

North Dakota State Water Commission

900 EAST BOULEVARD AVENUE, DEPT 770 • BISMARCK, NORTH DAKOTA 58505-0850
(701)-328-2750 • TTY 1-800-366-6888 • FAX (701)-328-3696 • <http://swc.nd.gov>

WATER DEVELOPMENT DIVISION
(701) 328-2752

July 17, 2018

North Dakota Department of Environmental Quality
Division of Water Quality
918 East Divide Avenue
Bismarck, ND 58501-1947

RE: June 2018 Devils Lake Outlets Monthly Discharge and Water Quality Report

Division of Water Quality:

Enclosed is the monthly discharge report for the Devils Lake Outlets for the month of June 2018. The West End Outlet discharged steadily at full (250 cfs) capacity until June 21st when an electrical conduit was damaged on a construction site unrelated to the Devils Lake Outlets. This damage forced the outlet discharges to be reduced to approximately 165 cfs for the remainder of the month (**Figure 1**).

Discharge from the East End Outlet started the month at 165 cfs, was increased to 225 cfs on June 6th, and was then reduced back to 165 cfs on June 24th to prevent exceedances of downstream water quality standards. The combined outlet discharge totaled 25,537 acre-feet which is a new record for combined outlet discharge in June. The 2018 season total discharge was 35,345 ac-ft as of June 30th.

The attached tables contain average daily outlet discharges and water quality results from samples collected from the outlets and the corresponding upstream and downstream locations. Also included are average daily stream flow data and conductivity data obtained from the USGS gaging stations located upstream and downstream of the outlets. For this and future reports, separate pages for the water quality samples collected at Cooperstown have been included for reference.

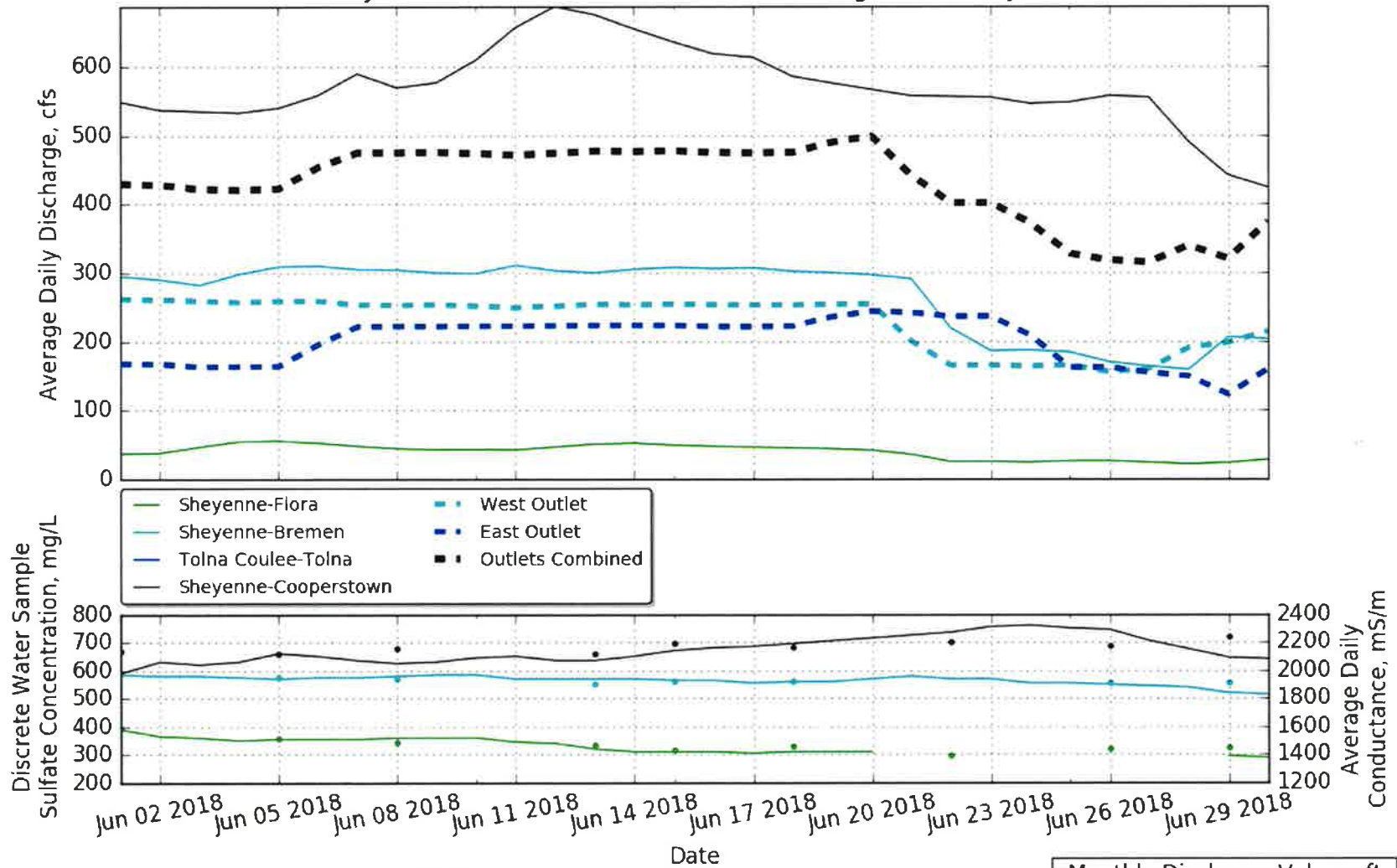
If you have any questions, please contact me at (701) 328-4948.

Sincerely,

Jonathan Kelsch P.E.
Section Chief of Construction

JK:TD/416-10
Enclosure

June 2018 Devils Lake Outlet Discharge Summary



Sulfate	Conductance
• • Flora	— Flora
• • Bremen	— Bremen
• • Pekin	— Cooperstown

	Monthly Discharge Vol., ac-ft
West End Outlet	13,633
East End Outlet	11,904
Combined Total	25,537

Figure 1: Devils Lake Outlet Discharge Summary

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission
 ADDRESS: 900 E Boulevard Avenue,
 Bismarck ND 58505

MONTHLY DISCHARGE REPORT


LOCATION: WEST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
6/1/18	6/30/18

LOCATION: Benson Co, ND

Devils Lake West Outlet discharged 13,633 ac-ft over 30 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.51	8.83	8.63	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	583	610	601	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	591	617	602	mg/L	Average	GRAB
OUTLET DISCHARGE	156	262	229	cfs	Continuous	Recorder
SIGNATURE				7/17/18	701-328-4948	
NAME AND TITLE	JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is attached.						

Notes:

- ac-ft - Acre feet
- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission
 ADDRESS: 900 E Boulevard Avenue,
 Bismarck ND 58505

MONTHLY DISCHARGE REPORT


LOCATION: EAST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
6/1/18	6/30/18

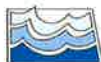
LOCATION: Ramsey, Benson, Nelson, ND

Devils Lake East Outlet discharged 11,904 ac-ft over 30 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.64	8.90	8.73	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	2760	2940	2866	µS/cm	Continuous	Recorder
SULFATE	854	970	932	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	894	961	939	mg/L	Average	GRAB
OUTLET DISCHARGE	123	244	200	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			7/17/18	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is attached.						

Notes:

- ac-ft - Acre feet
- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available



OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission
 ADDRESS: 900 E Boulevard Avenue,
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: UPSTREAM OF THE WEST END OUTLET (FLORA)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
6/1/18	6/30/18

LOCATION: Benson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.35	8.70	8.45	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,380	1,580	1,467	µS/cm	Continuous	Recorder
SULFATE	299	394	336	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	310	390	340	mg/L	Average	GRAB
FLOW, INSTREAM	22	55	40	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			7/17/18	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring location is attached.						

Notes:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- USGS streamflow and specific conductance data courtesy of the USGS
- USGS data are provisional and subject to revision

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission
 ADDRESS: 900 E Boulevard Avenue,
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: DOWNSTREAM OF THE WEST END OUTLET (BREMEN)
 UPSTREAM OF THE EAST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
6/1/18	6/30/18

LOCATION: Eddy Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.50	9.11	8.67	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,830	1,970	1,930	µS/cm	Continuous	Recorder
SULFATE	538	588	563	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	538	594	564	mg/L	Average	GRAB
FLOW, INSTREAM	159	311	267	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			7/17/18	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is attached.						

Notes:

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- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
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- USGS streamflow and specific conductance data courtesy of the USGS
- USGS data are provisional and subject to revision

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission
 ADDRESS: 900 E Boulevard Avenue,
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: DOWNSTREAM OF BOTH OUTLETS (PEKIN)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
6/1/18	6/30/18

LOCATION: Nelson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.44	9.04	8.58	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	NA	NA	NA	µS/cm	Continuous	Recorder
SULFATE	659	719	683	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	636	703	676	mg/L	Average	GRAB
FLOW, INSTREAM	NA	NA	NA	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			7/17/18	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	

COMMENT AND EXPLANATION OF ANY VIOLATIONS

A summary of individual sample results and flow data for both outlets, and upstream & downstream monitoring locations is attached.

Notes:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available

OUTLET OPERATOR NAME/ADDRESS

NAME: ND State Water Commission
 ADDRESS: 900 E Boulevard Avenue,
 Bismarck ND 58505


MONTHLY DISCHARGE REPORT

LOCATION: DOWNSTREAM OF BOTH OUTLETS (COOPERSTOWN)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
6/1/18	6/30/18

LOCATION: Griggs Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.38	8.46	8.42	SU	Weekly	GRAB
SPECIFIC CONDUCTANCE	1,980	2,320	2,145	µS/cm	Continuous	Recorder
SULFATE	617	682	647	mg/L	Weekly	GRAB
7 DAY AVERAGE OF SULFATE	617	682	642	mg/L	Average	GRAB
FLOW, INSTREAM	424	687	570	cfs	Continuous	Recorder
SIGNATURE	 JONATHAN KELSCH, HEAD, CONSTRUCTION SECTION			7/17/18	701-328-4948	
NAME AND TITLE				DATE	TELEPHONE NUMBER	
COMMENT AND EXPLANATION OF ANY VIOLATIONS						
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Notes:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- cfs - Cubic feet per second
- NA - Not available

Daily Outlet Discharge and Upstream and Downstream Flows Devils Lake Outlets

Date	Above West End Outlet - Sheyenne River near Flora		West End Outlet		Below West End Outlet/Above East End Outlet -Sheyenne River near Bremen		East End Outlet		Below East End Outlet - Tolna Coulee near Tolna		Below East End Outlet - Sheyenne River near Cooperstown		Sum of Outlets	
	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Daily Outlet Discharge (cfs)	Total Daily Volume (ft ³)	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Daily Outlet Discharge (cfs)	Total Daily Volume (ft ³)	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Streamflow USGS Gage (cfs)	Average Specific Conductance USGS Gage (µS/cm)	Average Daily Outlet Discharge (cfs)	Total Daily Volume (ft ³)
6/1/18	37	1,580	262	22,597,000	295	1,970	168	14,495,000	172	-	549	1,980	429	37,092,000
6/2/18	38	1,530	261	22,519,000	290	1,960	167	14,447,000	174	-	537	2,060	428	36,966,000
6/3/18	46	1,520	259	22,354,000	282	1,960	163	14,090,000	165	-	535	2,040	422	36,444,000
6/4/18	54	1,500	257	22,202,000	298	1,950	163	14,116,000	166	-	533	2,060	420	36,318,000
6/5/18	55	1,510	259	22,339,000	309	1,940	164	14,152,000	167	-	540	2,120	422	36,491,000
6/6/18	52	1,510	259	22,356,000	310	1,950	195	16,856,000	198	-	558	2,100	454	39,212,000
6/7/18	48	1,510	253	21,880,000	305	1,950	222	19,141,000	231	2,890	589	2,070	475	41,021,000
6/8/18	44	1,520	253	21,839,000	304	1,960	222	19,171,000	238	2,850	569	2,050	475	41,010,000
6/9/18	43	1,520	253	21,901,000	300	1,970	222	19,164,000	233	2,870	576	2,060	475	41,065,000
6/10/18	43	1,520	252	21,732,000	299	1,970	222	19,192,000	231	2,890	609	2,090	474	40,924,000
6/11/18	42	1,490	249	21,527,000	311	1,940	222	19,210,000	238	2,860	656	2,100	471	40,737,000
6/12/18	47	1,480	251	21,711,000	303	1,940	223	19,249,000	233	2,900	687	2,070	474	40,960,000
6/13/18	51	1,440	254	21,940,000	300	1,940	223	19,280,000	233	2,930	675	2,070	477	41,220,000
6/14/18	52	1,420	253	21,867,000	305	1,940	223	19,290,000	234	2,950	654	2,100	476	41,157,000
6/15/18	49	1,420	254	21,967,000	308	1,930	223	19,277,000	234	2,960	635	2,140	477	41,244,000
6/16/18	47	1,420	253	21,878,000	306	1,930	222	19,141,000	232	2,920	618	2,160	475	41,019,000
6/17/18	46	1,410	253	21,855,000	307	1,910	221	19,116,000	232	2,960	613	2,170	474	40,971,000
6/18/18	45	1,420	253	21,851,000	302	1,920	222	19,187,000	231	2,950	585	2,190	475	41,038,000
6/19/18	44	1,420	254	21,925,000	300	1,920	236	20,367,000	245	2,920	575	2,210	489	42,292,000
6/20/18	42	1,420	255	21,989,000	297	1,940	244	21,069,000	257	2,890	566	2,230	498	43,058,000
6/21/18	36	-	200	17,277,000	291	1,960	242	20,898,000	254	2,920	557	2,250	442	38,175,000
6/22/18	25	-	165	14,283,000	219	1,940	236	20,414,000	250	2,940	556	2,270	402	34,697,000
6/23/18	26	-	165	14,266,000	186	1,940	237	20,452,000	248	2,930	555	2,310	402	34,718,000
6/24/18	25	-	164	14,170,000	187	1,910	209	18,037,000	241	2,860	546	2,320	373	32,207,000
6/25/18	26	-	165	14,291,000	184	1,910	162	14,022,000	168	2,900	548	2,300	328	28,313,000
6/26/18	27	1,420	156	13,444,000	170	1,900	162	14,022,000	167	-	557	2,290	318	27,466,000
6/27/18	24	-	160	13,847,000	164	1,890	155	13,377,000	159	-	555	2,210	315	27,224,000
6/28/18	22	-	190	16,444,000	159	1,880	149	12,902,000	149	-	490	2,150	340	29,346,000
6/29/18	24	1,390	198	17,084,000	206	1,840	123	10,584,000	131	-	442	2,090	320	27,668,000
6/30/18	28	1,380	214	18,522,000	203	1,830	160	13,818,000	163	-	424	2,080	374	32,340,000
Minimum	22	1,380	156	13,444,000	159	1,830	123	10,584,000	131	2,850	424	1,980	315	27,224,000
Maximum	55	1,580	262	22,597,000	311	1,970	244	21,069,000	257	2,960	687	2,320	498	43,058,000
Average	40	1,467	229	19,795,233	267	1,930	200	17,284,533	209	2,910	570	2,145	429	37,079,767
			Total (Mgal)	4,442			Total (Mgal)	3,879					Total (Mgal)	8,321
			Total (Ac-ft)	13,633			Total (Ac-ft)	11,904					Total (Ac-ft)	25,537

Notes:

- cfs - cubic feet per second
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- ft³ - cubic feet
- Mgal - Millions of Gallons
- Ac ft - Acre Feet
- USGS streamflow and specific conductance data are preliminary and courtesy of the USGS
- NC - Not calculated

Sheyenne River Upstream of West End Outlet Near Flora

Monthly Water Quality Summary

Devils Lake Outlet Discharge Report

Date	Time	Specific Conductance USGS Gage (μ S/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of Samples included in 7- day Average
6/1/18	9:00	1,590	8.70	394	390	NA	2
6/2/18	-	-	-	-	-	-	-
6/3/18	-	-	-	-	-	-	-
6/4/18	-	-	-	-	-	-	-
6/5/18	19:55	1,500	8.42	359	377	NA	2
6/6/18	-	-	-	-	-	-	-
6/7/18	-	-	-	-	-	-	-
6/8/18	9:30	1,520	8.35	345	352	NA	2
6/9/18	-	-	-	-	-	-	-
6/10/18	-	-	-	-	-	-	-
6/11/18	-	-	-	-	-	-	-
6/12/18	-	-	-	-	-	-	-
6/13/18	8:00	1,450	8.39	334	340	NA	2
6/14/18	-	-	-	-	-	-	-
6/15/18	9:25	1,420	8.37	316	325	NA	2
6/16/18	-	-	-	-	-	-	-
6/17/18	-	-	-	-	-	-	-
6/18/18	8:10	1,420	8.36	328	326	27	3
6/19/18	-	-	-	-	-	-	-
6/20/18	-	-	-	-	-	-	-
6/21/18	-	-	-	-	-	-	-
6/22/18	8:55	0	8.45	299	314	NA	2
6/23/18	-	-	-	-	-	-	-
6/24/18	-	-	-	-	-	-	-
6/25/18	-	-	-	-	-	-	-
6/26/18	8:10	1,410	8.41	321	310	NA	2
6/27/18	-	-	-	-	-	-	-
6/28/18	-	-	-	-	-	-	-
6/29/18	9:20	1,400	8.57	326	324	NA	2
6/30/18	-	-	-	-	-	-	-
Minimum		0	8.35	299	310	27	
Maximum		1,590	8.70	394	390	27	
Average		1,301	8.45	336	340	27	

Notes:

- μ S/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- NA - Not Analyzed
- USGS specific conductance data courtesy of the USGS
- USGS data are provisional and subject to revision
- Italic font denotes preliminary result



**West End Outlet
Monthly Water Quality Summary
Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance from Telemetry System (µS/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of Samples included in 7- day Average
6/1/18	9:15	-	8.56	610	617	NA	2
6/2/18	-	-	-	-	-	-	-
6/3/18	-	-	-	-	-	-	-
6/4/18	-	-	-	-	-	-	-
6/5/18	8:05	-	8.51	606	608	NA	2
6/6/18	-	-	-	-	-	-	-
6/7/18	-	-	-	-	-	-	-
6/8/18	9:45	-	8.83	610	608	NA	2
6/9/18	-	-	-	-	-	-	-
6/10/18	-	-	-	-	-	-	-
6/11/18	-	-	-	-	-	-	-
6/12/18	-	-	-	-	-	-	-
6/13/18	8:15	-	8.60	601	606	NA	2
6/14/18	-	-	-	-	-	-	-
6/15/18	9:40	-	8.63	599	600	NA	2
6/16/18	-	-	-	-	-	-	-
6/17/18	-	-	-	-	-	-	-
6/18/18	8:26	-	8.55	593	598	8	3
6/19/18	-	-	-	-	-	-	-
6/20/18	-	-	-	-	-	-	-
6/21/18	-	-	-	-	-	-	-
6/22/18	9:05	-	8.77	598	596	NA	2
6/23/18	-	-	-	-	-	-	-
6/24/18	-	-	-	-	-	-	-
6/25/18	-	-	-	-	-	-	-
6/26/18	8:20	-	8.56	583	591	NA	2
6/27/18	-	-	-	-	-	-	-
6/28/18	-	-	-	-	-	-	-
6/29/18	9:30	-	8.68	610	597	NA	2
6/30/18	-	-	-	-	-	-	-
Minimum		NA	8.51	583	591	8	
Maximum		NA	8.83	610	617	8	
Average		NA	8.63	601	602	8	

Notes:

- mg/L - Milligrams per liter or parts per million
- NA - Not Analyzed
- Italic font denotes preliminary result



**Sheyenne River Downstream of West End Outlet/Upstream of East End Outlet (Bremen)
 Monthly Water Quality Summary
 Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance USGS Gage (μ S/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day Average
6/1/18	8:30	1,980	8.57	588	594	NA	2
6/2/18	-	-	-	-	-	-	-
6/3/18	-	-	-	-	-	-	-
6/4/18	-	-	-	-	-	-	-
6/5/18	7:30	1,940	8.57	575	582	NA	2
6/6/18	-	-	-	-	-	-	-
6/7/18	-	-	-	-	-	-	-
6/8/18	9:10	1,960	8.90	570	573	NA	2
6/9/18	-	-	-	-	-	-	-
6/10/18	-	-	-	-	-	-	-
6/11/18	-	-	-	-	-	-	-
6/12/18	-	-	-	-	-	-	-
6/13/18	7:30	1,930	8.50	552	561	NA	2
6/14/18	-	-	-	-	-	-	-
6/15/18	9:05	1,930	8.58	560	556	NA	2
6/16/18	-	-	-	-	-	-	-
6/17/18	-	-	-	-	-	-	-
6/18/18	7:42	1,880	8.55	564	559	43	3
6/19/18	-	-	-	-	-	-	-
6/20/18	-	-	-	-	-	-	-
6/21/18	-	-	-	-	-	-	-
6/22/18	-	-	-	-	-	-	-
6/23/18	-	-	-	-	-	-	-
6/24/18	-	-	-	-	-	-	-
6/25/18	-	-	-	-	-	-	-
6/26/18	7:45	1,880	8.58	538	538	NA	1
6/27/18	-	-	-	-	-	-	-
6/28/18	-	-	-	-	-	-	-
6/29/18	9:00	1,820	9.11	559	549	NA	2
6/30/18	-	-	-	-	-	-	-
Minimum		1,820	8.50	538	538	43	
Maximum		1,980	9.11	588	594	43	
Average		1,915	8.67	563	564	43	

Notes:

- μ S/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
- NA - Not Analyzed
- USGS specific conductance data courtesy of the USGS
- USGS data are provisional and subject to revision
- Italic font denotes preliminary result



East End Outlet Monthly Water Quality Summary Devils Lake Discharge Report

Date	Time	Specific Conductance USGS Gage (μ S/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day Average
6/1/18	7:20	-	8.85	970	961	NA	2
6/2/18	-	-	-	-	-	-	-
6/3/18	-	-	-	-	-	-	-
6/4/18	-	-	-	-	-	-	-
6/5/18			8.64	936	953	NA	2
6/6/18	-	-	-	-	-	-	-
6/7/18	-	-	-	-	-	-	-
6/8/18	7:40	2900	8.69	961	949	NA	2
6/9/18	-	-	-	-	-	-	-
6/10/18	-	-	-	-	-	-	-
6/11/18	-	-	-	-	-	-	-
6/12/18	-	-	-	-	-	-	-
6/13/18	9:30	-	8.69	958	960	NA	2
6/14/18	-	-	-	-	-	-	-
6/15/18	7:45	-	8.68	924	941	NA	2
6/16/18	-	-	-	-	-	-	-
6/17/18	-	-	-	-	-	-	-
6/18/18	9:40	2830	8.70	919	934	9	3
6/19/18	-	-	-	-	-	-	-
6/20/18	-	-	-	-	-	-	-
6/21/18	-	-	-	-	-	-	-
6/22/18	7:15	2940	8.76	935	927	NA	2
6/23/18	-	-	-	-	-	-	-
6/24/18	-	-	-	-	-	-	-
6/25/18	-	-	-	-	-	-	-
6/26/18	9:35	2900	8.68	933	934	NA	2
6/27/18	-	-	-	-	-	-	-
6/28/18	-	-	-	-	-	-	-
6/29/18	7:30	2760	8.90	854	894	NA	2
6/30/18	-	-	-	-	-	-	-
Minimum		2760	8.64	854	894	9	
Maximum		2940	8.90	970	961	9	
Average		2866	8.73	932	939	9	

Notes:

mg/L - Milligrams per liter or parts per million

NA - Not Analyzed

Italic font denotes preliminary result



**Sheyenne River Downstream of Both Outlets near Pekin
Monthly Water Quality Summary
Devils Lake Outlet Discharge Report**

Date	Time	Specific Conductance Laboratory Analysis (µS/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day Average
6/1/18	7:45	-	8.60	667	636	NA	2
6/2/18	-	-	-	-	-	-	-
6/3/18	-	-	-	-	-	-	-
6/4/18	-	-	-	-	-	-	-
6/5/18	9:45	-	8.44	659	663	NA	2
6/6/18	-	-	-	-	-	-	-
6/7/18	-	-	-	-	-	-	-
6/8/18	8:00	-	8.65	680	670	NA	2
6/9/18	-	-	-	-	-	-	-
6/10/18	-	-	-	-	-	-	-
6/11/18	-	-	-	-	-	-	-
6/12/18	-	-	-	-	-	-	-
6/13/18	9:55	-	8.47	660	670	NA	2
6/14/18	-	-	-	-	-	-	-
6/15/18	8:10	-	8.49	695	678	NA	2
6/16/18	-	-	-	-	-	-	-
6/17/18	-	-	-	-	-	-	-
6/18/18	10:15	-	8.49	682	679	61	3
6/19/18	-	-	-	-	-	-	-
6/20/18	-	-	-	-	-	-	-
6/21/18	-	-	-	-	-	-	-
6/22/18	7:35	-	8.55	700	691	NA	2
6/23/18	-	-	-	-	-	-	-
6/24/18	-	-	-	-	-	-	-
6/25/18	-	-	-	-	-	-	-
6/26/18	10:05	-	8.50	687	694	NA	2
6/27/18	-	-	-	-	-	-	-
6/28/18	-	-	-	-	-	-	-
6/29/18	8:00	-	9.04	719	703	NA	2
6/30/18	-	-	-	-	-	-	-
Minimum			8.44	659	636	61	
Maximum			9.04	719	703	61	
Average			8.58	683	676	61	

Notes:

mg/L - Milligrams per liter or parts per million

NA - Not Analyzed

Italic font denotes preliminary result

Bold font denotes sample sulfate concentration exceeds 750 mg/L



Sheyenne River Downstream of Both Outlets near Cooperstown

Monthly Water Quality Summary

Devils Lake Outlet Discharge Report

Date	Time	Specific Conductance USGS Gage (μ S/cm)	pH	Sulfate (mg/L)	7 Day Rolling Average of Sulfate (mg/L)	Total Suspended Solids (mg/L)	Number of samples included in 7- day Average
6/1/18	-	-	-	-	-	-	-
6/2/18	-	-	-	-	-	-	-
6/3/18	-	-	-	-	-	-	-
6/4/18	-	-	-	-	-	-	-
6/5/18	10:30	-	8.38	635	635	NA	1
6/6/18	-	-	-	-	-	-	-
6/7/18	-	-	-	-	-	-	-
6/8/18	-	-	-	-	-	-	-
6/9/18	-	-	-	-	-	-	-
6/10/18	-	-	-	-	-	-	-
6/11/18	-	-	-	-	-	-	-
6/12/18	-	-	-	-	-	-	-
6/13/18	10:40	1,890	8.40	617	617	NA	1
6/14/18	-	-	-	-	-	-	-
6/15/18	-	-	-	-	-	-	-
6/16/18	-	-	-	-	-	-	-
6/17/18	-	-	-	-	-	-	-
6/18/18	10:55	1,980	8.44	654	636	184	2
6/19/18	-	-	-	-	-	-	-
6/20/18	-	-	-	-	-	-	-
6/21/18	-	-	-	-	-	-	-
6/22/18	-	-	-	-	-	-	-
6/23/18	-	-	-	-	-	-	-
6/24/18	-	-	-	-	-	-	-
6/25/18	-	-	-	-	-	-	-
6/26/18	10:50	-	8.46	682	682	NA	1
6/27/18	-	-	-	-	-	-	-
6/28/18	-	-	-	-	-	-	-
6/29/18	-	-	-	-	-	-	-
6/30/18	-	-	-	-	-	-	-
7/1/18	-	-	-	-	-	-	-
Minimum		1,890	8.38	617	617	184	
Maximum		1,980	8.46	682	682	184	
Average		1,935	8.42	647	642	184	

Notes:

mg/L - Milligrams per liter or parts per million

NA - Not Analyzed

Italic font denotes preliminary result

Bold font denotes sample sulfate concentration exceeds 750 mg/L

