

Water-Data Report 2013

06465500 Niobrara River near Verdel, Nebr.

Niobrara Basin
Lower Niobrara Subbasin

LOCATION.--Lat 42°44'23", long 98°13'22" referenced to North American Datum of 1983, in NW ¼ NW ¼ sec.23, T.32 N., R.8 W., Knox County, NE, Hydrologic Unit 10150007, on right bank at downstream side of county road bridge, 6.6 mi south of Verdel, 7.5 mi upstream from Verdigre Creek, and at mile 14.8.

DRAINAGE AREA.--11,580 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--DAILY DISCHARGE--April 1938 to May 1940, June 1958 to current year.

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2009 to current year.

REVISED RECORDS.--WDR NE-94-1: Drainage area.

GAGE.--Water-stage recorder with satellite telemetry. Datum of gage is 1,312.12 ft above sea level. Apr. 25, 1938 to June 16, 1939, non-recording gage at site 2,600 ft downstream; June 17, 1939 to June 13, 1940, non-recording gage 2,850 ft downstream; and June 14, 1958 to July 24, 1985, water-stage recorder at site 2,600 ft downstream, all at datum 4.00 ft lower.

REMARKS.--Records fair because of the difficulty of determining bed regime changes; except for estimated daily discharges, which are poor. Discharge measurements generally made every six weeks. Natural flow of stream affected by irrigation and power developments.

06465500 Niobrara River near Verdel, Nebr.—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1,110	1,600	1,860	e1,210	e1,560	e1,900	1,870	2,910	e2,760	1,450	1,280	962
2	1,060	1,530	1,970	e1,320	e1,620	e2,030	1,500	2,750	e2,600	1,440	1,480	941
3	1,090	1,490	2,010	e1,450	e1,860	e2,170	1,620	2,110	e2,250	1,370	e1,520	950
4	1,570	1,350	1,980	e1,580	e2,220	e2,350	2,160	1,740	e2,440	1,290	e1,600	965
5	1,370	1,280	1,900	e1,630	e2,530	1,780	2,160	1,760	e2,390	1,220	e1,470	958
6	1,190	1,160	1,620	e1,670	e2,630	1,420	2,210	1,640	e2,340	1,160	e1,580	963
7	1,260	1,110	1,360	e1,630	e2,530	1,720	1,930	1,740	e2,000	1,170	e1,660	948
8	1,410	1,240	1,470	e1,700	e2,420	2,210	1,840	1,630	e1,870	1,250	e1,550	949
9	1,420	1,340	1,540	e1,750	e2,530	2,690	1,900	1,720	2,690	1,340	e1,420	935
10	1,390	1,590	e1,380	e1,820	e2,650	2,490	1,640	1,920	1,970	1,350	e1,310	903
11	1,460	1,700	e1,440	e1,970	e2,210	2,050	2,260	1,750	1,780	1,350	e1,310	908
12	1,270	1,770	e1,870	e1,670	e2,090	1,730	2,670	1,870	2,120	1,310	e1,210	970
13	1,460	1,740	e1,720	e1,370	e2,090	1,460	2,960	1,660	2,460	1,280	e1,310	1,010
14	1,500	1,540	e1,300	e1,080	e2,290	1,530	2,990	1,820	2,590	1,390	e1,380	1,010
15	1,600	1,540	e1,380	e980	e2,210	e1,780	3,280	1,760	3,090	1,490	e1,790	975
16	1,640	1,740	e1,400	e1,030	e1,950	e2,160	3,130	1,910	2,590	1,440	e1,620	1,000
17	1,550	1,810	e1,380	e1,470	e2,180	e2,250	3,510	2,400	2,100	1,700	1,500	1,080
18	999	1,630	e1,460	e1,870	e2,400	e2,120	3,530	2,370	1,600	1,400	1,380	1,140
19	991	1,820	e1,500	e2,330	e1,930	e1,960	3,270	2,650	1,430	1,360	1,320	1,070
20	948	1,990	e1,360	e2,040	e1,350	e1,910	3,070	3,090	1,400	1,300	1,300	e1,120
21	1,030	1,920	e1,110	e1,820	e1,160	e1,780	3,020	3,580	1,320	1,340	1,310	e1,180
22	1,010	1,870	e1,180	e1,620	e1,300	e1,610	3,020	3,100	1,730	1,350	1,410	e1,090
23	990	1,650	e1,060	e1,580	e1,440	1,530	3,130	2,830	2,140	1,300	1,780	e1,110
24	1,120	1,650	e960	e1,380	e1,830	1,500	2,930	2,370	2,550	1,290	1,520	e1,150
25	e1,230	1,720	e900	e1,460	e2,300	1,950	2,640	2,560	2,840	1,310	1,310	e1,150
26	e1,350	1,740	e900	e1,770	e2,100	2,090	2,880	2,710	2,320	1,280	1,180	e1,180
27	e1,300	1,720	e984	e1,950	e1,980	1,940	2,980	3,280	1,970	1,250	1,050	e1,320
28	e1,260	1,910	e1,080	e2,110	e1,950	1,540	2,820	3,890	1,790	1,220	1,010	1,800
29	e1,230	1,940	e1,010	e2,100	---	1,620	2,780	3,030	1,600	1,220	1,020	1,800
30	1,200	1,950	e970	e1,990	---	1,870	2,560	3,590	1,500	1,260	993	1,300
31	1,230	---	e1,100	e1,770	---	2,010	---	e2,900	---	1,250	973	---
Total	39,238	49,040	43,154	51,120	57,310	59,150	78,260	75,040	64,230	41,130	42,546	32,837
Mean	1,266	1,635	1,392	1,649	2,047	1,908	2,609	2,421	2,141	1,327	1,372	1,095
Max	1,640	1,990	2,010	2,330	2,650	2,690	3,530	3,890	3,090	1,700	1,790	1,800
Min	948	1,110	900	980	1,160	1,420	1,500	1,630	1,320	1,160	973	903
Ac-ft	77,830	97,270	85,600	101,400	113,700	117,300	155,200	148,800	127,400	81,580	84,390	65,130

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	1,454	1,552	1,446	1,506	1,944	2,574	2,383	2,223	2,017	1,440	1,191	1,276
Max	2,480	2,762	2,118	2,372	3,557	4,425	4,693	5,290	6,165	5,370	2,108	2,094
(WY)	(1996)	(1999)	(1997)	(2006)	(1997)	(1960)	(1995)	(1995)	(2010)	(1962)	(2009)	(1986)
Min	1,009	943	787	706	941	1,444	1,282	1,228	1,044	551	644	704
(WY)	(1977)	(1977)	(1969)	(1940)	(1939)	(1981)	(1939)	(1969)	(1976)	(1974)	(1971)	(1939)

06465500 Niobrara River near Verdel, Nebr.—Continued

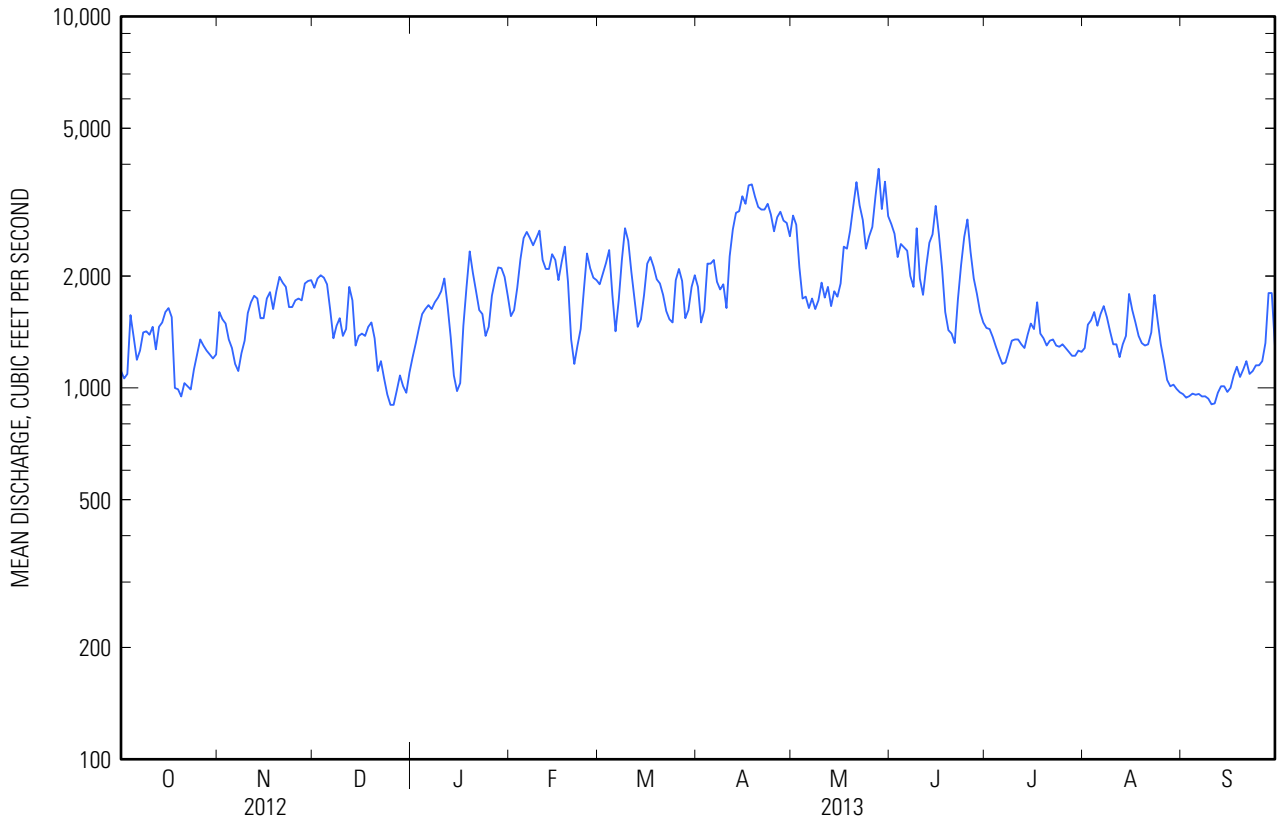
SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1938 - 2013	
Annual total	660,638		633,055			
Annual mean	1,805		1,734		1,757	
Highest annual mean					2,730	2010
Lowest annual mean					1,269	1976
Highest daily mean	4,510	Apr 28	3,890	May 28	25,100	Mar 27, 1960
Lowest daily mean	689	Aug 1	900	Dec 25	104	Nov 30, 1960
Annual seven-day minimum	722	Jul 26	938	Sep 5	210	Nov 27, 1976
Maximum peak flow			^a 4,560 May 28		^b 39,000 Mar 27, 1960	
Maximum peak stage			^c 5.14 Feb 24		^c 7.92 Feb 22, 1997	
Annual runoff (ac-ft)	1,310,000		1,256,000		1,273,000	
10 percent exceeds	2,950		2,640		2,760	
50 percent exceeds	1,670		1,620		1,550	
90 percent exceeds	885		1,060		914	

^a Gage height, 3.80 ft.

^b Gage height, 6.10 ft, at present datum and at site then in use.

^c Backwater from ice.

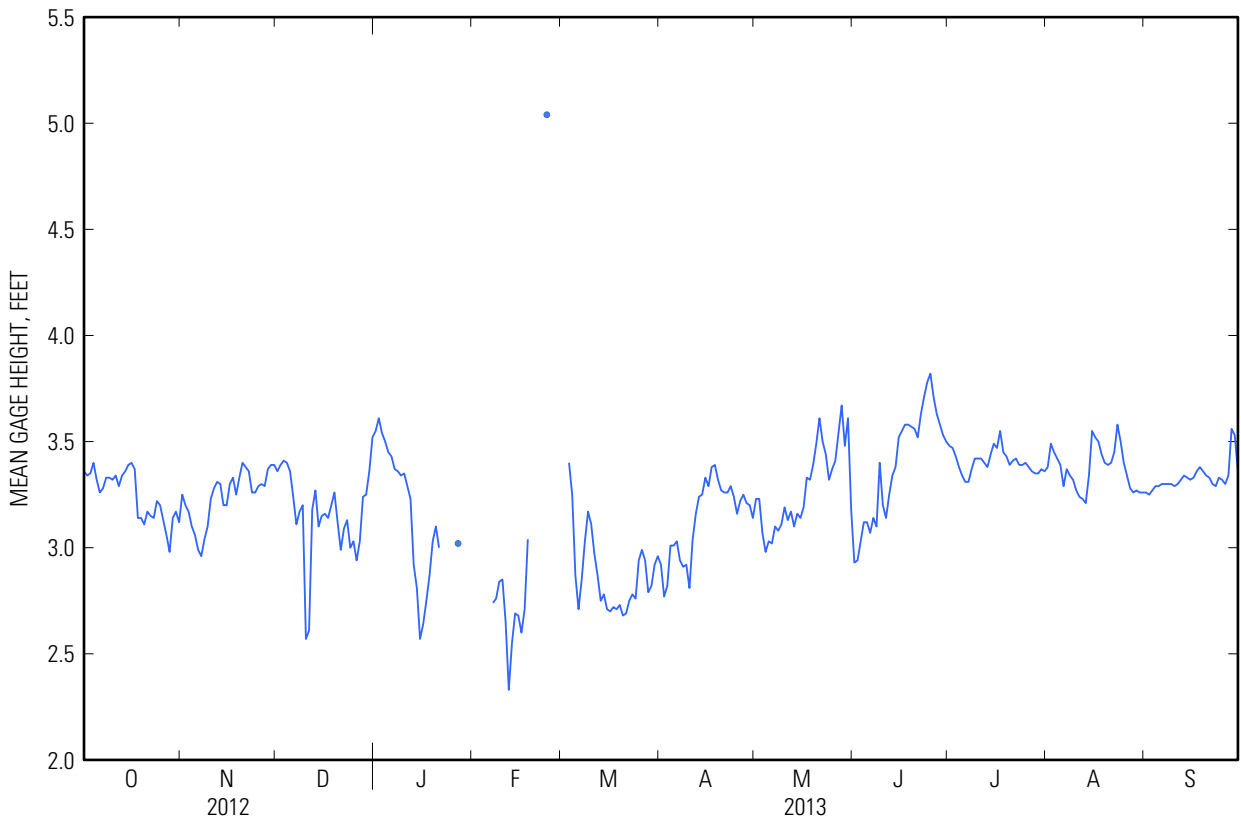


06465500 Niobrara River near Verdel, Nebr.—Continued

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.36	3.25	3.36	3.55	---	---	2.92	3.23	2.93	3.48	3.38	3.26
2	3.34	3.20	3.39	3.61	---	---	2.77	3.23	2.94	3.47	3.49	3.25
3	3.35	3.17	3.41	3.54	---	3.40	2.82	3.07	3.03	3.43	3.45	3.27
4	3.40	3.10	3.40	3.50	---	3.25	3.01	2.98	3.12	3.38	3.42	3.29
5	3.32	3.06	3.36	3.45	---	2.87	3.01	3.03	3.12	3.34	3.39	3.29
6	3.26	2.99	3.24	3.43	---	2.71	3.03	3.02	3.07	3.31	3.29	3.30
7	3.28	2.96	3.11	3.37	2.74	2.85	2.94	3.10	3.14	3.31	3.37	3.30
8	3.33	3.04	3.17	3.36	2.76	3.03	2.91	3.08	3.10	3.37	3.34	3.30
9	3.33	3.10	3.20	3.34	2.84	3.17	2.92	3.11	3.40	3.42	3.32	3.30
10	3.32	3.23	2.57	3.35	2.85	3.11	2.81	3.19	3.20	3.42	3.27	3.29
11	3.34	3.28	2.61	3.29	2.65	2.97	3.04	3.13	3.14	3.42	3.24	3.30
12	3.29	3.31	3.18	3.23	2.33	2.87	3.16	3.17	3.25	3.40	3.23	3.32
13	3.34	3.30	3.27	2.92	2.55	2.75	3.24	3.10	3.34	3.38	3.21	3.34
14	3.36	3.20	3.10	2.81	2.69	2.78	3.25	3.16	3.38	3.44	3.34	3.33
15	3.39	3.20	3.15	2.57	2.68	2.71	3.33	3.14	3.52	3.49	3.55	3.32
16	3.40	3.30	3.16	2.64	2.60	2.70	3.29	3.19	3.55	3.47	3.52	3.33
17	3.37	3.33	3.14	2.75	2.71	2.72	3.38	3.33	3.58	3.55	3.50	3.36
18	3.14	3.25	3.20	2.87	3.04	2.71	3.39	3.32	3.58	3.45	3.44	3.38
19	3.14	3.33	3.26	3.03	---	2.73	3.32	3.39	3.57	3.43	3.40	3.36
20	3.11	3.40	3.12	3.10	---	2.68	3.27	3.49	3.56	3.39	3.39	3.34
21	3.17	3.38	2.99	3.00	---	2.69	3.26	3.61	3.52	3.41	3.40	3.33
22	3.15	3.36	3.09	---	---	2.75	3.26	3.50	3.63	3.42	3.45	3.30
23	3.14	3.26	3.13	---	---	2.78	3.29	3.44	3.71	3.39	3.58	3.29
24	3.22	3.26	3.00	---	5.04	2.76	3.24	3.32	3.78	3.39	3.50	3.33
25	3.20	3.29	3.03	---	---	2.94	3.16	3.37	3.82	3.40	3.40	3.32
26	3.13	3.30	2.94	---	---	2.99	3.22	3.41	3.71	3.38	3.34	3.30
27	3.06	3.29	3.03	3.02	---	2.94	3.25	3.54	3.63	3.36	3.28	3.34
28	2.98	3.37	3.24	---	---	2.79	3.21	3.67	3.58	3.35	3.26	3.56
29	3.14	3.39	3.25	---	---	2.82	3.20	3.48	3.53	3.35	3.27	3.53
30	3.17	3.39	3.36	---	---	2.92	3.14	3.61	3.50	3.37	3.26	3.36
31	3.12	---	3.52	---	---	2.96	---	3.18	---	3.36	3.26	---
Mean	3.25	3.24	3.16	---	---	---	3.13	3.28	3.40	3.40	3.37	3.33
Max	3.40	3.40	3.52	---	---	---	3.39	3.67	3.82	3.55	3.58	3.56
Min	2.98	2.96	2.57	---	---	---	2.77	2.98	2.93	3.31	3.21	3.25

06465500 Niobrara River near Verdel, Nebr.—Continued



06465500 Niobrara River near Verdel, Nebr.—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 2010 to current year.

INSTRUMENTATION.--Continuous water temperature monitor. Water temperature measurements were collected using a Hach H377C water temperature probe.

REMARKS.--The water temperature records are rated as poor. Interruptions in the record are primarily due to equipment malfunctions.

EXTREMES FOR PERIOD OF RECORD.--These extremes may have been exceeded during non-measured periods.

WATER TEMPERATURE: Maximum, 34.9°C, July 25, 2011; minimum, 0.0°C, several days during winter period.

EXTREMES FOR CURRENT YEAR.--These extremes may have been exceeded during non-measured periods.

WATER TEMPERATURE: Maximum, 34.2°C, August 27; minimum, 0.0°C, several days during winter period.

**TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
10	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
11	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
12	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
13	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
14	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
15	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
16	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
17	---	---	---	---	---	---	---	---	---	0.2	0.1	0.1
18	---	---	---	---	---	---	---	---	---	0.2	0.1	0.1
19	---	---	---	---	---	---	---	---	---	0.2	0.1	0.1
20	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
21	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
22	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
23	---	---	---	---	---	---	---	---	---	0.1	0.0	0.0
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
28	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
29	---	---	---	---	---	---	---	---	---	0.1	0.1	0.1
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Month	---	---	---	---	---	---	---	---	---	---	---	---

06465500 Niobrara River near Verdel, Nebr.—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	---	---	---	0.3	0.1	0.1	11.9	4.3	7.7	13.0	7.9	9.9
2	---	---	---	0.6	0.1	0.3	13.2	4.4	8.0	15.0	6.6	10.1
3	---	---	---	1.2	0.1	0.5	14.8	4.8	9.2	16.5	7.8	11.6
4	0.1	0.0	0.0	2.8	0.1	1.0	15.4	7.0	10.6	11.0	8.3	9.3
5	0.1	0.0	0.0	0.3	0.1	0.1	13.1	6.4	9.7	14.2	8.0	10.3
6	0.1	0.0	0.1	2.0	0.1	0.5	16.0	8.7	11.9	21.3	9.4	14.6
7	0.1	0.1	0.1	3.9	0.1	1.5	14.0	9.3	11.6	21.3	13.2	16.8
8	0.1	0.0	0.1	4.5	0.1	2.1	16.4	9.5	12.0	22.3	14.8	18.1
9	0.2	0.0	0.1	3.0	0.4	2.1	9.7	0.1	2.9	17.8	15.1	16.3
10	0.2	0.1	0.1	0.4	0.1	0.1	0.9	0.1	0.3	22.7	13.6	17.3
11	0.2	0.1	0.1	2.9	0.1	1.0	2.8	0.1	1.2	19.7	13.2	16.3
12	0.3	0.1	0.1	1.0	0.1	0.3	8.6	0.1	3.5	20.5	10.9	15.1
13	0.3	0.1	0.1	5.7	0.1	1.9	9.2	1.4	5.0	23.8	14.3	18.6
14	0.4	0.1	0.2	10.8	1.5	5.6	11.4	5.4	7.3	26.6	17.6	21.7
15	0.2	0.1	0.1	10.6	6.3	7.7	8.9	3.0	5.7	26.0	17.6	21.3
16	0.2	0.1	0.1	7.8	3.0	5.1	9.8	4.4	6.4	21.0	17.6	19.0
17	0.5	0.1	0.2	6.5	1.6	3.6	5.9	2.9	4.6	27.8	16.4	21.4
18	0.3	0.1	0.2	4.9	0.2	2.5	3.7	0.2	2.1	25.5	20.4	22.9
19	0.2	0.1	0.1	7.1	0.1	2.4	9.2	0.1	3.9	23.2	19.4	21.4
20	0.1	0.1	0.1	7.3	0.1	2.7	7.5	3.8	4.9	20.4	17.0	19.0
21	0.1	0.1	0.1	2.0	0.2	0.9	10.9	3.6	6.5	17.0	13.7	15.4
22	0.1	0.1	0.1	0.8	0.1	0.3	8.2	2.8	5.4	15.2	12.5	13.6
23	0.1	0.1	0.1	2.0	0.1	0.7	10.3	1.6	5.5	21.1	12.0	16.2
24	0.1	0.1	0.1	3.3	0.1	1.1	11.4	4.1	7.6	19.9	14.5	16.8
25	0.2	0.1	0.1	2.5	0.1	0.8	15.9	5.4	10.2	25.4	16.3	20.3
26	0.1	0.1	0.1	6.6	0.1	2.3	19.6	9.5	13.9	22.4	18.3	20.1
27	0.2	0.1	0.1	10.2	0.1	4.5	22.4	11.6	16.4	25.2	17.2	20.5
28	0.1	0.1	0.1	9.3	3.8	6.3	22.2	14.2	17.6	26.5	17.6	21.6
29	---	---	---	14.5	4.4	8.8	22.4	14.2	17.7	24.0	19.7	21.7
30	---	---	---	16.1	8.8	11.7	18.6	13.0	15.6	25.4	18.0	21.2
31	---	---	---	14.7	7.2	10.3	---	---	---	19.9	16.0	18.0
Month	---	---	---	16.1	0.1	2.9	22.4	0.1	8.2	27.8	6.6	17.3

06465500 Niobrara River near Verdel, Nebr.—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	16.0	14.0	15.0	29.8	19.4	24.4	25.5	21.9	23.5	28.5	22.5	25.6
2	22.6	12.5	17.0	28.2	20.6	24.6	23.7	21.2	22.2	29.9	20.1	24.5
3	23.4	15.7	19.3	30.2	21.2	25.4	---	---	---	28.1	19.7	23.9
4	25.5	18.1	21.0	30.3	21.0	25.4	---	---	---	30.3	22.3	25.5
5	21.1	17.2	18.7	29.9	21.5	25.6	---	---	---	28.9	22.0	24.8
6	20.6	16.0	18.2	29.0	23.6	26.3	---	---	---	31.4	21.5	25.8
7	26.3	15.4	20.4	30.5	25.2	27.2	30.9	22.4	26.3	30.1	23.7	26.7
8	21.1	18.2	19.2	30.9	24.5	27.5	28.2	23.2	25.3	31.3	24.0	27.0
9	21.6	16.8	18.6	30.0	26.3	28.2	30.0	21.6	25.2	32.2	23.1	26.9
10	27.7	17.3	22.3	29.7	25.3	27.6	29.3	22.1	25.2	27.2	23.0	25.0
11	28.0	21.4	24.6	28.7	24.9	26.9	28.5	21.7	24.8	30.1	21.0	25.0
12	26.6	21.3	23.7	29.5	24.1	26.7	30.1	21.6	25.4	27.3	20.1	23.3
13	25.8	18.8	21.8	30.5	26.4	28.3	29.0	22.2	24.8	25.5	17.1	20.9
14	26.0	20.2	22.8	29.1	24.9	26.4	23.7	19.3	20.7	22.7	17.8	19.6
15	25.5	21.8	23.6	28.8	24.4	26.3	20.2	18.4	19.2	22.8	17.9	19.8
16	24.4	21.7	22.8	29.5	24.4	26.7	23.8	18.6	20.8	19.1	15.4	17.3
17	25.1	19.9	22.2	30.6	24.9	27.5	27.9	18.6	22.9	19.5	16.2	17.8
18	27.1	20.6	23.9	32.4	24.8	28.1	27.6	19.5	23.4	28.0	17.9	22.4
19	27.3	22.2	24.6	31.2	25.5	28.5	31.4	20.9	25.8	23.8	17.0	20.4
20	25.6	22.6	24.0	28.2	23.0	25.1	32.0	23.9	27.8	20.9	13.6	17.1
21	27.0	23.6	25.2	30.8	22.7	26.2	30.7	24.7	27.0	22.9	13.1	17.6
22	25.5	21.8	23.6	31.6	25.3	27.9	30.1	23.0	26.1	24.1	15.6	19.4
23	26.1	21.8	23.5	28.9	23.9	26.2	29.8	23.3	26.2	21.0	15.2	18.1
24	29.2	22.7	25.2	31.2	22.7	26.4	31.5	23.8	27.0	23.1	16.8	19.2
25	30.2	23.3	26.7	27.8	24.4	26.3	32.6	23.9	27.9	23.5	15.8	19.3
26	33.6	23.9	28.5	26.2	22.3	24.3	32.6	23.9	28.1	25.1	16.6	20.4
27	33.7	25.2	28.9	25.7	20.8	23.2	34.2	24.2	28.8	22.4	17.2	20.1
28	29.5	24.3	26.9	25.9	20.2	23.0	33.7	25.4	29.2	19.4	14.0	16.5
29	28.0	21.5	24.8	23.9	20.6	21.4	34.0	24.1	28.8	21.0	13.5	16.7
30	29.2	20.6	24.6	25.1	20.1	21.8	33.4	25.7	29.2	22.7	14.2	17.8
31	---	---	---	28.3	21.1	24.2	33.3	24.8	28.9	---	---	---
Month	33.7	12.5	22.7	32.4	19.4	25.9	---	---	---	32.2	13.1	21.5