

August 13, 2019

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

Re: July 2019 Devils Lake Outlets Monthly Discharge and Water Quality Report

Division of Water Quality:

The monthly discharge report for the Devils Lake Outlets for the month of July 2019 is enclosed. The West Outlet discharged steadily at an average rate of 218 cubic feet per second (cfs) for the month of July except for a planned two-day maintenance shutdown on July 16th and 17th. The East Outlet discharged steadily at an average rate of 80 cfs. A total of 18,308 acre-feet were discharged which brings the 2019 discharge total to 34,636 acre-feet.

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.

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

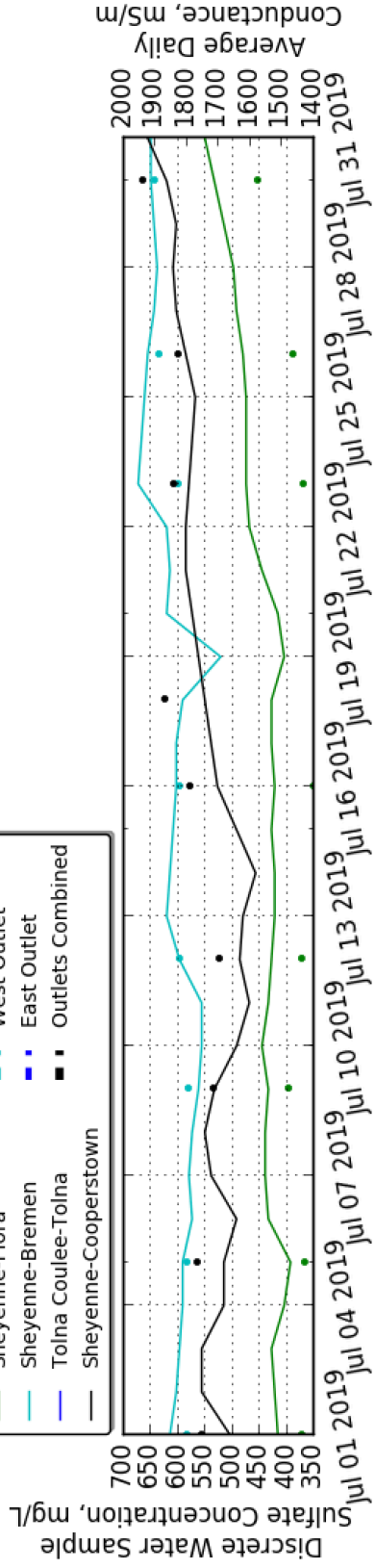
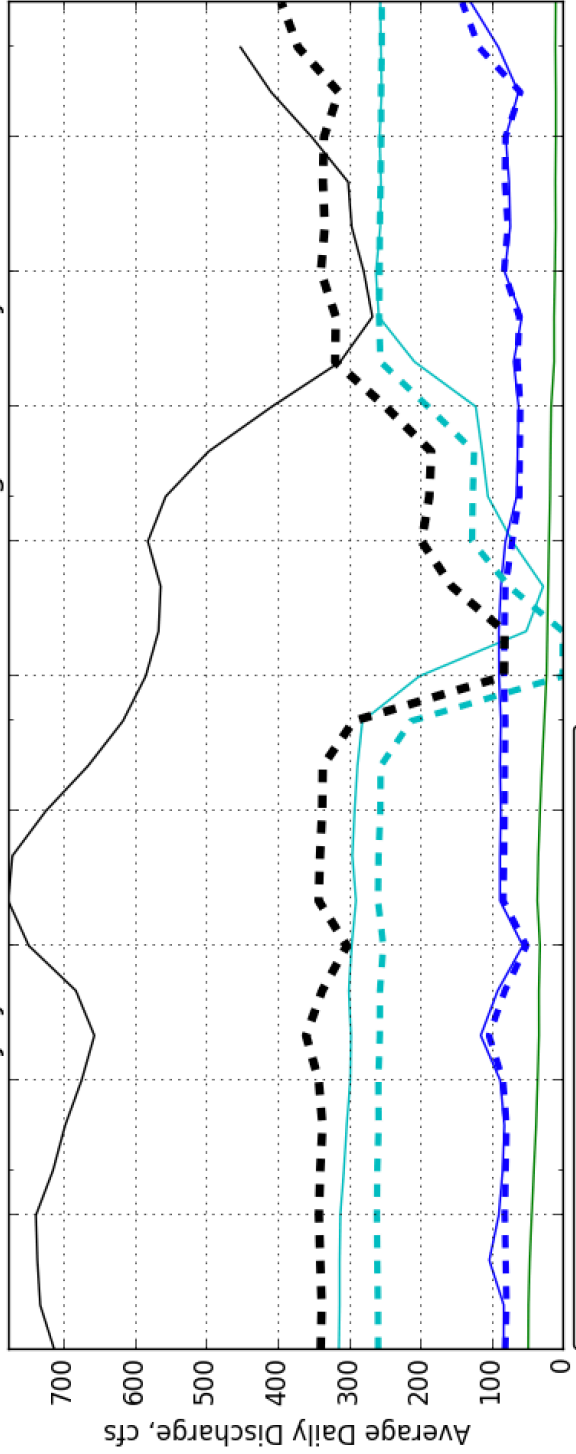
Sincerely,



Jonathan Kelsch P.E.
Section Chief of Construction

JK:TD/416-10
Enclosure

July 2019 Devils Lake Outlet Discharge Summary



Sulfate		Conductance	
Flora	Bremen	Flora	Bremen
•	•	—	—
•	•	—	—
•	•	—	—

Average Daily Conductance	
Flora	Bremen
•	•
•	•
•	•

Outlet	Monthly Discharge Vol., ac-ft
West End Outlet	13,415
East End Outlet	4,893
Combined Total	18,308

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
7/1/19	7/31/19

LOCATION: Benson Co, ND

Devils Lake West Outlet discharged 13,415 ac-ft over 29 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.62	8.83	8.72	SU	2 x Week	GRAB
SULFATE	617	649	631	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	618	643	630	mg/L	Average	GRAB
OUTLET DISCHARGE	0	261	218	cfs	Continuous	Recorder
SIGNATURE				8/13/19	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

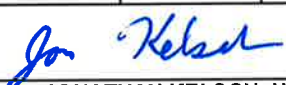
LOCATION: EAST END OUTLET

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
7/1/19	7/31/19

LOCATION: Ramsey, Benson, Nelson, ND

Devils Lake East Outlet discharged 4,893 ac-ft over 31 Days

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.44	8.97	8.65	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	2710	2900	2810	µS/cm	Continuous	Recorder
SULFATE	940	1010	982	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	956	1010	982	mg/L	Average	GRAB
OUTLET DISCHARGE	51	141	80	cfs	Continuous	Recorder
SIGNATURE				8/13/19	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: UPSTREAM OF THE WEST END OUTLET (FLORA)

FACILITY: Devils Lake Outlet Project

MONITORING PERIOD	
START DATE	END DATE
7/1/19	7/31/19

LOCATION: Benson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.23	8.57	8.42	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,470	1,740	1,565	µS/cm	Continuous	Recorder
SULFATE	350	454	384	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	361	422	383	mg/L	Average	GRAB
FLOW, INSTREAM	10	48	26	cfs	Continuous	Recorder
SIGNATURE				8/13/19	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 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
7/1/19	7/31/19

LOCATION: Eddy Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.53	8.81	8.67	SU	2 x Week	GRAB
SPECIFIC CONDUCTANCE	1,690	1,950	1,841	µS/cm	Continuous	Recorder
SULFATE	581	643	602	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	582	639	600	mg/L	Average	GRAB
FLOW, INSTREAM	46	319	243	cfs	Continuous	Recorder
SIGNATURE				8/13/19	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:

- SU - Standard Units
- µS/cm - Microsiemens per Centimeter at 25 degrees Celsius
- mg/L - Milligrams per liter or parts per million
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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
7/1/19	7/31/19

LOCATION: Nelson Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.37	8.59	8.50	SU	2 x Week	GRAB
SULFATE	523	663	583	mg/L	2 x Week	GRAB
7 DAY AVERAGE OF SULFATE	529	632	574	mg/L	Average	GRAB
FLOW, INSTREAM	NA	NA	NA	cfs	Continuous	Recorder
SIGNATURE				8/13/19	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:

- 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
7/1/19	7/31/19

LOCATION: Griggs Co, ND

PARAMETER	MINIMUM	MAXIMUM	AVERAGE	UNITS	SAMPLING FREQUENCY	TYPE
pH	8.32	8.50	8.43	SU	Weekly	GRAB
SPECIFIC CONDUCTANCE	1,580	1,920	1,734	µS/cm	Continuous	Recorder
SULFATE	499	588	529	mg/L	Weekly	GRAB
7 DAY AVERAGE OF SULFATE	499	588	533	mg/L	Average	GRAB
FLOW, INSTREAM	267	778	570	cfs	Continuous	Recorder
SIGNATURE				8/13/19	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:

- 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)
7/1/19	48	1,510	259	22,369,000	319	1,850	81	6,966,000	83	2,800	713	1,660	340	29,335,000
7/2/19	48	1,520	259	22,393,000	318	1,830	79	6,815,000	83	2,810	733	1,750	338	29,208,000
7/3/19	46	1,530	260	22,476,000	318	1,820	80	6,916,000	103	2,590	737	1,750	340	29,392,000
7/4/19	44	1,490	261	22,525,000	317	1,810	81	7,027,000	90	2,690	739	1,680	342	29,552,000
7/5/19	41	1,470	260	22,472,000	312	1,810	80	6,916,000	84	2,750	715	1,680	340	29,388,000
7/6/19	37	1,540	258	22,314,000	308	1,780	79	6,804,000	82	2,740	698	1,640	337	29,118,000
7/7/19	35	1,550	259	22,348,000	303	1,790	84	7,229,000	88	2,770	675	1,720	342	29,577,000
7/8/19	33	1,550	257	22,170,000	302	1,780	103	8,939,000	115	2,730	657	1,740	360	31,109,000
7/9/19	34	1,540	256	22,150,000	305	1,760	81	7,005,000	91	2,690	683	1,710	337	29,155,000
7/10/19	32	1,560	252	21,748,000	300	1,750	51	4,412,000	56	2,700	749	1,640	303	26,160,000
7/11/19	36	1,540	259	22,391,000	295	1,750	83	7,193,000	88	2,790	778	1,600	342	29,584,000
7/12/19	34	1,530	258	22,325,000	300	1,820	82	7,093,000	88	2,790	772	1,630	340	29,418,000
7/13/19	32	1,520	256	22,106,000	296	1,860	82	7,045,000	87	2,780	725	1,620	337	29,151,000
7/14/19	29	1,520	255	22,063,000	292	1,850	81	7,020,000	88	2,760	666	1,580	337	29,083,000
7/15/19	26	1,530	213	18,379,000	284	1,840	81	6,969,000	87	2,730	617	1,640	293	25,348,000
7/16/19	24	1,520	0	0	199	1,830	82	7,122,000	89	2,760	585	1,700	82	7,122,000
7/17/19	23	1,530	0	0	65	1,830	82	7,055,000	90	2,820	567	1,720	82	7,055,000
7/18/19	22	1,530	75	6,504,000	46	1,810	81	6,956,000	87	2,840	564	1,740	156	13,460,000
7/19/19	21	1,490	127	10,983,000	93	1,690	71	6,123,000	80	2,840	582	1,760	198	17,106,000
7/20/19	19	1,510	126	10,908,000	124	1,860	61	5,262,000	65	2,880	557	1,780	187	16,170,000
7/21/19	19	1,560	124	10,742,000	124	1,850	60	5,193,000	63	2,890	497	1,800	184	15,935,000
7/22/19	18	1,600	189	16,337,000	124	1,860	59	5,138,000	62	2,900	408	1,800	249	21,475,000
7/23/19	12	1,610	256	22,102,000	195	1,950	63	5,480,000	69	2,900	312	1,790	319	27,582,000
7/24/19	12	1,610	257	22,246,000	252	1,940	61	5,256,000	57	2,860	267	1,780	318	27,502,000
7/25/19	11	1,610	257	22,202,000	256	1,930	82	7,109,000	82	2,860	279	1,770	339	29,311,000
7/26/19	10	1,620	257	22,169,000	250	1,920	77	6,670,000	74	2,870	296	1,800	334	28,839,000
7/27/19	10	1,640	255	22,065,000	249	1,900	81	7,002,000	75	2,860	301	1,830	336	29,067,000
7/28/19	10	1,650	255	22,008,000	251	1,890	80	6,934,000	80	2,810	352	1,840	335	28,942,000
7/29/19	10	1,680	255	22,014,000	248	1,900	59	5,132,000	62	2,790	409	1,830	314	27,146,000
7/30/19	10	1,710	254	21,934,000	249	1,910	117	10,148,000	90	2,810	452	1,860	371	32,082,000
7/31/19	10	1,740	254	21,927,000	250	1,910	141	12,195,000	129	2,820	-	1,920	395	34,122,000
Minimum	10	1,470	0	0	46	1,690	51	4,412,000	56	2,590	267	1,580	82	7,055,000
Maximum	48	1,740	261	22,525,000	319	1,950	141	12,195,000	129	2,900	778	1,920	395	34,122,000
Average	26	1,565	218	18,850,645	243	1,841	80	6,874,968	83	2,795	570	1,734	298	25,725,613
			Total (Mgal)	4,371			Total (Mgal)	1,594					Total (Mgal)	5,965
			Total (Ac-ft)	13,415			Total (Ac-ft)	4,893					Total (Ac-ft)	18,308

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
7/1/19	8:05	1,510	8.29	371	402	NA	3
7/2/19	-	-	-	-	-	-	-
7/3/19	-	-	-	-	-	-	-
7/4/19	-	-	-	-	-	-	-
7/5/19	7:50	1,430	8.23	367	369	NA	2
7/6/19	-	-	-	-	-	-	-
7/7/19	-	-	-	-	-	-	-
7/8/19	-	-	-	-	-	-	-
7/9/19	8:25	1,540	8.39	397	382	NA	2
7/10/19	-	-	-	-	-	-	-
7/11/19	-	-	-	-	-	-	-
7/12/19	9:30	1,530	8.35	372	385	NA	2
7/13/19	-	-	-	-	-	-	-
7/14/19	-	-	-	-	-	-	-
7/15/19	-	-	-	-	-	-	-
7/16/19	8:00	1,520	8.39	350	361	46	2
7/17/19	-	-	-	-	-	-	-
7/18/19	-	-	-	-	-	-	-
7/19/19	-	-	-	-	-	-	-
7/20/19	-	-	-	-	-	-	-
7/21/19	-	-	-	-	-	-	-
7/22/19	-	-	-	-	-	-	-
7/23/19	7:54	1,600	8.55	368	368	NA	1
7/24/19	-	-	-	-	-	-	-
7/25/19	-	-	-	-	-	-	-
7/26/19	9:30	1,620	8.57	389	379	NA	2
7/27/19	-	-	-	-	-	-	-
7/28/19	-	-	-	-	-	-	-
7/29/19	-	-	-	-	-	-	-
7/30/19	8:15	1,700	8.56	454	422	NA	2
7/31/19	-	-	-	-	-	-	-
Minimum		1,430	8.23	350	361	46	
Maximum		1,700	8.57	454	422	46	
Average		1,556	8.42	384	383	46	

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
7/1/19	8:15	-	8.62	629	625	NA	3
7/2/19	-	-	-	-	-	-	-
7/3/19	-	-	-	-	-	-	-
7/4/19	-	-	-	-	-	-	-
7/5/19	8:00	-	8.75	630	630	NA	2
7/6/19	-	-	-	-	-	-	-
7/7/19	-	-	-	-	-	-	-
7/8/19	-	-	-	-	-	-	-
7/9/19	8:35	-	8.69	618	624	NA	2
7/10/19	-	-	-	-	-	-	-
7/11/19	-	-	-	-	-	-	-
7/12/19	9:40	-	8.77	617	618	NA	2
7/13/19	-	-	-	-	-	-	-
7/14/19	-	-	-	-	-	-	-
7/15/19	-	-	-	-	-	-	-
7/16/19	8:10	-	8.65	626	622	8	2
7/17/19	-	-	-	-	-	-	-
7/18/19	-	-	-	-	-	-	-
7/19/19	-	-	-	-	-	-	-
7/20/19	-	-	-	-	-	-	-
7/21/19	-	-	-	-	-	-	-
7/22/19	-	-	-	-	-	-	-
7/23/19	8:06	-	8.74	639	639	NA	1
7/24/19	-	-	-	-	-	-	-
7/25/19	-	-	-	-	-	-	-
7/26/19	9:40	-	8.83	637	638	NA	2
7/27/19	-	-	-	-	-	-	-
7/28/19	-	-	-	-	-	-	-
7/29/19	-	-	-	-	-	-	-
7/30/19	8:26	-	8.71	649	643	NA	2
7/31/19	-	-	-	-	-	-	-
Minimum			8.62	617	618	8	
Maximum			8.83	649	643	8	
Average			8.72	631	630	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
7/1/19	7:40	1,850	8.53	583	595	NA	3
7/2/19	-	-	-	-	-	-	-
7/3/19	-	-	-	-	-	-	-
7/4/19	-	-	-	-	-	-	-
7/5/19	7:25	1,820	8.67	582	583	NA	2
7/6/19	-	-	-	-	-	-	-
7/7/19	-	-	-	-	-	-	-
7/8/19	-	-	-	-	-	-	-
7/9/19	8:00	1,780	8.64	581	582	NA	2
7/10/19	-	-	-	-	-	-	-
7/11/19	-	-	-	-	-	-	-
7/12/19	9:00	1,770	8.72	596	589	NA	2
7/13/19	-	-	-	-	-	-	-
7/14/19	-	-	-	-	-	-	-
7/15/19	-	-	-	-	-	-	-
7/16/19	7:30	1,820	8.62	596	596	68	2
7/17/19	-	-	-	-	-	-	-
7/18/19	-	-	-	-	-	-	-
7/19/19	-	-	-	-	-	-	-
7/20/19	-	-	-	-	-	-	-
7/21/19	-	-	-	-	-	-	-
7/22/19	-	-	-	-	-	-	-
7/23/19	7:31	1,950	8.66	600	600	NA	1
7/24/19	-	-	-	-	-	-	-
7/25/19	-	-	-	-	-	-	-
7/26/19	9:10	1,920	8.81	635	618	NA	2
7/27/19	-	-	-	-	-	-	-
7/28/19	-	-	-	-	-	-	-
7/29/19	-	-	-	-	-	-	-
7/30/19	7:50	1,910	8.72	643	639	NA	2
7/31/19	-	-	-	-	-	-	-
Minimum		1,770	8.53	581	582	68	
Maximum		1,950	8.81	643	639	68	
Average		1,853	8.67	602	600	68	

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
7/1/19	9:27	2820	8.67	1000	1000	NA	3
7/2/19	-	-	-	-	-	-	-
7/3/19	-	-	-	-	-	-	-
7/4/19	-	-	-	-	-	-	-
7/5/19	10:40	2780	8.87	975	988	NA	2
7/6/19	-	-	-	-	-	-	-
7/7/19	-	-	-	-	-	-	-
7/8/19	-	-	-	-	-	-	-
7/9/19	9:50	2710	8.59	940	958	NA	2
7/10/19	-	-	-	-	-	-	-
7/11/19	-	-	-	-	-	-	-
7/12/19	7:40	2800	8.62	972	956	NA	2
7/13/19	-	-	-	-	-	-	-
7/14/19	-	-	-	-	-	-	-
7/15/19	-	-	-	-	-	-	-
7/16/19	9:20	2770	8.64	973	973	9	2
7/17/19	-	-	-	-	-	-	-
7/18/19	12:30	2840	8.97	982	976	NA	3
7/19/19	-	-	-	-	-	-	-
7/20/19	-	-	-	-	-	-	-
7/21/19	-	-	-	-	-	-	-
7/22/19	-	-	-	-	-	-	-
7/23/19	9:25	2900	8.47	979	981	NA	2
7/24/19	-	-	-	-	-	-	-
7/25/19	-	-	-	-	-	-	-
7/26/19	7:40	2870	8.44	1010	995	NA	2
7/27/19	-	-	-	-	-	-	-
7/28/19	-	-	-	-	-	-	-
7/29/19	-	-	-	-	-	-	-
7/30/19	9:50	2800	8.59	<i>1010</i>	1010	NA	2
7/31/19	-	-	-	-	-	-	-
Minimum		2710	8.44	940	956	9	
Maximum		2900	8.97	1010	1010	9	
Average		2810	8.65	982	982	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
7/1/19	9:52	-	8.37	556	557	NA	3
7/2/19	-	-	-	-	-	-	-
7/3/19	-	-	-	-	-	-	-
7/4/19	-	-	-	-	-	-	-
7/5/19	11:00	-	8.47	563	560	NA	2
7/6/19	-	-	-	-	-	-	-
7/7/19	-	-	-	-	-	-	-
7/8/19	-	-	-	-	-	-	-
7/9/19	10:15	-	8.47	534	549	NA	2
7/10/19	-	-	-	-	-	-	-
7/11/19	-	-	-	-	-	-	-
7/12/19	8:00	-	8.44	523	529	NA	2
7/13/19	-	-	-	-	-	-	-
7/14/19	-	-	-	-	-	-	-
7/15/19	-	-	-	-	-	-	-
7/16/19	9:51	-	8.50	578	551	70	2
7/17/19	-	-	-	-	-	-	-
7/18/19	12:50	-	8.58	624	575	NA	3
7/19/19	-	-	-	-	-	-	-
7/20/19	-	-	-	-	-	-	-
7/21/19	-	-	-	-	-	-	-
7/22/19	-	-	-	-	-	-	-
7/23/19	9:51	-	8.52	606	615	NA	2
7/24/19	-	-	-	-	-	-	-
7/25/19	-	-	-	-	-	-	-
7/26/19	7:15	-	8.55	600	603	NA	2
7/27/19	-	-	-	-	-	-	-
7/28/19	-	-	-	-	-	-	-
7/29/19	-	-	-	-	-	-	-
7/30/19	10:15	-	8.59	663	632	NA	2
7/31/19	-	-	-	-	-	-	-
Minimum			8.37	523	529	70	
Maximum			8.59	663	632	70	
Average			8.50	583	574	70	

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 (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
7/1/19	10:40	1,650	8.32	499	518	NA	2
7/2/19	-	-	-	-	-	-	-
7/3/19	-	-	-	-	-	-	-
7/4/19	-	-	-	-	-	-	-
7/5/19	-	-	-	-	-	-	-
7/6/19	-	-	-	-	-	-	-
7/7/19	-	-	-	-	-	-	-
7/8/19	-	-	-	-	-	-	-
7/9/19	11:05	1,740	8.43	520	520	NA	1
7/10/19	-	-	-	-	-	-	-
7/11/19	-	-	-	-	-	-	-
7/12/19	-	-	-	-	-	-	-
7/13/19	-	-	-	-	-	-	-
7/14/19	-	-	-	-	-	-	-
7/15/19	-	-	-	-	-	-	-
7/16/19	10:36	1,700	8.43	499	499	141	1
7/17/19	-	-	-	-	-	-	-
7/18/19	-	-	-	-	-	-	-
7/19/19	-	-	-	-	-	-	-
7/20/19	-	-	-	-	-	-	-
7/21/19	-	-	-	-	-	-	-
7/22/19	-	-	-	-	-	-	-
7/23/19	10:40	1,780	8.46	541	541	NA	1
7/24/19	-	-	-	-	-	-	-
7/25/19	-	-	-	-	-	-	-
7/26/19	-	-	-	-	-	-	-
7/27/19	-	-	-	-	-	-	-
7/28/19	-	-	-	-	-	-	-
7/29/19	-	-	-	-	-	-	-
7/30/19	11:00	1,850	8.50	588	588	NA	1
7/31/19	-	-	-	-	-	-	-
Minimum		1,650	8.32	499	499	141	
Maximum		1,850	8.50	588	588	141	
Average		1,744	8.43	529	533	141	

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