: <, less than; E, estimated.]

Date	Copper, water, fltrd, µg/L (01040)	Copper, water, unfltrd recover-able, µg/L (01042)	Lead, water, fltrd, µg/L (01049)	Lead, water, unfltrd recover-able, µg/L (01051)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover-able, µg/L (01092)	Suspnd. sedi-ment, sieve diametr <.063mm percent (70331)	Suspended sedi-ment concen-tration mg/L (80154)	Suspended sedi-ment dis-charge, tons/d (80155)
May 18...	12.2	12.7	E.07	.18	7.0	4.1	43	1	<.01
Aug 28...	6.5	5.9	<.12	E.05	5.6	5.1	29	1	<.01



## Water-Data Report 2007

**463023112153701 MINNEHAHA CREEK ABOVE CITY DIVERSION, NEAR RIMINI, MT**

Upper Missouri Basin  
Tenmile Subbasin

LOCATION.--Lat 46°30'23", long 112°15'37" referenced to North American Datum of 1927, in NW ¼ NW ¼ SE ¼ sec.29, T.9 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, about 75 feet upstream from city diversion structure, about 200 feet upstream from mouth and about 3 mi north of Rimini.

DRAINAGE AREA.--5.35 mi<sup>2</sup>.

GAGE--None. Elevation at site is 5,040 ft, referenced to the National Geodetic Vertical Datum of 1929.

**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--April 1998 to current year.

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd µg/L (01027)
<b>Mar</b> 08...	1300	1.0	7.2	74	6.0	0.0	24	6.92	1.64	1.9	1.8	1.30	1.22
<b>May</b> 18...	1230	4.0	7.5	55	24.5	9.0	17	5.02	1.15	3.1	3.1	1.13	1.26
<b>Jul</b> 09...	1230	1.5	7.6	63	25.0	12.5	19	5.65	1.29	2.9	3.1	1.22	1.17
<b>Aug</b> 28...	1230	.51	7.5	70	19.0	9.5	23	6.58	1.58	2.8	2.5	1.26	1.19

## 463023112153701 MINNEHAHA CREEK ABOVE CITY DIVERSION, NEAR RIMINI, MT—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Part 2 of 2

[Remark codes: &lt;, less than; E, estimated.]

Date	Copper, water, unfltrd	Copper, water, recover- able,	Lead, water, unfltrd	Lead, water, recover- able,	Zinc, water, unfltrd	Zinc, water, recover- able,	Suspnd. sedi- ment, sieve diametr percent <.063mm	Sus- pended sedi- ment concentra- tion	Sus- pended sedi- ment dis- charge,
	µg/L (01040)	µg/L (01042)	µg/L (01049)	µg/L (01051)	µg/L (01090)	µg/L (01092)	(70331)	mg/L (80154)	tons/d (80155)
<b>Mar</b> <b>08...</b>	3.9	4.6	E.10	.24	250	244	91	1	<.01
<b>May</b> <b>18...</b>	7.2	19.4	.31	1.41	214	217	74	2	.02
<b>Jul</b> <b>09...</b>	5.3	5.8	.14	.40	204	192	88	1	<.01
<b>Aug</b> <b>28...</b>	3.3	2.9	E.06	.17	234	205	80	1	<.01

Water-Data Report 2007

**06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT**

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°31'09", long 111°56'45" referenced to North American Datum of 1927, Jefferson County, MT, Hydrologic Unit 10030101, on right bank 3.5 mi downstream from Lump Gulch Creek, 4 mi northeast of Clancy, 7 mi southeast of Helena, and at river mile 24.4.

DRAINAGE AREA.--192 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--July 1908 to September 1916, July 1921 to September 1933, October 1945 to October 1953, October 1954 to September 1969, October 1978 to September 2002, October 2005 to current year. Record for October 1969 to September 1980 was collected by the Montana Department of Natural Resources and Conservation. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.--WSP 1806: 1946, minimum discharge. WSP 1309: 1925; 1927; 1931, maximum discharge (M); 1933; 1948 (M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,067.1 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to July 12, 1910, nonrecording gage at site 1.2 mi upstream at different datum. July 12, 1910 to Sept. 30, 1916, and July 28, 1921 to Aug. 12, 1933, nonrecording gage at site 2.2 mi upstream at different datum.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 700 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Flood of June 19, 1975 reached a discharge of 1,200 ft<sup>3</sup>/s, gage height, 6.56 ft.

## 06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	16	e20	e20	e19	e18	18	34	50	124	34	12	11
2	15	e22	e22	e19	e18	e19	33	53	123	31	12	10
3	15	22	e21	e20	e18	e20	30	62	119	30	12	9.5
4	15	24	e21	e21	e19	e21	29	55	110	28	13	9.9
5	16	24	e21	e22	e23	e26	30	46	104	27	12	11
6	17	25	20	e21	21	e32	29	42	116	26	15	11
7	34	35	19	e20	18	e38	28	40	140	27	14	12
8	35	43	e20	e18	18	e40	28	42	128	28	13	11
9	29	34	e20	e18	e19	35	30	44	114	25	12	13
10	26	28	e20	e18	e18	31	29	49	109	23	12	13
11	24	26	19	e18	17	35	27	58	106	22	12	12
12	23	24	20	e17	e17	52	26	55	95	20	12	11
13	22	23	20	e16	e18	64	25	55	86	20	11	12
14	21	23	20	e16	e18	46	26	54	82	19	12	12
15	21	21	22	e16	e18	37	30	47	77	20	12	11
16	24	23	19	e14	e18	34	32	45	73	21	11	11
17	27	21	e17	e12	18	37	32	45	77	21	12	11
18	24	21	e17	e12	19	44	39	45	70	24	12	12
19	23	20	e17	e13	19	41	36	44	64	22	12	16
20	36	22	e17	e14	19	40	32	42	60	18	14	17
21	36	22	e17	e14	20	37	32	56	61	18	13	15
22	30	22	e17	e15	18	34	32	82	55	16	13	14
23	27	21	e17	e16	18	35	34	76	51	15	13	19
24	27	19	e18	e17	e18	35	38	82	48	15	12	27
25	26	18	e18	e18	18	38	38	96	44	16	12	23
26	25	e18	18	e19	18	41	40	89	40	15	11	21
27	24	e16	19	e19	e18	39	37	95	39	15	10	19
28	23	e14	19	e19	e19	39	37	120	38	15	11	18
29	23	e12	e20	e19	---	32	45	130	36	14	11	19
30	e20	e16	e20	e18	---	32	50	137	35	13	11	20
31	e15	---	e19	e18	---	34	---	127	---	13	11	---
<b>Total</b>	739	679	594	536	518	1,106	988	2,063	2,424	651	375	431.4
<b>Mean</b>	23.8	22.6	19.2	17.3	18.5	35.7	32.9	66.5	80.8	21.0	12.1	14.4
<b>Max</b>	36	43	22	22	23	64	50	137	140	34	15	27
<b>Min</b>	15	12	17	12	17	18	25	40	35	13	10	9.5
<b>Ac-ft</b>	1,470	1,350	1,180	1,060	1,030	2,190	1,960	4,090	4,810	1,290	744	856

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	30.5	28.3	23.3	20.8	23.3	30.8	51.7	107	128	56.0	29.6	28.5
<b>Max</b>	70.0	60.0	43.8	36.7	57.2	80.0	131	453	450	141	88.8	71.4
<b>(WY)</b>	(1909)	(1910)	(1981)	(1983)	(1963)	(1910)	(1930)	(1981)	(1927)	(1915)	(1993)	(1915)
<b>Min</b>	11.4	11.7	10.1	9.94	8.55	12.1	22.9	21.4	20.2	9.89	4.69	7.33
<b>(WY)</b>	(2002)	(2002)	(2002)	(1957)	(1989)	(2002)	(1931)	(2000)	(2000)	(2000)	(2000)	(2000)

\* During periods of operation (July 1908 to September 1916, July 1921 to September 1933, October 1945 to October 1953, October 1954 to September 1969, October 1978 to September 2002, October 2005 to current year).

06061500 PRICKLY PEAR CREEK NEAR CLANCY, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1908 - 2007*	
<b>Annual total</b>	11,871		11,104.4			
<b>Annual mean</b>	32.5		30.4		46.5	
<b>Highest annual mean</b>					117	1981
<b>Lowest annual mean</b>					15.2	2000
<b>Highest daily mean</b>	254	Jun 10	140	Jun 7	1,930	May 22, 1981
<b>Lowest daily mean</b>	11	Sep 8	9.5	Sep 3	4.1	Aug 12, 1931
<b>Annual seven-day minimum</b>	11	Sep 8	10	Aug 29	4.3	Aug 24, 2000
<b>Maximum peak flow</b>			<sup>a</sup> 155	Jun 7	<sup>c</sup> 2,300	May 22, 1981
<b>Maximum peak stage</b>			<sup>b</sup> 2.22	Jan 2	8.82	May 22, 1981
<b>Instantaneous low flow</b>					<sup>d</sup> 0.50	Jan 26, 1958
<b>Annual runoff (ac-ft)</b>	23,550		22,030		33,720	
<b>10 percent exceeds</b>	70		55		99	
<b>50 percent exceeds</b>	20		21		29	
<b>90 percent exceeds</b>	14		12		15	

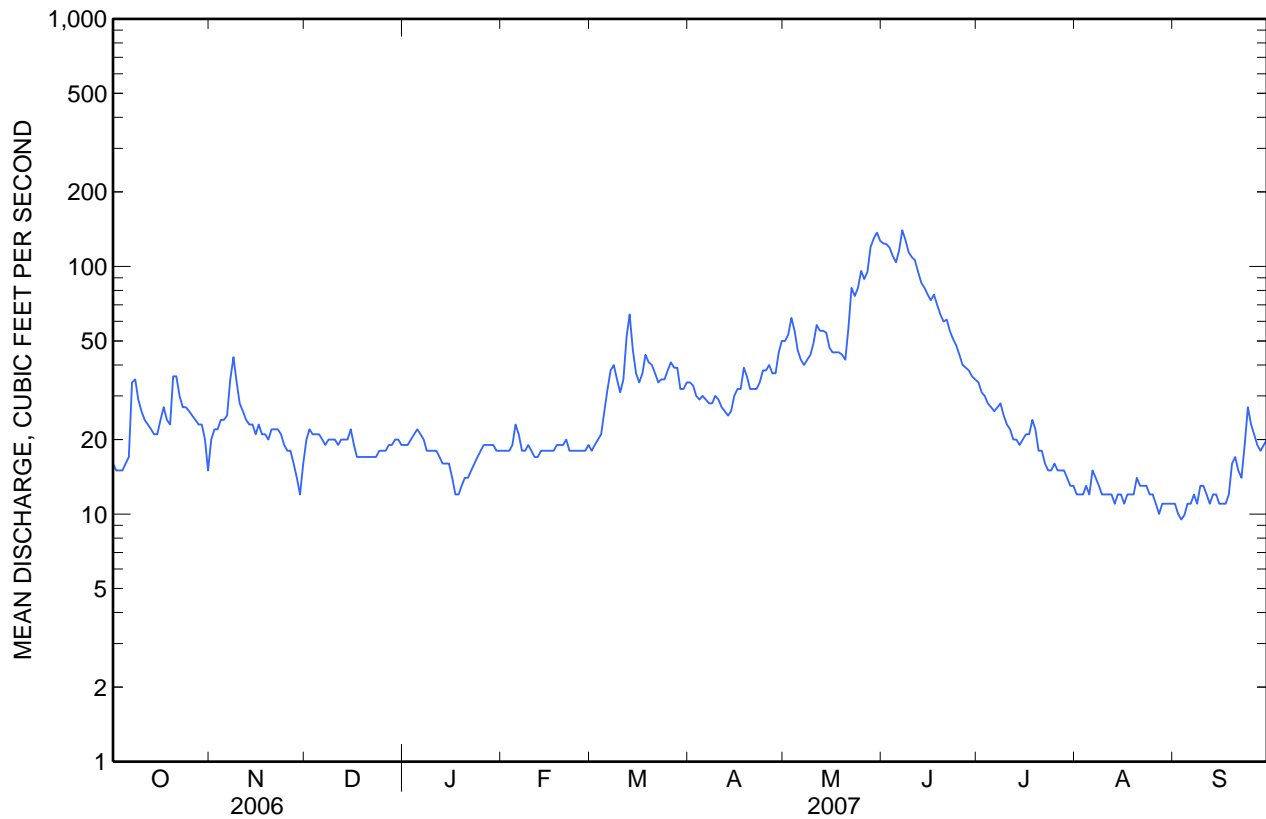
\* During periods of operation (July 1908 to September 1916, July 1921 to September 1933, October 1945 to October 1953, October 1954 to September 1969, October 1978 to September 2002, October 2005 to current year).

<sup>a</sup> Gage height, 2.14 ft.

<sup>b</sup> Backwater from ice.

<sup>c</sup> From culvert computation of peak flow.

<sup>d</sup> Gage height, 0.40 ft, result of ice jam upstream.





Water-Data Report 2007

## 06062500 TENMILE CREEK NEAR RIMINI, MT

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°31'27", long 112°15'22" referenced to North American Datum of 1927, in NE ¼ SW ¼ NE ¼ sec.20, T.9 N., R.5 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, Helena National Forest, on left bank at U.S. Forest Service Moose Creek campground, 500 ft upstream from Moose Creek, 2.5 mi north of Rimini, and at river mile 20.4.

DRAINAGE AREA.--30.9 mi<sup>2</sup>.

### SURFACE-WATER RECORDS

PERIOD OF RECORD.--July 1914 to September 1994, May 1997 to current year. Monthly discharge only for some periods, published in Water Supply Paper (WSP) 1309.

REVISED RECORDS.-- WSP 1309: 19417, 1921, 1924-25. WSP 1509: 1915; 1916-17, maximum discharge (M); 1920 (M); 1927, minimum discharge (m); 1928-1930; 1947 (m); 1948; 1950 (M). WSP 1559: Drainage area. WSP 1709: 1959. Water Data Report-MT-97-1: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 4,850 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Dec. 17, 1934, water-stage recorder at site 40 ft downstream at different elevation and different control.

REMARKS.--Records are good except those below 1.0 ft<sup>3</sup>/s and those for estimated daily discharges, which are poor. Flow is regulated by Chessman and Scott Reservoirs on tributaries upstream from station, which have a combined capacity, 2,340 acre-feet. Some small diversions occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## 06062500 TENMILE CREEK NEAR RIMINI, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.31	e0.50	0.66	0.68	e0.38	0.45	11	64	94	11	0.76	e0.22
2	0.58	e0.50	0.63	0.66	e0.40	0.45	10	69	85	9.5	0.64	e0.22
3	1.8	0.68	0.63	0.70	0.43	0.45	9.7	75	74	8.3	0.58	e0.22
4	2.2	0.89	0.60	0.70	0.44	0.47	9.4	59	65	7.9	0.76	0.23
5	2.4	1.5	0.58	0.58	0.55	0.57	9.3	50	67	6.0	0.72	0.27
6	2.1	2.1	0.54	0.54	0.58	0.69	9.5	45	88	5.3	0.85	0.23
7	3.3	11	0.52	0.55	0.66	0.74	9.1	43	95	4.8	0.74	0.20
8	3.3	11	0.52	0.59	0.73	0.83	8.9	46	95	4.5	0.61	0.21
9	2.2	5.4	0.56	0.56	0.78	0.89	10	46	87	3.7	0.57	0.23
10	1.5	4.0	0.56	0.58	0.78	0.92	9.4	50	81	3.2	0.58	0.23
11	1.00	3.5	0.55	0.54	0.78	1.1	8.9	49	81	2.5	0.54	0.20
12	0.78	2.6	0.55	e0.50	e0.70	e1.4	8.4	48	68	2.2	0.50	0.20
13	0.68	2.6	0.59	e0.46	e0.64	e2.0	8.1	47	59	2.0	0.47	0.22
14	0.59	2.3	0.59	e0.48	e0.60	e2.5	8.7	42	54	2.1	0.46	0.21
15	0.56	2.3	e0.50	e0.50	e0.56	e3.0	11	37	48	1.7	0.43	0.21
16	1.4	2.4	e0.50	e0.50	e0.56	4.1	11	33	43	1.5	0.44	0.20
17	2.2	1.8	e0.50	e0.50	0.55	4.6	13	31	43	1.6	0.59	0.20
18	1.9	1.6	e0.50	0.49	0.52	7.5	16	28	36	5.8	0.47	0.22
19	2.0	1.4	0.54	0.49	0.48	8.4	15	26	32	2.6	0.45	0.42
20	7.8	1.5	0.57	0.50	0.48	9.4	14	25	31	1.7	0.46	0.55
21	4.3	1.5	0.54	0.50	0.48	8.0	14	35	32	1.6	0.40	0.56
22	2.0	1.7	0.57	0.50	0.47	6.7	14	37	29	1.3	0.39	0.35
23	1.4	1.2	0.91	0.50	0.47	6.5	16	44	25	1.1	0.38	3.2
24	1.1	1.1	1.2	0.54	0.46	8.5	20	48	23	1.1	0.41	4.1
25	0.96	0.70	1.1	0.54	0.45	13	25	51	21	1.3	0.38	2.9
26	0.83	e0.60	1.1	0.52	0.43	15	29	57	19	1.2	0.34	2.5
27	0.81	e0.30	1.0	0.49	0.46	14	29	76	17	1.1	0.31	2.2
28	0.81	e0.50	0.81	0.46	0.47	12	36	98	16	0.98	0.30	1.8
29	e0.72	0.64	0.74	0.42	---	11	51	103	15	0.97	0.28	1.5
30	e0.66	0.63	0.71	0.40	---	11	62	103	13	1.0	0.26	1.0
31	e0.55	---	0.68	0.40	---	11	---	99	---	1.1	0.25	---
<b>Total</b>	52.74	68.44	20.55	16.37	15.29	167.16	506.4	1,664	1,536	100.65	15.32	25.00
<b>Mean</b>	1.70	2.28	0.66	0.53	0.55	5.39	16.9	53.7	51.2	3.25	0.49	0.83
<b>Max</b>	7.8	11	1.2	0.70	0.78	15	62	103	95	11	0.85	4.1
<b>Min</b>	0.31	0.30	0.50	0.40	0.38	0.45	8.1	25	13	0.97	0.25	0.20
<b>Ac-ft</b>	105	136	41	32	30	332	1,000	3,300	3,050	200	30	50

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	2.98	2.26	1.71	1.41	1.27	2.50	17.9	82.1	71.1	11.9	2.45	2.26
<b>Max</b>	23.1	13.6	9.64	6.97	5.05	17.5	66.7	300	346	66.4	22.5	22.4
<b>(WY)</b>	(1966)	(1986)	(1918)	(1918)	(1921)	(1986)	(1926)	(1917)	(1975)	(1969)	(1993)	(1993)
<b>Min</b>	0.19	0.22	0.17	0.14	0.06	0.07	1.50	6.14	3.01	0.34	0.13	0.23
<b>(WY)</b>	(1974)	(1941)	(1941)	(1941)	(2002)	(2002)	(1975)	(2000)	(2000)	(1985)	(2000)	(1935)

\* During periods of operation (1915-1994, May 1997 to current year).

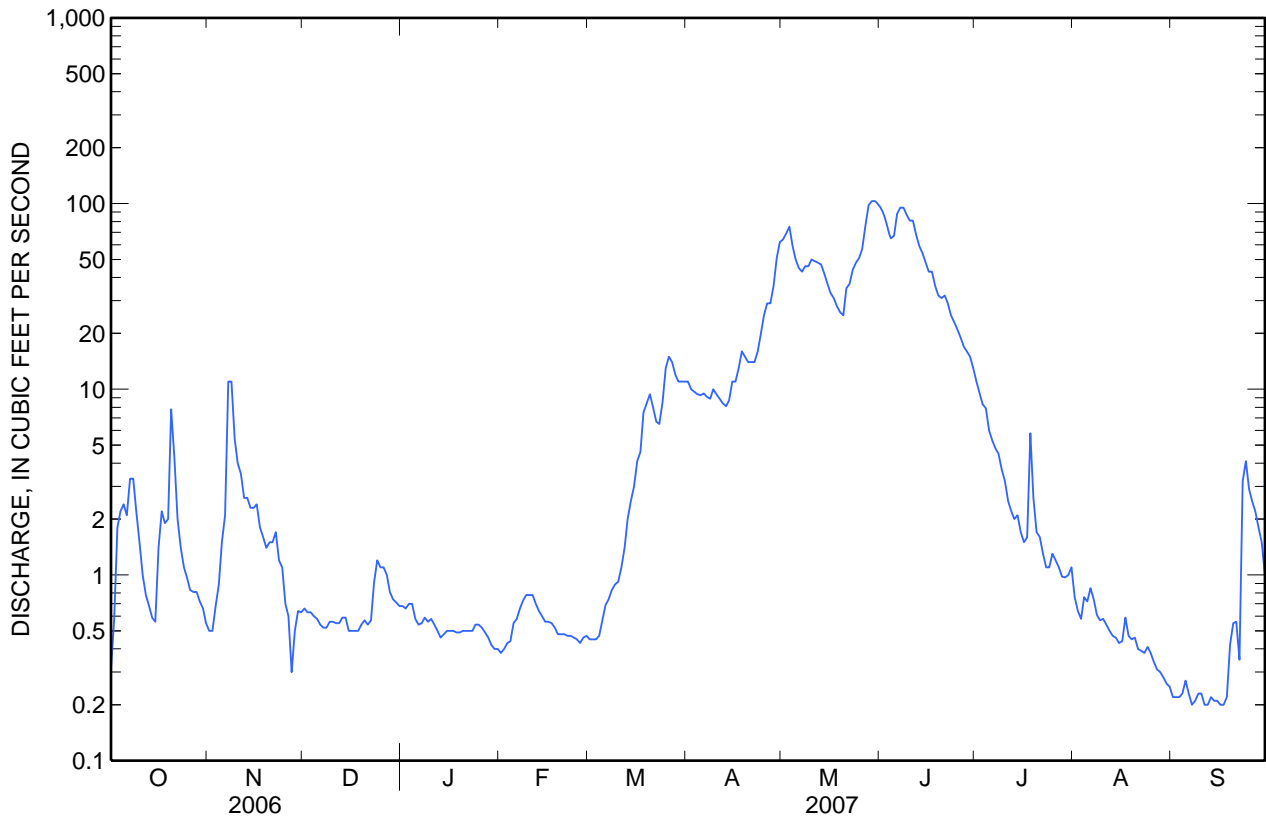


06062500 TENMILE CREEK NEAR RIMINI, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1915 - 2007*	
<b>Annual total</b>	4,293.94		4,187.92			
<b>Annual mean</b>	11.8		11.5		16.6	
<b>Highest annual mean</b>					53.1	1917
<b>Lowest annual mean</b>					1.74	2000
<b>Highest daily mean</b>	134	Jun 10	103	May 29	1,880	May 22, 1981
<b>Lowest daily mean</b>	0.16	Sep 13	0.20	Sep 7	0.00	Aug 31, 1931
<b>Annual seven-day minimum</b>	0.17	Sep 7	0.21	Sep 11	0.00	Aug 31, 1931
<b>Maximum peak flow</b>			118		3,290	May 22, 1981
<b>Maximum peak stage</b>			2.75		6.20	May 22, 1981
<b>Annual runoff (ac-ft)</b>	8,520		8,310		12,060	
<b>10 percent exceeds</b>	46		45		50	
<b>50 percent exceeds</b>	0.71		1.1		1.9	
<b>90 percent exceeds</b>	0.28		0.42		0.40	

\* During periods of operation (1915-1994, May 1997 to current year).



## 06062500 TENMILE CREEK NEAR RIMINI, MT—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--September 1981, 1997-98, March 2005 to current year.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 1 of 2

Date	Time	Instan- taneous dis- charge, cfs (00061)	pH, water, unfltrd field, std units (00400)	Specif- ic conduc- tance, wat unf µS/cm 25 degC (00095)	Temper- ature, air, deg C (00020)	Temper- ature, water, deg C (00010)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)	Magnes- ium, water, fltrd, mg/L (00925)	Arsenic water, fltrd, µg/L (01000)	Arsenic water, unfltrd, µg/L (01002)	Cadmium water, fltrd, µg/L (01025)	Cadmium water, unfltrd, µg/L (01027)
May 17...	1330	31	7.3	54	25.0	10.0	19	5.58	1.26	10.8	10.5	.61	.74
Jul 09...	1330	3.9	7.4	111	25.5	18.5	39	11.1	2.69	25.1	26.4	1.13	1.12
Aug 29...	0830	.31	7.5	167	9.5	8.5	64	18.7	4.28	24.7	23.7	1.03	1.03

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007

Part 2 of 2

[Remark codes: &lt;, less than.]

Date	Copper, water, fltrd, µg/L (01040)	Copper, water, unfltrd recover- able, µg/L (01042)	Lead, water, fltrd, µg/L (01049)	Lead, water, unfltrd recover- able, µg/L (01051)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover- able, µg/L (01092)	Zinc, water, unfltrd recover- able, µg/L (01092)	Suspnd. sedi- ment, sieve diametr percent <.063mm (70331)	Sus- pended sedi- ment concentr- ation mg/L (80154)	Sus- pended sedi- ment dis- charge, tons/d (80155)
May 17...	4.5	4.7	.63	1.65	150	146	80	3	.25	
Jul 09...	3.5	3.9	.42	1.11	262	245	86	1	.01	
Aug 29...	1.6	1.2	<.12	.12	245	202	67	1	<.01	

## Water-Data Report 2007

**06064500 LAKE HELENA NEAR HELENA, MT**

Upper Missouri Basin

LOCATION.--Lat 46°45'58", long 111°53'10" referenced to North American Datum of 1927, in SE ¼ SW ¼ sec.29, T.12 N., R.2 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 13 mi northeast of Helena, and at river mile 2,239.1.

DRAINAGE AREA.--610 mi<sup>2</sup>, above dam and control works on Prickly Pear Creek.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1945 to current year. April to July 1953 scattered daily elevation and contents, published in Water Supply Paper (WSP) 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana. Nonrecording gage at Hauser Dam read hourly.

GAGE.--Elevation of gage is at sea level (levels by the Montana Power Company).

COOPERATION.--Records furnished by PPL EnergyPlus, LLC.

REMARKS.--Gage heights collected at Hauser Dam are effective on Lake Helena at control dam. Prior to April 1945, contents of Lake Helena were included with records of Hauser Lake. After that date, a dam and control works has separated the two lakes to allow independent regulation of Lake Helena, if needed. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity is 12,710 acre-ft, between elevation 3,624.00 ft, bottom of control works, and 3,635.00 ft, top of flashboards. The lake has no dead storage. Figures given herein represent usable contents. Water is used for recreation, wildlife, and power production through Hauser Dam.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 12,040 acre-ft, Mar. 14, 2003, elevation, 3,635.70 ft; no storage Mar. 29 to Apr. 7, 1958, Feb. 12, 20, 1962, May 4-10, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 11,130 acre-ft, Nov. 9, elevation, 3,635.30 ft; minimum observed, 10,540 acre-ft, Aug. 30, elevation, 3,635.04.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	3,635.25	11,020	--
October 31	3,635.22	10,950	-70
November 30	3,635.22	10,950	0
December 31	3,635.24	11,000	+50
Calendar Year 2006	--	--	+100
January 31	3,635.17	10,840	-160
February 28	3,635.20	10,900	+60
March 31	3,635.22	10,950	+50
April 30	3,635.23	10,970	+20
May 31	3,635.27	11,060	+90
June 30	3,635.18	10,860	-200
July 31	3,635.23	10,970	+110
August 31	3,635.06	10,590	-380
September 30	3,635.22	10,950	+360
Water Year 2007	--	--	-70

## Water-Data Report 2007

**06065000 HAUSER LAKE NEAR HELENA, MT**

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°45'58", long 111°53'10" referenced to North American Datum of 1927, in SE ¼ SW ¼ sec.29, T.12 N., R.2 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at Hauser Dam on Missouri River, 1.6 mi downstream from Prickly Pear Creek, 13 mi northeast of Helena, and at river mile 2,226.4.

DRAINAGE AREA.--16,876 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1936 to current year. Records prior to October 1939, published only in Water Supply Paper (WSP) 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B. Monthend contents prior to May 1945 include contents of Lake Helena, excluded thereafter. Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana. Nonrecording gage read hourly.

REVISED RECORDS.--WSP 1729: 1949-57.

GAGE.--Elevation of gage is at sea level (levels by the Montana Power Company).

COOPERATION.--Records furnished by PPL EnergyPlus, LLC.

REMARKS.--Reservoir is formed by concrete dam completed in 1907; separated from Lake Helena in April 1945. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable contents is 61,870 acre-ft, between elevation 3,617.00 ft, bottom of tunnel, and 3,635.00 ft top of flashboards. Dead storage is 46,810 acre-ft below elevation 3,617.00 ft. Prior to Nov. 28, 1949, usable capacity was 52,090 acre-ft at elevation 3,635.00 ft, decrease caused by construction of Canyon Ferry Dam in backwater of Hauser Dam. Storage is not normally drawn below 3,621.00 ft, 8,870 acre-ft. Capacity above elevation 3625.0 updated in 1990. Figures given herein represent usable contents. Water is used for power and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 66,040 acre-ft, Mar. 14, 2003, elevation, 3,635.70 ft; no storage Jan. 31, Feb. 29, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 63,660 acre-ft, Nov. 9, elevation, 3,635.30 ft; minimum observed, 62,110 acre-ft, Aug. 30, elevation, 3,635.04.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	3,635.25	63,360	--
October 31	3,635.22	63,180	-180
November 30	3,635.22	63,180	0
December 31	3,635.24	63,300	+120
Calendar Year 2006	--	--	+240
January 31	3,635.17	62,880	-420
February 28	3,635.20	63,060	+180
March 31	3,635.22	63,180	+120
April 30	3,635.23	63,240	+60
May 31	3,635.27	63,480	+240
June 30	3,635.18	62,940	-540
July 31	3,635.23	63,240	+300
August 31	3,635.06	62,230	-1,010
September 30	3,635.22	63,180	+950
Water Year 2007	--	--	-180

Water-Data Report 2007

**06065500 MISSOURI RIVER BELOW HAUSER DAM, NEAR HELENA, MT**

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°45'58", long 111°53'20" referenced to North American Datum of 1927, in SE ¼ NW ¼ SW ¼ sec.29, T.12 N., R.2 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, 0.2 mi downstream from Hauser Dam, 1.3 mi upstream from Beaver Creek, 15 miles northeast of Helena, and at river mile 2,237.2.

DRAINAGE AREA.--16,876 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1923 to September 1942, October 1994 to current year. Monthly means for October, November, and December 1922 were from Congressional documents: 73rd Congress, 2nd session, H. Doc. 238, Missouri River. Published figures are in acre feet.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, referenced to the National Geodetic Vertical Datum of 1929. Prior to Feb. 1, 1940, water-stage recorder 0.2 mi upstream at different datum.

REMARKS.--Records are good except those for estimated days, which are fair. Flow is regulated by eight small irrigation reservoirs and two power plants, Clark Canyon Reservoir (station number 06015300) and Canyon Ferry Lake (station number 06058500). Diversions for irrigation include about 594,400 acres. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were obtained during the year.

## 06065500 MISSOURI RIVER BELOW HAUSER DAM, NEAR HELENA, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3,660	e3,650	e3,650	3,580	4,290	3,500	3,730	3,910	4,180	3,860	3,460	3,400
2	3,710	e3,650	e3,650	3,590	4,570	3,470	3,690	3,920	4,210	3,880	3,450	3,390
3	3,710	3,640	e3,650	3,590	4,470	3,440	3,640	4,060	4,170	3,910	3,460	3,350
4	3,700	3,610	e3,650	3,590	3,920	3,430	3,670	4,260	4,120	3,920	3,480	3,320
5	3,690	3,610	e3,600	3,590	3,610	3,410	3,760	4,120	4,110	3,900	3,500	3,360
6	3,700	3,600	3,610	3,730	3,600	3,450	3,670	3,990	4,130	3,900	3,540	3,370
7	3,730	3,610	3,610	3,680	3,600	3,460	3,670	3,890	4,060	3,810	3,610	3,350
8	3,710	3,700	3,610	3,650	3,600	3,510	3,690	3,820	4,170	3,760	3,620	3,340
9	3,720	3,750	3,610	3,670	3,530	3,540	3,700	3,720	4,580	3,840	3,580	3,370
10	3,680	3,680	3,610	4,610	3,440	3,510	3,700	3,700	5,210	3,890	3,560	3,360
11	3,660	3,610	3,610	5,480	3,450	3,470	3,710	3,820	5,560	3,920	3,560	3,370
12	3,600	3,610	3,610	4,810	3,490	3,460	3,710	3,930	5,340	3,930	3,560	3,390
13	3,630	3,640	3,620	4,110	3,530	3,500	3,700	3,860	5,040	3,930	3,580	3,360
14	3,670	3,760	3,630	4,090	3,530	3,550	3,690	3,830	4,810	3,940	3,570	3,370
15	3,670	3,730	3,610	4,050	3,490	3,540	3,710	3,880	4,540	3,990	3,570	3,410
16	3,690	3,740	3,600	4,050	3,460	3,520	3,710	4,000	4,450	4,000	3,560	3,490
17	3,680	3,730	3,590	4,050	3,450	3,520	3,710	4,060	4,450	3,920	3,600	3,500
18	3,660	3,730	3,580	3,970	3,450	3,530	3,780	3,990	4,400	3,830	3,620	3,510
19	3,710	3,720	3,590	3,700	3,450	3,500	3,800	3,930	4,210	3,730	3,650	3,520
20	3,680	3,730	3,590	3,660	3,450	3,500	3,790	3,880	4,050	3,530	3,660	3,410
21	3,680	3,700	3,590	3,660	3,450	3,500	3,790	3,960	3,950	3,470	3,650	3,390
22	3,710	3,660	3,590	3,660	3,450	3,490	3,790	4,110	3,880	3,490	3,610	3,350
23	3,710	3,660	3,590	3,630	3,450	3,500	3,800	4,150	3,870	3,490	3,610	3,400
24	3,710	3,660	3,590	3,590	3,450	3,480	3,790	4,110	3,870	3,450	3,600	3,400
25	3,710	3,670	3,590	3,580	3,450	3,450	3,800	4,160	3,870	3,440	3,620	3,380
26	3,730	3,670	3,590	3,600	3,450	3,400	3,790	4,150	3,870	3,450	3,660	3,360
27	3,700	3,670	3,590	3,580	3,470	3,510	3,790	4,150	3,870	3,430	3,670	3,350
28	3,680	e3,670	3,610	3,580	3,500	3,750	3,800	4,160	3,870	3,420	3,670	3,350
29	3,710	3,660	3,580	3,580	---	3,750	3,800	4,220	3,870	3,420	3,600	3,410
30	e3,700	e3,670	3,580	3,610	---	3,750	3,850	4,260	3,870	3,430	3,500	3,410
31	e3,700	---	3,580	3,750	---	3,740	---	4,180	---	3,450	3,410	---
<b>Total</b>	114,400	110,190	111,760	119,070	101,050	109,130	112,230	124,180	128,580	115,330	110,790	101,740
<b>Mean</b>	3,690	3,673	3,605	3,841	3,609	3,520	3,741	4,006	4,286	3,720	3,574	3,391
<b>Max</b>	3,730	3,760	3,650	5,480	4,570	3,750	3,850	4,260	5,560	4,000	3,670	3,520
<b>Min</b>	3,600	3,600	3,580	3,580	3,440	3,400	3,640	3,700	3,870	3,420	3,410	3,320
<b>Ac-ft</b>	226,900	218,600	221,700	236,200	200,400	216,500	222,600	246,300	255,000	228,800	219,800	201,800

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	3,565	3,642	3,603	3,593	3,764	4,333	5,108	6,612	7,800	4,278	3,135	3,302
<b>Max</b>	6,489	6,021	5,622	6,665	8,101	8,271	9,227	16,340	23,540	12,020	5,797	5,684
<b>(WY)</b>	(1998)	(1998)	(1996)	(1997)	(1997)	(1997)	(1942)	(1928)	(1927)	(1998)	(1998)	(1995)
<b>Min</b>	1,944	1,998	1,935	1,896	1,666	2,398	2,585	2,381	2,546	1,208	971	1,495
<b>(WY)</b>	(1935)	(1935)	(1935)	(1937)	(1938)	(1938)	(1938)	(1934)	(1934)	(1934)	(1934)	(1934)

\* During periods of operation (January 1923 to September 1942, October 1994 to present).

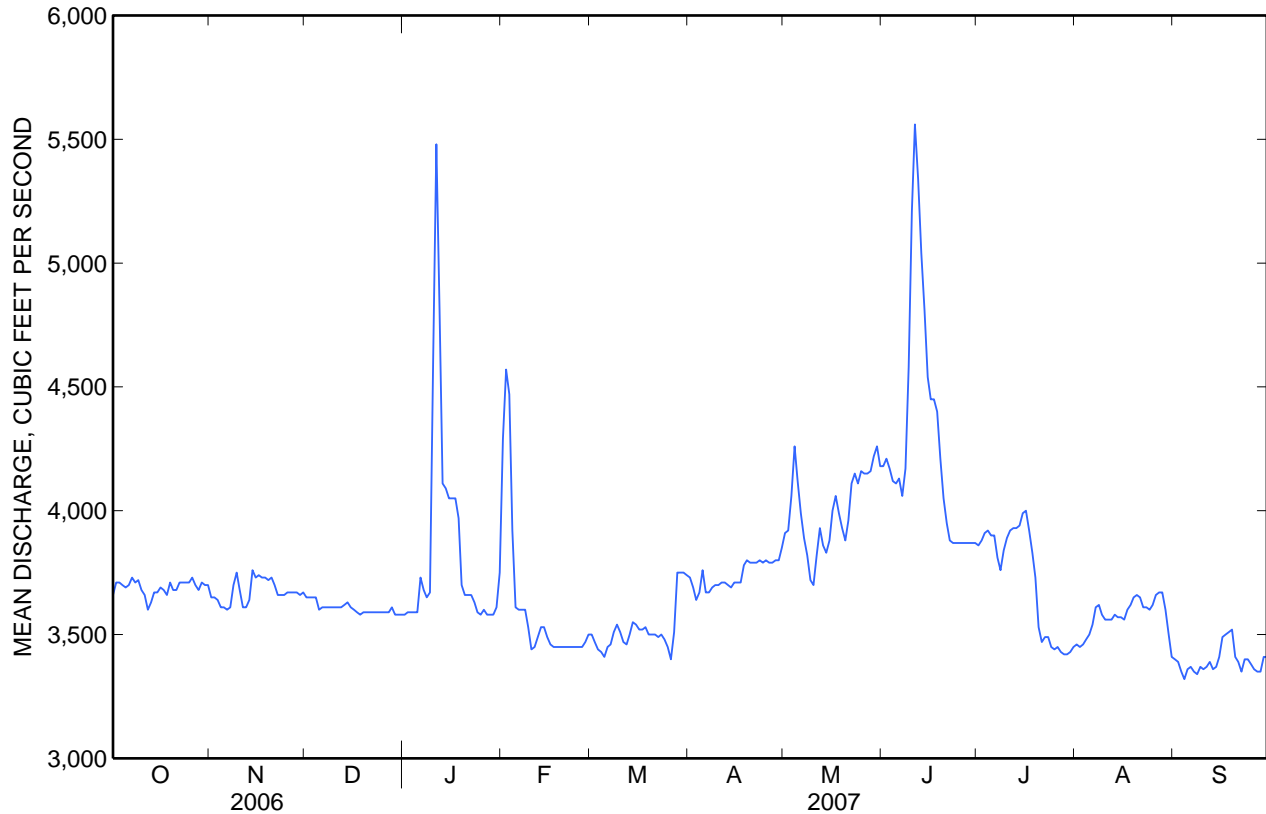
06065500 MISSOURI RIVER BELOW HAUSER DAM, NEAR HELENA, MT—Continued

SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1923 - 2007*	
<b>Annual total</b>	1,580,700		1,358,450			
<b>Annual mean</b>	4,331		3,722		4,393	
<b>Highest annual mean</b>					7,862	1997
<b>Lowest annual mean</b>					2,381	1934
<b>Highest daily mean</b>	6,600	May 6	5,560	Jun 11	33,300	Jun 15, 1927
<b>Lowest daily mean</b>	3,580	Dec 18	3,320	Sep 4	280	Mar 3, 1938
<b>Annual seven-day minimum</b>	3,590	Dec 17	3,350	Sep 3	716	Aug 3, 1934
<b>Maximum peak flow</b>			5,690	Jun 11	33,300	Jun 15, 1927
<b>Maximum peak stage</b>			4.74	Jun 11	<sup>a</sup> 78.80	Jun 15, 1927
<b>Instantaneous low flow</b>					280	Mar 3, 1938
<b>Annual runoff (ac-ft)</b>	3,135,000		2,694,000		3,183,000	
<b>10 percent exceeds</b>	5,440		4,110		7,150	
<b>50 percent exceeds</b>	4,060		3,660		3,670	
<b>90 percent exceeds</b>	3,630		3,440		2,150	

\* During periods of operation (January 1923 to September 1942, October 1994 to present).

<sup>a</sup> Site and datum then in use.





## Water-Data Report 2007

**06066000 HOLTER LAKE NEAR WOLF CREEK, MT**

Upper Missouri Basin  
Upper Missouri Subbasin

LOCATION.--Lat 46°59'28", long 112°00'17" referenced to North American Datum of 1927, in SE ¼ sec.5, T.14 N., R.3 W., Lewis and Clark County, MT, Hydrologic Unit 10030101, at Holter Dam on Missouri River, 3.3 mi east of Wolf Creek, and at river mile 2,211.1.

DRAINAGE AREA.--17,149 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--January 1936 to current year. Records prior to October 1939, published only in Water Supply Paper (WSP) 1309. April to July 1953 scattered daily elevations and contents, published in WSP 1320-B. May to June 1964 daily elevations and contents, published in WSP 1840-B.

Records of daily elevations are in files of the USGS Water Science Center located in Helena, Montana. Prior to 1950, published as Holter Reservoir near Wolf Creek. Nonrecording gage read three times daily.

GAGE.--Elevation of gage is at sea level (levels by the Montana Power Company).

COOPERATION.--Records furnished by PPL EnergyPlus, LLC.

REMARKS.--Reservoir is formed by concrete dam completed in 1918. Elevations are referenced to the National Geodetic Vertical Datum of 1929. Usable capacity is 81,920 acre-ft between elevation 3,543.00 ft, bottom of tunnel, and 3,564.00 ft, top of flashboards. Dead storage is 158,500 acre-ft below elevation 3,543.00 ft. Storage is not normally drawn below 3,548.00 ft, 16,660 acre-ft. Figures given herein represent usable contents. Water is used for power and recreation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 85,250 acre-ft, June 19, 1970, elevation, 3,564.70 ft; no storage Feb. 29, Dec. 31, 1936.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 82,200 acre-ft, Mar. 23, elevation, 3,564.06 ft; minimum contents observed, 79,380 acre-ft, Nov. 27 and 28, elevation 3,563.46.

**MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS,  
SEPTEMBER 2006 TO SEPTEMBER 2007**

<b>Date</b>	<b>Elevation (feet)</b>	<b>Contents (acre-feet)</b>	<b>Change in Contents (acre-feet)</b>
September 30	3,563.62	80,120	--
October 31	3,563.57	79,880	-240
November 30	3,563.49	79,520	-360
December 31	3,563.85	81,200	+1,680
Calendar Year 2006	--	--	+50
January 31	3,563.85	81,200	0
February 28	3,563.83	81,100	-100
March 31	3,563.80	80,960	-140
April 30	3,563.72	80,590	-370
May 31	3,563.90	81,430	+840
June 30	3,563.82	81,060	-370
July 31	3,563.75	80,730	-330
August 31	3,563.82	81,060	+330
September 30	3,563.83	81,100	+40
Water Year 2007	--	--	+980





Water-Data Report 2007

**06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT**

Upper Missouri Basin  
Upper Missouri-Dearborn Subbasin

LOCATION.--Lat 46°59'41", long 112°00'37" referenced to North American Datum of 1927, in NE ¼ SW ¼ SE ¼ sec.5, T.14 N., R.3 W., Lewis and Clark County, MT, Hydrologic Unit 10030102, on left bank 0.4 mi downstream from Holter Dam, 2.8 mi southeast of Wolf Creek, and at river mile 2,210.7.

DRAINAGE AREA.--17,149 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

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

GAGE.--Water-stage recorder. Elevation of gage is 3,464.11 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records are good. Flow is regulated by nine smaller irrigation reservoirs and powerplants, Clark Canyon Reservoir (station number 06015300), and Canyon Ferry Lake (station number 06058500). Diversions for irrigation include about 594,400 acres. U.S. Geological Survey satellite telemeter is located at the station.

## 06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3,600	3,660	3,680	3,620	4,020	3,550	3,720	3,690	4,180	3,970	3,380	3,380
2	3,610	3,750	3,700	3,590	4,380	3,550	3,710	3,740	4,220	3,950	3,350	3,380
3	3,610	3,970	3,710	3,550	4,510	3,550	3,690	3,940	4,340	3,900	3,340	3,350
4	3,620	3,620	3,700	3,580	4,110	3,550	3,640	4,300	4,280	3,900	3,340	3,350
5	3,600	3,510	3,660	3,580	3,730	3,530	3,620	4,130	4,210	3,890	3,350	3,350
6	3,620	3,510	3,680	3,580	3,740	3,460	3,550	3,910	4,140	3,960	3,360	3,350
7	3,640	3,520	3,690	3,650	3,710	3,410	3,530	3,760	4,240	4,010	3,470	3,360
8	3,630	3,530	3,680	3,680	3,690	3,440	3,590	3,710	4,390	3,980	3,540	3,380
9	3,610	3,580	3,680	3,840	3,660	3,480	3,670	3,630	4,680	3,960	3,550	3,380
10	3,610	3,580	3,670	4,400	3,580	3,530	3,690	3,580	5,200	3,890	3,540	3,360
11	3,610	3,560	3,670	5,120	3,520	3,550	3,700	3,590	5,680	3,810	3,480	3,360
12	3,610	3,560	3,650	4,920	3,440	3,550	3,710	3,650	5,720	3,790	3,470	3,360
13	3,640	3,620	3,690	4,150	3,460	3,560	3,690	3,640	5,460	3,800	3,480	3,300
14	3,660	3,650	3,740	4,120	3,490	3,590	3,690	3,640	5,250	3,830	3,490	3,350
15	3,650	3,650	3,760	4,120	3,500	3,640	3,690	3,730	4,680	3,980	3,490	3,430
16	3,660	3,670	3,770	4,090	3,500	3,630	3,690	3,890	4,450	4,010	3,490	3,500
17	3,650	3,680	3,720	4,030	3,510	3,570	3,700	4,060	4,530	3,940	3,490	3,520
18	3,610	3,670	3,730	4,020	3,530	3,560	3,710	3,960	4,550	3,800	3,500	3,530
19	3,610	3,680	3,690	3,830	3,530	3,510	3,730	3,870	4,350	3,770	3,510	3,510
20	3,640	3,680	3,660	3,530	3,520	3,480	3,720	3,780	4,260	3,600	3,490	3,410
21	3,640	3,680	3,630	3,520	3,530	3,460	3,710	3,800	4,180	3,460	3,490	3,380
22	3,660	3,730	3,630	3,560	3,550	3,460	3,710	3,940	3,970	3,460	3,500	3,390
23	3,650	3,780	3,610	3,650	3,550	3,480	3,710	4,030	3,970	3,470	3,530	3,390
24	3,670	3,790	3,610	3,690	3,550	3,520	3,710	4,130	3,930	3,470	3,590	3,400
25	3,670	3,810	3,600	3,660	3,550	3,560	3,710	4,150	3,890	3,470	3,610	3,400
26	3,670	3,760	3,610	3,650	3,550	3,570	3,710	4,140	3,880	3,480	3,610	3,350
27	3,660	3,710	3,620	3,660	3,550	3,590	3,710	4,140	3,910	3,470	3,570	3,370
28	3,670	3,720	3,620	3,640	3,550	3,750	3,710	4,080	3,940	3,470	3,560	3,370
29	3,700	3,720	3,620	3,620	---	3,790	3,710	4,130	3,960	3,440	3,510	3,370
30	3,730	3,670	3,600	3,600	---	3,780	3,710	4,180	3,950	3,390	3,450	3,360
31	3,700	---	3,620	3,690	---	3,760	---	4,170	---	3,380	3,380	---
<b>Total</b>	112,910	110,020	113,700	118,940	102,510	110,410	110,540	121,090	132,390	115,700	107,910	101,690
<b>Mean</b>	3,642	3,667	3,668	3,837	3,661	3,562	3,685	3,906	4,413	3,732	3,481	3,390
<b>Max</b>	3,730	3,970	3,770	5,120	4,510	3,790	3,730	4,300	5,720	4,010	3,610	3,530
<b>Min</b>	3,600	3,510	3,600	3,520	3,440	3,410	3,530	3,580	3,880	3,380	3,340	3,300
<b>Ac-ft</b>	224,000	218,200	225,500	235,900	203,300	219,000	219,300	240,200	262,600	229,500	214,000	201,700

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	4,433	4,724	4,915	4,968	4,921	5,038	5,469	6,628	8,702	5,787	4,228	4,175
<b>Max</b>	10,140	8,500	9,645	6,637	7,954	9,186	11,130	15,710	23,370	16,580	7,590	10,010
<b>(WY)</b>	(1966)	(1966)	(1960)	(1997)	(1997)	(1968)	(1976)	(1948)	(1948)	(1975)	(1984)	(1984)
<b>Min</b>	2,710	2,968	3,024	3,068	3,036	2,757	2,489	2,063	1,533	2,454	1,969	2,077
<b>(WY)</b>	(1954)	(1989)	(2002)	(2002)	(2002)	(1959)	(1959)	(1955)	(1955)	(1954)	(1954)	(1959)

## 06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued

## SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1946 - 2007	
<b>Annual total</b>	1,600,710		1,357,810			
<b>Annual mean</b>	4,386		3,720		5,330	
<b>Highest annual mean</b>					8,497	1984
<b>Lowest annual mean</b>					3,008	2002
<b>Highest daily mean</b>	6,590	May 3	5,720	Jun 12	34,000	Jun 8, 1948
<b>Lowest daily mean</b>	3,510	Nov 5	3,300	Sep 13	747	May 27, 1962
<b>Annual seven-day minimum</b>	3,540	Nov 5	3,360	Sep 8	1,040	May 16, 1957
<b>Maximum peak flow</b>			5,910	Jun 11	34,800	Jun 8, 1948
<b>Maximum peak stage</b>			3.56	Jun 11	11.70	Jun 8, 1948
<b>Instantaneous low flow</b>					<sup>a</sup> 250	Jul 26, 1968
<b>Annual runoff (ac-ft)</b>	3,175,000		2,693,000		3,862,000	
<b>10 percent exceeds</b>	5,640		4,120		7,890	
<b>50 percent exceeds</b>	4,160		3,650		4,600	
<b>90 percent exceeds</b>	3,640		3,440		3,040	

	Water Years 1946 - 1952*		Water Years 1953 - 2007**	
<b>Annual mean</b>	5,882		5,260	
<b>Highest annual mean</b>	7,787	1948	8,497	1984
<b>Lowest annual mean</b>	4,651	1946	3,008	2002
<b>Highest daily mean</b>	34,000	Jun 8, 1948	25,600	Jun 20, 1964
<b>Lowest daily mean</b>	1,560	Aug 31, 1946	747	May 27, 1962
<b>Annual seven-day minimum</b>	2,310	Aug 2, 1949	1,040	May 16, 1957
<b>Maximum peak flow</b>	34,800	Jun 8, 1948	27,100	Jun 19, 1964
<b>Maximum peak stage</b>	11.70	Jun 8, 1948	10.04	Jun 19, 1964
<b>Instantaneous low flow</b>	<sup>b</sup> 742	Nov 25, 1949	<sup>a</sup> 250	Jul 26, 1968
<b>Annual runoff (ac-ft)</b>	4,261,000		3,811,000	
<b>10 percent exceeds</b>	10,800		7,650	
<b>50 percent exceeds</b>	4,520		4,620	
<b>90 percent exceeds</b>	3,350		3,030	

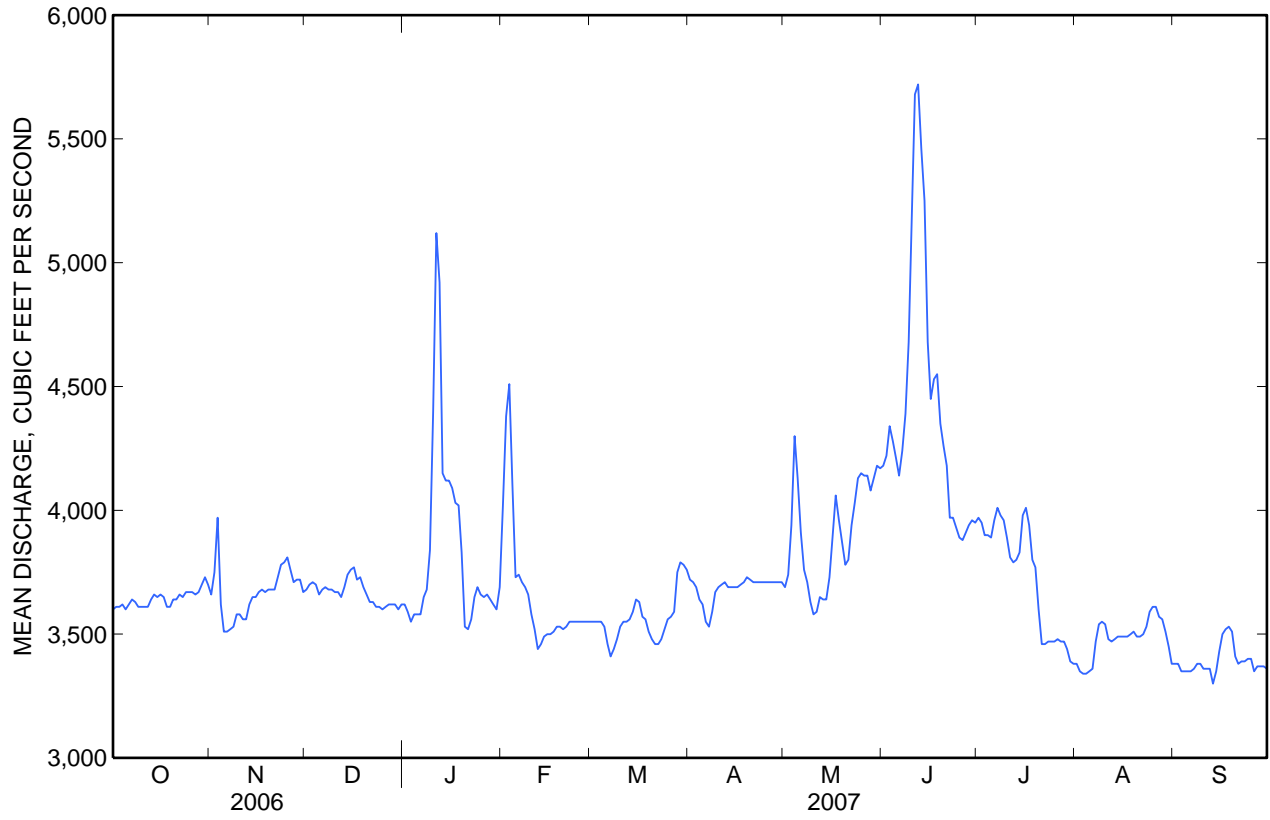
\* Before Canyon Ferry Dam completion.

\*\* After Canyon Ferry Dam completion.

<sup>a</sup> Gage height, 0.18 ft.

<sup>b</sup> Probably less than; during powerplant shutdown.

06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued



**06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--October 1999 to current year.

WATER TEMPERATURE: October 1999 to current year.

INSTRUMENTATION.--Temperature probe installed Sept. 30, 1999.

REMARKS.--Daily water temperature record rated excellent. Missing data for Jan. 28-30 are due to equipment problems. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 22.5°C, July 27, 2007; minimum, 0.5°C, many days in January 2005, Dec. 23-25, 2006 and Jan 10-15, 2007.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.5°C, July 27; minimum, 0.5°C, December 23-25 and January 10-15.

**TEMPERATURE, WATER, DEGREES CELSIUS  
WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	14.5	14.0	14.5	9.0	9.0	9.0	3.5	3.0	3.5	1.0	1.0	1.0
2	14.5	14.0	14.0	9.0	9.0	9.0	3.5	2.5	3.0	1.0	1.0	1.0
3	14.5	13.5	14.0	9.0	8.5	9.0	3.0	2.5	2.5	1.0	1.0	1.0
4	14.0	14.0	14.0	9.0	8.5	8.5	2.5	2.5	2.5	1.0	1.0	1.0
5	14.5	14.0	14.0	9.0	8.5	8.5	2.5	2.0	2.5	1.0	1.0	1.0
6	14.5	14.0	14.5	8.5	8.5	8.5	2.5	2.0	2.0	1.0	1.0	1.0
7	14.5	13.5	14.0	9.0	8.5	8.5	2.5	2.0	2.0	1.0	1.0	1.0
8	14.0	13.5	14.0	8.5	8.0	8.5	2.5	2.0	2.0	1.0	1.0	1.0
9	13.5	13.5	13.5	8.5	8.0	8.0	2.5	2.0	2.0	1.0	1.0	1.0
10	13.5	13.0	13.0	8.0	8.0	8.0	2.5	2.0	2.0	1.0	0.5	1.0
11	13.5	13.0	13.0	8.0	7.5	8.0	2.0	2.0	2.0	1.0	0.5	1.0
12	13.0	13.0	13.0	8.0	7.5	7.5	2.0	2.0	2.0	1.0	0.5	1.0
13	13.0	13.0	13.0	7.5	7.5	7.5	2.0	2.0	2.0	1.0	0.5	0.5
14	13.0	12.5	13.0	7.5	7.0	7.5	2.0	2.0	2.0	1.0	0.5	1.0
15	13.0	12.5	13.0	7.0	7.0	7.0	2.0	2.0	2.0	1.0	0.5	1.0
16	12.5	12.0	12.5	7.0	7.0	7.0	2.0	2.0	2.0	1.0	1.0	1.0
17	12.5	12.0	12.0	7.0	6.5	7.0	2.0	1.5	1.5	1.0	1.0	1.0
18	12.0	12.0	12.0	7.0	6.5	6.5	1.5	1.0	1.5	1.0	1.0	1.0
19	12.0	11.5	12.0	6.5	6.5	6.5	1.5	1.0	1.0	1.0	1.0	1.0
20	12.0	11.5	11.5	6.5	6.5	6.5	1.0	1.0	1.0	1.0	1.0	1.0
21	11.5	11.5	11.5	6.5	6.5	6.5	1.0	1.0	1.0	1.0	1.0	1.0
22	11.5	11.0	11.0	6.5	6.5	6.5	1.0	1.0	1.0	1.0	1.0	1.0
23	11.0	11.0	11.0	6.5	6.0	6.0	1.0	0.5	1.0	1.0	1.0	1.0
24	11.0	11.0	11.0	6.0	6.0	6.0	1.0	0.5	1.0	1.0	1.0	1.0
25	11.0	10.5	11.0	6.0	5.5	6.0	1.0	0.5	1.0	1.5	1.0	1.0
26	10.5	10.5	10.5	5.5	5.5	5.5	1.0	1.0	1.0	1.5	1.0	1.0
27	10.5	10.5	10.5	5.5	5.0	5.0	1.0	1.0	1.0	1.0	1.0	1.0
28	10.5	10.0	10.5	5.0	4.5	4.5	1.0	1.0	1.0	---	---	---
29	10.5	10.0	10.0	4.5	3.5	4.0	1.0	1.0	1.0	---	---	---
30	10.0	9.5	10.0	3.5	3.5	3.5	1.0	1.0	1.0	---	---	---
31	9.5	9.0	9.5	---	---	---	1.0	1.0	1.0	1.5	1.0	1.0
Month	14.5	9.0	12.5	9.0	3.5	7.0	3.5	0.5	1.5	---	---	---

## 06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	<b>February</b>			<b>March</b>			<b>April</b>			<b>May</b>		
<b>1</b>	1.5	1.0	1.0	2.0	1.5	1.5	5.0	4.5	4.5	10.0	7.5	9.0
<b>2</b>	1.5	1.0	1.0	2.0	1.5	1.5	4.5	4.5	4.5	10.0	8.0	9.0
<b>3</b>	1.5	1.0	1.0	2.0	1.5	1.5	5.0	4.5	4.5	9.0	7.5	8.0
<b>4</b>	1.5	1.0	1.5	2.0	1.5	1.5	5.0	4.5	4.5	10.0	8.0	9.0
<b>5</b>	1.5	1.5	1.5	2.0	1.5	1.5	4.5	4.5	4.5	10.0	8.0	9.0
<b>6</b>	1.5	1.0	1.5	2.0	1.5	2.0	5.0	4.5	4.5	10.5	8.5	9.0
<b>7</b>	1.5	1.0	1.5	2.0	1.5	2.0	5.0	4.5	4.5	10.5	9.0	10.0
<b>8</b>	1.5	1.0	1.5	2.0	1.5	2.0	5.5	4.5	5.0	12.0	8.5	10.5
<b>9</b>	1.5	1.0	1.5	2.5	2.0	2.0	5.5	5.0	5.0	10.5	9.5	10.0
<b>10</b>	1.5	1.0	1.5	2.5	2.0	2.0	5.0	5.0	5.0	11.5	9.5	10.0
<b>11</b>	1.5	1.0	1.5	2.5	2.0	2.0	5.5	5.0	5.0	11.5	10.0	11.0
<b>12</b>	1.5	1.0	1.0	2.5	2.0	2.5	5.5	5.0	5.0	12.5	10.0	11.0
<b>13</b>	1.5	1.0	1.0	2.5	2.0	2.0	5.5	5.0	5.0	10.5	8.5	9.5
<b>14</b>	1.5	1.0	1.0	2.5	2.0	2.5	6.0	5.0	5.5	11.0	9.0	10.0
<b>15</b>	1.5	1.0	1.5	2.5	2.0	2.5	6.0	5.5	6.0	11.5	9.5	11.0
<b>16</b>	1.5	1.5	1.5	2.5	2.5	2.5	6.5	5.5	6.0	13.0	10.0	11.5
<b>17</b>	1.5	1.5	1.5	3.0	2.5	2.5	6.5	6.0	6.0	13.0	11.0	12.0
<b>18</b>	1.5	1.5	1.5	3.0	2.5	2.5	6.0	5.5	6.0	12.5	11.0	11.5
<b>19</b>	2.0	1.5	1.5	3.0	2.5	2.5	6.0	5.5	5.5	13.0	10.0	11.5
<b>20</b>	1.5	1.5	1.5	3.0	2.5	3.0	6.5	5.5	6.0	13.0	10.0	11.5
<b>21</b>	2.0	1.5	1.5	3.5	3.0	3.0	7.0	6.0	6.5	13.0	10.0	11.5
<b>22</b>	1.5	1.5	1.5	3.0	3.0	3.0	7.0	6.5	7.0	10.5	9.0	10.0
<b>23</b>	1.5	1.5	1.5	3.5	3.0	3.0	7.0	6.0	6.5	12.0	10.0	11.5
<b>24</b>	1.5	1.5	1.5	3.5	3.0	3.5	7.5	6.0	7.0	12.5	10.5	12.0
<b>25</b>	2.0	1.5	1.5	4.0	3.5	3.5	8.0	7.0	7.5	12.0	10.5	11.5
<b>26</b>	2.0	1.5	1.5	4.0	3.5	4.0	7.5	6.0	7.0	13.0	11.5	12.0
<b>27</b>	1.5	1.5	1.5	4.0	3.5	4.0	8.5	7.0	7.5	13.0	11.5	12.0
<b>28</b>	1.5	1.5	1.5	4.0	3.5	4.0	8.5	7.5	8.0	12.5	11.5	12.0
<b>29</b>	---	---	---	4.5	4.0	4.0	8.5	7.0	7.5	12.0	11.0	11.5
<b>30</b>	---	---	---	4.5	4.0	4.0	7.5	7.0	7.0	12.5	11.5	12.0
<b>31</b>	---	---	---	5.0	4.5	4.5	---	---	---	12.5	11.5	11.5
<b>Month</b>	2.0	1.0	1.5	5.0	1.5	2.5	8.5	4.5	6.0	13.0	7.5	10.5

## 06066500 MISSOURI RIVER BELOW HOLTER DAM, NEAR WOLF CREEK, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	12.0	11.0	12.0	17.5	16.0	16.5	19.0	17.5	18.0	18.0	16.5	17.5
2	13.0	11.5	12.0	17.5	15.5	16.0	19.5	18.0	19.0	18.0	16.5	17.0
3	13.0	11.5	12.0	17.5	15.5	16.5	20.5	19.0	20.0	18.0	17.0	17.5
4	13.5	12.0	12.5	17.5	16.0	16.5	20.0	18.0	19.0	18.5	17.0	17.5
5	15.0	13.0	14.0	17.5	16.5	17.0	18.5	17.5	18.0	18.0	17.0	17.5
6	14.5	10.0	13.0	19.0	17.0	18.0	20.0	18.5	19.5	18.0	16.5	17.5
7	13.5	9.5	12.0	20.5	16.5	18.0	19.5	18.0	18.5	18.0	16.0	17.0
8	14.5	12.5	13.5	20.5	17.0	17.5	19.5	18.0	18.5	16.5	16.0	16.5
9	14.5	13.0	14.0	18.0	15.0	17.0	19.0	18.0	18.5	16.5	16.0	16.5
10	14.0	13.0	13.5	18.0	16.0	17.5	19.0	17.0	18.0	17.0	16.5	16.5
11	14.0	13.0	13.5	18.5	17.0	17.5	19.0	17.0	18.0	17.0	16.5	17.0
12	14.0	12.5	13.0	18.0	17.0	17.5	19.5	17.5	18.5	17.0	15.5	16.5
13	14.5	13.0	14.0	18.5	17.5	18.0	18.0	17.5	18.0	16.5	15.5	16.0
14	14.0	12.0	13.0	19.5	17.5	18.5	19.0	17.0	18.0	16.0	16.0	16.0
15	13.5	12.5	13.0	20.0	17.5	19.0	18.0	17.5	17.5	16.5	16.0	16.0
16	15.0	12.5	14.0	19.5	18.0	18.5	18.0	17.0	17.5	16.5	16.0	16.0
17	14.0	12.5	13.0	19.5	17.5	18.5	19.5	17.0	18.5	16.0	15.5	16.0
18	14.5	13.5	14.0	19.5	18.0	19.0	19.5	18.0	18.5	16.0	15.5	16.0
19	15.5	13.5	14.5	20.0	18.5	19.0	19.0	18.0	18.5	15.5	15.0	15.5
20	16.0	14.0	15.0	19.5	18.0	18.5	18.0	17.5	18.0	15.5	15.0	15.0
21	16.0	14.5	15.5	19.0	18.5	19.0	18.0	17.0	17.5	15.0	14.5	15.0
22	16.0	14.5	15.0	20.5	18.5	19.0	17.5	17.0	17.0	15.0	14.5	15.0
23	15.5	14.5	15.0	19.5	18.5	19.0	17.5	16.5	17.0	15.0	14.0	14.5
24	15.5	14.0	15.0	21.5	19.0	19.5	17.5	16.5	17.0	14.5	14.0	14.5
25	15.0	12.5	14.0	21.0	18.5	19.5	18.0	16.5	17.5	14.5	14.0	14.0
26	16.5	13.0	15.0	19.0	18.0	18.5	17.5	16.0	17.0	14.0	14.0	14.0
27	16.0	15.0	15.5	22.5	18.0	19.5	17.0	16.0	16.5	14.0	14.0	14.0
28	16.0	15.0	15.5	21.0	18.5	19.5	17.0	15.5	16.5	14.0	14.0	14.0
29	16.5	14.5	15.5	20.0	18.5	19.5	18.0	16.5	17.0	14.0	13.5	13.5
30	17.0	15.5	16.0	20.0	18.5	19.5	18.0	16.5	17.5	13.5	13.0	13.5
31	---	---	---	19.5	18.0	19.0	18.0	17.0	17.5	---	---	---
Month	17.0	9.5	13.9	22.5	15.0	18.3	20.5	15.5	17.9	18.5	13.0	15.8

Water-Data Report 2007

**06071300 LITTLE PRICKLY PEAR CREEK AT WOLF CREEK, MT**

Upper Missouri Basin  
Upper Missouri-Dearbon Subbasin

LOCATION.--Lat 47°00'19", long 112°04'10" referenced to North American Datum of 1927, in NE ¼ NW ¼ NE ¼ sec.2, T.14 N., R.4 W., Lewis and Clark County, MT, Hydrologic Unit 10030102, on right bank 30 ft downstream from Interstate 15 access road bridge, 500 ft southwest of Wolf Creek Post Office, 0.5 mi downstream from Wolf Creek, and at river mile 3.2.

DRAINAGE AREA.--381 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--May 1962 to September 1967, October 1991 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,547.38 ft, referenced to the National Geodetic Vertical Datum of 1929. May 10, 1962 to July 6, 1965, water-stage recorder on left bank at present elevation. July 7, 1965 to Apr. 11, 1966, non-recording gage on bridge 0.25 mi upstream at elevation 3.27 ft higher. Apr. 12, 1966 to Sept. 30, 1967, water-stage recorder on right bank 23 ft upstream at present elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Diversions for irrigation of about 2,500 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 7, 1975, reached a stage of 7.45 ft, present elevation, from floodmarks, discharge, 4,500 ft<sup>3</sup>/s.



## 06071300 LITTLE PRICKLY PEAR CREEK AT WOLF CREEK, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	34	48	51	39	e32	39	78	121	168	64	30	25
2	34	50	53	53	e30	e40	75	117	148	61	29	25
3	36	52	53	63	e35	39	71	138	135	58	28	23
4	37	56	57	59	38	45	69	164	120	56	27	24
5	37	58	58	44	50	43	69	158	118	54	27	24
6	38	59	57	45	58	50	68	132	144	53	29	25
7	39	57	56	44	50	82	66	114	452	49	28	25
8	41	62	54	53	40	77	65	101	439	47	28	29
9	44	59	54	52	39	61	64	92	371	45	28	28
10	43	57	51	50	40	57	64	88	313	44	29	28
11	42	56	53	e30	42	59	63	90	272	44	30	27
12	42	54	54	e25	e28	63	63	83	233	44	28	26
13	42	55	55	e28	e32	86	62	80	204	40	27	28
14	42	57	58	e30	e38	87	61	80	185	38	26	27
15	42	54	60	e32	41	75	62	77	169	37	27	27
16	44	53	54	e35	54	70	67	71	157	39	26	26
17	47	53	33	35	62	69	67	62	151	40	27	26
18	46	54	29	36	62	71	102	59	140	41	27	27
19	46	59	35	38	52	77	115	58	129	37	28	28
20	54	60	40	39	48	82	106	56	115	34	32	29
21	59	61	44	40	45	83	101	58	111	33	30	29
22	59	62	49	41	45	80	101	77	106	32	29	28
23	57	63	47	43	43	78	103	102	98	31	27	36
24	56	61	50	44	40	77	103	87	93	30	27	43
25	55	54	51	41	43	79	108	124	90	31	27	37
26	54	38	54	38	42	85	118	157	75	32	25	34
27	54	28	55	30	41	89	114	163	70	34	24	32
28	52	e25	53	33	41	92	112	184	67	35	23	32
29	52	e30	34	34	---	84	112	211	68	32	23	33
30	52	47	34	e32	---	79	121	202	65	32	23	34
31	48	---	33	36	---	79	---	186	---	33	23	---
<b>Total</b>	1,428	1,582	1,519	1,242	1,211	2,177	2,550	3,492	5,006	1,280	842	865
<b>Mean</b>	46.1	52.7	49.0	40.1	43.2	70.2	85.0	113	167	41.3	27.2	28.8
<b>Max</b>	59	63	60	63	62	92	121	211	452	64	32	43
<b>Min</b>	34	25	29	25	28	39	61	56	65	30	23	23
<b>Ac-ft</b>	2,830	3,140	3,010	2,460	2,400	4,320	5,060	6,930	9,930	2,540	1,670	1,720

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	48.8	52.0	48.3	43.5	56.5	66.1	129	216	192	75.0	42.3	45.5
<b>Max</b>	131	98.5	74.9	69.1	190	109	372	580	684	175	95.4	127
<b>(WY)</b>	(1966)	(1966)	(1966)	(1965)	(1996)	(2003)	(1965)	(1965)	(1967)	(1965)	(1993)	(1965)
<b>Min</b>	29.0	31.5	26.0	30.8	29.3	42.0	64.8	35.5	25.5	17.7	14.2	18.5
<b>(WY)</b>	(2004)	(1993)	(2002)	(1993)	(2001)	(2002)	(2000)	(1992)	(1992)	(2000)	(2000)	(2000)

\* During periods of operation (May 1962 to September 1967, October 1991 to current year).

06071300 LITTLE PRICKLY PEAR CREEK AT WOLF CREEK, MT—Continued

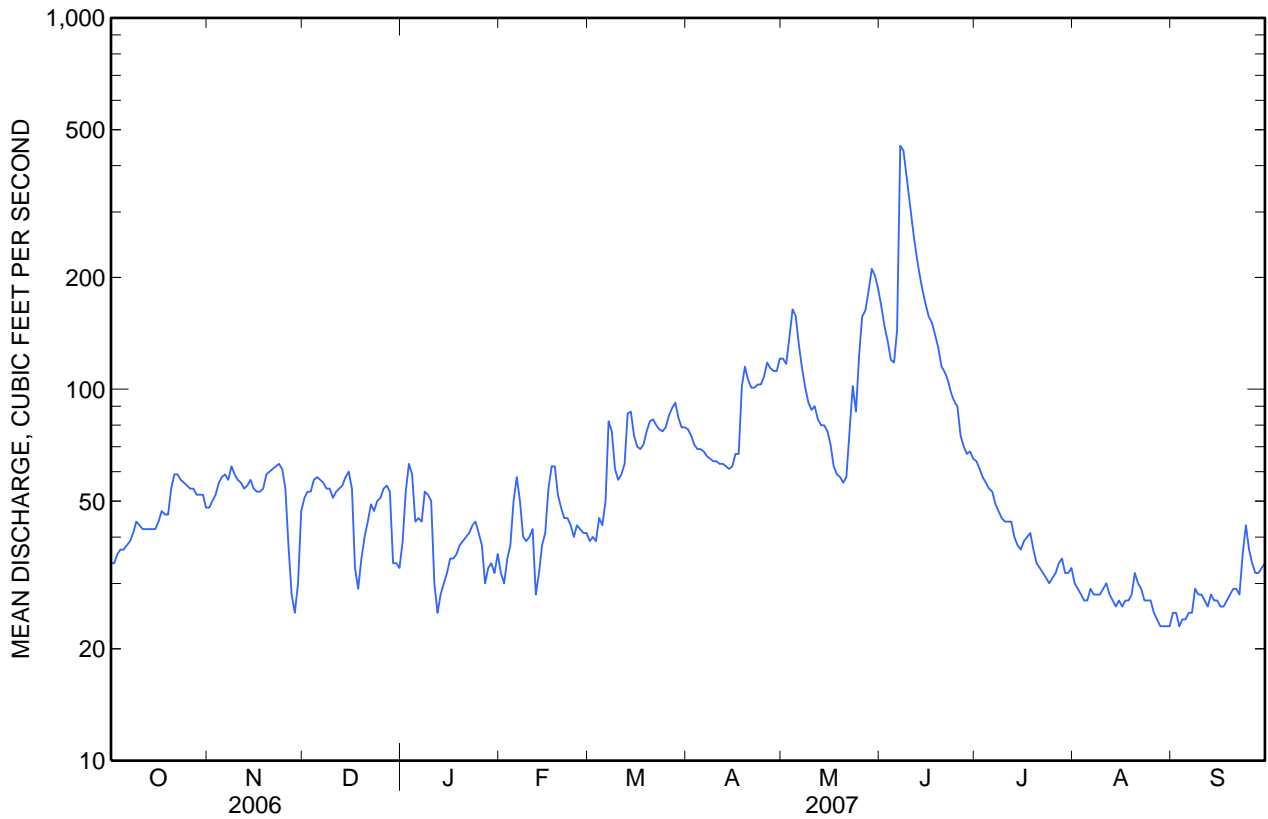
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1962 - 2007*	
<b>Annual total</b>	23,671		23,194			
<b>Annual mean</b>	64.9		63.5		83.8	
<b>Highest annual mean</b>					179	1965
<b>Lowest annual mean</b>					35.2	2000
<b>Highest daily mean</b>	355	Jun 11	452	Jun 7	2,440	Jun 9, 1964
<b>Lowest daily mean</b>	20	Aug 4	23	Aug 28	10	Aug 13, 1992
<b>Annual seven-day minimum</b>	21	Jul 31	24	Aug 28	11	Jul 29, 2000
<b>Maximum peak flow</b>			521	Jun 7	3,110	Jun 9, 1964
<b>Maximum peak stage</b>			4.76	Jun 7	7.65	Jun 9, 1964
<b>Instantaneous low flow</b>			<sup>a</sup> 21	Sep 3	<sup>b</sup> 9.6	Aug 2, 2000
<b>Annual runoff (ac-ft)</b>	46,950		46,010		60,700	
<b>10 percent exceeds</b>	157		114		162	
<b>50 percent exceeds</b>	46		52		52	
<b>90 percent exceeds</b>	26		28		27	

\* During periods of operation (May 1962 to September 1967, October 1991 to current year).

<sup>a</sup> Gage height, 2.79 ft.

<sup>b</sup> Gage height, 2.54 ft.





Water-Data Report 2007

**06073500 DEARBORN RIVER NEAR CRAIG, MT**

Upper Missouri Basin  
Upper Missouri-Dearborn Subbasin

LOCATION.--Lat 47°11'57", long 112°05'44" referenced to North American Datum of 1927, in NW ¼ NW ¼ SE ¼ sec.27, T.17 N., R.4 W., Lewis and Clark County, MT, Hydrologic Unit 10030102, on left bank at upstream side of bridge on U.S. Highway 287, 7.0 mi downstream from South Fork Dearborn River, 10.5 mi northwest of Craig, 13.5 mi north of Wolf Creek, and at river mile 19.0.

DRAINAGE AREA.--325 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1945 to September 1969, October 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,800 ft, referenced to the National Geodetic Vertical Datum of 1929. Oct. 1, 1945 to Sept. 30, 1946, nonrecording gage; Oct. 1, 1946 to June 9, 1964, water-stage recorder on upstream side of bridge; June 10, 1964 to May 31, 1965, nonrecording gage; June 1, 1965 to Sept. 30 1969, water-stage recorder on downstream side of abandoned bridge 0.2 mi downstream, all at same previous elevation.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite telemeter is located at the station.

## 06073500 DEARBORN RIVER NEAR CRAIG, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	42	56	e90	e120	e45	e60	153	484	568	127	41	19
2	42	55	e85	159	e40	e55	152	502	538	119	44	19
3	42	55	e90	155	e45	e55	149	634	498	112	41	18
4	42	55	e100	139	e60	e60	143	619	461	109	38	18
5	43	53	e90	88	e100	64	142	524	443	105	40	20
6	46	52	e90	101	e90	71	137	457	450	100	42	21
7	50	52	e100	104	e70	70	134	414	556	99	39	21
8	56	228	e100	144	e65	67	130	376	517	96	36	25
9	60	248	e100	139	e60	64	128	394	464	92	35	26
10	57	196	e95	134	e60	64	128	422	425	89	32	25
11	55	168	e90	e38	e65	65	128	420	391	90	28	23
12	53	149	e85	e35	e55	73	127	422	355	83	28	23
13	53	137	85	e40	e55	110	122	436	326	81	27	26
14	53	130	79	e45	e60	124	119	403	296	83	26	25
15	53	130	83	e50	e80	119	119	358	271	79	25	23
16	57	127	70	e52	e90	116	124	327	261	74	25	22
17	61	124	63	e55	e100	116	124	315	269	73	26	21
18	57	119	e55	e60	e90	122	186	305	242	74	25	23
19	57	115	e55	e65	e80	132	185	320	224	68	26	26
20	60	112	e70	e70	e75	138	184	314	208	63	27	27
21	65	113	107	e70	e75	143	187	306	199	60	28	25
22	64	114	108	e75	e70	141	201	344	190	57	27	22
23	63	110	103	e80	e70	139	220	326	178	54	27	38
24	62	108	111	e85	e70	136	266	305	169	53	29	47
25	61	108	121	e80	e80	144	320	410	168	53	27	35
26	56	e105	121	e75	e70	165	356	434	163	51	24	31
27	53	e90	109	e70	e65	178	364	502	146	51	22	29
28	50	e80	111	e65	e60	177	366	627	137	49	22	28
29	50	e85	102	e60	---	163	436	661	138	47	22	31
30	50	e100	e90	e55	---	158	481	614	134	44	20	37
31	48	---	e90	e55	---	156	---	587	---	42	19	---
<b>Total</b>	1,661	3,374	2,848	2,563	1,945	3,445	6,011	13,562	9,385	2,377	918	774
<b>Mean</b>	53.6	112	91.9	82.7	69.5	111	200	437	313	76.7	29.6	25.8
<b>Max</b>	65	248	121	159	100	178	481	661	568	127	44	47
<b>Min</b>	42	52	55	35	40	55	119	305	134	42	19	18
<b>Ac-ft</b>	3,290	6,690	5,650	5,080	3,860	6,830	11,920	26,900	18,620	4,710	1,820	1,540

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	70.3	72.5	64.5	55.3	58.8	83.4	234	669	723	196	63.6	54.1
<b>Max</b>	187	165	155	104	184	187	519	1,337	2,104	583	163	230
<b>(WY)</b>	(1966)	(1947)	(1947)	(1947)	(1996)	(1947)	(1969)	(1995)	(1964)	(1951)	(1951)	(1993)
<b>Min</b>	17.0	31.9	23.9	22.2	22.5	33.8	51.0	135	113	27.2	13.1	18.8
<b>(WY)</b>	(1957)	(2006)	(2002)	(2002)	(2002)	(2002)	(1961)	(2000)	(2000)	(2000)	(2000)	(1956)

\* During periods of operation (October 1945 to September 1969, October 1993 to current year).

## 06073500 DEARBORN RIVER NEAR CRAIG, MT—Continued

## SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 1946 - 2007*	
<b>Annual total</b>	48,588		48,863			
<b>Annual mean</b>	133		134		195	
<b>Highest annual mean</b>					363	1948
<b>Lowest annual mean</b>					58.3	2000
<b>Highest daily mean</b>	917	Jun 11	661	May 29	12,500	Jun 9, 1964
<b>Lowest daily mean</b>	19	Aug 10	18	Sep 3	8.5	Aug 17, 1961
<b>Annual seven-day minimum</b>	21	Aug 5	19	Aug 30	11	Aug 14, 1961
<b>Maximum peak flow</b>			<sup>a</sup> 707	May 3	<sup>d</sup> 15,400	Jun 9, 1964
<b>Maximum peak stage</b>			<sup>b</sup> 4.82	Nov 29	<sup>e</sup> 13.50	Jun 9, 1964
<b>Instantaneous low flow</b>			<sup>c</sup> 17	Sep 4	<sup>f</sup> 8.0	Aug 17, 1961
<b>Annual runoff (ac-ft)</b>	96,370		96,920		141,400	
<b>10 percent exceeds</b>	347		360		518	
<b>50 percent exceeds</b>	57		85		72	
<b>90 percent exceeds</b>	24		27		33	

\* During periods of operation (October 1945 to September 1969, October 1993 to current year).

<sup>a</sup> Gage height 4.35 ft.

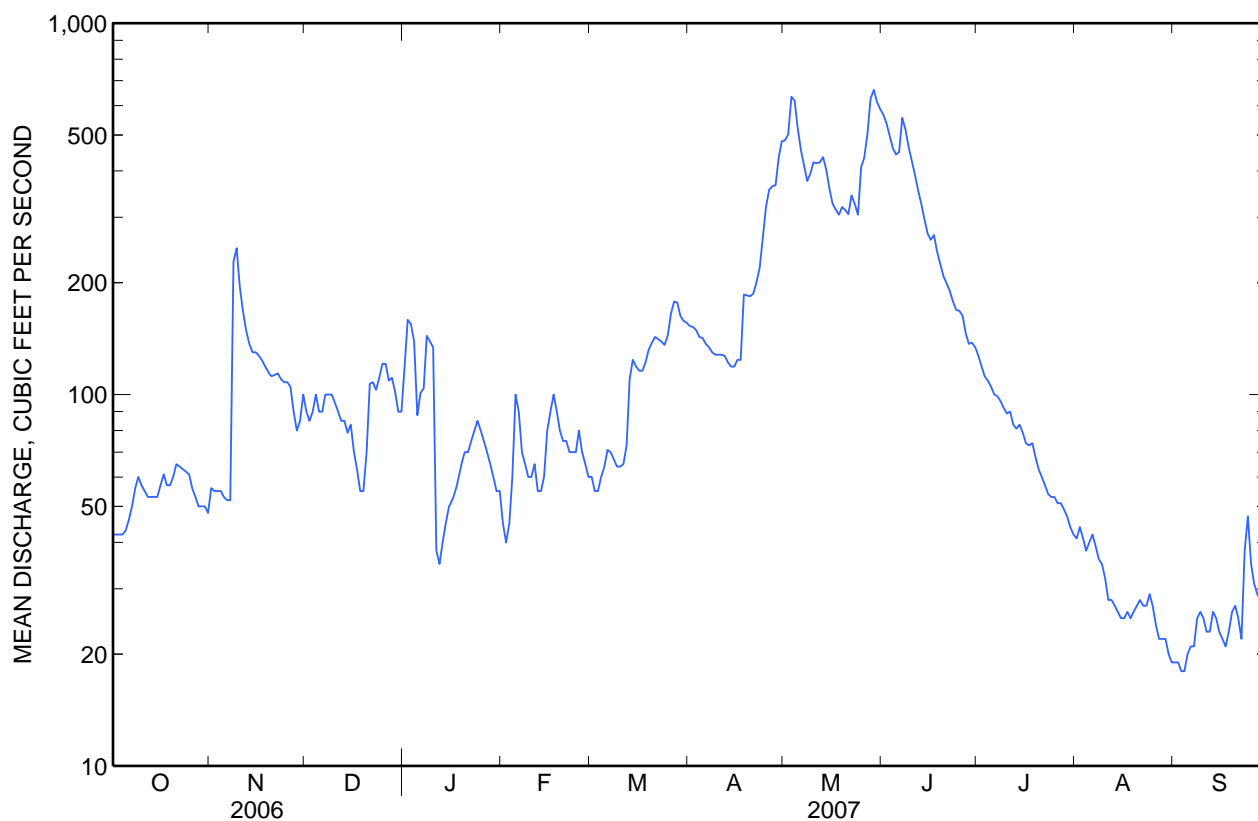
<sup>b</sup> Backwater from ice.

<sup>c</sup> Gage height, 1.96 ft.

<sup>d</sup> From rating curve extended above 7,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

<sup>e</sup> From floodmark.

<sup>f</sup> Site and datum then in use.



**06073500 DEARBORN RIVER NEAR CRAIG, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF RECORD.--August to September 1991, June 1999 to July 2003.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: November 1993 to 2004, seasonal records beginning April 2005 to current year.

INSTRUMENTATION.--Temperature recorder installed Nov. 3, 1993.

REMARKS.--Daily water temperature records are rated good. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 28.5°C, Aug. 1, 2, 2000; minimum, 0.0°C on many days during winter.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: During seasonal operation, maximum, 27.5°C, July 18 and 19; minimum for seasonal period, 1.0°C, Apr. 3 and 4.

**TEMPERATURE, WATER, DEGREES CELSIUS  
APRIL 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	April			May			June			July		
1	9.5	5.0	7.0	13.0	6.5	10.0	16.5	9.0	12.5	23.0	14.5	18.5
2	6.5	3.5	5.0	12.5	8.5	10.5	17.0	9.5	13.5	22.0	15.0	18.5
3	6.5	1.0	3.5	11.0	7.0	8.5	17.0	10.0	13.5	24.0	15.0	19.0
4	5.0	1.0	3.0	10.0	4.0	7.0	18.0	11.0	14.5	24.5	15.0	20.0
5	4.5	2.0	3.5	11.5	4.0	7.5	15.5	12.5	13.5	25.5	15.5	20.5
6	3.5	2.0	2.5	13.0	5.5	9.0	12.5	9.0	10.0	24.0	16.5	20.5
7	7.5	2.0	4.0	14.5	7.5	10.5	12.5	7.5	9.5	24.5	17.5	20.5
8	11.0	1.5	6.0	16.0	8.5	12.0	14.5	8.0	11.0	25.0	16.5	20.5
9	9.0	5.5	7.0	15.5	9.0	12.0	13.5	9.0	11.5	22.5	15.5	19.0
10	5.5	2.5	4.0	13.0	8.5	11.0	13.0	10.5	11.5	24.0	14.0	18.5
11	7.0	3.0	4.5	15.0	8.5	11.5	16.5	9.5	13.0	24.5	14.5	19.5
12	9.5	3.0	5.5	14.5	9.0	12.0	16.5	10.5	13.5	25.5	15.5	20.5
13	11.0	2.5	6.5	12.5	8.0	10.0	15.0	10.0	12.5	25.0	16.5	21.0
14	12.5	5.5	8.5	11.0	6.0	8.0	17.5	10.5	14.0	22.5	17.0	20.0
15	10.5	7.5	8.5	14.5	6.5	10.5	17.5	11.0	14.0	25.5	16.5	20.5
16	12.5	4.5	8.5	16.0	8.5	12.0	17.5	11.0	14.0	26.5	16.5	21.0
17	10.5	6.5	8.5	15.5	10.0	12.5	15.5	11.0	13.0	25.0	18.5	21.5
18	8.5	3.5	5.0	17.0	10.5	13.5	16.5	9.5	13.0	27.5	18.0	22.5
19	8.0	4.0	5.5	16.0	10.0	13.0	18.0	10.0	14.0	27.5	19.0	23.0
20	11.0	3.5	7.0	13.5	10.0	11.5	20.0	12.0	16.0	27.0	18.0	22.5
21	12.0	4.0	8.0	10.5	8.0	9.5	22.0	13.5	17.5	26.0	18.5	22.0
22	11.0	5.5	8.5	8.0	6.5	7.0	22.5	14.0	18.0	26.5	17.5	22.0
23	13.0	7.0	10.0	12.0	5.0	8.5	22.0	15.0	18.5	26.5	18.0	22.5
24	13.0	6.5	9.5	13.0	8.0	10.0	21.5	14.0	17.5	23.0	18.5	21.0
25	10.5	6.5	8.5	11.0	5.5	7.5	17.5	13.5	15.5	26.5	18.0	22.0
26	12.5	6.5	9.0	15.0	7.0	10.5	19.5	10.0	14.5	26.0	18.0	21.5
27	9.5	6.5	7.5	13.0	9.5	11.5	21.0	11.5	16.5	25.5	18.0	21.5
28	14.5	6.5	10.0	11.0	8.0	9.5	23.0	14.0	18.5	27.0	17.5	22.0
29	13.0	7.5	10.0	10.5	7.5	9.0	22.0	16.0	18.5	25.5	17.0	21.5
30	12.5	7.5	10.0	14.0	7.0	10.5	21.0	14.5	18.0	25.5	18.0	21.0
31	---	---	---	15.5	8.0	11.5	---	---	---	26.0	17.5	21.5
Month	14.5	1.0	7.0	17.0	4.0	10.0	23.0	7.5	14.5	27.5	14.0	21.0

**06073500 DEARBORN RIVER NEAR CRAIG, MT—Continued****TEMPERATURE, WATER, DEGREES CELSIUS  
APRIL 2007 TO SEPTEMBER 2007**

<b>Day</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>	<b>Max</b>	<b>Min</b>	<b>Mean</b>
	<b>August</b>			<b>September</b>		
<b>1</b>	25.5	17.0	21.0	22.5	15.0	18.5
<b>2</b>	25.0	16.5	21.0	22.5	14.5	18.5
<b>3</b>	24.5	17.5	21.0	22.0	14.5	18.5
<b>4</b>	24.0	15.5	19.5	18.5	14.0	16.5
<b>5</b>	23.0	15.5	19.0	20.0	14.5	17.0
<b>6</b>	24.0	15.0	19.5	20.5	14.5	17.5
<b>7</b>	23.0	15.5	19.0	18.0	13.5	15.5
<b>8</b>	24.0	15.0	19.0	17.0	12.0	14.0
<b>9</b>	23.5	15.5	19.0	19.0	10.5	14.5
<b>10</b>	23.0	15.5	19.0	18.5	10.5	14.5
<b>11</b>	23.5	13.5	18.0	19.5	11.5	15.5
<b>12</b>	23.0	14.0	18.5	16.5	11.5	13.0
<b>13</b>	22.5	14.0	18.0	17.5	9.0	13.0
<b>14</b>	23.0	14.5	18.5	18.0	9.0	13.5
<b>15</b>	23.0	14.0	18.5	18.5	10.0	14.0
<b>16</b>	20.0	14.0	17.5	17.0	12.0	14.5
<b>17</b>	22.0	14.5	18.0	15.5	11.5	13.0
<b>18</b>	22.0	15.5	18.5	15.0	8.5	12.0
<b>19</b>	21.5	14.5	17.5	12.0	9.0	10.5
<b>20</b>	16.5	12.5	14.5	10.5	7.5	9.0
<b>21</b>	17.5	12.5	15.0	15.0	7.5	11.0
<b>22</b>	21.5	11.5	16.0	14.0	9.0	12.0
<b>23</b>	21.0	12.5	16.5	12.5	8.0	10.0
<b>24</b>	21.0	13.0	16.5	13.5	7.5	10.0
<b>25</b>	20.0	12.5	16.5	11.5	8.0	9.5
<b>26</b>	21.0	13.5	17.0	14.0	7.5	10.5
<b>27</b>	20.5	13.5	16.5	13.5	8.5	11.0
<b>28</b>	22.0	13.0	17.0	14.0	9.0	11.5
<b>29</b>	22.5	12.5	17.5	11.5	9.0	10.5
<b>30</b>	22.0	13.0	17.5	12.0	6.0	9.0
<b>31</b>	20.0	14.5	17.5	---	---	---
<b>Month</b>	25.5	11.5	18.0	22.5	6.0	13.5



Water-Data Report 2007

**06076560 SMITH RIVER BELOW NEWLAN CREEK, NEAR WHITE SULPHUR SPRINGS, MT**

Upper Missouri Basin  
Smith Subbasin

LOCATION.--Lat 46°35'27", long 111°03'26" referenced to North American Datum of 1927, in NW ¼ NE ¼ NE ¼ sec.35, T.10 N., R.5 E., Meagher County, MT, Hydrologic Unit 10030103, on left bank 40 ft upstream from county road bridge, 0.3 mi downstream from Newlan Creek, 7.3 mi northwest of White Sulphur Springs, and at river mile 112.1.

DRAINAGE AREA.--517 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 2004 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,785 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Flow is slightly regulated by Smith River Reservoir (station number 06075000) and Newlan Creek Reservoir. Numerous diversions for irrigation occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.



## 06076560 SMITH RIVER BELOW NEWLAN CREEK, NEAR WHITE SULPHUR SPRINGS, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	46	e45	e40	e40	e25	e50	72	69	103	30	21	18
2	46	e55	e45	e40	e22	e50	73	70	e100	30	21	18
3	51	60	e45	e40	e25	e55	70	76	e100	30	19	17
4	48	61	e45	e35	e30	e60	72	81	e95	30	19	18
5	47	61	e45	e40	e40	70	77	80	e100	30	19	19
6	47	59	e45	e40	e45	121	77	75	130	29	21	21
7	77	57	e45	e40	e35	188	70	69	154	27	21	22
8	67	60	e45	e45	e30	329	70	68	129	25	20	22
9	59	59	e45	e40	e30	311	71	69	117	25	21	24
10	56	56	e45	e35	e30	182	70	67	109	26	23	24
11	56	57	e50	e30	e30	165	67	77	103	26	24	22
12	53	54	e55	e25	e25	202	65	86	93	26	21	21
13	52	e52	e60	e30	e30	274	62	104	83	25	19	21
14	51	e50	e60	e30	e30	177	59	118	86	26	20	21
15	54	e45	e55	e30	e30	107	59	112	81	24	18	21
16	58	e45	e50	e30	e40	85	58	98	71	24	18	21
17	59	e45	e40	e30	e50	83	55	87	79	25	19	22
18	59	e45	e35	e30	e60	84	61	88	81	26	20	22
19	59	e45	e35	e35	e60	78	71	99	75	25	20	24
20	66	e50	e35	e35	e60	76	73	105	59	24	19	27
21	65	e55	e35	e35	e60	71	78	140	54	23	18	26
22	61	e55	e36	e40	e60	69	71	185	49	22	18	27
23	58	e50	e38	e42	e50	69	66	150	43	22	19	31
24	57	e45	e40	e45	e45	69	64	126	40	22	21	29
25	56	e38	e45	e42	e55	71	63	129	40	23	20	28
26	55	e30	e50	e40	e50	71	66	114	34	23	19	29
27	54	e25	e45	e35	e50	75	62	106	31	21	19	29
28	53	e22	e40	e35	e50	82	61	144	30	20	18	28
29	54	e25	e35	e32	---	72	62	148	30	21	19	30
30	e50	e30	e30	e30	---	72	65	138	29	20	18	31
31	e40	---	e30	e32	---	73	---	120	---	20	18	---
<b>Total</b>	1,714	1,436	1,344	1,108	1,147	3,541	2,010	3,198	2,328	770	610	713
<b>Mean</b>	55.3	47.9	43.4	35.7	41.0	114	67.0	103	77.6	24.8	19.7	23.8
<b>Max</b>	77	61	60	45	60	329	78	185	154	30	24	31
<b>Min</b>	40	22	30	25	22	50	55	67	29	20	18	17
<b>Ac-ft</b>	3,400	2,850	2,670	2,200	2,280	7,020	3,990	6,340	4,620	1,530	1,210	1,410

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2005 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	57.2	53.8	50.8	49.7	46.4	80.8	76.2	113	180	68.5	30.5	40.8
<b>Max</b>	64.2	64.8	60.8	63.9	50.8	114	102	125	263	126	39.0	54.9
<b>(WY)</b>	(2006)	(2006)	(2006)	(2006)	(2006)	(2007)	(2006)	(2006)	(2005)	(2005)	(2005)	(2005)
<b>Min</b>	52.0	47.9	43.4	35.7	41.0	60.7	59.9	103	77.6	24.8	19.7	23.8
<b>(WY)</b>	(2005)	(2007)	(2007)	(2007)	(2007)	(2005)	(2005)	(2007)	(2007)	(2007)	(2007)	(2007)

06076560 SMITH RIVER BELOW NEWLAN CREEK, NEAR WHITE SULPHUR SPRINGS, MT—Continued

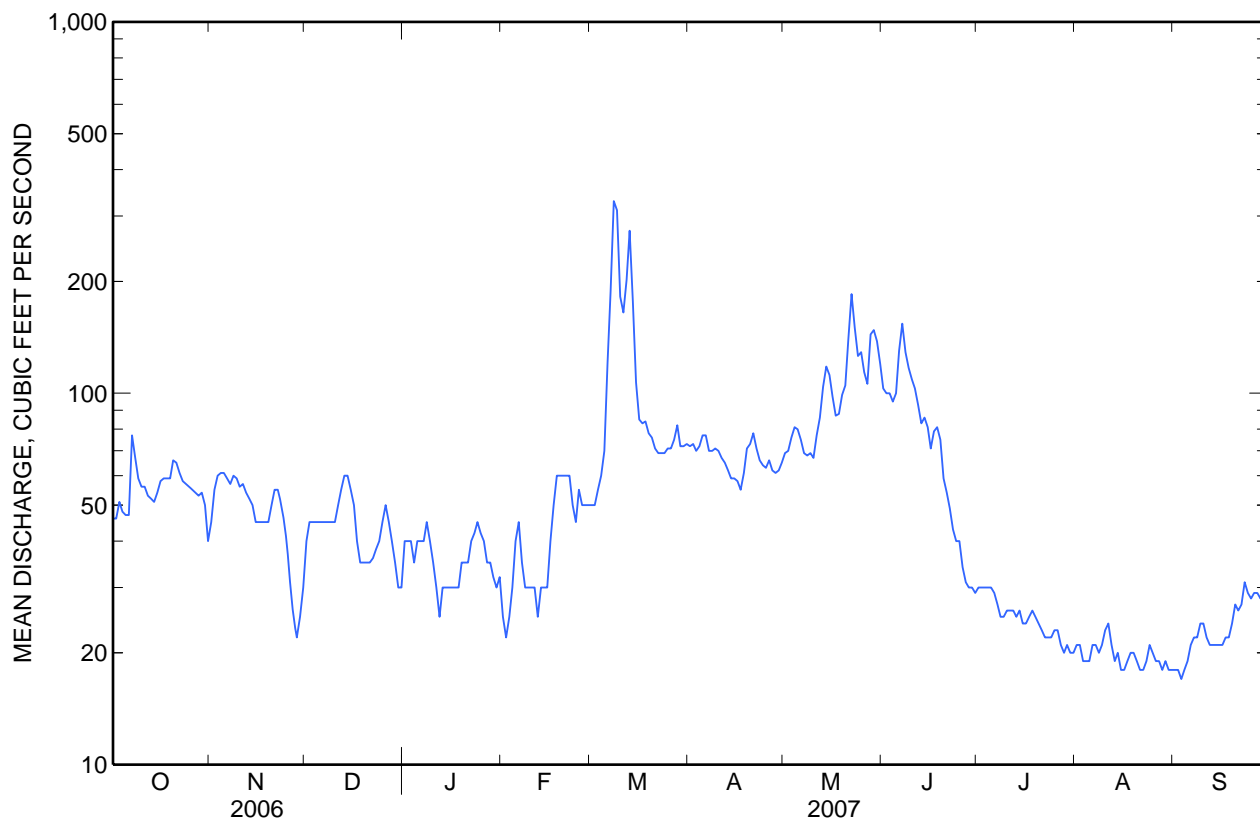
SUMMARY STATISTICS

	Calendar Year 2006		Water Year 2007		Water Years 2005 - 2007	
Annual total	26,929		19,919			
Annual mean	73.8		54.6		70.6	
Highest annual mean					79.8	2005
Lowest annual mean					54.6	2007
Highest daily mean	565	Jun 10	329	Mar 8	565	Jun 10, 2006
Lowest daily mean	22	Nov 28	17	Sep 3	17	Sep 3, 2007
Annual seven-day minimum	29	Aug 5	18	Aug 28	18	Aug 28, 2007
Maximum peak flow			385	Mar 8	<sup>b</sup> 677	Jun 10, 2006
Maximum peak stage			3.63	Mar 8	<sup>c</sup> 4.90	Jan 5, 2005
Instantaneous low flow			<sup>a</sup> 17	Aug 15	<sup>a</sup> 17	Aug 15, 2007
Annual runoff (ac-ft)	53,410		39,510		51,150	
10 percent exceeds	127		98		128	
50 percent exceeds	58		45		57	
90 percent exceeds	33		21		30	

<sup>a</sup> Gage height, 1.65 ft.

<sup>b</sup> Gage height, 4.37 ft.

<sup>c</sup> About, ice jam.





Water-Data Report 2007

**06076690 SMITH RIVER NEAR FORT LOGAN, MT**

Upper Missouri Basin  
Smith Subbasin

LOCATION.--Lat 46°47'45", long 111°10'41" referenced to North American Datum of 1927, in NE ¼ SW ¼ SW ¼ sec.13, T.12 N., R.4 E., Meagher County, MT, Hydrologic Unit 10030103, on left bank, 15 ft downstream from ranch bridge, 1.0 mi upstream from Sheep Creek, 9.0 mi north of Fort Logan, and at river mile 83.7.

DRAINAGE AREA.--846 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1977 to September 1996, October 2006 to September 2007.

GAGE.--Water-stage recorder. Elevation of gage is 4,400 ft above sea level, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Flow is slightly regulated by Smith River Reservoir. Diversion for irrigation of about 19,300 acres occurs upstream of station. U.S. Geological Survey satellite telemeter is located at the station. Several unpublished observations of water temperature and specific conductance were made during the year.

## Water-Data Report 2007

## 06076690 SMITH RIVER NEAR FORT LOGAN, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**  
[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	80	76	e70	e35	e35	e60	112	115	174	64	25	25
2	80	90	e75	e50	e35	61	115	116	160	64	26	26
3	83	109	e80	e50	e55	77	108	125	146	65	30	25
4	84	111	e80	e50	e70	73	108	127	143	63	33	25
5	81	110	e80	e45	e80	97	113	121	128	63	31	27
6	83	107	e80	e50	e80	173	115	116	152	66	38	28
7	98	106	e82	e45	e70	282	109	110	217	67	39	33
8	116	108	e80	e38	e70	318	104	102	201	68	44	36
9	101	110	e80	e36	e60	374	106	103	172	64	43	39
10	94	106	e80	e34	e60	372	107	106	158	58	44	43
11	91	105	e85	e32	e60	250	104	117	151	52	45	42
12	88	101	e85	e30	e55	299	100	122	138	47	44	e40
13	86	104	e85	e40	e40	469	97	131	124	42	37	e40
14	85	103	e85	e45	e40	323	95	152	122	39	32	e40
15	86	97	e70	e50	e40	191	93	152	124	39	32	38
16	89	118	e45	e50	e60	148	94	139	114	37	29	38
17	95	113	e38	e50	e60	136	93	119	119	38	27	41
18	92	138	e37	e55	e60	140	98	112	120	42	27	41
19	92	146	e40	e60	e65	134	110	122	116	39	29	43
20	101	132	e50	e60	e70	126	112	127	102	34	30	50
21	110	112	e50	e60	e80	120	117	155	89	30	28	53
22	101	115	e50	e55	e60	112	116	193	87	28	25	52
23	95	113	e50	e55	e58	110	110	207	81	29	26	71
24	93	e80	e50	e65	e60	110	106	182	77	25	26	71
25	93	e65	e55	e60	e58	112	104	191	77	29	22	64
26	90	e50	e55	e60	e58	115	105	186	72	32	23	60
27	88	e35	e55	e60	e58	114	105	168	69	29	23	58
28	87	e35	e50	e60	e65	127	100	189	62	27	23	58
29	87	e60	e45	e60	---	113	102	221	57	26	22	62
30	85	e65	e45	e55	---	111	108	241	62	27	22	66
31	68	---	e35	e55	---	113	---	200	---	25	23	---
<b>Total</b>	2,802	2,920	1,947	1,550	1,662	5,360	3,166	4,567	3,614	1,358	948	1,335
<b>Mean</b>	90.4	97.3	62.8	50.0	59.4	173	106	147	120	43.8	30.6	44.5
<b>Max</b>	116	146	85	65	80	469	117	241	217	68	45	71
<b>Min</b>	68	35	35	30	35	60	93	102	57	25	22	25
<b>Ac-ft</b>	5,560	5,790	3,860	3,070	3,300	10,630	6,280	9,060	7,170	2,690	1,880	2,650

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2007, BY WATER YEAR (WY) \***

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	115	107	97.1	87.9	118	163	177	240	273	157	81.1	93.3
<b>Max</b>	273	237	220	146	373	399	363	798	833	445	275	299
<b>(WY)</b>	(1994)	(1994)	(1994)	(1994)	(1996)	(1978)	(1978)	(1981)	(1982)	(1978)	(1993)	(1993)
<b>Min</b>	63.7	50.5	46.2	46.5	48.8	81.8	79.1	50.9	46.5	37.2	20.1	30.1
<b>(WY)</b>	(1989)	(1989)	(1988)	(1993)	(1989)	(1992)	(1992)	(2000)	(1988)	(1988)	(2001)	(2001)

\* During periods of record (October 1977 to September 1996, October 2006 to September 2007.)

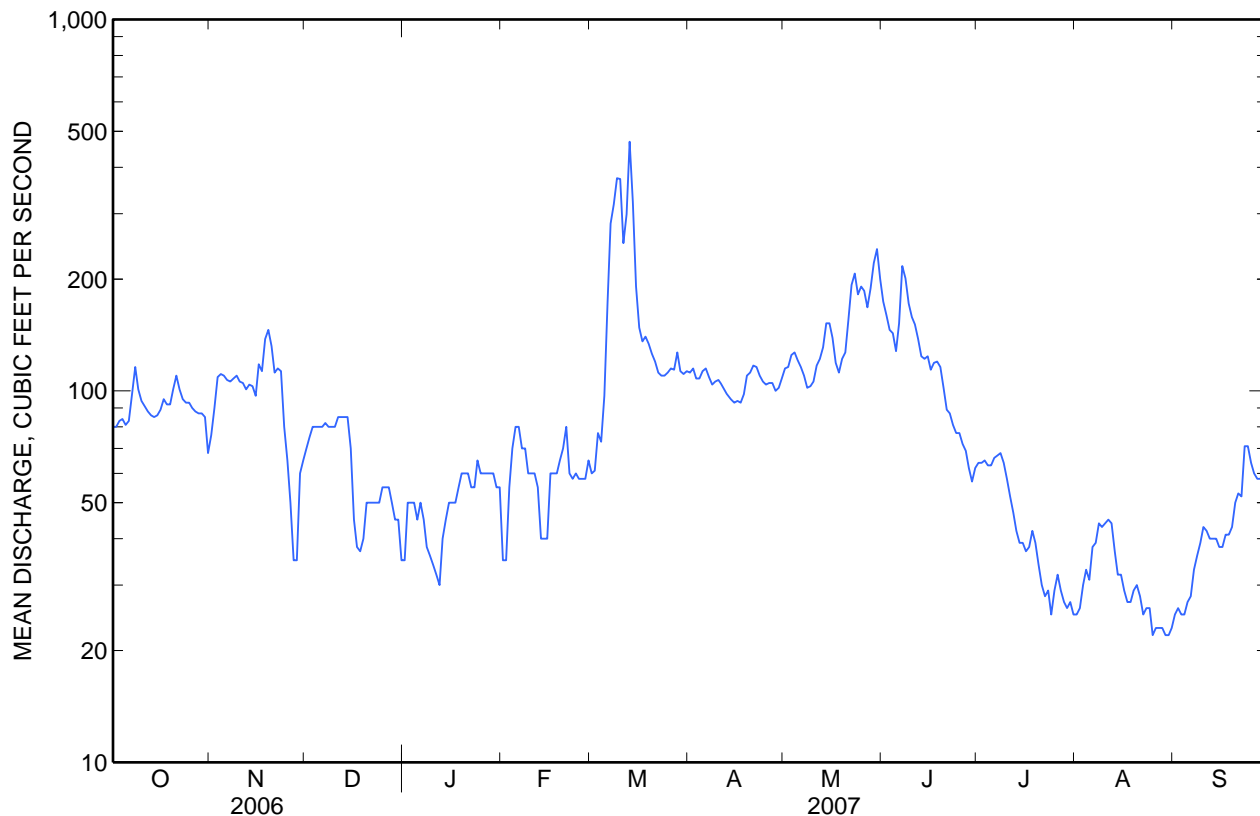
06076690 SMITH RIVER NEAR FORT LOGAN, MT—Continued

SUMMARY STATISTICS

	Water Year 2007		Water Years 1978 - 2007*	
Annual total	31,229			
Annual mean	85.6		148	
Highest annual mean			244	1982
Lowest annual mean			64.4	1988
Highest daily mean	469	Mar 13	3,220	May 22, 1981
Lowest daily mean	22	Aug 25	18	Sep 2, 1988
Annual seven-day minimum	23	Aug 25	19	Aug 19, 1988
Maximum peak flow	551	Mar 13	4,600	May 22, 1981
Maximum peak stage	4.37	Mar 13	7.80	May 22, 1981
Instantaneous low flow	<sup>a</sup> 19	Jul 28	16	Aug 22, 1988
Annual runoff (ac-ft)	61,940		107,000	
10 percent exceeds	139		285	
50 percent exceeds	76		106	
90 percent exceeds	31		56	

\* During periods of record (October 1977 to September 1996, October 2006 to September 2007.)

<sup>a</sup> Gage height, 2.51 ft.





Water-Data Report 2007

**06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT**

Upper Missouri Basin  
Smith Subbasin

LOCATION.--Lat 46°49'41", long 111°11'29" referenced to North American Datum of 1927, in SW ¼ NW ¼ SE ¼ sec.2, T.12 S., R.4 E., Meagher County, MT, Hydrologic Unit 10030103, on right bank at downstream side of private bridge, 0.6 mi downstream from Eagle Creek, 11.3 mi north of Fort Logan, and at river mile 80.8.

DRAINAGE AREA.--1,088 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--October 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,350 ft, referenced to the National Geodetic Vertical Datum of 1929.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Flow is slightly regulated by the Smith River Reservoir (station number 06075000). Diversion for irrigation of about 19,300 acres occurs upstream from station. U.S. Geological Survey satellite telemeter is located at the station.

## Water-Data Report 2007

## 06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2006 TO SEPTEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	99	e95	e90	e55	e55	e85	210	630	634	147	59	45
2	98	e105	e95	e70	e55	e80	207	682	558	140	63	47
3	102	e120	e100	e70	e75	e95	182	774	491	129	63	46
4	108	e135	e100	e65	e90	e95	188	707	452	121	63	44
5	108	e150	e100	e70	e100	e150	197	604	399	119	61	48
6	115	153	e100	e70	e100	e250	187	526	435	119	76	51
7	151	159	e102	e65	e90	e350	178	473	595	117	73	53
8	175	175	e100	e60	e90	e400	170	450	517	118	72	57
9	149	155	e100	e55	e80	e450	190	447	445	108	69	62
10	135	145	e100	e50	e80	e500	184	473	410	104	73	64
11	131	159	e105	e45	e80	530	176	526	387	99	74	63
12	129	133	e105	e50	e75	822	166	508	359	94	70	58
13	126	146	e110	e60	e60	877	168	532	330	89	65	58
14	125	140	e110	e65	e60	541	180	538	323	87	60	57
15	124	122	e90	e70	e60	314	187	481	310	89	61	57
16	132	166	e70	e70	e80	244	193	436	294	91	57	58
17	142	127	e60	e70	e80	285	215	391	337	90	55	62
18	134	122	e55	e75	e80	381	251	365	301	95	55	60
19	136	131	e60	e80	e85	314	266	363	281	89	56	65
20	157	172	e70	e80	e90	291	257	358	255	80	57	74
21	169	160	e70	e80	e95	256	262	424	230	72	57	77
22	155	154	e70	e75	e90	212	264	456	220	68	54	74
23	144	137	e70	e68	e80	205	262	464	205	68	54	97
24	143	e105	e70	e85	e80	224	275	425	195	65	55	103
25	143	e85	e80	e80	e80	248	310	498	186	71	51	89
26	134	e65	e80	e80	e80	251	357	533	178	76	49	84
27	134	e55	e80	e80	e80	244	364	539	172	76	47	82
28	130	e55	e70	e80	e90	248	385	666	159	70	47	81
29	128	e80	e65	e80	---	204	488	719	143	65	47	90
30	113	e85	e60	e75	---	208	583	806	143	62	44	101
31	e80	---	e55	e75	---	213	---	722	---	58	43	---
<b>Total</b>	4,049	3,791	2,592	2,153	2,240	9,567	7,502	16,516	9,944	2,876	1,830	2,007
<b>Mean</b>	131	126	83.6	69.5	80.0	309	250	533	331	92.8	59.0	66.9
<b>Max</b>	175	175	110	85	100	877	583	806	634	147	76	103
<b>Min</b>	80	55	55	45	55	80	166	358	143	58	43	44
<b>Ac-ft</b>	8,030	7,520	5,140	4,270	4,440	18,980	14,880	32,760	19,720	5,700	3,630	3,980

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2007, BY WATER YEAR (WY)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	125	121	102	111	102	174	268	483	596	231	106	103
<b>Max</b>	213	185	167	249	145	309	468	1,119	1,893	607	276	219
<b>(WY)</b>	(1998)	(1999)	(1998)	(1997)	(1997)	(2007)	(2006)	(1997)	(1997)	(1998)	(1997)	(1997)
<b>Min</b>	67.0	73.6	65.8	66.9	65.8	71.5	134	249	152	83.6	43.7	53.6
<b>(WY)</b>	(2002)	(2002)	(2004)	(2002)	(2002)	(2002)	(2002)	(2002)	(2001)	(2003)	(2000)	(2001)

06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT—Continued

SUMMARY STATISTICS

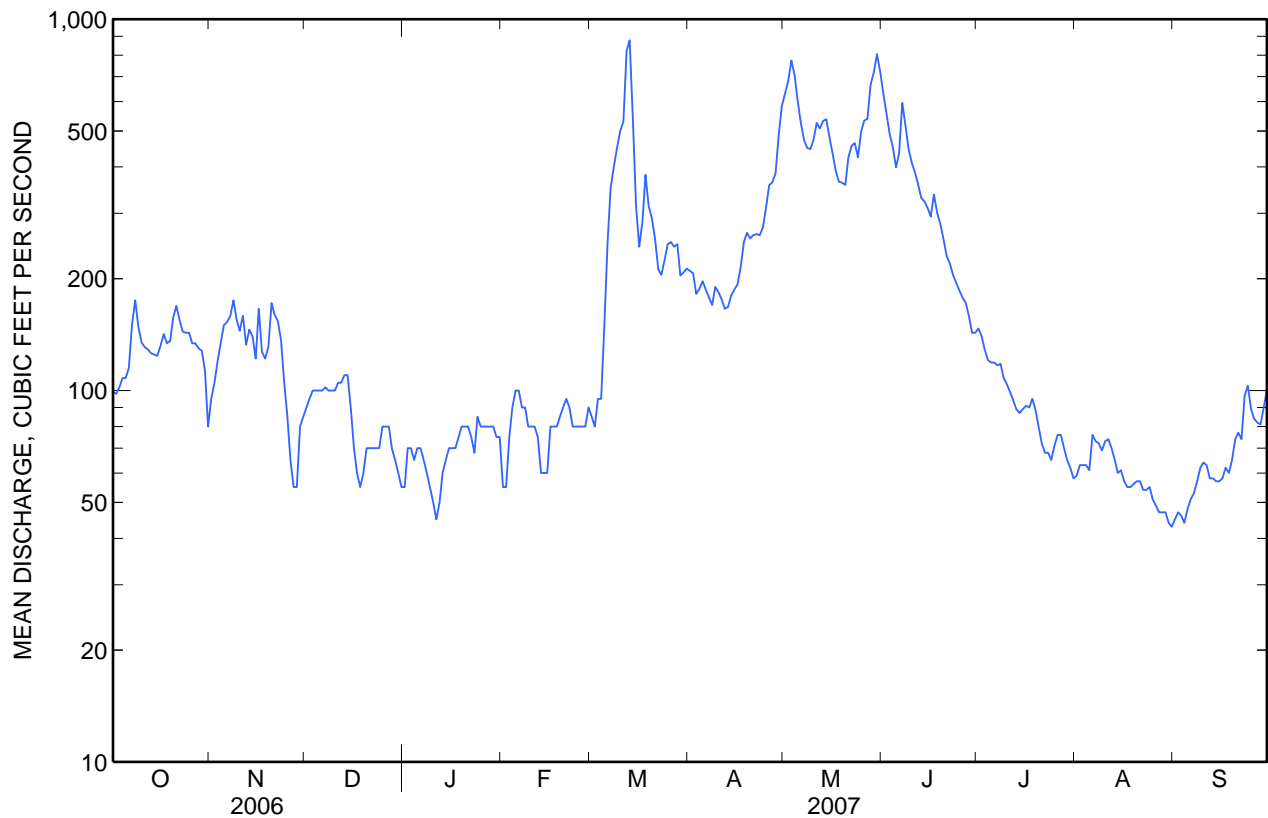
	Calendar Year 2006		Water Year 2007		Water Years 1997 - 2007	
Annual total	78,984		65,067			
Annual mean	216		178		210	
Highest annual mean					458	1997
Lowest annual mean					109	2001
Highest daily mean	1,290	Jun 11	877	Mar 13	3,510	Jun 12, 1997
Lowest daily mean	50	Feb 17	43	Aug 31	30	Jan 5, 2004
Annual seven-day minimum	65	Dec 16	45	Aug 29	32	Aug 25, 2000
Maximum peak flow			1,720	Mar 12	<sup>b</sup> 3,900	Jun 12, 1997
Maximum peak stage			5.82	Mar 12	<sup>c</sup> 9.30	Jan 1, 1997
Instantaneous low flow			<sup>a</sup> 41	Aug 30	<sup>d</sup> 28	Aug 26, 2000
Annual runoff (ac-ft)	156,700		129,100		152,300	
10 percent exceeds	545		450		459	
50 percent exceeds	120		103		125	
90 percent exceeds	73		57		67	

<sup>a</sup> Gage height, 2.72 ft.

<sup>b</sup> Gage height, 7.00 ft.

<sup>c</sup> Backwater from ice.

<sup>d</sup> Gage height, 2.65 ft.





**06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT—Continued****WATER-QUALITY RECORDS**

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Water year 2002 to current year.

INSTRUMENTATION.--Water temperature recorder installed Nov. 4, 1997.

REMARKS.--Seasonal daily water temperature records are rated fair. Several unpublished observations of specific conductance and water temperature were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 28.0°C, July 18, 2007; minimum 0.0°C, many days during winter months.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: During seasonal period of operation, maximum, 28.0°C, July 18; minimum 0.5°C, April 3.

**TEMPERATURE, WATER, DEGREES CELSIUS  
APRIL 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	April			May			June			July		
1	6.5	3.5	5.0	11.0	6.0	8.5	14.5	8.0	11.5	24.5	17.0	21.0
2	5.5	2.5	3.5	10.5	7.0	9.0	16.0	10.0	13.0	24.0	17.5	21.0
3	5.0	0.5	2.5	9.0	6.0	7.0	16.5	11.0	14.0	25.0	16.0	20.5
4	5.5	2.0	3.5	7.5	3.5	5.5	17.5	12.0	14.5	25.0	16.0	20.5
5	5.0	2.0	3.5	8.5	4.0	6.5	15.0	13.0	14.0	26.5	16.5	21.5
6	5.0	2.0	3.5	10.0	4.5	7.5	13.5	9.5	11.5	26.0	18.5	22.0
7	6.5	1.5	3.5	11.5	5.5	8.5	10.0	8.0	9.0	24.0	18.5	21.0
8	8.5	1.0	4.5	13.0	7.0	10.0	13.0	8.0	10.0	25.5	16.5	21.0
9	6.5	3.5	5.0	13.5	7.5	10.5	14.5	9.5	12.5	24.5	17.5	20.5
10	4.5	2.5	3.5	12.0	9.0	10.0	14.0	12.0	13.0	24.5	15.0	19.5
11	6.0	2.0	4.0	13.5	7.5	10.5	17.5	11.0	14.0	25.5	15.0	20.0
12	8.0	2.0	4.5	14.0	9.5	12.0	17.5	12.0	14.5	26.5	16.5	21.5
13	9.5	1.5	5.0	13.0	8.5	10.0	16.0	11.5	14.0	25.5	17.5	21.5
14	10.0	3.5	6.5	10.5	6.5	8.0	15.5	12.5	14.0	25.0	18.0	21.5
15	8.5	5.5	7.0	12.5	5.5	9.0	16.5	11.5	13.5	27.0	17.0	21.5
16	11.5	4.5	8.0	14.5	8.0	11.5	19.0	12.0	15.0	26.5	17.5	22.0
17	9.0	6.0	7.5	15.5	10.0	13.0	16.0	12.5	14.0	25.5	19.5	22.0
18	7.0	3.5	5.0	15.5	10.5	13.5	15.0	11.0	12.5	28.0	19.0	23.0
19	4.5	2.5	3.5	14.5	11.0	13.0	18.0	11.0	14.5	27.5	20.0	23.5
20	7.0	2.0	4.5	13.5	11.0	12.0	19.5	13.0	16.0	27.5	18.5	22.5
21	8.5	2.5	5.5	12.0	9.0	10.5	21.5	14.0	17.5	25.0	18.0	21.5
22	9.5	4.0	7.0	9.5	7.0	8.0	22.5	14.5	18.5	27.5	17.5	22.5
23	9.5	6.5	8.0	10.5	5.5	8.0	22.5	16.0	19.5	27.0	18.5	23.0
24	11.0	5.5	8.0	10.5	6.5	8.5	22.0	15.5	18.5	23.0	19.0	21.0
25	10.5	5.5	8.0	11.5	6.5	9.0	19.0	14.0	17.0	25.5	17.5	21.0
26	9.0	6.0	7.5	13.5	7.5	10.5	19.0	10.5	14.5	24.0	18.0	21.0
27	9.5	5.0	7.5	13.5	9.0	11.5	21.0	12.0	16.5	25.5	17.5	21.5
28	11.5	5.0	8.5	12.5	9.0	10.0	23.5	15.0	19.0	26.0	17.0	21.5
29	10.5	6.5	8.5	9.5	7.5	8.0	23.0	16.5	19.5	26.0	17.0	21.5
30	10.5	6.5	8.5	12.0	7.0	9.0	24.0	16.0	19.5	24.5	17.5	21.0
31	---	---	---	12.0	7.0	9.5	---	---	---	26.0	17.0	21.0
Month	11.5	0.5	5.7	15.5	3.5	9.6	24.0	8.0	14.8	28.0	15.0	21.4

## 06077200 SMITH RIVER BELOW EAGLE CREEK, NEAR FORT LOGAN, MT—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**APRIL 2007 TO SEPTEMBER 2007**

Day	Max	Min	Mean	Max	Min	Mean
	<b>August</b>			<b>September</b>		
<b>1</b>	24.5	15.0	20.0	22.5	13.5	17.5
<b>2</b>	24.5	16.0	20.0	23.0	13.0	18.0
<b>3</b>	24.5	18.0	21.0	23.0	14.0	18.0
<b>4</b>	24.0	15.5	19.5	18.5	13.5	15.0
<b>5</b>	22.0	14.5	18.5	19.5	13.5	16.0
<b>6</b>	24.0	15.0	19.0	19.0	15.0	16.5
<b>7</b>	23.5	15.0	19.0	20.0	12.5	15.5
<b>8</b>	23.5	14.0	18.5	16.0	11.5	13.5
<b>9</b>	23.5	15.0	19.0	14.5	10.5	12.5
<b>10</b>	21.0	15.5	18.0	17.0	8.0	12.5
<b>11</b>	23.0	13.0	17.5	18.0	9.5	13.5
<b>12</b>	24.0	14.5	18.5	16.5	10.0	13.0
<b>13</b>	20.5	15.0	17.5	16.5	8.5	12.0
<b>14</b>	22.5	14.0	18.0	16.5	7.0	11.5
<b>15</b>	23.0	13.5	18.0	17.0	8.5	12.5
<b>16</b>	22.5	14.5	18.0	16.0	9.5	12.5
<b>17</b>	21.5	15.5	18.0	12.5	9.0	11.0
<b>18</b>	20.0	14.5	17.5	13.5	7.0	10.5
<b>19</b>	21.5	13.5	17.0	11.0	8.0	9.5
<b>20</b>	17.0	13.5	15.5	11.5	7.5	9.5
<b>21</b>	20.5	13.0	16.0	14.5	7.0	10.5
<b>22</b>	21.0	11.0	15.5	10.5	7.0	9.0
<b>23</b>	19.5	12.0	15.5	10.0	7.0	9.0
<b>24</b>	19.5	12.0	15.5	11.0	6.5	8.0
<b>25</b>	20.5	11.5	15.5	11.0	5.5	8.5
<b>26</b>	21.0	12.0	16.0	13.0	6.0	9.0
<b>27</b>	21.0	12.5	16.5	13.5	7.0	10.0
<b>28</b>	22.0	12.0	16.5	11.5	8.0	9.5
<b>29</b>	22.5	12.0	17.0	10.0	8.5	9.5
<b>30</b>	21.5	12.5	17.0	11.0	5.0	8.0
<b>31</b>	19.0	13.5	17.0	---	---	---
<b>Month</b>	24.5	11.0	17.6	23.0	5.0	12.1



Water-Data Report 2007

**06077500 SMITH RIVER NEAR EDEN, MT**

Upper Missouri Basin  
Smith Subbasin

LOCATION.--Lat 47°11'21", long 111°23'08" referenced to North American Datum of 1927, in NE ¼ NW ¼ NW ¼ sec.32, T.17 N., R.3 E., Cascade County, MT, Hydrologic Unit 10030103, on left bank 0.5 mi upstream from Clark Creek, 2.6 mi upstream from Hound Creek, 7.7 mi southwest of Eden, and at river mile 27.0.

DRAINAGE AREA.--1,594 mi<sup>2</sup>.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--April 1951 to September 1969, March 2006 to October 2006.

GAGE.--Water-stage recorder. Elevation of gage is 3,500 ft, referenced to the National Geodetic Vertical Datum of 1929. April 1951 to September 1969, water-stage recorder at present site at datum approximately 2.0 ft lower.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Flow is slightly regulated by Smith River Reservoir (station number 06075000) and Newlan Creek Reservoir. Diversions for irrigation of about 24,500 acres occur upstream from station. U.S. Geological Survey satellite telemeter is located at the station. Several observations of water temperature and specific conductance were made during the year.

## 06077500 SMITH RIVER NEAR EDEN, MT—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**CALENDAR YEAR JANUARY TO DECEMBER 2007**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1			e100	271	985	1,500	242	93	58	102		
2			e100	273	1,060	1,280	242	90	57	99		
3			e120	259	1,220	1,110	230	89	57	95		
4			e120	239	1,280	974	213	90	57	93		
5			e200	248	1,110	885	202	88	60	101		
6			e300	246	944	856	192	95	63	116		
7			e400	234	822	1,410	189	101	64	114		
8			e500	221	752	1,340	191	97	63	108		
9			553	218	740	1,130	187	92	67	103		
10			595	236	777	999	176	92	69	102		
11			556	243	884	912	166	92	71	100		
12			e550	225	895	818	157	92	71	96		
13			e1,200	211	901	732	149	90	69	95		
14			883	210	976	675	141	86	68	95		
15			504	226	897	635	137	80	67	95		
16			345	241	804	591	134	79	65	94		
17			281	254	721	600	137	76	63	99		
18			412	316	655	589	143	74	66	107		
19			433	375	616	531	144	74	70	108		
20			374	364	600	487	131	75	74	103		
21			353	345	640	445	122	75	78	102		
22			298	344	732	413	115	73	80	100		
23			262	342	747	385	111	69	98	98		
24			263	364	717	358	109	73	119	96		
25			285	424	812	346	109	70	109	96		
26			326	516	966	327	109	68	97	99		
27			342	577	1,040	308	151	64	90	102		
28			352	580	1,270	290	121	61	85	100		
29			308	689	1,460	266	109	61	91	102		
30			272	867	1,820	248	103	60	97	106		
31			276	---	1,750	---	98	59	---	107		
<b>Total</b>			11,863	10,158	29,593	21,440	4,760	2,478	2,243	3,133		
<b>Mean</b>			383	339	955	715	154	79.9	74.8	101		
<b>Max</b>			1,200	867	1,820	1,500	242	101	119	116		
<b>Min</b>			100	210	600	248	98	59	57	93		
<b>Ac-ft</b>			23,530	20,150	58,700	42,530	9,440	4,920	4,450	6,210		

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 – 1969 AND SEASONS 2006 – 2007\***

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Mean</b>	99.4	137	188	400	950	1,146	355	150	147	167	150	110
<b>Max</b>	211	350	383	1,157	2,089	3,119	833	344	537	501	370	260
<b>(WY)</b>	(1969)	(1963)	(2007)	(1969)	(1964)	(1953)	(1965)	(1968)	(1965)	(1966)	(1966)	(1969)
<b>Min</b>	42.8	48.8	63.3	137	289	279	36.3	15.7	29.6	52.3	57.4	31.0
<b>(WY)</b>	(1955)	(1955)	(1955)	(1961)	(1961)	(1961)	(1961)	(1961)	(1961)	(1962)	(1962)	(1962)

\* During periods of operation (April 1951 to September 1969; March 2006 to current year, seasonal records only).

## 06077500 SMITH RIVER NEAR EDEN, MT—Continued

## SUMMARY STATISTICS

	2007 Season		Water Years 1951 - 1969*		Seasons 2006 - 2007*	
<b>Annual mean</b>			338			
<b>Highest annual mean</b>			614	1965		
<b>Lowest annual mean</b>			107	1961		
<b>Highest daily mean</b>	1,820	May 30	10,500	Jun 4, 1953	1,820	May 30, 2007
<b>Lowest daily mean</b>	57	Sep 2	3.1	Sep 1, 1961	54	Aug 30, 2006
<b>Annual seven-day minimum</b>			4.2	Aug 26, 1961		
<b>Maximum peak flow</b>	<sup>a</sup> 1,930	May 30	<sup>d</sup> 12,300	Jun 4, 1953	<sup>a</sup> 1,930	May 30, 2007
<b>Maximum peak stage</b>	<sup>b</sup> 7.02	Mar 13	12.50	Feb 4, 1963	<sup>b</sup> 7.02	Mar 13, 2007
<b>Instantaneous low flow</b>	<sup>c</sup> 55	Sep 1	<sup>e</sup> 3.1	Sep 1, 1961	<sup>c</sup> 50	Mar 13, 2006
<b>Annual runoff (ac-ft)</b>			245,100			
<b>10 percent exceeds</b>			796			
<b>50 percent exceeds</b>			157			
<b>90 percent exceeds</b>			60			

\* During periods of operation (April 1951 to September 1969; March 2006 to current year, seasonal records only).

<sup>a</sup> Gage height, 5.92 ft.

<sup>b</sup> Backwater from ice.

<sup>c</sup> Gage height, 2.63 ft.

<sup>d</sup> Gage height, 10.64 ft, from rating curve extended above 3,800 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow.

<sup>e</sup> Observed, gage height, -0.17 ft, datum then in use, result of discharge measurement.

