

Water-Data Report 2008

**05064500 RED RIVER OF THE NORTH AT HALSTAD, MN**

Upper Red Basin  
Elm-Marsh Subbasin

LOCATION.--Lat 47°21'07", long 96°50'36" referenced to North American Datum of 1927, in NE ¼ NW ¼ NW ¼ sec.25, T.145 N., R.49 W., Traill County, ND, Hydrologic Unit 09020107, on upstream side of highway bridge, 0.5 mi west of Halstad, MN, 2.5 mi downstream from Wild Rice River, and at mile 375.2.

DRAINAGE AREA.--21,800 mi<sup>2</sup>, including 3,800 mi<sup>2</sup> in closed basins.

**SURFACE-WATER RECORDS**

PERIOD OF RECORD.--DAILY DISCHARGE--April 1936 to June 1937 (no winter records), April 1942 to September 1960 (spring and summer months only), June 1961 to current year.

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

REVISED RECORDS.--WSP 1388: 1936, 1950. WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 826.65 ft above National Geodetic Vertical Datum of 1929. Prior to July 17, 1961, nonrecording gage at same site and datum.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of about 38.5 ft.

## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

**DISCHARGE, CUBIC FEET PER SECOND**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**  
**DAILY MEAN VALUES**

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	767	1,250	e584	e680	e595	e505	e2,570	3,540	2,040	3,740	1,650	557
2	838	1,120	e582	e700	e590	e500	e2,850	4,070	2,000	3,340	1,320	667
3	754	1,030	e580	e705	e585	e490	e3,130	4,840	2,000	3,010	1,110	1,400
4	668	979	e580	e710	e580	e480	e3,570	5,690	2,160	2,820	970	1,850
5	623	949	e580	e708	e575	e478	e4,410	6,520	2,410	2,680	869	1,800
6	588	935	e580	e700	e570	e475	e6,300	7,000	2,600	2,450	801	2,140
7	563	914	e580	e695	e565	e470	e7,870	6,760	5,320	2,230	776	2,090
8	576	895	e585	e695	e555	e470	e7,500	5,950	7,440	2,160	767	1,750
9	598	894	e590	e695	e545	e480	6,480	5,210	8,010	2,100	790	1,420
10	640	891	e592	e705	e530	e490	5,460	4,740	8,210	1,930	865	1,150
11	604	865	e595	e706	e528	e500	5,630	4,380	8,560	2,010	895	2,320
12	559	855	e605	e695	e526	e515	5,540	4,080	11,300	2,110	920	6,470
13	583	881	e600	e692	e524	e525	5,080	3,840	14,400	2,070	1,630	8,010
14	618	921	e600	e690	e523	e540	4,830	3,690	15,300	2,160	2,750	7,420
15	651	908	e610	e685	e510	e570	4,830	3,570	14,700	2,360	4,260	6,230
16	701	840	e630	e660	e518	e655	5,010	3,470	13,400	2,370	5,080	4,830
17	757	805	e660	e655	e517	e734	4,980	3,380	11,800	2,220	5,100	3,590
18	828	818	e665	e650	e516	e823	4,760	3,250	10,100	2,070	4,350	2,720
19	899	817	e670	e645	e515	e911	4,550	3,130	8,480	1,890	3,460	2,160
20	1,170	834	e660	e640	e520	e1,000	4,290	3,010	7,170	1,760	2,780	1,800
21	1,310	846	e660	e637	e525	e1,100	4,010	2,870	6,180	1,640	2,300	1,520
22	1,310	809	e670	e634	e535	e1,190	3,800	2,750	5,490	1,650	1,950	1,310
23	1,330	745	e685	e630	e530	e1,460	3,590	2,640	5,000	1,580	1,630	1,200
24	1,350	e620	e678	e630	e530	e1,740	3,420	2,470	4,600	1,500	1,310	1,140
25	1,320	e508	e672	e628	e530	e1,870	3,290	2,300	4,280	1,430	1,030	1,020
26	1,280	e489	e665	e625	e525	e1,950	3,200	2,230	4,060	1,360	830	928
27	1,250	e525	e655	e620	e520	e2,030	3,200	2,130	4,120	1,260	705	864
28	1,300	e580	e650	e615	e515	e2,090	3,230	2,010	4,400	1,190	635	831
29	1,430	e580	e640	e610	e510	e2,160	3,190	1,910	4,300	1,530	604	951
30	1,480	e600	e645	e605	---	e2,230	3,250	1,890	4,120	2,600	563	1,360
31	1,410	---	e655	e600	---	e2,380	---	2,010	---	2,160	537	---
<b>Total</b>	28,755	24,703	19,403	20,545	15,607	31,811	133,820	115,330	203,950	65,380	53,237	71,498
<b>Mean</b>	928	823	626	663	538	1,026	4,461	3,720	6,798	2,109	1,717	2,383
<b>Max</b>	1,480	1,250	685	710	595	2,380	7,870	7,000	15,300	3,740	5,100	8,010
<b>Min</b>	559	489	580	600	510	470	2,570	1,890	2,000	1,190	537	557
<b>Ac-ft</b>	57,040	49,000	38,490	40,750	30,960	63,100	265,400	228,800	404,500	129,700	105,600	141,800

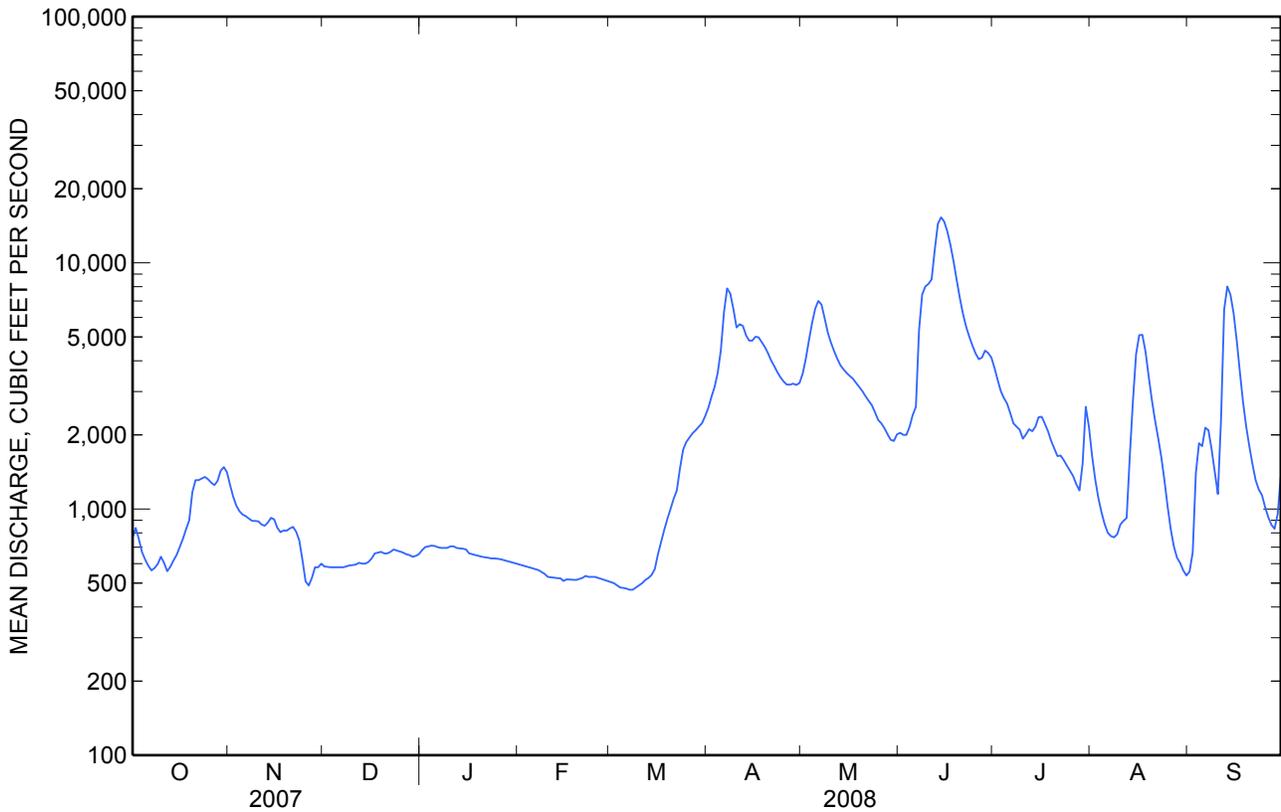
## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Mean</b>	951	1,002	706	569	590	2,625	8,134	4,082	3,702	3,108	1,271	986
<b>Max</b>	3,020	5,707	2,413	1,875	1,952	9,444	38,460	15,570	14,760	20,060	11,700	4,705
<b>(WY)</b>	(2005)	(2001)	(2001)	(2006)	(1998)	(1995)	(1997)	(1997)	(2007)	(1975)	(1993)	(1999)
<b>Min</b>	61.5	92.3	51.2	32.1	45.9	249	705	449	242	153	59.5	38.4
<b>(WY)</b>	(1977)	(1977)	(1977)	(1977)	(1977)	(1962)	(1981)	(1977)	(1977)	(1988)	(1977)	(1976)

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1961 - 2008	
<b>Annual total</b>	1,362,849		784,039			
<b>Annual mean</b>	3,734		2,142		2,324	
<b>Highest annual mean</b>					6,028	1997
<b>Lowest annual mean</b>					214	1977
<b>Highest daily mean</b>	24,400	Jun 20	15,300	Jun 14	69,900	Apr 19, 1997
<b>Lowest daily mean</b>	479	Jan 19	470	Mar 7	10	Sep 2, 1976
<b>Annual seven-day minimum</b>	482	Feb 12	478	Mar 3	17	Aug 28, 1976
<b>Maximum peak flow</b>			15,300	Jun 14	71,500	Apr 19, 1997
<b>Maximum peak stage</b>			21.69	Jun 14	40.74	Apr 19, 1997
<b>Instantaneous low flow</b>					5.4	Oct 8, 1936
<b>Annual runoff (ac-ft)</b>	2,703,000		1,555,000		1,684,000	
<b>10 percent exceeds</b>	11,100		5,030		5,230	
<b>50 percent exceeds</b>	865		1,120		948	
<b>90 percent exceeds</b>	548		536		247	

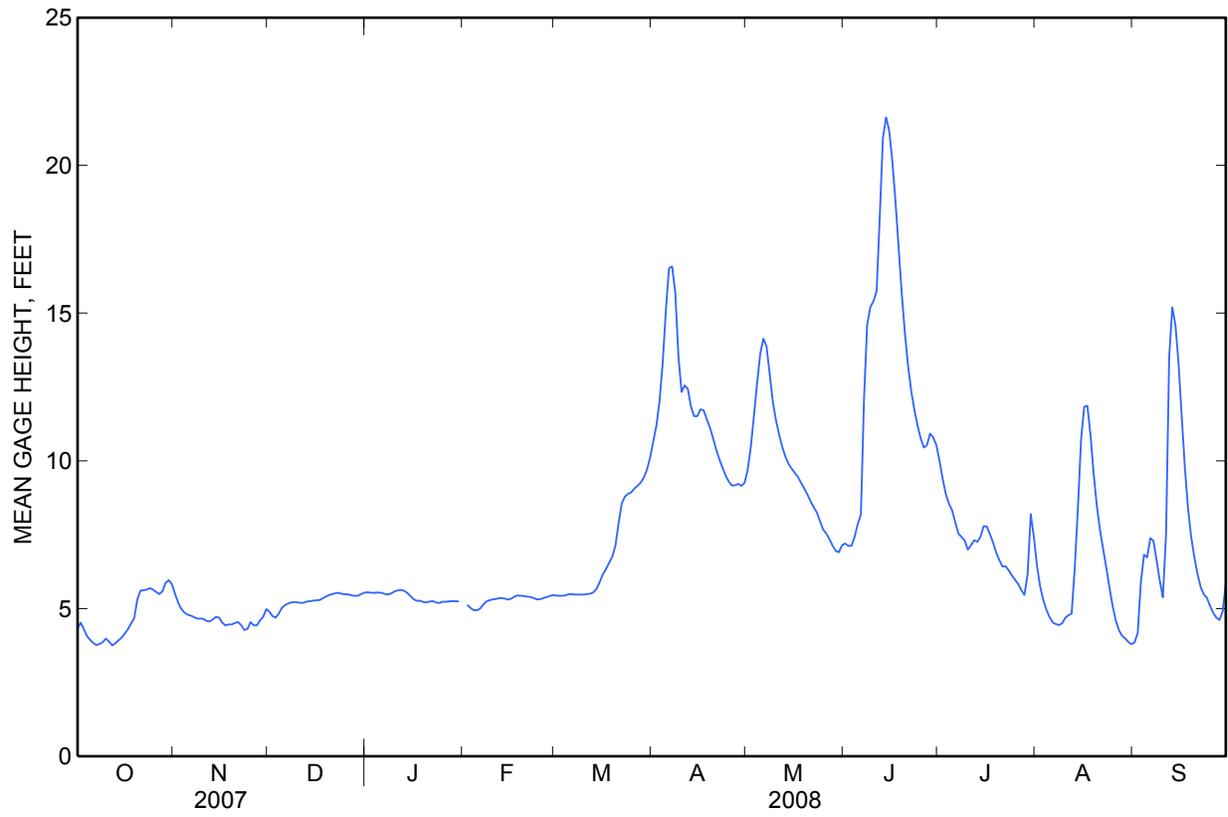


## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

**GAGE HEIGHT, FEET**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**  
**DAILY MEAN VALUES**

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	4.33	5.49	4.89	5.55	---	5.44	10.65	9.68	7.20	9.99	6.43	3.85
2	4.52	5.19	4.74	5.54	5.11	5.43	11.19	10.46	7.12	9.39	5.74	4.17
3	4.30	4.98	4.69	5.53	5.01	5.43	12.02	11.51	7.12	8.87	5.28	5.88
4	4.06	4.86	4.84	5.54	4.94	5.44	13.30	12.61	7.42	8.55	4.95	6.82
5	3.94	4.79	5.03	5.54	4.94	5.48	15.08	13.62	7.86	8.32	4.70	6.73
6	3.83	4.76	5.12	5.52	5.00	5.49	16.52	14.13	8.18	7.92	4.53	7.38
7	3.76	4.71	5.17	5.48	5.14	5.47	16.58	13.88	12.10	7.54	4.47	7.29
8	3.80	4.66	5.21	5.48	5.24	5.47	15.69	12.94	14.60	7.42	4.44	6.63
9	3.86	4.66	5.22	5.53	5.28	5.47	13.54	12.00	15.20	7.30	4.50	5.95
10	3.98	4.65	5.21	5.59	5.31	5.47	12.33	11.38	15.40	6.99	4.69	5.38
11	3.88	4.58	5.19	5.62	5.32	5.49	12.55	10.89	15.74	7.14	4.77	7.50
12	3.75	4.56	5.20	5.63	5.35	5.50	12.43	10.47	18.26	7.31	4.83	13.51
13	3.82	4.63	5.24	5.59	5.35	5.55	11.83	10.14	20.92	7.26	6.38	15.19
14	3.92	4.72	5.25	5.51	5.33	5.67	11.51	9.90	21.62	7.42	8.42	14.59
15	4.01	4.69	5.27	5.40	5.30	5.90	11.51	9.73	21.18	7.78	10.72	13.26
16	4.15	4.52	5.28	5.30	5.34	6.16	11.74	9.59	20.14	7.78	11.83	11.49
17	4.30	4.43	5.29	5.26	5.41	6.34	11.71	9.45	18.78	7.52	11.86	9.75
18	4.49	4.46	5.35	5.26	5.44	6.55	11.41	9.25	17.22	7.24	10.86	8.38
19	4.67	4.46	5.41	5.22	5.43	6.76	11.13	9.06	15.66	6.90	9.56	7.42
20	5.31	4.51	5.46	5.21	5.42	7.14	10.77	8.86	14.31	6.64	8.48	6.74
21	5.61	4.54	5.49	5.24	5.40	7.90	10.38	8.63	13.21	6.42	7.67	6.17
22	5.62	4.44	5.52	5.25	5.39	8.56	10.06	8.43	12.36	6.43	7.02	5.73
23	5.64	4.27	5.53	5.20	5.35	8.79	9.77	8.25	11.73	6.29	6.39	5.48
24	5.69	4.31	5.50	5.19	5.31	8.88	9.50	7.96	11.20	6.12	5.72	5.36
25	5.64	4.54	5.48	5.23	5.31	8.93	9.30	7.67	10.76	5.97	5.10	5.08
26	5.56	4.43	5.48	5.23	5.35	9.06	9.16	7.54	10.45	5.83	4.60	4.85
27	5.49	4.43	5.45	5.24	5.38	9.15	9.17	7.35	10.53	5.62	4.27	4.69
28	5.59	4.60	5.43	5.25	5.42	9.26	9.22	7.13	10.92	5.46	4.08	4.61
29	5.87	4.72	5.43	5.25	5.45	9.43	9.15	6.95	10.79	6.17	3.99	4.90
30	5.96	4.98	5.48	5.24	---	9.70	9.25	6.90	10.53	8.19	3.87	5.83
31	5.82	---	5.53	---	---	10.11	---	7.14	---	7.41	3.79	---
<b>Mean</b>	4.68	4.65	5.27	---	---	6.95	11.62	9.79	13.28	7.26	6.26	7.35
<b>Max</b>	5.96	5.49	5.53	---	---	10.11	16.58	14.13	21.62	9.99	11.86	15.19
<b>Min</b>	3.75	4.27	4.69	---	---	5.43	9.15	6.90	7.12	5.46	3.79	3.85

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued



## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1961-67, 1972 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1997 to current year.

SPECIFIC CONDUCTANCE: October 1997 to current year.

INSTRUMENTATION.--Water-quality monitor since October 1997.

REMARKS.--Records rated as follows:

WATER TEMPERATURE: Rated good.

SPECIFIC CONDUCTANCE: Rated good: October 1-July 31, August 15-September 30. Rated fair: August 1-11. Rated poor: August 12-14.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum recorded, 30.8°C, August 1, 2007; minimum recorded, -0.4°C, February 2 and March 2, 2004.

SPECIFIC CONDUCTANCE: Maximum recorded, 1,340 microsiemens, March 27-28, 2006; minimum recorded, 235 microsiemens, June 21, 2000.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 26.9°C, August 1; minimum recorded, -0.2°C, November 23, 27-28.

SPECIFIC CONDUCTANCE: Maximum recorded, 978 microsiemens, June 25; minimum recorded, 249 microsiemens, September 12.

## WATER-QUALITY DATA

## WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 1 of 3

[Remark codes: <, less than.]

Date	Time	Instantaneous discharge, ft <sup>3</sup> /s (00061)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)	Specific conductance, wat unfltrd lab, μS/cm 25 degC (90095)	Specific conductance, wat unfltrd lab, 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)	Potassium, water, fltrd, mg/L (00935)	Sodium adsorption ratio (00931)
Apr 14...	1040	4,940	8.1	7.5	643	645	9.2	3.7	290	62.6	33.4	6.10	.6
Aug 08...	1000	766	8.4	8.4	673	677	18.4	22.9	280	56.3	33.4	7.41	.7

## WATER-QUALITY DATA

## WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 2 of 3

[Remark codes: <, less than.]

Date	Sodium fraction of cations percent (00932)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO <sub>3</sub> (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L as SiO <sub>2</sub> (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue water, dis-solved, tons/d (70302)	Aluminum, water, fltrd, μg/L (01106)	Antimony, water, fltrd, μg/L (01095)	Arsenic, water, fltrd, μg/L (01000)	Barium, water, fltrd, μg/L (01005)
Apr 14...	14	22.5	180	17.3	.18	15.7	128	399	5,260	<50	<1.00	3.9	44
Aug 08...	18	27.9	225	25.0	.21	17.4	99.8	417	833	<50	<1.00	7.1	58

## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

**WATER-QUALITY DATA**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Part 3 of 3

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

Date	Beryllium, water, fltrd, µg/L (01010)	Boron, water, fltrd, µg/L (01020)	Cadmium, water, fltrd, µg/L (01025)	Chromium, water, fltrd, µg/L (01030)	Copper, water, fltrd, µg/L (01040)	Iron, water, fltrd, µg/L (01046)	Lead, water, fltrd, µg/L (01049)	Manganese, water, fltrd, µg/L (01056)	Nickel, water, fltrd, µg/L (01065)	Selenium, water, fltrd, µg/L (01145)	Silver, water, fltrd, µg/L (01075)	Thallium, water, fltrd, µg/L (01057)	Zinc, water, fltrd, µg/L (01090)
Apr 14...	<1.00	52	<1.00	2.1	1.8	<50	<1.00	<10.0	2.8	1.1	<1.0	<1.00	<1.0
Aug 08...	<1.00	80	<1.00	<1.0	<1.0	<50	<1.00	<10.0	3.9	<1.0	<1.0	<1.00	1.2

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	17.2	16.0	16.7	7.0	6.1	6.6	---	---	---	---	---	---
2	16.8	15.8	16.3	6.6	5.8	6.2	---	---	---	---	---	---
3	15.8	14.5	15.2	5.8	4.8	5.2	---	---	---	---	---	---
4	15.4	14.5	14.9	5.9	4.3	5.0	---	---	---	---	---	---
5	17.3	14.2	15.4	5.9	3.5	4.3	---	---	---	---	---	---
6	17.7	15.1	16.7	3.5	2.8	3.1	---	---	---	---	---	---
7	17.8	16.3	16.9	3.0	1.8	2.3	---	---	---	---	---	---
8	16.8	14.8	15.9	2.0	1.7	1.9	---	---	---	---	---	---
9	15.4	12.7	13.4	3.0	2.0	2.6	---	---	---	---	---	---
10	13.0	11.4	11.8	3.5	2.0	2.7	---	---	---	---	---	---
11	12.2	10.8	11.4	3.8	3.0	3.4	---	---	---	---	---	---
12	11.9	10.6	11.4	3.7	2.7	3.2	---	---	---	---	---	---
13	12.2	10.7	11.5	3.8	3.3	3.5	---	---	---	---	---	---
14	11.7	10.9	11.3	3.4	2.8	3.1	---	---	---	---	---	---
15	11.9	10.5	11.1	2.8	2.0	2.4	---	---	---	---	---	---
16	13.3	11.9	12.7	2.5	1.9	2.2	---	---	---	---	---	---
17	13.5	12.0	13.1	2.1	1.6	1.8	---	---	---	---	---	---
18	14.0	13.4	13.7	3.7	1.4	2.4	---	---	---	---	---	---
19	13.9	11.3	12.5	4.1	2.2	2.8	---	---	---	---	---	---
20	11.7	10.3	11.0	2.2	1.5	2.0	---	---	---	---	---	---
21	11.7	10.1	10.9	1.5	0.3	0.9	---	---	---	---	---	---
22	10.1	9.1	9.7	0.3	-0.1	0.1	---	---	---	---	---	---
23	9.7	9.0	9.4	0.6	-0.2	0.2	---	---	---	---	---	---
24	9.1	8.3	8.8	0.3	-0.1	0.0	---	---	---	---	---	---
25	9.2	8.0	8.6	-0.1	-0.1	-0.1	---	---	---	---	---	---
26	8.9	8.0	8.4	---	---	---	---	---	---	---	---	---
27	8.1	7.3	7.7	---	---	---	---	---	---	---	---	---
28	7.4	6.5	7.0	---	---	---	---	---	---	---	---	---
29	7.4	6.5	6.9	---	---	---	---	---	---	---	---	---
30	8.7	6.9	7.5	---	---	---	---	---	---	---	---	---
31	8.7	7.0	7.5	---	---	---	---	---	---	---	---	---
Month	17.8	6.5	11.8	---	---	---	---	---	---	---	---	---

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

TEMPERATURE, WATER, DEGREES CELSIUS  
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	---	---	---	8.3	7.7	7.9
2	---	---	---	---	---	---	---	---	---	8.3	7.5	7.9
3	---	---	---	---	---	---	---	---	---	8.8	7.4	8.1
4	---	---	---	---	---	---	---	---	---	9.5	8.0	8.7
5	---	---	---	---	---	---	---	---	---	9.4	8.8	9.1
6	---	---	---	---	---	---	---	---	---	9.4	8.7	9.1
7	---	---	---	---	---	---	---	---	---	10.4	9.3	9.7
8	---	---	---	---	---	---	1.1	-0.1	0.3	11.2	10.3	10.7
9	---	---	---	---	---	---	---	---	---	12.1	10.9	11.5
10	---	---	---	---	---	---	---	---	---	12.3	11.1	11.6
11	---	---	---	---	---	---	---	---	---	12.0	10.7	11.4
12	---	---	---	---	---	---	2.1	1.0	1.5	11.8	11.2	11.5
13	---	---	---	---	---	---	3.2	1.7	2.4	12.7	11.1	11.8
14	---	---	---	---	---	---	5.3	3.0	4.1	12.0	10.5	11.3
15	---	---	---	---	---	---	6.6	5.1	5.7	13.3	11.8	12.5
16	---	---	---	---	---	---	---	---	---	14.2	13.0	13.6
17	---	---	---	---	---	---	7.6	6.7	7.1	14.3	13.7	14.0
18	---	---	---	---	---	---	8.7	7.1	7.8	14.7	13.6	14.2
19	---	---	---	---	---	---	10.0	8.6	9.2	14.6	14.2	14.4
20	---	---	---	---	---	---	---	---	---	15.0	13.8	14.4
21	---	---	---	---	---	---	---	---	---	15.6	14.3	14.9
22	---	---	---	---	---	---	10.4	9.5	9.9	16.3	14.9	15.6
23	---	---	---	---	---	---	10.1	9.6	9.9	16.7	15.6	16.1
24	---	---	---	---	---	---	---	---	---	17.2	15.8	16.3
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	18.2	16.1	17.1
27	---	---	---	---	---	---	6.8	5.5	6.2	16.5	15.4	16.0
28	---	---	---	---	---	---	7.6	6.2	6.9	17.0	15.3	16.2
29	---	---	---	---	---	---	8.5	7.0	7.7	---	---	---
30	---	---	---	---	---	---	8.5	7.8	8.2	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

**TEMPERATURE, WATER, DEGREES CELSIUS**  
**WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	19.4	17.8	18.6	24.1	22.7	23.3	26.9	25.0	25.9	---	---	---
2	19.0	18.3	18.6	---	---	---	26.2	25.1	25.5	---	---	---
3	---	---	---	---	---	---	26.2	24.1	25.1	21.0	19.5	20.3
4	---	---	---	---	---	---	25.8	24.5	25.0	20.2	18.4	19.1
5	---	---	---	24.4	23.0	23.6	26.0	23.6	24.7	18.4	17.7	18.0
6	---	---	---	25.4	23.9	24.7	26.4	24.0	25.2	18.5	17.1	17.8
7	---	---	---	---	---	---	26.5	24.1	25.3	18.4	17.6	17.9
8	---	---	---	---	---	---	25.6	23.6	24.2	17.7	16.9	17.3
9	---	---	---	25.1	22.9	23.9	24.9	22.6	23.7	17.0	16.0	16.6
10	---	---	---	---	---	---	24.3	23.0	23.5	16.6	16.0	16.4
11	---	---	---	---	---	---	23.3	22.5	22.8	16.5	16.0	16.3
12	---	---	---	24.6	23.1	23.7	23.3	22.1	22.7	16.7	15.9	16.2
13	---	---	---	23.6	22.2	22.9	23.7	22.0	22.9	16.7	16.3	16.4
14	---	---	---	23.9	22.2	23.1	23.4	22.3	22.9	16.7	16.1	16.3
15	---	---	---	24.5	23.3	23.8	23.3	22.6	22.9	16.1	15.3	15.7
16	17.9	16.3	17.0	---	---	---	22.8	21.9	22.4	16.0	15.0	15.5
17	18.0	16.8	17.3	---	---	---	23.5	22.4	22.9	16.5	15.5	16.0
18	19.3	17.8	18.5	24.3	23.1	23.8	24.0	22.9	23.4	17.2	16.1	16.7
19	20.4	19.1	19.7	24.2	23.5	23.8	24.6	23.2	23.9	18.1	16.8	17.4
20	21.3	20.1	20.6	24.6	23.3	24.1	24.6	23.7	24.2	18.0	17.2	17.6
21	21.8	20.8	21.3	---	---	---	24.4	23.4	23.9	18.3	17.1	17.7
22	22.3	21.0	21.6	26.1	24.4	25.2	23.9	22.6	23.3	18.7	17.7	18.2
23	22.6	21.6	22.1	25.7	24.2	24.9	22.6	21.7	22.2	19.1	18.3	18.6
24	23.4	22.1	22.7	25.8	23.7	24.5	22.6	20.8	21.8	18.7	17.5	18.2
25	24.0	22.9	23.5	---	---	---	22.6	20.6	21.7	18.1	17.2	17.7
26	---	---	---	---	---	---	22.8	20.7	21.7	18.0	17.2	17.7
27	---	---	---	26.7	24.9	25.7	22.6	21.0	21.8	17.2	15.7	16.5
28	---	---	---	26.0	24.8	25.4	22.4	20.6	21.5	16.7	15.7	16.2
29	---	---	---	25.8	24.3	25.2	22.7	20.2	21.5	16.3	14.9	15.4
30	23.1	21.8	22.4	24.9	23.0	23.9	23.0	20.3	21.7	15.6	14.3	14.9
31	---	---	---	26.3	24.4	25.2	24.2	21.2	22.6	---	---	---
Month	---	---	---	---	---	---	26.9	20.2	23.3	---	---	---

## 05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
<b>1</b>	920	888	907	799	779	782	---	---	---	---	---	---
<b>2</b>	901	842	867	804	790	794	---	---	---	---	---	---
<b>3</b>	862	813	834	853	785	813	---	---	---	---	---	---
<b>4</b>	826	810	820	881	853	871	---	---	---	---	---	---
<b>5</b>	835	772	807	928	881	915	---	---	---	---	---	---
<b>6</b>	834	768	800	948	924	939	---	---	---	---	---	---
<b>7</b>	801	765	781	944	924	934	---	---	---	---	---	---
<b>8</b>	765	718	736	946	927	938	---	---	---	---	---	---
<b>9</b>	734	720	728	937	887	905	---	---	---	---	---	---
<b>10</b>	769	705	741	919	866	900	---	---	---	---	---	---
<b>11</b>	762	702	722	866	841	853	---	---	---	---	---	---
<b>12</b>	706	671	692	850	793	822	---	---	---	---	---	---
<b>13</b>	735	670	705	827	803	811	---	---	---	---	---	---
<b>14</b>	786	720	749	828	814	822	---	---	---	---	---	---
<b>15</b>	796	764	783	855	823	833	---	---	---	---	---	---
<b>16</b>	775	727	745	856	826	839	---	---	---	---	---	---
<b>17</b>	768	727	738	842	836	839	---	---	---	---	---	---
<b>18</b>	738	726	732	843	743	803	---	---	---	---	---	---
<b>19</b>	809	727	775	835	768	814	---	---	---	---	---	---
<b>20</b>	871	776	815	868	835	857	---	---	---	---	---	---
<b>21</b>	871	759	796	889	868	877	---	---	---	---	---	---
<b>22</b>	808	715	760	926	889	911	---	---	---	---	---	---
<b>23</b>	856	802	825	918	877	902	---	---	---	---	---	---
<b>24</b>	856	812	834	906	895	899	---	---	---	---	---	---
<b>25</b>	812	776	794	922	901	913	---	---	---	---	---	---
<b>26</b>	782	775	779	901	761	866	---	---	---	---	---	---
<b>27</b>	776	762	768	897	858	882	---	---	---	---	---	---
<b>28</b>	777	750	766	907	884	893	---	---	---	---	---	---
<b>29</b>	792	757	781	---	---	---	---	---	---	---	---	---
<b>30</b>	792	743	771	---	---	---	---	---	---	---	---	---
<b>31</b>	795	765	785	---	---	---	---	---	---	---	---	---
<b>Month</b>	920	670	779	---	---	---	---	---	---	---	---	---

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	---	---	---	---	---	---	724	713	717
2	---	---	---	---	---	---	---	---	---	722	712	717
3	---	---	---	---	---	---	---	---	---	722	715	719
4	---	---	---	---	---	---	---	---	---	727	697	717
5	---	---	---	---	---	---	---	---	---	740	720	729
6	---	---	---	---	---	---	---	---	---	722	536	602
7	---	---	---	---	---	---	---	---	---	630	546	587
8	---	---	---	---	---	---	665	633	651	693	630	664
9	---	---	---	---	---	---	---	---	---	725	693	714
10	---	---	---	---	---	---	---	---	---	755	712	734
11	---	---	---	---	---	---	---	---	---	762	755	759
12	---	---	---	---	---	---	617	609	613	774	756	763
13	---	---	---	---	---	---	616	611	613	773	743	764
14	---	---	---	---	---	---	618	612	615	781	772	777
15	---	---	---	---	---	---	621	614	618	784	777	781
16	---	---	---	---	---	---	---	---	---	786	779	783
17	---	---	---	---	---	---	637	631	635	789	775	781
18	---	---	---	---	---	---	641	630	637	801	789	795
19	---	---	---	---	---	---	654	630	642	806	797	802
20	---	---	---	---	---	---	---	---	---	806	802	804
21	---	---	---	---	---	---	---	---	---	803	795	799
22	---	---	---	---	---	---	716	692	711	806	797	802
23	---	---	---	---	---	---	710	687	696	810	787	800
24	---	---	---	---	---	---	---	---	---	789	778	784
25	---	---	---	---	---	---	---	---	---	793	726	774
26	---	---	---	---	---	---	---	---	---	795	769	786
27	---	---	---	---	---	---	766	743	753	818	733	767
28	---	---	---	---	---	---	767	738	746	738	719	727
29	---	---	---	---	---	---	763	736	746	---	---	---
30	---	---	---	---	---	---	741	720	727	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

05064500 RED RIVER OF THE NORTH AT HALSTAD, MN—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS  
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	705	641	664	872	815	842	545	508	534	---	---	---
2	673	650	661	---	---	---	548	525	536	---	---	---
3	---	---	---	---	---	---	571	548	558	599	575	593
4	---	---	---	844	838	842	578	570	574	575	459	493
5	---	---	---	838	819	828	591	578	580	490	459	473
6	---	---	---	849	811	833	636	589	607	531	490	513
7	---	---	---	---	---	---	598	590	594	535	531	532
8	---	---	---	870	833	854	598	586	592	543	532	539
9	---	---	---	833	766	792	594	584	590	550	540	543
10	---	---	---	---	---	---	592	581	587	600	550	573
11	---	---	---	---	---	---	611	579	584	600	449	571
12	---	---	---	732	662	704	625	581	597	449	249	330
13	---	---	---	710	655	685	584	532	574	305	278	286
14	---	---	---	733	679	713	532	487	506	360	292	329
15	---	---	---	680	667	674	659	516	558	409	353	375
16	691	605	646	---	---	---	529	350	387	472	409	439
17	735	691	717	---	---	---	406	373	394	503	472	486
18	793	735	775	780	701	734	418	404	408	540	503	523
19	827	793	811	774	754	766	442	418	432	576	540	563
20	865	826	847	754	705	722	462	442	448	617	576	596
21	889	865	876	---	---	---	493	462	476	666	617	638
22	904	889	897	736	679	707	513	493	502	704	666	690
23	897	876	885	679	643	662	543	513	527	711	697	703
24	924	894	908	655	643	650	571	543	562	727	706	714
25	978	924	958	649	641	644	591	571	583	787	726	746
26	---	---	---	672	644	653	596	585	591	743	716	726
27	---	---	---	682	653	667	595	587	591	750	737	744
28	---	---	---	654	643	651	610	595	604	745	735	740
29	---	---	---	643	532	611	631	610	624	753	733	741
30	885	872	875	532	305	355	648	631	636	756	670	727
31	---	---	---	508	339	436	656	641	650	---	---	---
Month	---	---	---	---	---	---	659	350	548	---	---	---