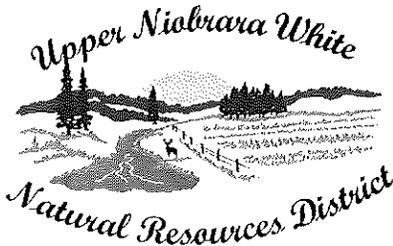

2019 ANNUAL INTEGRATED MANAGEMENT PLAN REPORT:

NEBRASKA DEPARTMENT OF NATURAL
RESOURCES
&
UPPER NIOBRARA WHITE NATURAL RESOURCES
DISTRICT

REPORTING ON CALENDAR YEAR 2018 DATA
ANNUAL MEETING HELD ON OCTOBER 23, 2019



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October 2019

Annual report by Upper Niobrara White Natural Resources District (UNWNRD) on the activities related to the joint Integrated Management Plan (IMP) with the Nebraska Department of Natural Resources (DNR).

Purpose: The purpose of the report is to fulfill the UNWNRD's responsibilities under the IMP annual reporting obligations and provide updates to current monitoring projects and studies as outlined in the IMP.

Reporting and exchanging information gathered from monitoring projects, streamflow data or other studies provides a basis to increase understanding of the surface water and hydrologically connected ground water system. As surface and ground water are hydrologically connected throughout much of the district, estimates of water quantity of either surface or ground water cannot be evaluated separately. The data gathered through this IMP's monitoring plan is designed to evaluate and measure the success of the objectives of this IMP. This information exchange also helps to test the validity of the conclusions and information upon which the IMP is based.

UNWNRD Reporting: Permitting

The IMP requires that the UNWNRD annually report to the following permitting actions within the district:

- 1) Ground Water Permitting
- 2) Ground Water Variances/Modifications
- 3) New Ground Water Uses
- 4) Municipal Accounting

1) Ground Water Permitting – The following ground water permits were granted in 2018:

A) Replacement well permits

- (1) 11 – Replacement Irrigation
- (2) 0 – Replacement Public Water Supply
- (3) 0 – Replacement Commercial/Industrial

B) New well permits

- (1) 0 – New Public Water Supply
- (2) 0 – New Public Water Supply – Test Wells
- (3) 0 – New Irrigation – Failed to Decommission within 180 Days (Replacement/Conversion)
- (4) 0 – New Industrial Well – Temporary for Road Construction (Convert to 50 gpm or less)

2) Ground Water Variances/Modifications – The following ground water variances were requested in 2018:

A) Double J Farms Inc. Darby proposes to modify wells in Section 5 27 49, all the wells drilled on this property were originally drilled and used as irrigation wells. The following is a description of the status of each well:

Well G-031603 was drilled in 1969 and has been decommissioned; Well G-162561 was drilled in 1975 and has been converted/modified to a stock well; Well G-174930 was drilled in 2009 and has been converted/modified to a stock well; Well G-042795 was drilled in 2013 and is currently used for as irrigation well. The proposal is to be allowed to modify/convert the current irrigation well (G-042795) to a stock well or decommission this well and convert the old irrigation well (G-162561), which is currently registered as a stock well, back to an irrigation well. The current irrigation well casing has shifted to the extent that an irrigation pump cannot be reinstalled. Dustin White, from Dustin White Irrigation, has ran a camera down both these wells and believes the old well can be refurbished by jetting the well to clean the screen and have it be viable as an irrigation well. Steve Sandberg moved to approve the Jespersen well modification with the stipulation that the old well be decommissioned; Al Rasmussen seconded the motion. PASS (January 2018)

B) Hamilton's are requesting to modify field boundaries on 257.04 certified acres in section 1-30-42; they are replacing two older pivots. The sizes of the new pivots are being modified, the NW pivot is decreasing in size to irrigate 109.52 acres and the East pivot is increasing in size to irrigate 147.52 acres; there will be no net change in the number of certified irrigated acres. Rich Zochol moved to approve the Hamilton Acre Transfer Request; the request will modify field boundaries, no new acres. Mike Strasburger seconded the motion. PASS (April 2018)

C) Lynn presented the request by Holmgren Cattle Company to certify acres that were eligible in 2006. The irrigated acres are and have been assessed as irrigated and under the rules and regulations meet the definition of historically irrigated. Holmgren's are requesting that the District certify as irrigated the 47.35 acres eligible. Rich Zochol moved to certify Holmgren Cattle Company acres. Mike Strasburger seconded the motion. PASS (July 2018)

*47.35 Ac cert.
was eligible for
(2006 want certified)*

3) Ground Water Uses – No new ground water use was granted in 2018.

The UNWNRD does allow additional acres to be added to existing wells in subarea 3. The District received no requests to certify any additional acres.

Road Construction Uses: No requests for 2018

4) Municipal Accounting – This use is required to be reported to the District by October 1 of each year. At meeting time, the District has received all reports. Compilation of water use is attached; Crawford water pumping numbers are listed as submitted, with a negative usage after subtracting their wastewater. Follow up on their numbers will occur when their water operator returns to work from an illness.

Integrated Management Studies

Currently, DNR and UNWNRD have several joint/cooperative studies:

- 1) Niobrara Hydrogeologic and Hydrostratigraphic Framework Study: This study provides geospatial coverages of aquifer properties throughout the upper portion of the Niobrara Basin. It is intended to help expand the Box Butte ground water model. The study was finished in 2010, with basin coverages delivered to DNR. (Finished 2010)
- 2) Niobrara Operations Model Study (IWMPPF): The operations model will combine three separate models, CROPSIM, a ground water model and a surface water model to develop operational scenarios that maximize water use efficiency. All portions of the operations model are currently developed and the model has been calibrated. Work continues on data collection needs for model refinement and is currently being utilized to analyze the model area. (Completed with ongoing refinement)
- 3) Niobrara River Basin Study (Bureau of Reclamation Basin Study Program): The basin study will assist in projecting water supply and demand in the basin, analyze water supply operations under alternate water availability conditions and develop and analyze options for providing and optimizing use of future water supplies. The study will include development of a basin-wide ground water model and a surface water operations model used to analyze conjunctive management options. Currently model is completed and continued analysis of basin is ongoing.
- 4) Economic implications of reduced ground water allocations study: The multi-NRD study has a goal to provide farm-level economic analysis of limited irrigation impacts for crops grown in the panhandle of Nebraska and to provide educational programming to assist producers effectively manage ground water irrigation in areas that instituted pumping allocations. The study was completed in 2014, with final reporting being completed by UNL staff. (Completed 2014)
- 5) Upper Niobrara River Basin Model evaluation of existing water use data utilizing the INSIGHT Data enhancement Program (IDEP) to create a program for converting metered water use into model input data sets. The work has been completed on the program for converting actual metered water use to a model input data set. Follow up will be provided by Marc Groff and the Flatwater Group to the NRD and the DNR to finalize deliverables. (Completed 2015)
- 6) Upper Niobrara River Basin Model evaluation of modeled water use in the district as estimated by CROPSIM and comparing estimates to actual water use as measured since 2007 utilizing the INSIGHT Data enhancement Program (IDEP). The work has been completed on the evaluation of estimated model water use vs. actual metered water use. Follow up will be provided by Marc Groff and the Flatwater Group to the NRD and the DNR to finalize deliverables. (Completed 2015)
- 7) The Upper Niobrara White NRD continues to collaborate with the four other NRD's in the Niobrara Basin and the Department to develop or refine management plans for each district in the basin. An ongoing coordinated effort for long term planning is desired by the District's as well as the Department for the management of hydrologically connected surface and ground water.
- 8) The Upper Niobrara White NRD, along with the Department, is utilizing a Citizen's Advisory Committee (CAC) to consult on long term planning within the District. The integrated model consists of a watershed/land use model, surface water operations model and a ground water model. The models have been calibrated to match crop types within the district and actual water use obtained from the meter data.

The purpose of the model moving forward will be to evaluate various management schemes that can be used to establish future policy. One of the roles of the CAC will be to recommend scenarios to be evaluated.

- 9) The Upper Niobrara White NRD, along with the Department, hired HDR Inc. as a consultant to analyze the potential for recharge projects within the District. (Ongoing)

Board Actions for Additional Ground Water and Integrated Water Management Purposes:

Transfer of certified acres impacted by a public project: The UNWNRD will work with the landowner and others as needed to determine the amount of certified acres impacted and determine if there is an opportunity to modify or transfer acres, to the landowner(s), within the District's rules and regulations. The UNWNRD will bank any acres that have not been transferred and allow the landowner to maintain the original certified acres and, if allocated, the allocation for the remainder of the current allocation period. The landowner shall have to the end of the allocation period in which the public project impacted the acres to work with the District to determine if there is an option under existing rules to modify or transfer the acres to the landowner(s). If it is determined that there is not an option to complete a transfer, then the acres will remain in the District's bank for potential future offsets levied against the district. The landowners certified acres will be reduced by the amount of acres impacted and if allocated, the allocation will be adjusted accordingly. Land acquired by acquisition will not be allowed to be transferred to anyone else but the same landowner. Rich Zochol moved to adopt the new policy pertaining to the transfer of irrigated acres impacted by a public project, Tod Dorshorst seconded the motion. PASS (April 2016)

Rich Zochol moved to develop a Voluntary Integrated Management Plan for the District in conjunction with the Nebraska Department of Natural Resources, Tod Dorshorst seconded the motion. PASS (October 2017)

Tod Dorshorst moved to request the DNR issue a moratorium or stay on surface water permits until the VIMP was completed. Mike Strasburger offered an amendment to the motion to exclude Subarea 3, Tod Dorshorst accepted the amendment and Dave Carlson seconded the motion and amendment. PASS (February 2018)

Rich Zochol moved to allow staff to prepare and submit a request for proposal for the groundwater recharge project, Tod Dorshorst seconded the motion. PASS (February 2018)

Rich Zochol moved to hold public meetings regarding allowing additional high capacity well in Sub Area 3, Dave Carlson seconded the motion. PASS (April 2018)

Tod Dorshorst moved to proceed with the recharge project study provided DNR does provide the 60% cost share Al Rasmussen seconded the motion. PASS (April 2018)

John Burke moved to invite Jim Douglas to a future Board Meeting to discuss the partnership between the NRBA and NGPC as well as the Purchase Agreement of the Spencer Dam Hydro Facility, Tod Dorshorst seconded the motion. PASS (May 2018)

John Burke moved to invite Jim Douglas to the October Board Meeting to discuss the partnership between the NRBA and NGPC as well as the Purchase Agreement of the Spencer Dam Hydro Facility, Tod Dorshorst seconded the motion. PASS (June 2018)

Tod Dorshorst moved to submit the draft Rules and Regulations to Nebraska Department of Environmental Quality and Department of National Resources for review and to proceed with the public information process, Scott Berndt seconded the motion. PASS (June 2018)

Lynn discussed the request for a stay on surface water rights downstream through subarea 6 and subarea 2 that was sent to the Nebraska Department of Natural Resources (Department) to be in place through the completion of the voluntary integrated management planning process. The Board currently has moratorium on high capacity wells. Based on the statutes, the Department has indicated a stay may be put in place if the UNWNRD requests an evaluation to determine if an immediate stay should be put in place. Rich Zochol moved to send a letter to request an evaluation. Tod Dorshorst seconded the motion. PASS (August 2018)

Dave Carlson moved to move ahead with the purchase of the Spencer Hydro-Electric Generating Facility, Tod Dorshorst seconded the motion. PASS (September 2018)

Pat reported on the public participation process for the proposed changes to the Groundwater Management Area and Integrated management Area Rules and Regulations. The timeline of events are based on passing of these rules and regulations at the November 2018 regular board meeting. The proposal will include a public hearing and three public information meetings. Rich Zochol moved to certify Holmgren Cattle Company acres. Mike Strasburger seconded the motion. PASS (July 2018)

Rich Zochol moved adopt the rules and regulations as were presented and issue and order adopting the amendments to the Groundwater Management Area and Integrated Management Area Rules and Regulations, Al Rasmussen seconded the motion. PASS (November 2018)

Rich Zochol moved allow a maximum of 1,300 irrigated acres to sub-area 3 in accordance with the Groundwater Management and Integrated Management Rules and Regulations, Mike Strasburger seconded the motion. PASS (December 2018)

Municipal Pumping and Consumption Analysis

IMP Report October 2019

Total Ground Water Consumed						
Year	Harrison	Crawford	Chadron	Hemingford	Alliance	Totals
2001-2002	42,659,770.00	2,317,170.85	290,590,000.00	92,127,600.00	939,049,000.00	1,366,743,540.85
2002-2003	32,881,170.00	1,134,426.67	205,370,000.00	73,471,700.00	747,359,000.00	1,060,216,296.67
2003-2004	38,736,290.00	1,139,258.38	222,540,000.00	80,977,600.00	762,402,000.00	1,105,795,148.38
2004-2005	30,832,360.00	989,245.19	167,290,000.00	73,997,700.00	700,382,000.00	973,491,305.19
2005-2006	34,191,160.00	3,397,553.26	213,950,000.00	73,666,200.00	854,551,000.00	1,179,755,913.26
Baseline Average	35,860,150.00	1,795,530.87	219,948,000.00	78,848,160.00	800,748,600.00	1,137,200,440.87
2006-2007	33,515,350.00	6,098,591.49	215,840,000.00	62,344,500.00	755,301,000.00	1,073,099,441.49
2007-2008	30,508,130.00	6,178,706.41	252,880,000.00	62,902,801.00	726,318,000.00	1,078,787,637.41
2008-2009	28,186,390.00	1,460,376.57	170,430,000.00	62,396,468.00	572,650,000.00	835,123,234.57
2009-2010	23,009,380.00	1,883,287.76	78,112,467.72	63,859,442.00	528,620,000.00	695,484,577.48
2010-2011	28,995,660.00	427,640.96	13,647,502.97	59,925,360.00	527,891,000.00	630,887,163.93
5 Year Average	28,842,982.00	3,209,720.64	146,181,994.14	62,285,714.20	622,156,000.00	862,676,410.98
2011-2012	35,879,760.00	2,673,073.78	92,617,749.00	76,119,700.00	698,624,000.00	905,914,282.78
2012-2013	32,078,600.00	2,772,729.87	69,682,045.72	64,233,900.00	635,348,000.00	804,115,275.59
2013-2014	24,839,900.00	551,335.33	16,981,185.74	64,106,683.00	516,674,000.00	623,153,104.07
2014-2015	25,249,500.00	548,305.56	10,213,875.47	51,234,600.00	509,189,000.00	596,435,281.03
2015-2016	34,348,950.00	782,092.29	51,564,189.63	64,838,532.00	579,441,000.00	730,974,763.92
5 Year Average	30,479,342.00	1,465,507.37	48,211,809.11	64,106,683.00	587,855,200.00	732,118,541.48
2016-2017	26,708,288.00	237,433.27	50,415,423.23	69,501,800.00	564,161,000.00	711,023,944.50
2017-2018	22,269,694.00	16,937.07	36,974,117.15	57,975,900.00	504,991,000.00	622,227,648.22
2018-2019	20,470,725.00	-19,428.17	10,109,363.41	61,035,100.00	493,449,000.00	585,044,760.24
2001-2018 Total	502,620,658.00	32,591,227.64	2,122,124,439.48	1,095,704,586.00	10,617,960,000.00	14,371,000,911.12

Total Ground Water Consumed per person per day						
Year	Harrison	Crawford	Chadron	Hemingford	Alliance	Averages
2001-2002	442.71	5.75	140.73	263.20	295.58	229.59
2002-2003	333.65	2.84	99.04	209.90	236.82	176.45
2003-2004	383.13	2.85	107.49	237.79	247.46	195.74
2004-2005	316.38	2.54	83.44	222.05	232.25	171.33
2005-2006	352.16	8.81	108.17	224.50	287.30	196.19
Baseline Average	365.61	4.56	107.77	231.49	259.88	193.86
2006-2007	357.29	15.99	110.57	192.13	256.61	186.52
2007-2008	327.78	16.37	126.82	193.42	246.09	182.10
2008-2009	312.64	3.91	86.28	192.29	192.93	157.61
2009-2010	262.66	5.01	39.36	201.33	180.99	137.87
2010-2011	316.49	1.12	6.39	204.46	189.50	143.59
5 Year Average	315.37	8.48	73.88	196.73	213.22	161.54
2011-2012	388.54	7.34	43.37	259.71	225.26	184.84
2012-2013	352.96	7.68	32.63	219.16	204.86	163.46
2013-2014	275.52	1.53	7.95	219.54	166.57	134.22
2014-2015	280.07	1.53	4.78	175.46	164.16	125.20
2015-2016	381.00	2.18	24.14	222.05	186.81	163.24
5 Year Average	335.62	4.05	22.57	219.18	189.53	154.19
2016-2017	307.45	0.68	24.11	239.22	183.94	151.08
2017-2018	256.36	0.05	17.68	199.55	164.65	127.66
2018-2019	235.65	-0.06	4.83	210.07	160.88	122.27
2001-2018 Avg.	326.80	4.78	59.32	215.88	212.37	163.83

2019 ANNUAL REPORT
BY THE DEPARTMENT OF NATURAL RESOURCES OF 2018 DATA
TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE
NATURAL RESOURCES DISTRICT'S INTEGRATED MANAGEMENT PLAN

Purpose

This report fulfills the Department of Natural Resources' (Department or NeDNR) responsibilities as outlined in the Upper Niobrara White Natural Resources District (District or UNWNRD) integrated management plan (IMP) and provide updates to current projects and studies in the area.

Reporting and exchanging information gathered from monitoring projects, streamflow data, or other studies provides a basis for increased understanding of the hydrologically connected surface water and groundwater system. In areas where surface water and groundwater are hydrologically connected, estimates of water quantity of either surface water or groundwater cannot be evaluated separately. The data gathered through the IMP's monitoring plan and reported here are provided to assist evaluation of the success of the IMP's objectives. This information exchange also helps to test the validity of the conclusions and information upon which the IMP is based. This report contains information on variance activities and permit activities from January 1 through December 31, 2018. Also included are canal diversion and streamflow measurements from October 1, 2017 through September 30, 2018, the 2018 water year.

Department Reporting

The IMP requires that the Department annually report on the following surface water data within the district:

1. *Surface water permitting*
 - a. Any order of cancellation issued pursuant to Neb. Rev. Stat. § 46-229.04(5) or any assignment of the right to use that portion of an appropriation which was relinquished.
 - b. Variances granted by the Department, facts offered as justification for the variance to be granted and the reasons for the action taken.
2. *Diversions*
 - a. Records of surface water diversions collected by the Department upstream of the Box Butte Reservoir.
3. *Streamflow*
 - a. Records of streamflow measurements taken from non-gaged streams within the District.

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1. Surface Water Permitting

a. Any order of cancellation issued pursuant to Neb. Rev. Stat. § 46-229.04(5) or any assignment of the right to use that portion of an appropriation which was relinquished.

In 2018, the Department did not act upon any such relinquishment or assignment of right within the surface water control area of the District.

The IMP does not specifically require reporting of cancelled (in-full or in-part) surface water appropriations other than those pursuant to *Neb. Rev. Stat. § 46-229.04(5)*, however, NeDNR is providing this information for a more complete picture of surface water permitting activities within the UNWNRD. During calendar year 2018, four surface water permits were cancelled in-full. All four of the permits cancelled were temporary, one-year permits for road construction held by the Dawes County Road Department. Table 1 summarize the permits cancelled in 2018. Figure 1 shows the locations of the fully cancelled permits within the surface water control area.

Table 1: Surface water appropriations cancelled in-full during 2018 within the surface water control area of the UNWNRD.

Appropriation Number	Cancellation Date	Point of Diversion				Status	Use	Source	Begin cfs	Begin af	Cancelled cfs	Cancelled af	Authority
		Sec	Twn	Rng	Dir								
A-19544	7/20/2018	3	31	52	W	Cancelled in Full	Temporary Road Construction	White River	0.78	10.0	0.78	10.0	Temporary Permit Expired
A-19545	7/20/2018	27	34	48	W	Cancelled in Full	Temporary Road Construction	Bordeaux Creek	0.78	10.0	0.78	10.0	Temporary Permit Expired
A-19546	7/20/2018	24	32	52	W	Cancelled in Full	Temporary Road Construction	White River	0.78	10.0	0.78	10.0	Temporary Permit Expired
A-19547	7/20/2018	13	33	48	W	Cancelled in Full	Temporary Road Construction	Bordeaux Creek, Little	0.78	10.0	0.78	10.0	Temporary Permit Expired

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Authority upon which Department actions were based:

1. The permit was for a temporary appropriation which are limited to one year.

Authority upon which the above actions were based is: *Neb. Rev. Stat. §46-233 (8)* Application may be made to the department for a temporary permit to appropriate water. The same standards for granting a permanent appropriation shall apply for granting such temporary permit except when the temporary permit is for road construction or other public use construction and the amount of water requested is less than ten acre-feet in total volume. For temporary permits for public-use construction, the applicant shall include on the application the location of the diversion, the location of use, a description of the project, the amount of water requested, and the person to contact. Temporary permits for public-use construction and for less than ten acre-feet in total volume may be granted without any determination of unappropriated water and shall be considered to be in the public interest. The requirement of filing a map or plans with the application for a temporary permit may be waived at the discretion of the director. In granting a temporary permit, the director shall specify a date on which the right to appropriate water under the permit shall expire. Under no circumstances shall such date be longer than one calendar year after the date the temporary permit was granted. Temporary permits shall be administered during times of shortage based on priority. The right to appropriate water shall automatically terminate on the date specified by the director on the temporary permit without further action by the department.

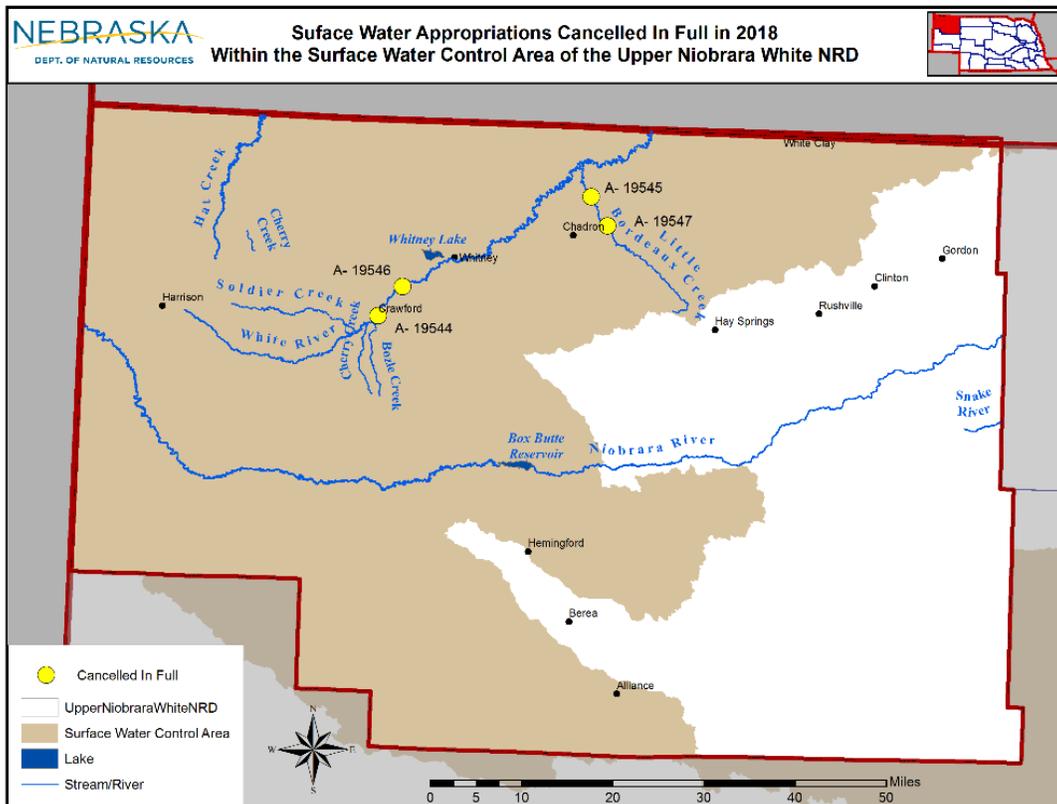


Figure 1: Fully cancelled surface water appropriations within the surface water control area.

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b. ***Variances granted by the Department, facts offered as justification for the variance to be granted and the reasons for the action taken***

During calendar year 2018, eight requests for leave to file an application for a new surface water appropriation within the area under a moratorium or stay (variance) were received. Four requests were to file applications for temporary road construction, and the remaining four were to file applications to store water in existing reservoirs. Table 2 provides a summary regarding the variances filed in 2018. Figure 2 shows the locations of the associated applications approved within the surface water control area. Appendix C includes *Department of Natural Resources Rules of Surface Water, Title 457, Neb. Admin. Code, Chapter 23*, regarding variances.

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Table 2: Variances granted during 2018 and the associated applications approved in the surface water control area of the UNWNRD.

Appropriation Number	Approval Date	Point of Diversion/ Reservoir Location				Use	Source	Name of Reservoir	Grant in CFS	Grant in AF	Variance Petition Basis	Associated Variance
		Sec	Twn	Rng	Dir							
A-19575	2/6/2018	16	31	52	W	Storage	Bozle Creek, Trib. To	Grable Ponds 1, 2 and 3	NA	33.6	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.04	VAR-6355
A-19576	2/6/2018	16	31	52	W	Storage	Cherry Creek, Trib. To	Cherry Creek Pond	NA	20.6	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.04	VAR-6356
A-19588	5/23/2018	19	31	52	W	Storage	White River, Trib. To	Lower Ice House Pond	NA	15.18	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.04	VAR-6561
A-19595	6/29/2018	11	31	53	W	Storage	Soldier Creek	Crazy Horse Pond	NA	11.62	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.04	VAR-6560
A-19609	9/5/2018	27	34	48	W	Temporary Road Construction	Bordeaux Creek	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-6240
A-19610	9/5/2018	13	33	48	W	Temporary Road Construction	Bordeaux Creek, Little	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-6242
A-19611	9/5/2018	3	31	52	W	Temporary Road Construction	White River	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-6241
A-19612	9/5/2018	24	32	52	W	Temporary Road Construction	White River	NA	NA	10	Variance granted pursuant to 457 Neb. Admin. Code Ch. 23 § 001.06	VAR-6974

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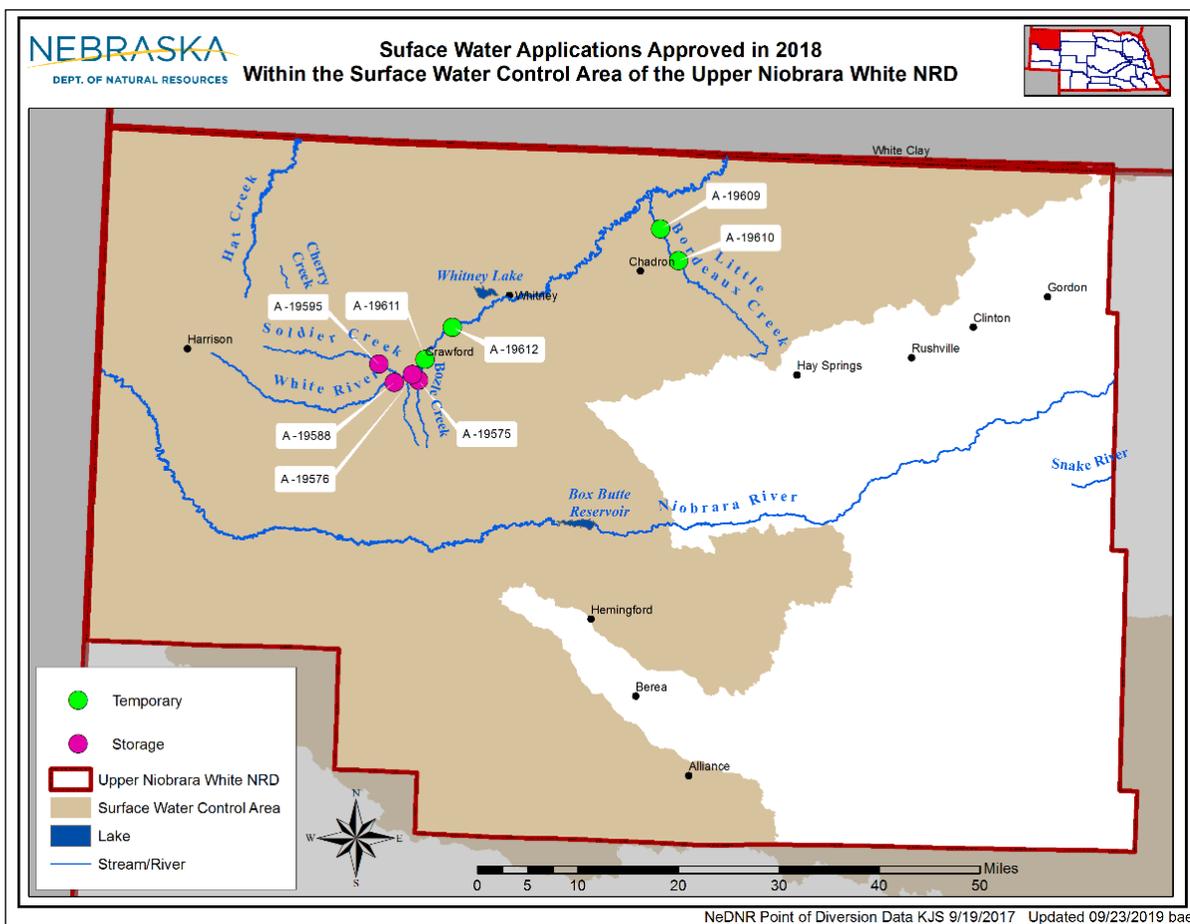


Figure 2: Locations of surface water appropriations approved in 2018 within the surface water control area.

2. Diversions

a. Records of surface water diversions collected by the Department upstream of the Box Butte Reservoir

Surface water diversion records for the water year 2018 are included in Appendix A and their locations are shown in Figure 3. The canals measured include: Bennett-Kay Canal; Cook Canal No. 1; Earnest Canal (North); Earnest Canal (South); Excelsior Canal; Geo. Hitshew Canal; Harris-Neece Canal; Hughes Canal; Johnson Canal; Labelle Canal; Lakota Canal; Lichte Canal (although Lichte Canal is not above Box Butte Reservoir, it is included here for information); McGinley-Stover Canal; McLaughlin Canal; Mettlen Canal; Moore-Kay Canal and the Pioneer Canal. Streamflow measurements for gaged streams may be found at: <https://waterdata.usgs.gov/ne/nwis/current/?type=flow>.

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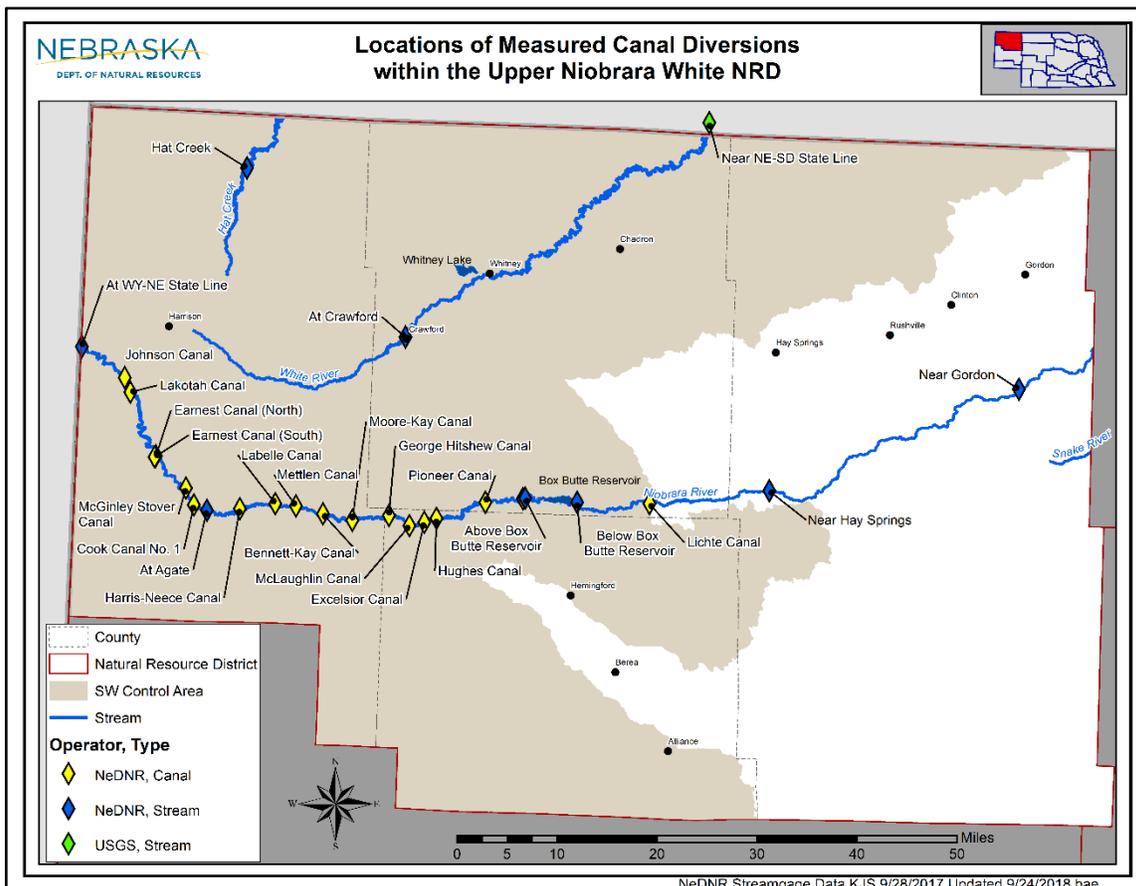


Figure 3: Locations of gaged measurements included in Appendix A.

3. Streamflow
 a. **Records of field measurements of diversions into canals and of streamflow within the District.**

Non-gaged stream locations, pumpsite and reservoir measurements for calendar year 2018 are included in Appendix B. Field measurements were taken at: Niobrara River, Hat Creek, and Whitney Reservoir (one reading). Measurements were also taken at various diversions, including: Armstrong Pump; Cook Pump, Delsing Pump; Hiltshew Pump #2, and Montague Canal Pump.

4. Monitoring
 a. **2018 Surface water pump site inspections conducted in 2018.**

The NeDNR field office staff regularly inspects pump sites of surface water diversion points as conditions allow. Not all pump sites are inspected every

2019 ANNUAL REPORT
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irrigation season, and some pump sites may be visited more than once per season. In 2018, field office staff inspected 109 pump sites (Figure 4), this is in addition to the field measurements of diversions into canals (Appendix B), in the UNWNRD. As a part of inspections, field staff collect the following data:

- Evidence of pump site
- Pumps that are running
- Crops in field
- Irrigation method

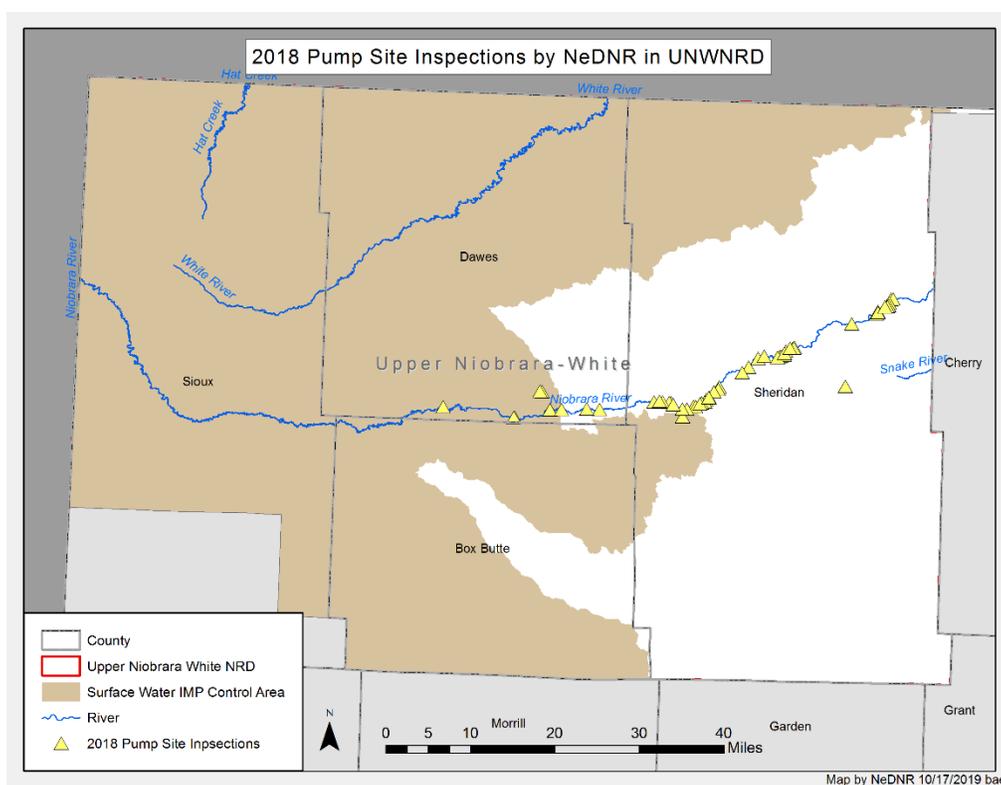


Figure 4: Pump site inspections conducted in 2018

Current Studies

The Upper Niobrara White NRD and the Department worked to prepare a refined hydrogeologic and hydrostratigraphic framework along the Niobrara River between Agate, Nebraska, and the Dunlap diversion for the Mirage Flats irrigation project. The Department contracted with the University of Nebraska-Lincoln's Conservation and Survey Division to conduct this study, the purpose of which was to gain additional

2019 ANNUAL REPORT
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TO MEET THE REQUIREMENTS OF THE UPPER NIOBRARA WHITE
NATURAL RESOURCES DISTRICT'S INTEGRATED MANAGEMENT PLAN

information regarding groundwater resources in areas presumed, according to geologic maps, to be without aquifers – yet, well registration records indicate that water wells have been drilled and are producing in these areas. The study is complete and report finalized, and the resulting information will be used in considering the extent of groundwater resources and hydrologic connection with surface water in these areas.

In 2018, the NRD and the Department signed a contract with HDR, Inc. (HDR), and HDR began work on a project to assess groundwater recharge potential and identify and prioritize possible recharge project sites within the NRD. This project covers Dawes, Box Butte, the northern one-third of Sheridan, and the northern two-thirds of Sioux Counties.

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**13000 Bennett-Kay Canal from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
2	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
3	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
4	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
5	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
6	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.2	0.00
7	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.2	0.00
8	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.2	0.00
9	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
10	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
11	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00
12	---	---	---	---	---	---	0.00	0.00	0.00	0.00	2.2	0.00
13	---	---	---	---	---	---	0.00	0.00	0.00	0.01	1.5	0.00
14	---	---	---	---	---	---	0.00	0.00	0.00	0.01	0.00	0.00
15	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.00	0.00	0.00	0.04	0.00	0.00
17	---	---	---	---	---	---	0.00	0.00	0.00	0.70	0.00	0.00
18	---	---	---	---	---	---	0.00	0.00	0.00	2.3	0.00	0.00
19	---	---	---	---	---	0.00	0.00	0.00	0.00	3.5	0.00	0.00
20	---	---	---	---	---	0.00	0.00	0.00	0.00	3.8	0.00	0.00
21	---	---	---	---	---	0.00	0.00	0.00	0.00	3.8	0.00	0.00
22	---	---	---	---	---	0.00	0.00	0.00	0.00	3.7	0.00	0.00
23	---	---	---	---	---	0.00	0.00	0.00	0.00	3.7	0.00	0.00
24	---	---	---	---	---	0.00	0.00	0.00	0.00	3.7	0.00	0.00
25	---	---	---	---	---	0.00	0.00	0.00	0.00	3.7	0.00	0.00
26	---	---	---	---	---	0.00	0.00	0.00	0.00	3.6	0.00	0.00
27	---	---	---	---	---	0.00	0.00	0.00	0.00	3.2	0.00	0.00
28	---	---	---	---	---	0.00	0.00	0.00	0.00	2.8	0.00	0.00
29	---	---	---	---	---	0.00	0.00	0.00	0.00	2.3	0.00	0.00
30	---	---	---	---	---	0.00	0.00	0.00	0.00	2.4	0.00	0.00
31	---	---	---	---	---	0.00	---	0.00	---	2.3	0.00	---
Total	0.000	---	---	---	---	0.000	0.000	0.000	0.000	45.6	28.7	0.000
Mean	0.000	---	---	---	---	0.000	0.000	0.000	0.000	1.47	0.93	0.000
Max	0.00	---	---	---	---	0.00	0.00	0.00	0.00	3.8	2.3	0.00
Min	0.00	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	---	0.00	0.00	0.00	0.00	90	57	0.00
CAL YEAR	2017	TOTAL	195.0	MEAN	1.02	MAX	5.0	MIN	0.00	AC-FT	386	
WTR YEAR	2018	TOTAL	74.0	MEAN	0.37	MAX	4.0	MIN	0.00	AC-FT	147	
Legend:	*e* Estimated											
	Created on				01/25/19 11:55				by J A MARBURGER			

NIOBRARA RIVER BASIN

BENNETT-KAY CANAL from Niobrara River, 00013000

LOCATION.- 42.42555, -103.5654 near Agate, NE.

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1958 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**29000 Cook Canal No. 1 from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
4	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
5	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
6	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
7	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
8	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
9	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
10	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
11	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
12	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
13	---	---	---	---	---	---	0.01	0.00	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
18	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	0.00	0.04	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
21	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
22	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	---	---	---	---	---	0.01	0.00	0.00	0.00	0.00	0.00	0.00
26	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	---	---	---	---	---	0.00	---	0.00	---	0.00	0.00	---
Total	0.000	---	---	---	---	0.010	0.010	0.040	0.000	0.000	0.000	0.000
Mean	0.000	---	---	---	---	0.002	0.002	0.002	0.001	0.002	0.002	0.000
Max	0.00	---	---	---	---	0.01	0.01	0.04	0.00	0.00	0.00	0.00
Min	0.00	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	---	0.02	0.02	0.08	0.00	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	1.0	MEAN	0.089	MAX	1.0	MIN	0.00	AC-FT	1.4	
WTR YEAR	2018	TOTAL	0.0	MEAN	0.000	MAX	0.0	MIN	0.00	AC-FT	0.1	
Legend:	*e* Estimated											
	Created on				01/25/19 11:01				by J A MARBURGER			

NIOBRARA RIVER BASIN

COOK CANAL NO. 1 from Niobrara River, 00029000

LOCATION.- 42.43063, -103.8183

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1956 - 1982, 1985 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**38200 Earnest Canal (North) from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	1.6	0.78	2.0	0.00	0.00	0.00
2	0.00	---	---	---	---	---	1.3	0.78	1.3	0.00	0.00	0.00
3	0.00	---	---	---	---	---	1.3	0.98	0.43	0.00	0.00	0.00
4	---	---	---	---	---	---	1.3	0.99	0.32	0.00	0.00	0.00
5	---	---	---	---	---	---	1.2	0.98	0.27	0.00	0.00	0.00
6	---	---	---	---	---	---	1.3	0.98	0.20	0.00	0.00	0.00
7	---	---	---	---	---	---	1.3	0.78	0.12	0.00	0.00	0.00
8	---	---	---	---	---	---	1.2	0.68	0.03	0.00	0.00	0.00
9	---	---	---	---	---	---	1.2	0.61	0.00	0.00	0.00	0.00
10	---	---	---	---	---	---	1.2	0.56	0.00	0.00	0.00	0.00
11	---	---	---	---	---	---	0.98	0.53	0.00	0.00	0.00	0.00
12	---	---	---	---	---	---	0.74	0.53	0.00	0.00	0.00	0.00
13	---	---	---	---	---	---	1.1	0.54	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	1.4	0.54	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	1.7	0.52	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	1.9	0.47	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	1.9	0.44	0.16	0.00	0.00	0.00
18	---	---	---	---	---	---	1.7	0.38	0.26	0.00	0.00	0.00
19	---	---	---	---	---	---	1.9	0.98	0.44	0.00	0.00	0.00
20	---	---	---	---	---	1.8	2.0	1.6	0.78	0.00	0.00	0.00
21	---	---	---	---	---	1.6	1.9	2.1	0.74	0.00	0.00	0.00
22	---	---	---	---	---	1.5	1.6	2.0	0.72	0.00	0.00	0.00
23	---	---	---	---	---	1.6	1.6	1.8	0.61	0.00	0.00	0.00
24	---	---	---	---	---	1.7	1.4	1.7	0.47	0.00	0.00	0.00
25	---	---	---	---	---	1.8	1.1	1.9	0.33	0.00	0.00	0.00
26	---	---	---	---	---	1.9	1.1	1.6	0.25	0.00	0.00	0.00
27	---	---	---	---	---	2.1	1.0	1.1	0.19	0.00	0.00	0.00
28	---	---	---	---	---	1.9	0.95	2.0	0.12	0.00	0.00	0.00
29	---	---	---	---	---	1.7	0.82	2.5	0.00	0.00	0.00	0.00
30	---	---	---	---	---	1.5	0.76	2.3	0.00	0.00	0.00	0.00
31	---	---	---	---	---	1.6	---	2.3	---	0.00	0.00	---
Total	0.000	---	---	---	---	20.7	40.4	35.9	9.74	0.000	0.000	0.000
Mean	0.000	---	---	---	---	1.71	1.35	1.16	0.33	0.000	0.000	0.000
Max	0.00	---	---	---	---	2.1	2.0	2.5	2.0	0.00	0.00	0.00
Min	0.00	---	---	---	---	1.5	0.74	0.38	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	---	41	80	71	19	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	156.0	MEAN	0.79	MAX	4.0	MIN	0.00	AC-FT	309	
WTR YEAR	2018	TOTAL	107.0	MEAN	0.54	MAX	3.0	MIN	0.00	AC-FT	212	
Legend:	'e' Estimated											
	Created on						01/03/19 10:42			by J A MARBURGER		

NIORRARA RIVER BASIN

EARNEST CANAL (NORTH) from Niobrara River, 00038200

LOCATION.- 42.48911, -103.897 near Harrison, NE.

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

38100 Earnest Canal (South) from Niobrara Rive Q, WATER YEAR OCT 2017 TO SEP 2018 Daily Mean Values												
Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	0.38	0.14	0.37	0.00	0.00	0.00
2	0.00	---	---	---	---	---	0.31	0.15	0.22	0.00	0.00	0.00
3	0.00	---	---	---	---	---	0.26	0.20	0.14	0.00	0.00	0.00
4	---	---	---	---	---	---	0.28	0.20	0.10	0.00	0.00	0.00
5	---	---	---	---	---	---	0.24	0.19	0.06	0.00	0.00	0.00
6	---	---	---	---	---	---	0.25	0.19	0.01	0.00	0.00	0.00
7	---	---	---	---	---	---	0.25	0.17	0.00	0.00	0.00	0.00
8	---	---	---	---	---	---	0.23	0.13	0.00	0.00	0.00	0.00
9	---	---	---	---	---	---	0.23	0.09	0.00	0.00	0.00	0.00
10	---	---	---	---	---	---	0.24	0.05	0.00	0.00	0.00	0.00
11	---	---	---	---	---	---	0.20	0.03	0.00	0.00	0.00	0.00
12	---	---	---	---	---	---	0.19	0.04	0.00	0.00	0.00	0.00
13	---	---	---	---	---	---	0.26	0.08	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	0.32	0.11	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	0.39	0.11	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.44	0.07	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	0.43	0.06	0.01	0.00	0.00	0.00
18	---	---	---	---	---	---	0.40	0.02	0.06	0.00	0.00	0.00
19	---	---	---	---	---	---	0.44	0.18	0.14	0.00	0.00	0.00
20	---	---	---	---	---	---	0.46	0.26	0.23	0.00	0.00	0.00
21	---	---	---	---	---	0.47	0.44	0.44	0.22	0.00	0.00	0.00
22	---	---	---	---	---	0.45	0.38	0.43	0.21	0.00	0.00	0.00
23	---	---	---	---	---	0.48	0.38	0.30	0.20	0.00	0.00	0.00
24	---	---	---	---	---	0.50	0.35	0.27	0.16	0.00	0.00	0.00
25	---	---	---	---	---	0.55	0.29	0.32	0.11	0.00	0.00	0.00
26	---	---	---	---	---	0.55	0.26	0.27	0.05	0.00	0.00	0.00
27	---	---	---	---	---	0.61	0.25	0.21	0.01	0.00	0.00	0.00
28	---	---	---	---	---	0.55	0.21	0.41	0.00	0.00	0.00	0.00
29	---	---	---	---	---	0.45	0.15	0.67	0.00	0.00	0.00	0.00
30	---	---	---	---	---	0.35	0.11	0.53	0.00	0.00	0.00	0.00
31	---	---	---	---	---	0.36	---	0.53	---	0.00	0.00	---
Total	0.000	---	---	---	---	5.32	9.02	6.85	2.30	0.000	0.000	0.000
Mean	0.00	---	---	---	---	0.48	0.30	0.22	0.077	-0.000	0.000	0.000
Max	0.00	---	---	---	---	0.61	0.46	0.67	0.37	0.00	0.00	0.00
Min	0.00	---	---	---	---	0.35	0.11	0.02	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	---	11	18	14	4.6	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	272.0	MEAN	1.37	MAX	7.0	MIN	0.00	AC-FT	540	
WTR YEAR	2018	TOTAL	23.0	MEAN	0.12	MAX	1.0	MIN	0.00	AC-FT	47	
Legend:	'e' Estimated											
	Created on				02/04/19 08:20				by Author			

NIORRARA RIVER BASIN

EARNEST CANAL (SOUTH) from Niobrara River, 00038100

LOCATION.- 42.4976, -103.8993 near Hamison, NE.

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

46000 Excelsior Canal from Niobrara River Q, WATER YEAR OCT 2017 TO SEP 2018 Daily Mean Values												
Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	0.00	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	0.00	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	0.28
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	e0.01	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	0.00	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	0.010	---	---	0.000	---	0.000	0.28
Mean	---	---	---	---	---	0.010	---	---	0.000	---	0.000	0.28
Max	---	---	---	---	---	0.01	---	---	0.00	---	0.00	0.28
Min	---	---	---	---	---	0.01	---	---	0.00	---	0.00	0.28
AC-FT	---	---	---	---	---	0.02	---	---	0.00	---	0.00	0.6
CAL YEAR	2017	TOTAL	5.0	MEAN	0.028	MAX	1.0	MIN	-0.00	AC-FT	8.9	
WTR YEAR	2018	TOTAL	0.0	MEAN	0.058	MAX	0.0	MIN	0.00	AC-FT	0.6	
Legend:	'e' Estimated											
Created on						02/04/19 09:16			by J A MARBURGER			

NIOBRARA RIVER BASIN

EXCELSIOR CANAL from Niobrara River, 00046000

LOCATION.- 42.41917, -103.3665 near Marsland, NE.

GAGE.--Continuous stage recorder and 28 inch cutthroat flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

63000 Geo. HitsheW Canal from Niobrara River
 Q, WATER YEAR OCT 2017 TO SEP 2018
 Daily Mean Values

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
2	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
3	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
4	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
5	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
6	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
7	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
8	---	---	---	---	---	---	0.00	0.17	0.00	0.00	0.00	0.00
9	---	---	---	---	---	---	0.00	1.6	0.00	0.00	0.00	0.00
10	---	---	---	---	---	---	0.00	3.0	0.00	0.00	0.00	0.00
11	---	---	---	---	---	---	0.00	1.7	0.00	0.00	0.00	0.00
12	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
13	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
18	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
21	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	---	---	---	---	---	0.00	---	0.00	---	0.00	0.00	---
Total	---	---	---	---	---	0.000	0.000	6.47	0.000	0.000	0.000	0.000
Mean	---	---	---	---	---	0.000	0.000	0.21	0.000	0.000	0.000	0.000
Max	---	---	---	---	---	0.00	0.00	3.0	0.00	0.00	0.00	0.00
Min	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	0.00	0.00	13	0.00	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	0.0	MEAN	0.000	MAX	0.0	MIN	0.00	AC-FT	0.00	
WTR YEAR	2018	TOTAL	6.0	MEAN	0.033	MAX	3.0	MIN	0.00	AC-FT	13	
Legend:	'e' Estimated											
	Created on				01/25/19 14:20				by J A MARBURGER			

NIOBRARA RIVER BASIN

GEO. HITSHEW CANAL from Niobrara River, 00063000

LOCATION.- 42.42713, -103.4363 near Marsland, NE.

GAGE.--Continuous stage recorder and 30 inch cutthroat flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**62000 Harris-Neece Canal from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	0.00	0.00	0.00	9.9	0.00	9.8
2	0.00	---	---	---	---	---	0.00	0.00	0.00	9.7	0.00	9.8
3	0.00	---	---	---	---	---	0.00	0.00	0.00	9.8	0.00	9.6
4	---	---	---	---	---	---	0.00	0.00	0.00	10	0.00	9.9
5	---	---	---	---	---	---	0.00	0.00	2.0	9.6	0.00	9.4
6	---	---	---	---	---	---	0.00	0.00	9.1	9.0	0.00	9.9
7	---	---	---	---	---	---	0.00	0.00	9.8	8.2	0.00	9.4
8	---	---	---	---	---	---	0.00	0.00	9.7	7.8	0.00	9.5
9	---	---	---	---	---	---	0.00	0.00	9.6	7.2	2.9	9.6
10	---	---	---	---	---	---	0.00	0.00	9.3	6.7	11	9.3
11	---	---	---	---	---	---	0.00	0.00	9.0	7.1	12	9.4
12	---	---	---	---	---	---	0.00	0.00	8.9	7.0	12	9.0
13	---	---	---	---	---	---	0.00	0.00	9.3	7.6	11	9.0
14	---	---	---	---	---	---	0.00	0.00	9.0	7.9	11	8.7
15	---	---	---	---	---	---	0.00	0.00	9.0	3.0	11	8.6
16	---	---	---	---	---	---	0.00	0.00	9.0	0.00	11	8.5
17	---	---	---	---	---	---	0.00	0.00	9.6	0.00	11	8.3
18	---	---	---	---	---	---	0.00	0.00	10	0.00	12	8.4
19	---	---	---	---	---	---	0.00	0.00	11	0.00	12	8.3
20	---	---	---	---	---	---	0.00	0.00	12	0.00	12	8.5
21	---	---	---	---	---	---	0.00	0.00	12	0.00	11	8.6
22	---	---	---	---	---	---	0.00	0.00	12	0.00	11	9.0
23	---	---	---	---	---	0.00	0.00	0.00	11	0.00	11	8.8
24	---	---	---	---	---	0.00	0.00	0.00	11	0.00	11	8.9
25	---	---	---	---	---	0.00	0.00	0.00	11	0.00	10	8.4
26	---	---	---	---	---	0.00	0.00	0.00	11	0.00	10	8.3
27	---	---	---	---	---	0.00	0.00	0.00	11	0.00	9.8	8.5
28	---	---	---	---	---	0.00	0.00	0.00	10	0.00	10	8.5
29	---	---	---	---	---	0.00	0.00	0.00	11	0.00	10	8.5
30	---	---	---	---	---	0.00	0.00	0.00	11	0.00	10	4.3
31	---	---	---	---	---	0.00	---	0.00	---	0.00	10	---
Total	0.000	---	---	---	---	0.000	0.000	0.000	257	120	243	265
Mean	0.000	---	---	---	---	0.000	0.000	0.000	8.55	3.89	7.84	8.82
Max	0.00	---	---	---	---	0.00	0.00	0.00	12	10	12	9.9
Min	0.00	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	4.3
AC-FT	0.00	---	---	---	---	0.00	0.00	0.00	510	239	481	525
CAL YEAR	2017	TOTAL	687.0	MEAN	3.60	MAX	10.0	MIN	0.00	AC-FT	1360	
WTR YEAR	2018	TOTAL	885.0	MEAN	4.54	MAX	12.0	MIN	0.00	AC-FT	1760	
Legend:	'e' Estimated		Created on				01/14/19 14:23		by Author: S. Figuric			

2018 WY

NIOBRARA RIVER BASIN

HARRIS-NEECE CANAL from Niobrara River, 00062000

LOCATION.- 42.42795, -103.7282 near Agate, NE.

GAGE.--Continuous stage recorder and 30 inch cutthroat flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

69000 Hughes Canal from Niobrara River
 Q, WATER YEAR OCT 2017 TO SEP 2018
 Daily Mean Values

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	---	---	---	---	---	---	0.13	---	---	e0.00	e0.00	0.00
2	---	---	---	---	---	---	0.13	---	---	e0.00	e0.00	0.00
3	---	---	---	---	---	---	0.12	---	---	e0.00	e0.00	0.00
4	---	---	---	---	---	---	0.14	---	---	e0.00	e0.00	0.00
5	---	---	---	---	---	---	0.12	---	---	e0.00	e0.00	0.00
6	---	---	---	---	---	---	0.12	---	---	e0.00	e0.00	0.00
7	---	---	---	---	---	---	0.12	---	---	e0.00	e0.00	0.00
8	---	---	---	---	---	---	0.10	---	---	e0.00	e0.00	0.00
9	---	---	---	---	---	---	0.12	---	---	e0.00	e0.00	0.00
10	---	---	---	---	---	---	0.15	---	---	e0.00	e0.00	0.00
11	---	---	---	---	---	---	0.11	---	---	e0.00	e0.00	0.00
12	---	---	---	---	---	---	0.09	---	---	e0.00	e0.00	0.00
13	---	---	---	---	---	---	0.15	---	---	e0.00	e0.00	0.00
14	---	---	---	---	---	---	0.35	---	e0.00	e0.00	e0.00	0.00
15	---	---	---	---	---	---	0.41	---	e0.00	e0.00	e0.00	0.00
16	---	---	---	---	---	---	0.15	---	e0.00	e0.00	e0.00	0.00
17	---	---	---	---	---	---	0.17	---	e0.00	e0.00	e0.00	0.00
18	---	---	---	---	---	---	0.15	---	e0.00	e0.00	e0.00	0.00
19	---	---	---	---	---	---	0.17	---	e0.00	e0.00	e0.00	0.00
20	---	---	---	---	---	---	0.07	---	e0.00	e0.00	e0.00	0.00
21	---	---	---	---	---	---	0.07	---	e0.00	e0.00	e0.00	0.00
22	---	---	---	---	---	0.25	0.20	---	e0.00	e0.00	e0.00	0.00
23	---	---	---	---	---	0.23	0.22	---	e0.00	e0.00	0.00	0.00
24	---	---	---	---	---	0.23	0.08	---	e0.00	e0.00	0.00	0.00
25	---	---	---	---	---	0.20	0.30	---	e0.00	e0.00	0.00	0.00
26	---	---	---	---	---	0.18	0.30	---	e0.00	e0.00	0.00	0.00
27	---	---	---	---	---	0.27	0.26	---	e0.00	e0.00	0.00	0.00
28	---	---	---	---	---	0.18	0.21	---	e0.00	e0.00	0.00	0.00
29	---	---	---	---	---	0.17	0.20	---	e0.00	e0.00	0.00	0.00
30	---	---	---	---	---	0.19	0.16	---	e0.00	e0.00	0.00	0.00
31	---	---	---	---	---	0.15	---	---	---	e0.00	0.00	---
Total	---	---	---	---	---	2.05	5.07	---	0.000	0.000	0.000	0.000
Mean	---	---	---	---	---	0.20	0.17	---	0.000	0.000	0.00	0.00
Max	---	---	---	---	---	0.27	0.41	---	0.00	0.00	0.00	0.00
Min	---	---	---	---	---	0.15	0.07	---	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	4.1	10	---	0.00	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	9.0	MEAN	0.053	MAX	1.0	MIN	0.00	AC-FT	18	
WTR YEAR	2018	TOTAL	7.0	MEAN	0.048	MAX	0.0	MIN	0.00	AC-FT	14	
Legend:	'e' Estimated											
	Created on					01/23/19 10:56			by J A MARBURGER			

NIOBARRA RIVER BASIN

HUGHES CANAL from Niobrara River, 00069000

LOCATION.- 42.42558 , -103.3431 near Marsland, NE.

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

72000 Johnson Canal from Niobrara River
 Q, WATER YEAR OCT 2017 TO SEP 2018
 Daily Mean Values

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	---	---	---	---	---	---	0.00	4.4	8.1	0.00	0.00	0.00
2	---	---	---	---	---	---	0.00	4.8	7.2	0.00	0.00	0.00
3	---	---	---	---	---	---	0.00	5.1	6.9	0.00	0.00	0.00
4	---	---	---	---	---	---	0.00	5.1	6.6	0.00	0.00	0.00
5	---	---	---	---	---	---	0.00	5.6	6.2	0.00	0.00	0.00
6	---	---	---	---	---	---	0.00	5.3	6.8	0.00	0.00	0.00
7	---	---	---	---	---	---	0.00	5.0	13	0.00	0.00	0.00
8	---	---	---	---	---	---	0.00	4.8	17	0.00	0.00	0.00
9	---	---	---	---	---	---	0.00	4.6	17	0.00	0.00	0.00
10	---	---	---	---	---	---	0.00	4.9	9.9	0.00	0.00	0.00
11	---	---	---	---	---	---	0.00	4.9	0.05	0.00	0.00	0.00
12	---	---	---	---	---	---	0.00	5.2	0.00	0.00	0.00	0.00
13	---	---	---	---	---	---	0.00	5.5	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	0.00	5.7	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	0.00	6.1	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.00	5.7	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	0.00	5.5	0.00	0.00	0.00	0.00
18	---	---	---	---	---	---	0.00	5.3	0.00	0.00	0.00	0.00
19	---	---	---	---	---	0.00	0.00	7.8	0.00	0.00	0.00	0.00
20	---	---	---	---	---	0.00	0.00	9.2	0.00	0.00	0.00	0.00
21	---	---	---	---	---	0.00	0.00	11	0.00	0.00	0.00	0.00
22	---	---	---	---	---	0.00	0.00	8.9	0.00	0.00	0.00	0.00
23	---	---	---	---	---	0.00	0.00	8.8	0.00	0.00	0.00	0.00
24	---	---	---	---	---	0.00	1.1	8.3	0.00	0.00	0.00	0.00
25	---	---	---	---	---	0.00	3.4	7.7	0.00	0.00	0.00	0.00
26	---	---	---	---	---	0.00	3.6	7.1	0.00	0.00	0.00	0.00
27	---	---	---	---	---	0.00	3.5	6.6	0.00	0.00	0.00	0.00
28	---	---	---	---	---	0.00	3.5	6.8	0.00	0.00	0.00	0.00
29	---	---	---	---	---	0.00	3.5	8.0	0.00	0.00	0.00	0.00
30	---	---	---	---	---	0.00	3.6	8.4	0.00	0.00	0.00	0.00
31	---	---	---	---	---	0.00	---	8.6	---	0.00	0.00	---
Total	---	---	---	---	---	0.000	22.2	201	98.8	0.000	0.000	0.000
Mean	---	---	---	---	---	0.000	0.74	6.46	3.31	0.000	0.000	0.000
Max	---	---	---	---	---	0.00	3.6	11	17	0.00	0.00	0.00
Min	---	---	---	---	---	0.00	0.00	4.4	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	0.00	44	398	196	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	63.0	MEAN	0.40	MAX	17.0	MIN	0.00	AC-FT	125	
WTR YEAR	2018	TOTAL	322.0	MEAN	1.64	MAX	17.0	MIN	0.00	AC-FT	638	
Legend:	e' Estimated											
	Created on					01/23/19 11:19			by J A MARBURGER			

NIOBRARA RIVER BASIN

JOHNSON CANAL from Niobrara River, 00072000

LOCATION.- 42.61062, -103.9648 near Harrison, NE.

GAGE.--Continuous stage recorder and 1.5 ft. Parshall flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**78000 Labelle Canal from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
4	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
5	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
6	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
7	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
8	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
9	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
10	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
11	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
12	---	---	---	---	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00
13	---	---	---	---	0.00	---	0.00	0.00	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
18	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
21	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
22	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
23	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	---	---	---	---	---	0.00	---	0.00	---	0.00	0.00	---
Total	0.000	---	---	---	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Mean	0.000	---	---	---	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Max	0.00	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Min	0.00	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CAL YEAR	2017	TOTAL	2.0	MEAN	0.006	MAX	0.0	MIN	0.00	AC-FT	3.0
WTR YEAR	2018	TOTAL	0.0	MEAN	0.000	MAX	0.0	MIN	0.00	AC-FT	0.00

Legend: 'e' Estimated Created on 01/24/19 14:10 by Author: S. Figuric

2018 WY
 NIOBRARA RIVER BASIN
 LABELLE CANAL from Niobrara River, 00078000
 LOCATION.- 42.4375, -103.6592 near Agate, NE.
 GAGE.--Continuous stage recorder and concrete flume
 PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**79000 Lakotah Canal from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	1.3	---	---	---	---	---	---	0.11	0.01	0.08	0.08	0.01
2	1.4	---	---	---	---	---	---	0.09	0.01	0.08	0.06	0.01
3	1.5	---	---	---	---	---	---	0.1	0.00	0.07	0.00	0.01
4	1.5	---	---	---	---	---	---	0.11	0.00	0.07	0.01	0.01
5	1.6	---	---	---	---	---	---	0.09	0.00	0.06	0.01	0.01
6	1.6	---	---	---	---	---	---	0.07	0.00	0.05	0.01	0.01
7	1.7	---	---	---	---	---	---	0.01	0.01	0.01	0.01	0.01
8	1.8	---	---	---	---	---	---	0.00	0.01	0.01	0.01	0.01
9	1.9	---	---	---	---	---	---	0.01	0.01	0.01	0.01	0.01
10	2.0	---	---	---	---	---	---	0.01	0.01	0.01	0.01	0.01
11	2.2	---	---	---	---	---	---	0.07	0.12	0.01	0.01	0.01
12	---	---	---	---	---	---	---	0.10	0.14	0.01	0.01	0.01
13	---	---	---	---	---	---	---	0.12	0.12	0.01	0.01	0.01
14	---	---	---	---	---	---	---	0.11	0.09	0.01	0.01	0.01
15	---	---	---	---	---	---	---	0.12	0.06	0.01	0.01	0.01
16	---	---	---	---	---	---	---	0.11	0.01	0.01	0.01	0.01
17	---	---	---	---	---	---	---	0.08	0.09	0.06	0.01	0.01
18	---	---	---	---	---	---	---	0.05	0.19	0.08	0.01	0.01
19	---	---	---	---	---	---	---	0.20	0.26	0.09	0.01	0.01
20	---	---	---	---	---	---	---	0.14	0.23	0.08	0.01	0.01
21	---	---	---	---	---	---	---	0.15	0.21	0.06	0.01	0.01
22	---	---	---	---	---	---	---	0.15	0.19	0.02	0.01	0.01
23	---	---	---	---	---	---	---	0.09	0.17	0.02	0.01	0.01
24	---	---	---	---	---	---	---	0.05	0.16	0.02	0.01	0.01
25	---	---	---	---	---	---	0.15	0.03	0.14	0.02	0.01	0.01
26	---	---	---	---	---	---	0.09	0.01	0.13	0.02	0.01	0.01
27	---	---	---	---	---	---	0.07	0.01	0.12	0.02	0.01	0.01
28	---	---	---	---	---	---	0.06	0.01	0.12	0.06	0.01	0.00
29	---	---	---	---	---	---	0.08	0.01	0.10	0.07	0.01	0.01
30	---	---	---	---	---	---	0.09	0.01	0.09	0.08	0.01	0.04
31	---	---	---	---	---	---	---	0.01	---	0.09	0.01	---
Total	18.5	---	---	---	---	---	0.54	2.23	2.80	1.30	0.42	0.32
Mean	1.68	---	---	---	---	---	0.088	0.073	0.093	0.040	0.010	0.007
Max	2.2	---	---	---	---	---	0.15	0.20	0.26	0.09	0.08	0.04
Min	1.3	---	---	---	---	---	0.06	0.00	0.00	0.01	0.00	0.00
AC-FT	37	---	---	---	---	---	1.1	4.4	5.6	2.6	0.8	0.6
CAL YEAR	2017	TOTAL	192.0	MEAN	0.68	MAX	4.0	MIN	0.00	AC-FT	382	
WTR YEAR	2018	TOTAL	26.0	MEAN	0.15	MAX	2.0	MIN	0.00	AC-FT	52	
Legend:	'e' Estimated											
	Created on						01/25/19 10:25			by J A MARBURGER		

NIOBRARA RIVER BASIN

LAKOTAH CANAL from Niobrara River, 00079000

LOCATION.- 42.58989, -103.9525 near Harrison, NE.

GAGE.--Continuous stage recorder and 2 ft. Parshall flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**81000 Lichte Canal from Niobrara River
Q, WATER YEAR OCT 2016 TO SEP 2017
Daily Mean Values**

Day	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
Total	---	---	---	---	---	---	---	---	---	---	---	---
Mean	---	---	---	---	---	---	---	---	---	---	---	---
Max	---	---	---	---	---	---	---	---	---	---	---	---
Min	---	---	---	---	---	---	---	---	---	---	---	---
AC-FT	---	---	---	---	---	---	---	---	---	---	---	---
CAL YEAR	2016	TOTAL	0.0	MEAN		MAX		MIN		AC-FT	0.00	
WTR YEAR	2017	TOTAL	0.0	MEAN		MAX		MIN		AC-FT	0.00	
Legend:	'e' Estimated		Created on				03/19/18 12:09		by J A MARBURGER			

NIORARA RIVER BASIN

LICHTE CANAL from Niobrara River, 00081000

LOCATION.--NW1/4SW1/4 Sec. 26-29-48 W. near Dunlap

GAGE.--Continuous stage recorder and 3 ft. Parshall flume

PERIOD OF RECORD.--1956 -2013 The Site was not visited in Water Year 2017.

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

84000 McGinley-Stover Canal from Niobrara Rive Q, WATER YEAR OCT 2017 TO SEP 2018 Daily Mean Values												
Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	---	0.00	2.2	0.00	0.00	0.00
2	0.00	---	---	---	---	---	---	0.00	2.1	0.00	0.00	0.00
3	0.00	---	---	---	---	---	---	0.00	2.0	1.3	0.89	0.00
4	---	---	---	---	---	---	---	0.00	2.0	1.9	1.8	0.00
5	---	---	---	---	---	---	---	0.00	5.1	1.4	1.7	0.00
6	---	---	---	---	---	---	---	0.00	6.2	1.7	1.7	0.00
7	---	---	---	---	---	---	---	0.00	5.1	1.7	1.6	0.00
8	---	---	---	---	---	---	---	0.00	4.0	1.5	1.6	0.00
9	---	---	---	---	---	---	---	0.00	3.3	1.5	1.6	0.00
10	---	---	---	---	---	---	---	5.1	2.4	1.5	1.6	0.00
11	---	---	---	---	---	---	---	11	1.8	2.2	1.6	0.00
12	---	---	---	---	---	---	---	8.8	1.4	2.2	1.5	0.00
13	---	---	---	---	---	---	---	8.8	1.3	2.1	1.5	0.00
14	---	---	---	---	---	---	---	8.8	1.2	1.9	1.4	0.00
15	---	---	---	---	---	---	---	8.8	1.1	2.0	1.4	0.00
16	---	---	---	---	---	---	---	8.6	0.38	2.7	1.3	0.00
17	---	---	---	---	---	---	---	8.3	0.00	0.70	0.44	0.00
18	---	---	---	---	---	---	---	8.1	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	---	7.3	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	---	5.9	0.00	0.00	0.00	0.00
21	---	---	---	---	---	---	---	5.5	0.00	0.00	0.00	0.00
22	---	---	---	---	---	---	---	5.1	0.00	0.00	0.00	0.00
23	---	---	---	---	---	---	---	5.1	0.00	0.75	0.00	0.00
24	---	---	---	---	---	---	---	3.5	0.00	1.5	0.00	0.00
25	---	---	---	---	---	---	---	2.5	0.00	1.5	0.00	0.00
26	---	---	---	---	---	---	---	2.4	0.00	1.6	0.00	0.00
27	---	---	---	---	---	---	---	2.4	0.00	1.6	0.00	0.00
28	---	---	---	---	---	---	---	2.3	0.00	0.51	0.00	0.00
29	---	---	---	---	---	---	---	2.4	0.00	0.00	0.00	0.00
30	---	---	---	---	---	---	---	2.3	0.00	0.00	0.00	0.00
31	---	---	---	---	---	---	---	2.2	---	0.00	0.00	---
Total	0.000	---	---	---	---	---	---	125	41.6	33.8	21.6	0.000
Mean	0.000	---	---	---	---	---	---	4.05	1.39	1.09	0.70	0.000
Max	0.00	---	---	---	---	---	---	11	6.2	2.7	1.8	0.00
Min	0.00	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	---	---	---	248	82	67	43	0.00
CAL YEAR	2017	TOTAL	136.0	MEAN	0.80	MAX	5.0	MIN	0.00	AC-FT	270	
WTR YEAR	2018	TOTAL	222.0	MEAN	1.42	MAX	11.0	MIN	0.00	AC-FT	441	
Legend:	'e' Estimated											
	Created on				01/14/19 14:30				by Author: S. Figuric			

2018 WY

NIOBRARA RIVER BASIN

McGINLEY-STOVER CANAL from Niobrara River, 00084000

LOCATION.- 42.45577, -103.837 near Agate, NE.

GAGE.--Continuous stage recorder and 3 ft. Parshall flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

86000 McLaughlin Canal from Niobrara River Q, WATER YEAR OCT 2017 TO SEP 2018 Daily Mean Values												
Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	---	---	---	---	---	---	0.00	0.00	0.13	0.00	0.00	0.00
2	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
3	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
4	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
5	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
6	---	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00
7	---	---	---	---	---	---	0.00	0.01	0.00	0.00	0.00	0.00
8	---	---	---	---	---	---	0.00	0.03	0.00	0.00	0.00	0.00
9	---	---	---	---	---	---	0.00	0.02	0.00	0.00	0.00	0.00
10	---	---	---	---	---	---	0.00	0.02	0.00	0.00	0.00	0.00
11	---	---	---	---	---	---	0.00	0.01	0.00	0.00	0.00	0.00
12	---	---	---	---	---	---	0.00	0.01	0.00	0.00	0.00	0.00
13	---	---	---	---	---	---	0.00	0.01	0.00	0.00	0.00	0.00
14	---	---	---	---	---	---	0.00	0.01	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	0.00	0.03	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	0.00	0.54	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	0.00	1.4	0.00	0.00	0.00	0.00
18	---	---	---	---	---	---	0.00	0.99	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	0.00	1.8	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	0.00	1.8	0.00	0.00	0.00	0.00
21	---	---	---	---	---	---	0.00	0.82	0.00	0.00	0.00	0.00
22	---	---	---	---	---	1.7	0.00	0.31	0.00	0.00	0.00	0.00
23	---	---	---	---	---	1.7	0.00	0.18	0.00	0.00	0.00	0.00
24	---	---	---	---	---	1.6	0.00	0.15	0.00	0.00	0.00	0.00
25	---	---	---	---	---	1.5	0.00	0.1	0.00	0.00	0.00	0.00
26	---	---	---	---	---	1.4	0.00	0.01	0.00	0.00	0.00	0.00
27	---	---	---	---	---	0.52	0.00	0.00	0.00	0.00	0.00	0.00
28	---	---	---	---	---	1.1	0.00	0.24	0.00	0.00	0.00	0.00
29	---	---	---	---	---	0.02	0.00	0.73	0.00	0.00	0.00	0.00
30	---	---	---	---	---	0.00	0.00	0.81	0.00	0.00	0.00	0.00
31	---	---	---	---	---	0.00	---	0.47	---	0.00	0.00	---
Total	---	---	---	---	---	9.54	0.000	10.5	0.13	0.000	0.000	0.000
Mean	---	---	---	---	---	0.95	0.000	0.34	0.004	0.000	0.000	0.000
Max	---	---	---	---	---	1.7	0.00	1.8	0.13	0.00	0.00	0.00
Min	---	---	---	---	---	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AC-FT	---	---	---	---	---	19	0.00	21	0.3	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	90.0	MEAN	0.55	MAX	5.0	MIN	0.00	AC-FT	179	
WTR YEAR	2018	TOTAL	20.0	MEAN	0.10	MAX	2.0	MIN	0.00	AC-FT	40	
Legend:	'e' Estimated						Created on	01/25/19 15:29		by J A MARBURGER		

NIOBRARA RIVER BASIN

McLAUGHLIN CANAL from Niobrara River, 00086000

LOCATION.- 42.41358, -103.3953 near Marsland, NE.

GAGE.--Continuous stage recorder and 30 inch cutthroat flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

104000 Moore-Kay Canal from Niobrara River
 Q, WATER YEAR OCT 2017 TO SEP 2018
 Daily Mean Values

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	---	---	---	---	---	1.3	---	---	0.00	0.00	0.00
2	0.00	---	---	---	---	---	1.5	---	---	0.00	0.00	0.00
3	0.00	---	---	---	---	---	1.5	---	---	0.00	0.00	0.00
4	---	---	---	---	---	---	1.8	---	---	0.00	0.00	0.00
5	---	---	---	---	---	---	1.5	---	---	0.00	0.00	0.00
6	---	---	---	---	---	---	1.3	---	---	0.00	0.00	0.00
7	---	---	---	---	---	---	1.3	---	---	0.00	0.00	0.00
8	---	---	---	---	---	---	1.5	---	---	0.00	0.00	0.00
9	---	---	---	---	---	---	1.6	---	---	0.00	0.00	0.00
10	---	---	---	---	---	---	1.6	---	---	0.00	0.00	0.00
11	---	---	---	---	---	---	1.5	---	---	0.00	0.00	0.00
12	---	---	---	---	---	---	1.1	---	---	0.00	0.00	0.00
13	---	---	---	---	---	---	1.3	---	---	0.00	0.00	0.00
14	---	---	---	---	---	---	6.6	---	0.00	0.00	0.00	0.00
15	---	---	---	---	---	---	3.6	---	0.00	0.00	0.00	0.00
16	---	---	---	---	---	---	3.0	---	0.00	0.00	0.00	0.00
17	---	---	---	---	---	---	2.7	---	0.00	0.00	0.00	0.00
18	---	---	---	---	---	---	2.4	---	0.00	0.00	0.00	0.00
19	---	---	---	---	---	---	1.9	---	0.00	0.00	0.00	0.00
20	---	---	---	---	---	---	1.7	---	0.00	0.00	0.00	0.00
21	---	---	---	---	---	3.3	1.9	---	0.00	0.00	0.00	0.00
22	---	---	---	---	---	3.2	2.2	---	0.00	0.00	0.00	0.00
23	---	---	---	---	---	3.0	2.2	---	0.00	0.00	0.00	0.00
24	---	---	---	---	---	2.8	2.7	---	0.00	0.00	0.00	0.00
25	---	---	---	---	---	2.4	2.5	---	0.00	0.00	0.00	0.00
26	---	---	---	---	---	2.3	2.1	---	0.00	0.00	0.00	0.00
27	---	---	---	---	---	1.9	1.7	---	0.00	0.00	0.00	0.00
28	---	---	---	---	---	1.6	---	---	0.00	0.00	0.00	0.00
29	---	---	---	---	---	1.4	---	---	0.00	0.00	0.00	0.00
30	---	---	---	---	---	1.3	---	---	0.00	0.00	0.00	0.00
31	---	---	---	---	---	1.2	---	---	---	0.00	0.00	---
Total	0.000	---	---	---	---	24.4	55.8	---	0.000	0.000	0.000	0.000
Mean	0.000	---	---	---	---	2.23	2.07	---	0.000	0.000	0.000	0.000
Max	0.00	---	---	---	---	3.3	6.6	---	0.00	0.00	0.00	0.00
Min	0.00	---	---	---	---	1.2	1.1	---	0.00	0.00	0.00	0.00
AC-FT	0.00	---	---	---	---	48	111	---	0.00	0.00	0.00	0.00
CAL YEAR	2017	TOTAL	15.0	MEAN	0.086	MAX	2.0	MIN	0.00	AC-FT	29	
WTR YEAR	2018	TOTAL	80.0	MEAN	0.53	MAX	7.0	MIN	0.00	AC-FT	159	
Legend:	'e' Estimated											
	Created on					02/05/19 09:29			by J A MARBURGER			

NIOBRARA RIVER BASIN

MOORE-KAY CANAL from Niobrara River, 00104000

LOCATION.- 42.41793, -103.5075 near Marsland, NE.

GAGE.--Continuous stage recorder and 2 ft. flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

**89000 Mettlen Canal from Niobrara River
Q, WATER YEAR OCT 2017 TO SEP 2018
Daily Mean Values**

Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.85	---	---	---	---	---	1.2	1.8	1.7	4.5	0.30	0.01
2	0.98	---	---	---	---	---	1.2	1.8	1.7	4.3	0.42	0.03
3	1.4	---	---	---	---	---	1.2	1.8	1.7	4.1	0.47	0.03
4	---	---	---	---	---	---	1.2	1.7	1.6	3.8	0.48	0.03
5	---	---	---	---	---	---	1.2	1.7	1.6	3.4	0.59	0.01
6	---	---	---	---	---	---	1.5	1.7	1.6	4.0	0.66	0.01
7	---	---	---	---	---	---	1.6	1.7	1.5	3.9	0.72	0.03
8	---	---	---	---	---	---	1.6	1.7	1.4	3.6	0.73	0.01
9	---	---	---	---	---	---	1.6	1.8	1.3	3.2	0.68	0.01
10	---	---	---	---	---	---	1.6	1.9	1.3	2.7	0.65	0.02
11	---	---	---	---	---	---	1.6	1.8	1.2	2.0	0.58	0.01
12	---	---	---	---	---	---	1.6	1.9	1.1	1.6	0.21	0.00
13	---	---	---	---	---	---	1.8	1.9	1.1	1.8	0.03	0.00
14	---	---	---	---	---	---	2.9	1.9	1.0	0.08	0.00	0.00
15	---	---	---	---	---	---	1.6	2.0	1.1	0.39	0.00	0.00
16	---	---	---	---	---	---	1.6	1.9	1.1	0.26	0.00	0.00
17	---	---	---	---	---	---	1.6	1.9	1.1	0.00	0.00	0.00
18	---	---	---	---	---	---	1.5	1.9	1.1	0.00	0.00	0.00
19	---	---	---	---	---	---	1.6	2.1	1.2	0.00	0.00	0.00
20	---	---	---	---	---	---	1.6	2.0	1.2	0.01	0.00	0.00
21	---	---	---	---	---	---	1.6	2.0	1.2	0.00	0.00	0.00
22	---	---	---	---	---	---	1.6	2.0	1.2	0.01	0.00	0.00
23	---	---	---	---	---	2.5	1.6	1.9	1.2	0.01	0.00	0.00
24	---	---	---	---	---	2.5	1.7	1.9	1.2	0.01	0.00	0.00
25	---	---	---	---	---	2.0	1.6	1.8	1.2	0.03	0.00	0.00
26	---	---	---	---	---	1.5	1.6	1.7	1.1	0.07	0.00	0.00
27	---	---	---	---	---	1.3	1.6	1.7	0.99	0.11	0.00	0.00
28	---	---	---	---	---	1.2	1.6	1.8	0.88	0.13	0.00	0.00
29	---	---	---	---	---	1.2	1.6	1.8	0.79	0.16	0.00	0.00
30	---	---	---	---	---	1.1	1.7	1.8	2.3	0.28	0.00	0.00
31	---	---	---	---	---	1.1	---	1.7	---	0.26	0.00	---
Total	3.23	---	---	---	---	14.4	47.5	57.0	38.7	44.7	6.52	0.20
Mean	1.09	---	---	---	---	1.61	1.58	1.83	1.29	1.44	0.21	0.006
Max	1.4	---	---	---	---	2.5	2.9	2.1	2.3	4.5	0.73	0.03
Min	0.85	---	---	---	---	1.1	1.2	1.7	0.79	0.00	0.00	0.00
AC-FT	6.4	---	---	---	---	29	94	113	77	89	13	0.4
CAL YEAR	2017	TOTAL	52.0	MEAN	0.27	MAX	4.0	MIN	0.00	AC-FT	104	
WTR YEAR	2018	TOTAL	212.0	MEAN	1.09	MAX	5.0	MIN	0.00	AC-FT	421	
Legend:	'e' Estimated											
	Created on				01/28/19 15:10				by J A MARBURGER			

NIOBARRA RIVER BASIN

METTLEN CANAL from Niobrara River, 00089000

LOCATION.- 42.43538, -103.6188 near Agate, NE.

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1956 - present

APPENDIX A 2018 CANAL MEASUREMENTS

Nebraska Department of Natural Resources

123000 Pioneer Canal from Niobrara River Q, WATER YEAR OCT 2017 TO SEP 2018 Daily Mean Values												
Day	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
1	0.00	0.00	---	---	---	---	---	---	---	---	---	---
2	0.00	0.00	---	---	---	---	---	---	---	---	---	---
3	0.00	0.00	---	---	---	---	---	---	---	---	---	---
4	0.00	0.00	---	---	---	---	---	---	---	---	---	---
5	0.00	0.00	---	---	---	---	---	---	---	---	---	---
6	0.00	0.00	---	---	---	---	---	---	---	---	---	---
7	0.00	0.00	---	---	---	---	---	---	---	---	---	---
8	0.00	0.00	---	---	---	---	---	---	---	---	---	---
9	0.00	---	---	---	---	---	---	---	---	---	---	---
10	0.00	---	---	---	---	---	---	---	---	---	1.9	---
11	0.00	---	---	---	---	---	---	---	---	---	---	---
12	0.00	---	---	---	---	---	---	---	---	---	---	---
13	0.00	---	---	---	---	---	---	---	---	---	---	---
14	0.00	---	---	---	---	---	---	---	0.70	---	---	---
15	0.00	---	---	---	---	---	---	---	---	---	---	---
16	0.00	---	---	---	---	---	---	---	---	---	---	---
17	0.00	---	---	---	---	---	---	---	---	---	---	---
18	0.00	---	---	---	---	---	---	---	---	---	---	---
19	0.00	---	---	---	---	---	---	---	---	---	---	---
20	0.00	---	---	---	---	---	---	---	---	---	---	---
21	0.00	---	---	---	---	---	---	---	---	---	---	---
22	0.00	---	---	---	---	---	---	---	---	---	---	---
23	0.00	---	---	---	---	---	---	---	---	---	0.00	---
24	0.00	---	---	---	---	---	---	---	---	---	---	---
25	0.00	---	---	---	---	---	---	---	---	---	---	---
26	0.00	---	---	---	---	---	---	---	---	---	---	---
27	0.00	---	---	---	---	---	---	---	---	---	---	---
28	0.00	---	---	---	---	---	---	---	0.00	---	---	---
29	0.00	---	---	---	---	---	---	---	---	---	---	---
30	0.00	---	---	---	---	---	---	---	---	---	---	---
31	0.00	---	---	---	---	---	---	---	---	---	---	---
Total	0.000	0.000	---	---	---	---	---	---	0.70	---	1.90	---
Mean	0.000	0.000	---	---	---	---	---	---	0.35	---	0.96	---
Max	0.00	0.00	---	---	---	---	---	---	0.70	---	1.9	---
Min	0.00	0.00	---	---	---	---	---	---	0.00	---	0.00	---
AC-FT	0.00	0.00	---	---	---	---	---	---	1.4	---	3.8	---
CAL YEAR	2017	TOTAL	207.0	MEAN	0.98	MAX	5.0	MIN	0.00	AC-FT	411	
WTR YEAR	2018	TOTAL	3.0	MEAN	0.060	MAX	2.0	MIN	0.00	AC-FT	5.2	
Legend:	'e' Estimated											
	Created on				02/04/19 10:51				by J A MARBURGER			

NIOBRARA RIVER BASIN

PIONEER CANAL from Niobrara River, 00123000

LOCATION.- 42.45158, -103.2486 near Marsland, NE.

GAGE.--Continuous stage recorder and concrete flume

PERIOD OF RECORD.--1956 - 1982, 1986 - present

APPENDIX B 2018 FIELD MEASUREMENTS

Date	Site Number	Site Name	Discharge
6/26/2018	6400	Armstrong Pump fr Niobrara River	0
7/12/2018	6400	Armstrong Pump fr Niobrara River	0
10/3/2017	6380	Cook Pump fr Niobrara River	0
7/12/2018	6380	Cook Pump fr Niobrara River	1.45
8/1/2018	6380	Cook Pump fr Niobrara River	0
8/7/2018	6380	Cook Pump fr Niobrara River	1.34
8/24/2018	6380	Cook Pump fr Niobrara River	1.33
4/30/2018	6440	Delsing Pump fr Niobrara River	0
6/13/2018	6440	Delsing Pump fr Niobrara River	36.5
8/22/2018	6440	Delsing Pump fr Niobrara River	0
10/6/2017	3250	Hat Creek near Ardmore, South Dakota	0
6/27/2018	6300	Hitsheew Pump #2 fr Niobrara River	0
7/13/2018	6300	Hitsheew Pump #2 fr Niobrara River	0
4/30/2018	6445	Montague Canal Pump fr Niobrara River	0
5/1/2018	3740	Niobrara River at Dunlap at Hwy 385	9.82
6/29/2018	3750	Niobrara River at old Dunlap Bridge	66.4
11/20/2017	6520	Whitney Reservoir	6520 AF

NEBRASKA ADMINISTRATIVE CODE

Title 457 - DEPARTMENT OF NATURAL RESOURCES RULES
FOR SURFACE WATER

Chapter 23 - MORATORIUM AREA VARIANCES FOR SURFACE WATER APPROPRIATIONS

001 PETITION FOR LEAVE TO FILE OR CONSIDER AN APPLICATION. Any person wanting to apply for a new surface water appropriation within a moratorium or stay area must file a petition in the Department requesting leave to file an application. The petition must be accompanied by a copy of the completed proposed application. The application shall not be considered filed at the time it is submitted with the petition. Anyone who currently has an unapproved application on file in the Department for a new appropriation for a project that is within a moratorium or stay area must file a petition requesting a variance to the moratorium or stay. The fee for filing the petitions shall be that described in § 33-105(8) R.R.S. 1943, as amended.

The petition shall include sufficient information to indicate:

001.01 The proposed project is for a non-consumptive use; or

001.02 The applicant has a credible proposal for replacing any consumptive use that will occur in a manner such that the project will not harm other users; or

001.03 The applicant has credible information that indicates there **may be** unappropriated water available at the proposed location at the time the depletion is likely to occur; or

001.04 The project existed prior to any informal moratorium, formal moratorium or stay.

001.05 There is a public safety issue that must be addressed and the proposed project addresses such issue.

001.06 The proposed use is a temporary use for public construction and the total volume requested is less than ten (10) acre-feet.

002 REVIEW. The Department shall review the information provided with the petition and shall make a determination as to whether it is sufficient to indicate good cause for allowing further consideration of the application.

003 DECISION. A written decision shall be issued. The decision shall either deny the petition and state the reasons for such denial, or grant the petition and state either (a) the petitioner may file the application and supporting documentation, or (b) the Department will proceed to process the existing filed application. Any decision approving a petition shall not bind the Director to approve any application to which it relates, or in any way be used as evidence of prejudice for the Director's future decisions

concerning the specific approval requirements of such application. Allowance of a leave to file does not negate the necessity to meet the specific approval requirements for an appropriation.

004 APPEAL. If the petitioner wishes to appeal the decision of the Department, he or she may request a hearing before the Department within 15 days of the date the decision is rendered in accordance with the Department's Rules of Practice and Procedure, Title 454.