

Water-Data Report 2009

**06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND**

Little Missouri Basin  
Lower Little Missouri Subbasin

LOCATION.--Lat 47°35'45", long 103°15'50" referenced to North American Datum of 1927, in SE ¼ SE ¼ NW ¼ sec.35, T.148 N., R.99 W., McKenzie County, ND, Hydrologic Unit 10110205, on left bank 0.8 mi upstream from U.S. Highway 85 crossing, 17 mi upstream from Cherry Creek, and 17.5 mi south of Watford City.

DRAINAGE AREA.--8,310 mi<sup>2</sup>, approximately.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--DAILY DISCHARGE--October 1934 to current year.

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2000 to current year.

REVISED RECORDS.--WSP 926: 1935. WSP 1270: 1943.

GAGE.--Water-stage recorder. Datum of gage is 1,929.03 ft above National Geodetic Vertical Datum of 1929. From October 2, 1959, to June 17, 1963, and November 28, 1964, to September 30, 1990, water-stage recorder at site at U.S. Highway 85 crossing, 0.8 mi downstream. From June 18, 1963, to November 28, 1964, at site 0.6 mi downstream at present datum. See WSP 1729 or 1917 for history of changes prior to October 2, 1959.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

## 06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued

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

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	48	80	186	e15	e3.7	e6.0	e1,050	2,670	382	363	134	127
2	48	81	189	e14	e3.7	e20	835	2,220	344	316	129	125
3	48	78	e180	e12	e3.6	e50	864	2,040	325	324	130	126
4	48	77	e160	e11	e3.6	e170	736	1,890	319	341	129	126
5	57	111	e140	e10	e3.5	e450	735	1,710	304	378	128	125
6	62	177	e130	e9.0	e3.4	e1,000	878	1,530	309	441	130	128
7	52	85	e115	e8.0	e3.3	e1,700	1,100	1,410	337	1,210	128	128
8	48	69	e110	e7.4	e3.2	e2,400	958	1,440	405	1,180	192	134
9	54	63	e105	e6.5	e3.1	e2,300	847	1,250	485	1,750	416	137
10	54	66	e96	e6.0	e3.0	e2,200	868	1,100	611	1,320	319	127
11	55	72	e89	e5.5	e2.9	e2,150	976	981	637	822	266	126
12	90	79	e83	e5.3	e2.8	e2,100	1,040	937	693	634	438	130
13	127	99	e80	e5.2	e2.7	e2,500	1,010	902	624	497	625	131
14	166	101	e78	e5.1	e2.6	e3,400	1,280	851	617	403	403	134
15	252	91	e75	e5.0	e2.5	e4,600	3,170	791	529	346	344	134
16	250	116	e70	e5.0	e2.5	e6,100	5,940	757	447	440	256	131
17	204	124	e65	e4.9	e2.4	e8,000	8,730	721	378	610	187	130
18	164	145	e60	e4.8	e2.4	e9,600	13,100	674	361	423	143	128
19	203	219	e57	e4.8	e2.3	e8,700	15,700	634	545	336	140	123
20	187	205	e54	e4.7	e2.3	e10,000	19,300	596	659	296	170	122
21	155	200	e50	e4.6	e2.3	e12,300	19,900	565	687	282	130	118
22	144	219	e47	e4.6	e2.3	e11,500	15,100	532	579	253	129	118
23	131	210	e43	e4.5	e2.3	e10,000	11,000	520	546	226	129	121
24	117	209	e40	e4.4	e2.3	e6,300	8,450	497	595	185	126	123
25	105	169	e36	e4.3	e2.2	e5,000	6,760	497	597	151	130	123
26	93	182	e32	e4.2	e2.2	e3,000	5,450	863	566	137	131	123
27	e92	203	e28	e4.1	e2.2	e2,000	4,400	894	633	131	127	121
28	e88	191	e25	e4.0	e2.4	e1,300	3,620	562	512	127	129	127
29	85	168	e22	e3.9	---	e970	3,200	581	478	134	130	127
30	82	174	e20	e3.8	---	e940	3,010	472	439	136	129	130
31	81	---	e17	e3.8	---	e1,100	---	422	---	133	125	---
<b>Total</b>	3,390	4,063	2,482	195.4	77.7	121,856.0	160,007	31,509	14,943	14,325	6,222	3,803
<b>Mean</b>	109	135	80.1	6.30	2.77	3,931	5,334	1,016	498	462	201	127
<b>Max</b>	252	219	189	15	3.7	12,300	19,900	2,670	693	1,750	625	137
<b>Min</b>	48	63	17	3.8	2.2	6.0	735	422	304	127	125	118
<b>Ac-ft</b>	6,720	8,060	4,920	388	154	241,700	317,400	62,500	29,640	28,410	12,340	7,540

**STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2009, BY WATER YEAR (WY)**

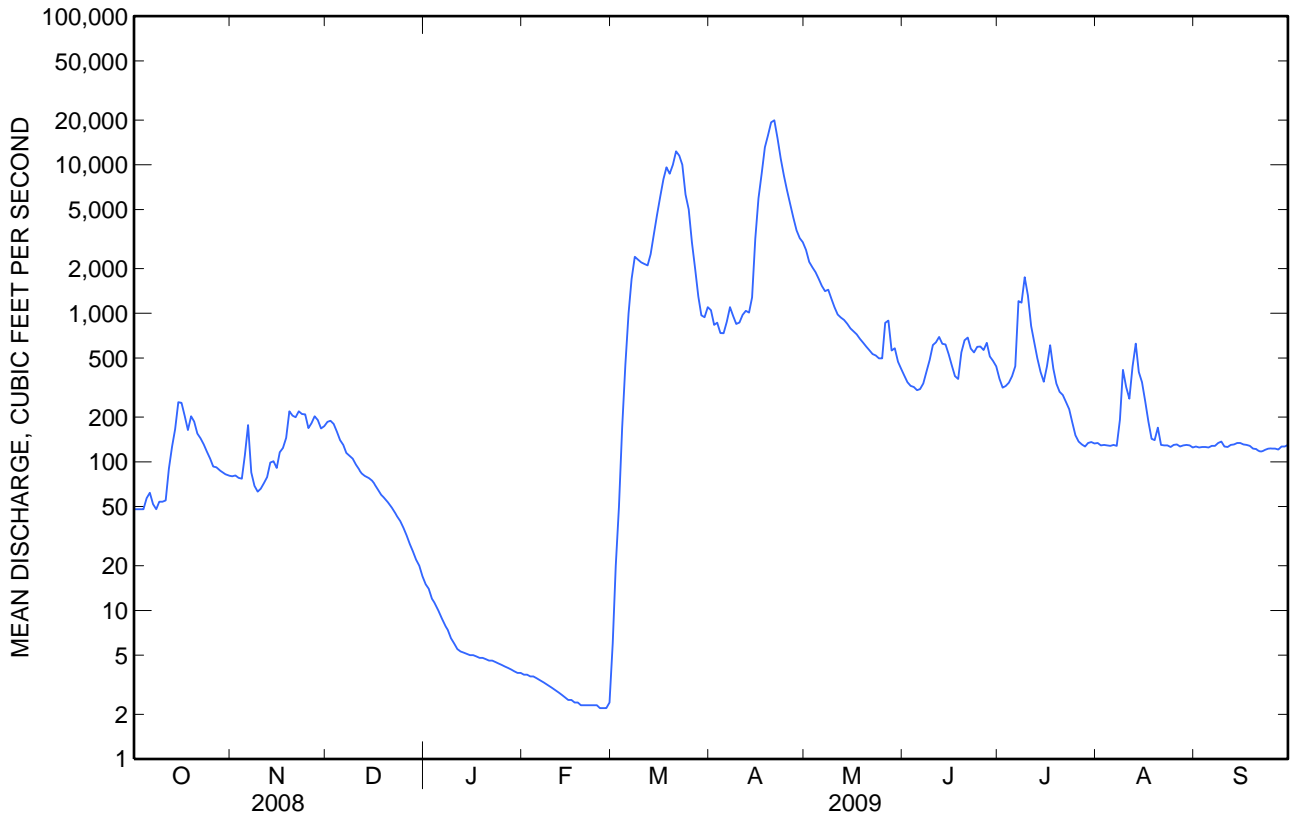
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	157	65.3	19.5	13.3	244	1,794	1,443	749	1,043	492	210	154
<b>Max</b>	2,364	509	138	123	3,023	10,220	12,170	4,302	5,646	2,759	1,405	1,174
<b>(WY)</b>	(1972)	(2001)	(1947)	(2006)	(1943)	(1972)	(1952)	(1975)	(1944)	(1993)	(1937)	(1941)
<b>Min</b>	0.83	0.33	0.00	0.00	0.00	22.2	29.5	18.0	14.8	9.26	0.02	1.38
<b>(WY)</b>	(1989)	(1989)	(1989)	(1935)	(1935)	(1964)	(1981)	(1981)	(1988)	(1980)	(1988)	(1936)

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued

SUMMARY STATISTICS

	Calendar Year 2008		Water Year 2009		Water Years 1935 - 2009	
<b>Annual total</b>	156,045.83		362,873.1			
<b>Annual mean</b>	426		994		533	
<b>Highest annual mean</b>					1,637	1971
<b>Lowest annual mean</b>					38.0	1988
<b>Highest daily mean</b>	7,000	May 12	19,900	Apr 21	55,000	Mar 25, 1947
<b>Lowest daily mean</b>	0.28	Feb 16	2.2	Feb 25	0.00	Jan 1, 1935
<b>Annual seven-day minimum</b>	0.28	Feb 14	2.3	Feb 21	0.00	Jan 1, 1935
<b>Maximum peak flow</b>			20,800	Apr 21	110,000	Mar 25, 1947
<b>Maximum peak stage</b>			13.68	Apr 21	<sup>a</sup> 24.00	Mar 25, 1947
<b>Annual runoff (ac-ft)</b>	309,500		719,800		385,800	
<b>10 percent exceeds</b>	1,080		2,120		1,140	
<b>50 percent exceeds</b>	114		143		74	
<b>90 percent exceeds</b>	0.56		4.5		1.0	

<sup>a</sup> From floodmark, site and datum then in use.

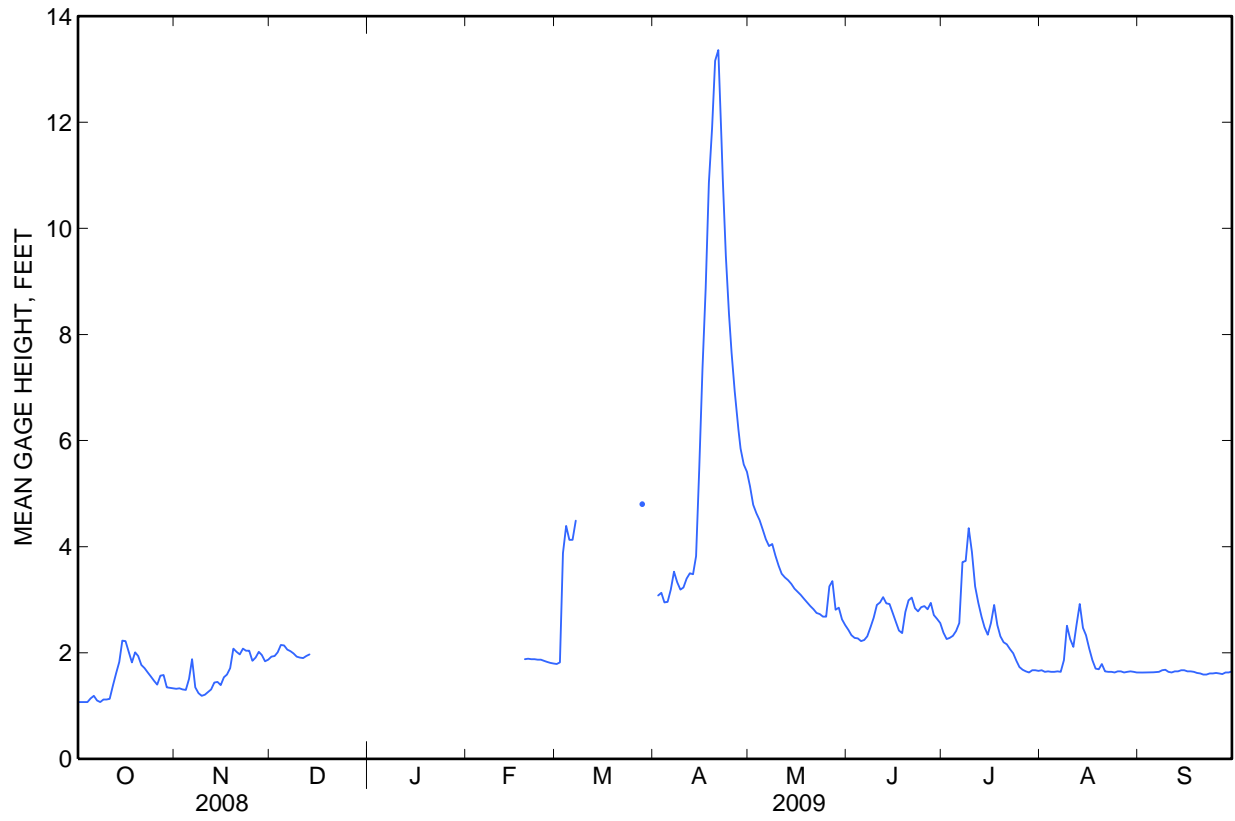


## 06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued

**GAGE HEIGHT, FEET**  
**WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1.07	1.32	1.93	---	---	1.79	---	5.14	2.43	2.38	1.67	1.63
2	1.07	1.33	1.94	---	---	1.82	3.08	4.79	2.33	2.26	1.64	1.63
3	1.07	1.31	2.01	---	---	3.88	3.13	4.63	2.28	2.28	1.65	1.63
4	1.07	1.30	2.15	---	---	4.39	2.95	4.50	2.27	2.32	1.64	1.63
5	1.14	1.51	2.14	---	---	4.13	2.96	4.32	2.22	2.41	1.64	1.63
6	1.19	1.88	2.06	---	---	4.13	3.19	4.14	2.24	2.56	1.65	1.64
7	1.10	1.35	2.03	---	---	4.49	3.53	4.01	2.31	3.71	1.64	1.64
8	1.07	1.24	1.99	---	---	---	3.33	4.05	2.48	3.73	1.86	1.67
9	1.12	1.19	1.93	---	---	---	3.19	3.83	2.66	4.35	2.51	1.68
10	1.12	1.21	1.91	---	---	---	3.23	3.64	2.90	3.90	2.26	1.64
11	1.13	1.26	1.90	---	---	---	3.40	3.49	2.95	3.25	2.11	1.63
12	1.38	1.31	1.94	---	---	---	3.50	3.42	3.05	2.94	2.53	1.65
13	1.61	1.44	1.97	---	---	---	3.48	3.37	2.93	2.68	2.92	1.65
14	1.83	1.45	---	---	---	---	3.82	3.30	2.92	2.48	2.47	1.67
15	2.23	1.39	---	---	---	---	5.49	3.21	2.75	2.34	2.33	1.67
16	2.22	1.54	---	---	---	---	7.35	3.15	2.58	2.56	2.08	1.65
17	2.02	1.59	---	---	---	---	8.87	3.09	2.42	2.90	1.86	1.65
18	1.82	1.71	---	---	---	---	10.86	3.02	2.37	2.52	1.70	1.64
19	2.01	2.08	---	---	1.88	---	11.89	2.95	2.77	2.31	1.69	1.62
20	1.94	2.02	---	---	1.89	---	13.16	2.88	2.99	2.20	1.79	1.61
21	1.77	1.97	---	---	1.88	---	13.36	2.82	3.04	2.16	1.65	1.59
22	1.71	2.08	---	---	1.88	---	11.65	2.75	2.84	2.07	1.64	1.59
23	1.63	2.04	---	---	1.87	---	9.95	2.73	2.78	1.99	1.64	1.61
24	1.55	2.04	---	---	1.87	---	8.74	2.68	2.86	1.85	1.63	1.61
25	1.47	1.85	---	---	1.85	---	7.83	2.68	2.88	1.73	1.65	1.62
26	1.40	1.91	---	---	1.83	---	7.04	3.25	2.82	1.68	1.65	1.61
27	1.57	2.02	---	---	1.81	---	6.37	3.35	2.94	1.65	1.63	1.60
28	1.58	1.96	---	---	1.80	4.80	5.85	2.81	2.71	1.63	1.64	1.63
29	1.35	1.84	---	---	---	---	5.55	2.85	2.64	1.67	1.65	1.63
30	1.34	1.87	---	---	---	---	5.41	2.63	2.56	1.67	1.64	1.65
31	1.33	---	---	---	---	---	---	2.52	---	1.66	1.63	---
<b>Mean</b>	1.48	1.63	---	---	---	---	---	3.42	2.66	2.45	1.86	1.63
<b>Max</b>	2.23	2.08	---	---	---	---	---	5.14	3.05	4.35	2.92	1.68
<b>Min</b>	1.07	1.19	---	---	---	---	---	2.52	2.22	1.63	1.63	1.59

06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued



06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1972 to current year.

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 1 of 4

[Remark codes: <, less than.]

Date	Time	Baro- metric pres- sure, mm Hg (00025)	Temper- ature, air, deg C (00020)	Instan- taneous dis- charge, ft <sup>3</sup> /s (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specif. conduc- tance, wat unf lab, μS/cm @ 25 degC (90095)	Specif- ic conduc- tance, wat unf lab, μS/cm @ 25 degC (00095)	Temper- ature, water, deg C (00010)	Dis- solved solids, sum of consti- tuents, mg/L (70301)	Dis- solved solids, water, tons/d (70302)	Hard- ness, water, mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
Apr 21...	1120	704	--	20,000	8.1	8.0	465	450	9.2	288	16,100	120	29.4
Sep 08...	1605	--	17.9	130	7.9	8.3	1,990	1,960	19.2	1,230	482	260	58.1

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 2 of 4

[Remark codes: <, less than.]

Date	Magnes- ium, water, fltrd, mg/L (00925)	Potas- sium, water, fltrd, mg/L (00935)	Sodium adsorp- tion ratio (00931)	Sodium frac- tion of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (90410)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L as SiO2 (00955)	Sulfate water, fltrd, mg/L (00945)	Alum- inum, water, fltrd, μg/L (01106)	Barium, water, fltrd, μg/L (01005)	Beryll- ium, water, fltrd, μg/L (01010)
Apr 21...	10.6	4.16	2.0	48	51.0	83	3.19	.19	5.80	144	<50	20	<1.00
Sep 08...	28.9	10.8	9.4	74	352	269	12.6	.35	9.77	738	90	80	<5.00

WATER-QUALITY DATA  
WATER YEAR OCTOBER 2008 TO SEPTEMBER 2009

Part 3 of 4

[Remark codes: <, less than.]

Date	Cadmium water, fltrd, μg/L (01025)	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)	Nickel, water, fltrd, μg/L (01065)	Silver, water, fltrd, μg/L (01075)	Thall- ium, water, fltrd, μg/L (01057)	Zinc, water, fltrd, μg/L (01090)	Anti- mony, water, fltrd, μg/L (01095)	Arsenic water, fltrd, μg/L (01000)	Boron, water, fltrd, μg/L (01020)
Apr 21...	<1.00	2.0	2.4	<50	<1.00	<10.0	2.5	<1.0	<1.00	<1.0	<1.00	1.2	87
Sep 08...	<5.00	<5.0	8.1	220	<5.00	15.0	7.1	<5.0	<5.00	<5.0	<5.00	<5.0	301

**06337000 LITTLE MISSOURI RIVER NEAR WATFORD CITY, ND—Continued**

**WATER-QUALITY  
DATA  
WATER YEAR  
OCTOBER 2008 TO  
SEPTEMBER 2009**

Part 4 of 4

[Remark codes:  
<, less than.]

Date	Selen- ium, water, fltrd, µg/L (01145)
Apr 21...	1.9
Sep 08...	<5.0