
2022 ANNUAL INTEGRATED MANAGEMENT PLAN REPORT:

NEBRASKA DEPARTMENT OF NATURAL
RESOURCES
&
MIDDLE NIOBRARA NATURAL RESOURCES
DISTRICT

REPORTING ON 2021 DATA
ANNUAL MEETING HELD ON APRIL 27, 2022

2022 ANNUAL REPORT
BY THE DEPARTMENT OF NATURAL RESOURCES OF 2021 DATA
TO MEET THE REQUIREMENTS OF THE MIDDLE NIOBRARA NATURAL RESOURCES
DISTRICT'S INTEGRATED MANAGEMENT PLAN

Purpose

The Middle Niobrara Natural Resources District (MNNRD or District) and the Nebraska Department of Natural Resources (NeDNR or Department) jointly adopted a voluntary Integrated Management Plan (IMP) which became effective on December 30, 2020.

Annual reports for the voluntary IMP are intended to provide transparency between the MNNRD and NeDNR, and to keep the public informed about integrated water management activities within the District. This annual report covers the actions and progress made by NeDNR in 2021 to implement the voluntary IMP, with a focus on surface water. The MNNRD completed a separate report that describes the actions and progress made in voluntary IMP implementation, with a focus on groundwater.

Department Reporting

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

1. Surface water use
 - a. Irrigation
 - b. Municipal
 - c. Industrial
2. Surface water permitting
 - a. New surface water appropriations granted (natural flow, storage, groundwater recharge (etc.))
 - b. Transfers/cancellations of surface water appropriations
3. New groundwater permits issued
4. Stream gage measurements from Department-maintained gages
5. Surface water administrative actions taken
6. New depletions accounting report
7. New data collected or model/study results (conservation measures, riparian ET, etc.)

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1. Surface Water Use

Table 1 shows a breakdown of active surface water permits in the Middle Niobrara NRD based on the type and purpose of permit. In total, there are 157 active surface water permits in the District. Of those, 109 permits are for irrigation diverted from a naturally flowing source (IR), which are approved for irrigation of 49,258.10 acres at a cumulative rate of 697.31 cfs. There are 11 supplemental irrigation permits (SI) that allow 35,609.80 acres with existing IR permits to receive a cumulative total of 510 acre-feet of water from a reservoir. MNNRD holds four storage (ST) permits allowing a total of 628.2 acre-feet of storage, and there are 24 ST permits not held by the District allowing a total of 77,775.60 acre-feet of storage. The Nebraska Game and Parks Commission holds two Supplemental Storage (SS) permits for a cumulative grant of 150 acre-feet. There are also two industrial permits in the District, one for aggregate washing at a rate of 0.89 cfs and the other for 98 acre-feet of storage for fish culture.

Table 1: Surface Water Use in the Middle Niobrara NRD as of December 31, 2021

ACTIVE SURFACE WATER PERMITS IN THE MIDDLE NIOBRARA NRD				
as of December 31, 2021				
Purpose of Permit	Number of Permits	Acres Approved for Irrigation	Grant (cfs)	Grant (af)
(IR) Diversion from naturally flowing source for irrigation	109	49,258.10	697.31	N/A
(SI) Diversion from a reservoir for irrigation of land that is also approved to receive water from a naturally flowing source	11	35,609.80*	N/A	510
(SO) Diversion only from a reservoir for irrigation	0	0	N/A	0
Total Irrigation Permits	120	49,258.10	697.31	510
(DO) Domestic Use	5	5.4	0.1	N/A
(ST) Storage of water in a reservoir held by MNNRD	4	N/A	N/A	628.2
(ST) Storage of water in a reservoir not held by MNNRD	24	N/A	N/A	77,775.60
(SS) Supplemental storage	2	N/A	N/A	150
Total Storage Permits	35	5.4	0.1	78,553.80
Aggregate washing	1	N/A	0.89	0
Fish culture	1	N/A	N/A	98
Total Permits	157	49263.5	698.3	79,161.80
* SI approved acres are accounted for under IR permits.				

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2. Surface Water Permitting

In 2021 there were no new surface water permits issued by the Department. Additionally, there were no permits fully cancelled and no variances issued in the District during the 2021 reporting year.

The Ainsworth Irrigation District and the US Bureau of Reclamation applied for and were granted a provisional relinquishment and reassignment of acres for one IR permit and an associated SI permit in 2021. This action effectively transferred, within the District, a total of 122.5 irrigated acres and a grant of 1.75 cfs. Table 2 summarizes the modifications to the affected permits. Maps showing the location of the provisional relinquishment and reassignment of acres can be found in **Appendix A**.

Table 2: Modifications to Surface Water Permits in the MNNRD from January 1, 2021 to December 31, 2021

MODIFICATIONS TO SURFACE WATER PERMITS									
January 1, 2021 to December 31, 2021									
PROVISIONAL RELINQUISHMENTS (CANCELLATION) PREL-9383 AND PREL-9384 AND REASSIGNMENTS REA-9385 AND REA-9386 FOR APPROPRIATIONS A-5218 AND A-10620									
Mod Number	Order Date	Right ID	Permit ID	Use	Source	Acres Relinquished	Grant Relinquished	Acres Reassigned	Grant Reassigned
PREL-9383	7/30/2021	7981	A-5218	IR	Snake River	168.2	2.4 cfs	-	-
PREL-9384	7/30/2021	7983	A-10620	SI	Merritt Reservoir	168.2	N/A	-	-
REA-9385*	7/30/2021	7981	A-5218	IR	Snake River	-	-	122.5	1.75 cfs
REA-9386**	7/30/2021	7983	A-10620	SI	Merritt Reservoir	-	-	122.5	N/A
*The remaining balance of 45.7 acres and grant of 0.65 cfs are currently non-appurtenant. The permit holder has 5 years from the order date to reassign these acres to make them appurtenant.									
**The remaining balance of 45.7 acres is currently non-appurtenant. The permit holder has 5 years from the order date to reassign these acres to make them appurtenant.									

3. Groundwater Permitting

The Department of Natural Resources, in accordance with *Neb. Rev. Stat. § 46-613.01, §§ 46-639 - 46-6503*, issues groundwater transfer permits for municipal use. Table 3 provides a summary of the permitted maximum water withdrawals for the city of Ainsworth's municipal groundwater transfer permit. Annual reports for this permit are provided by the City of Ainsworth and available upon request.

In 2021, there were no new groundwater permits issued by NeDNR in the Middle Niobrara NRD.

Table 3: Department issued groundwater transfer permits in Middle Niobrara NRD.

DEPARTMENT ISSUED GROUNDWATER TRANSFER PERMITTS as of December 31, 2021					
Permit Holder	Appropriation Number	Priority Date	Maximum Daily Withdrawal	Total Annual Withdrawal	Required Reporting
City of Ainsworth	MT-3	12/29/2003	1,440,000 Gallons	73,730,000 Gallons	Yes

4. Stream Gage Measurements

The Department maintains four stream gages within the MNNRD portion of the Niobrara River Basin. These gages are located on the Niobrara River near Nenzel, the Snake River at Doughboy, the Snake River near Burge, and the Ainsworth Canal from Merritt Reservoir. The Department also monitors water levels at Merritt Reservoir. Additionally, The USGS operates two active stream gages in the District located on the Niobrara River near Sparks and on Long Pine Creek near Riverview. Figure 2 shows the location of these gages. Charts detailing yearly average streamflow compared to the period of record average for each stream gage, and water level readings at Merritt Reservoir for the 2021 water year (October 1, 2020 to September 30, 2021) can be found in **Appendix B**.

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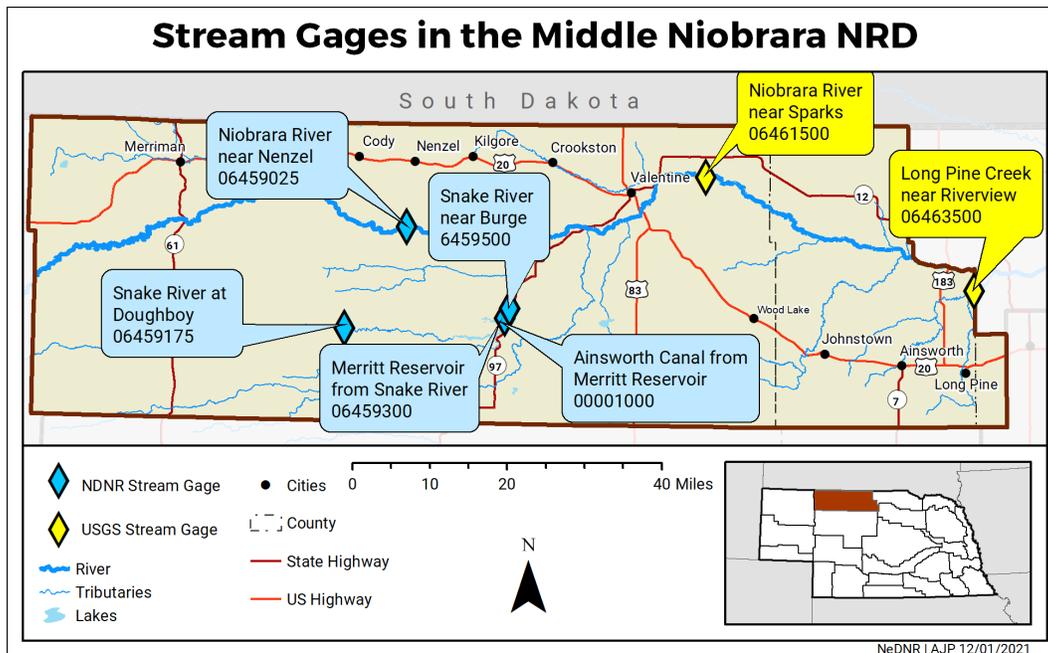


Figure 1: Location of NeDNR and USGS operated stream gages in Middle Niobrara NRD.

5. Surface Water Administration

No surface water administrative actions were taken in the MNNRD in 2021.

6. New Depletions Accounting Report

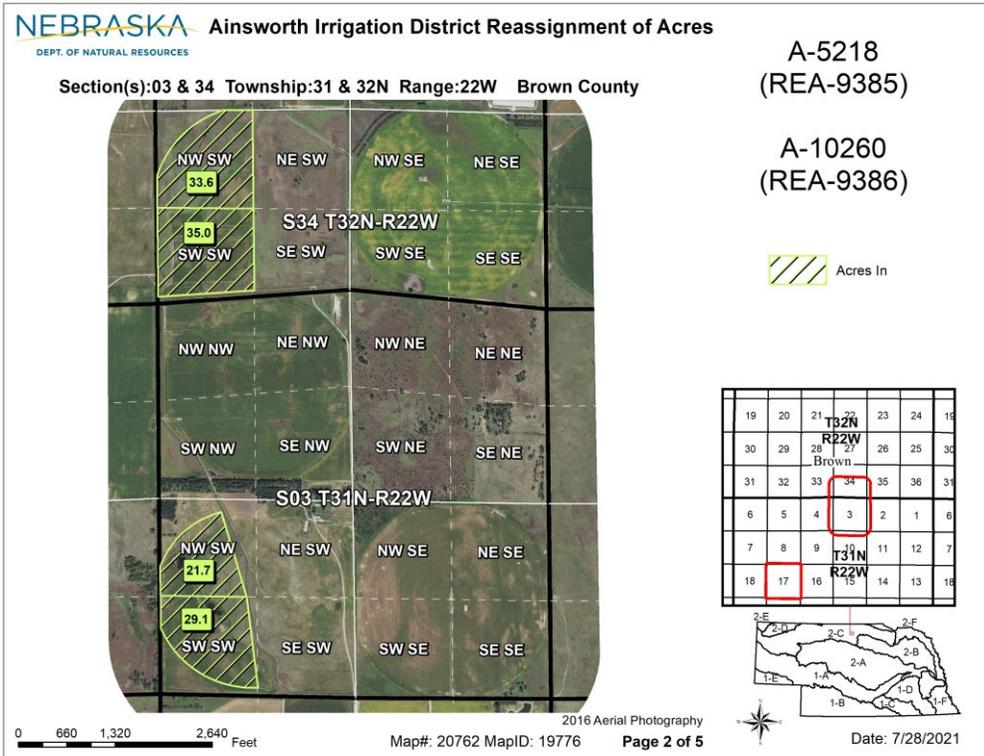
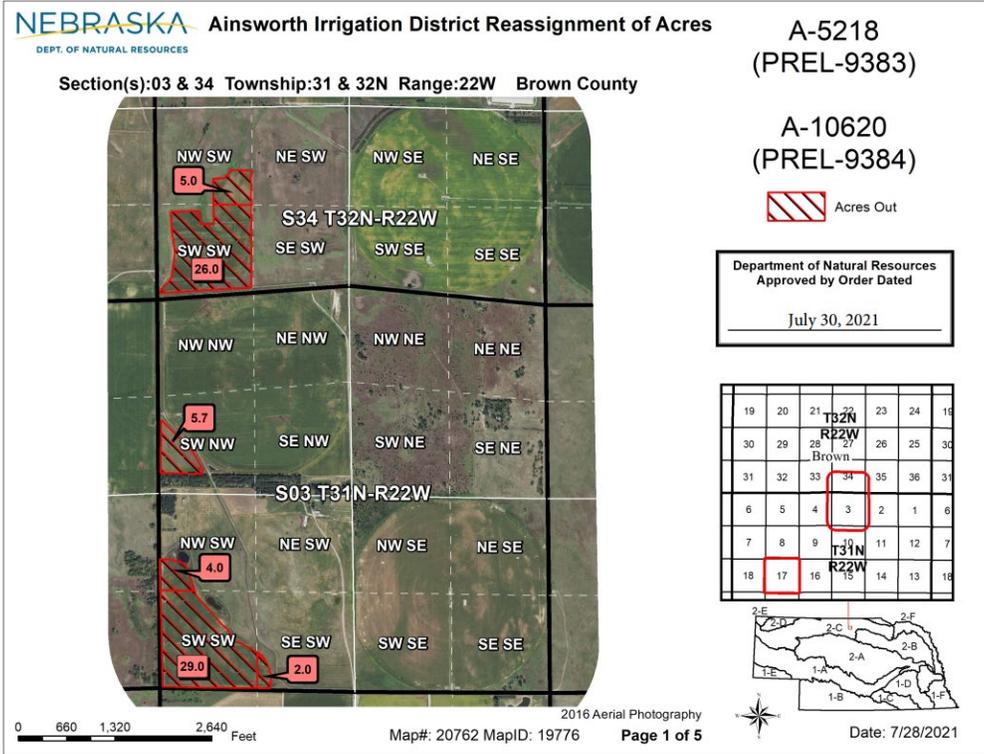
In 2021, there were no new surface water permits issued; thus, there are no new depletions to report.

The Department is able to complete analysis for any 2021-approved groundwater uses as reported by the District, if the District so desires.

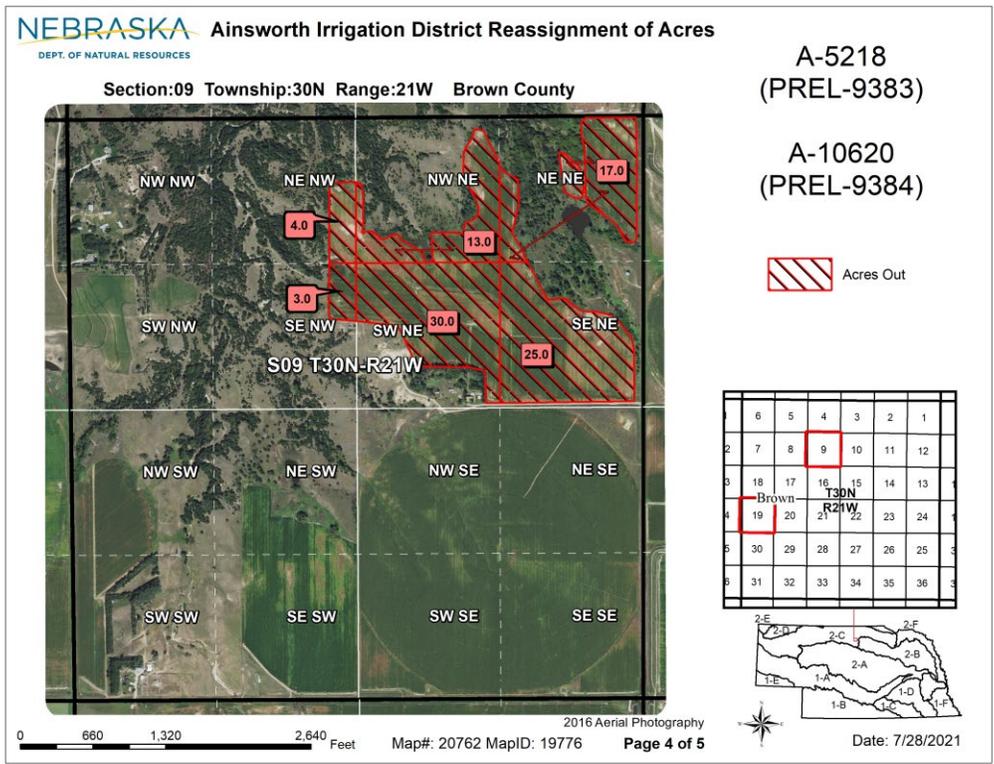
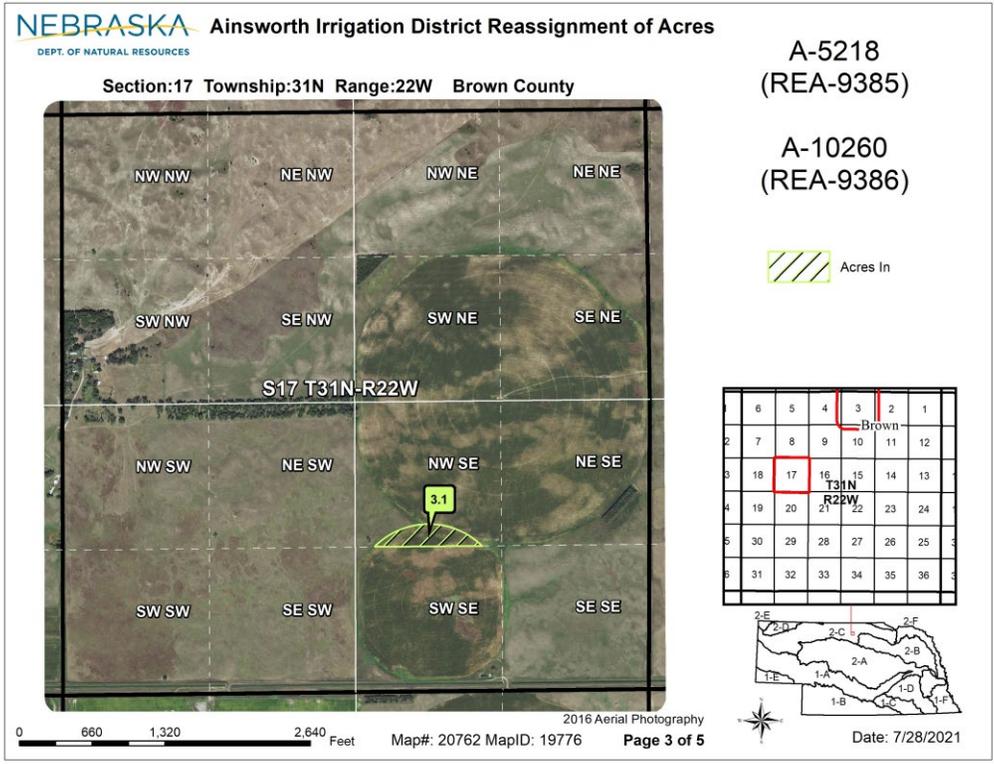
7. New Data Collected or Model/Study Results

In 2020, the Department began collaborating with the USGS and National Park Service on the development of a groundwater model that would cover the District. Calibration of this model has been completed and the USGS plans to publish the model in the spring of 2022.

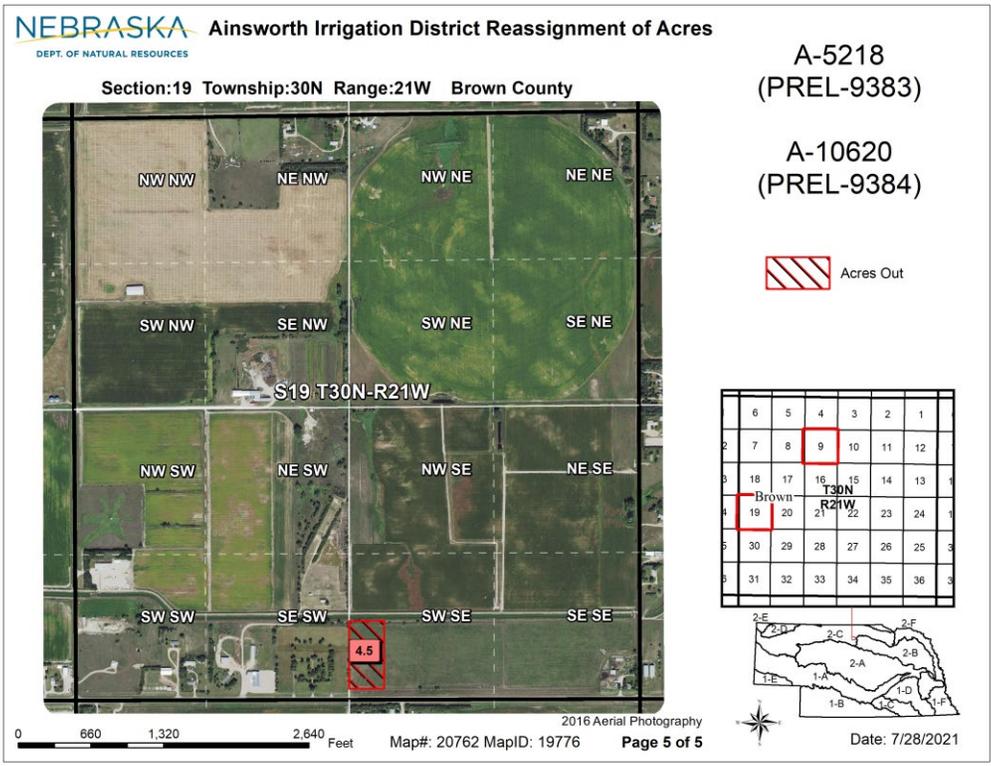
Appendix A



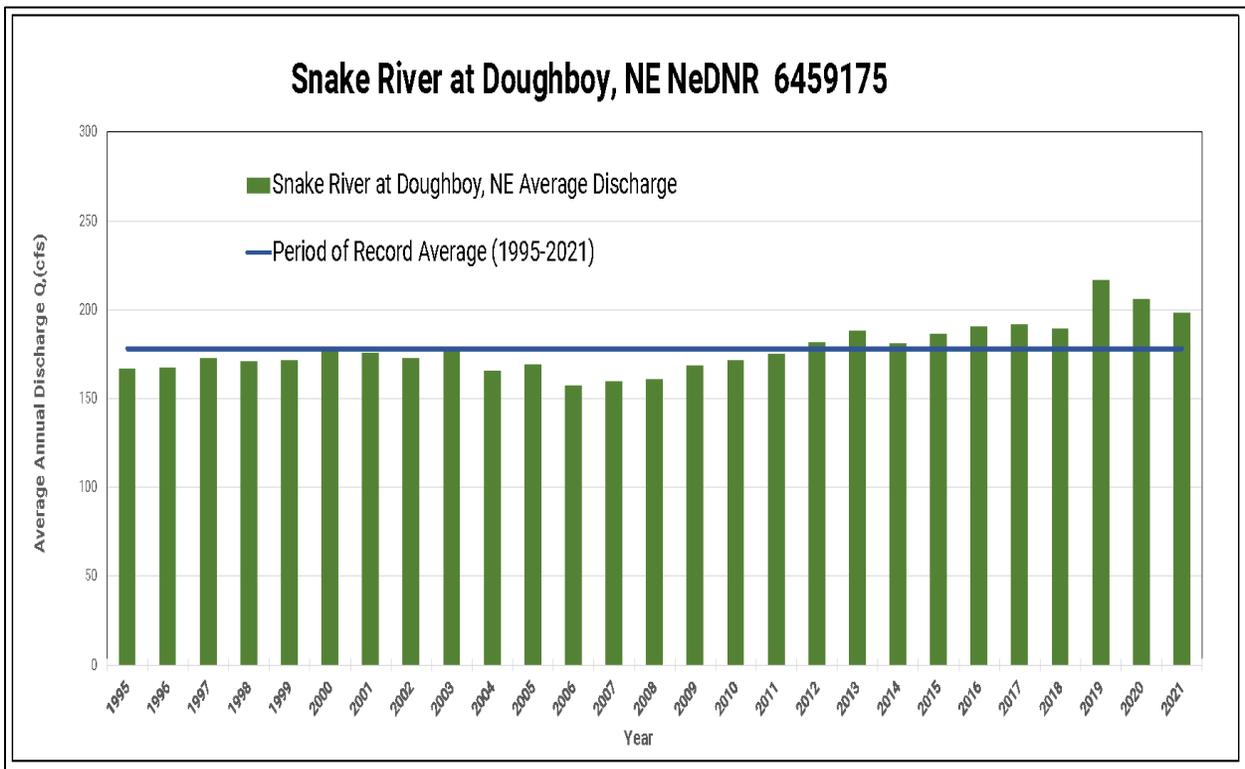
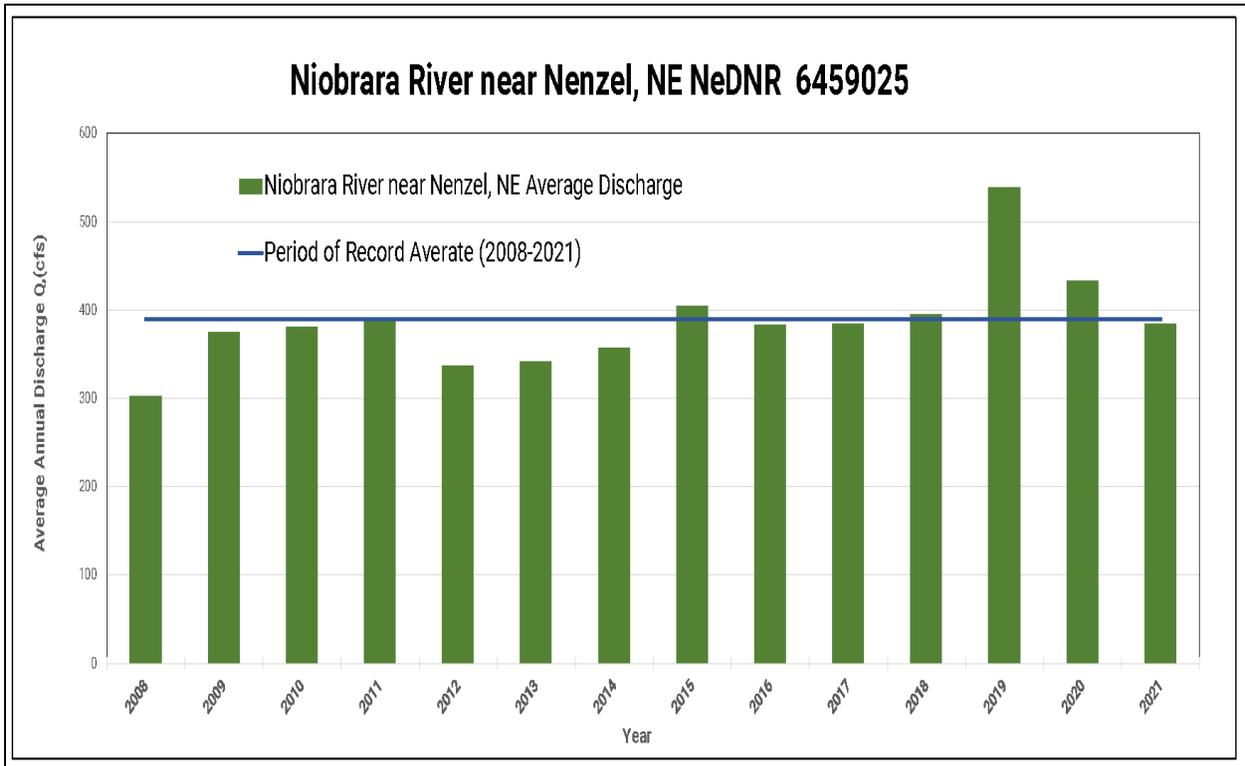
Appendix A



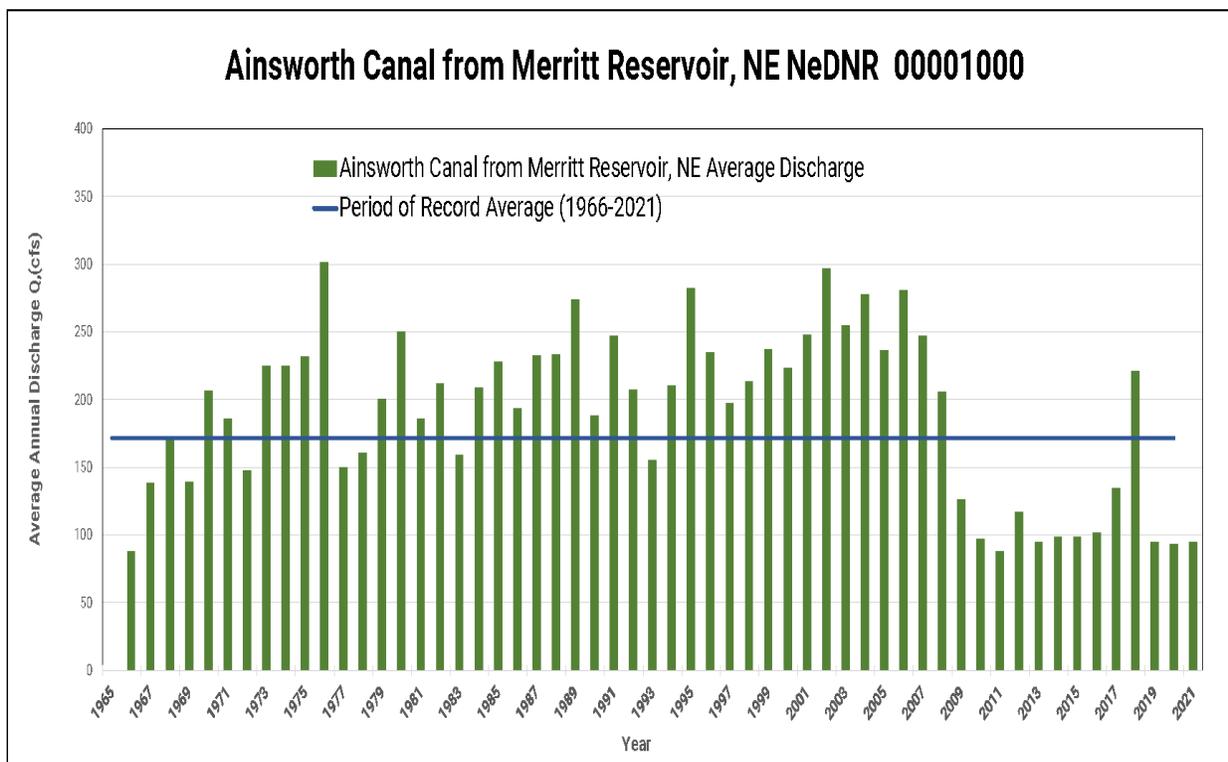
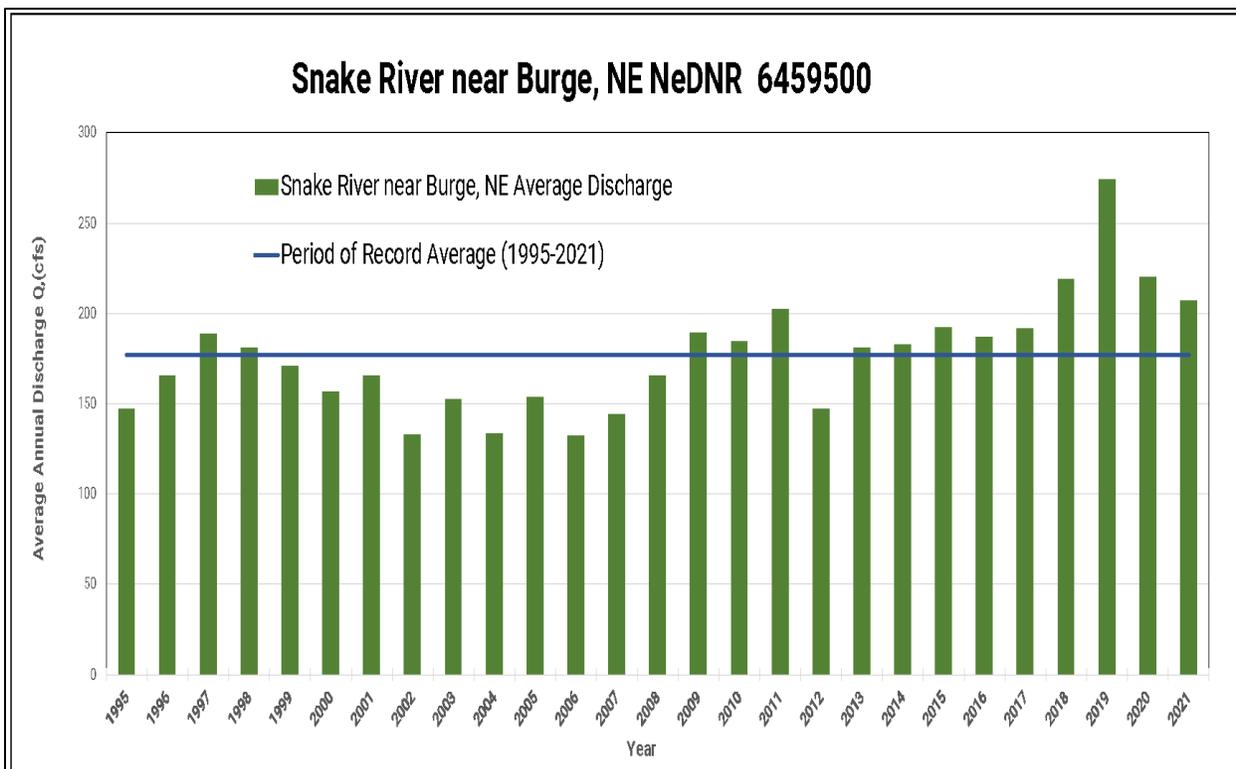
Appendix A



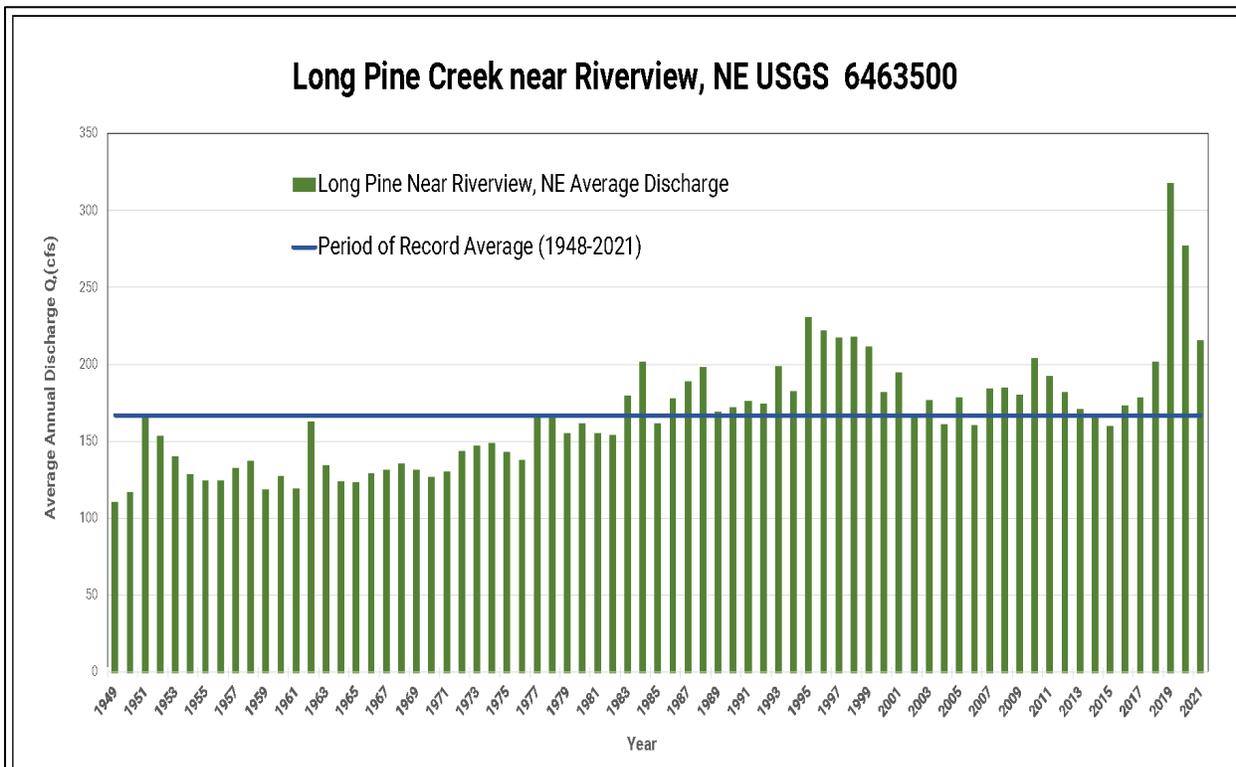
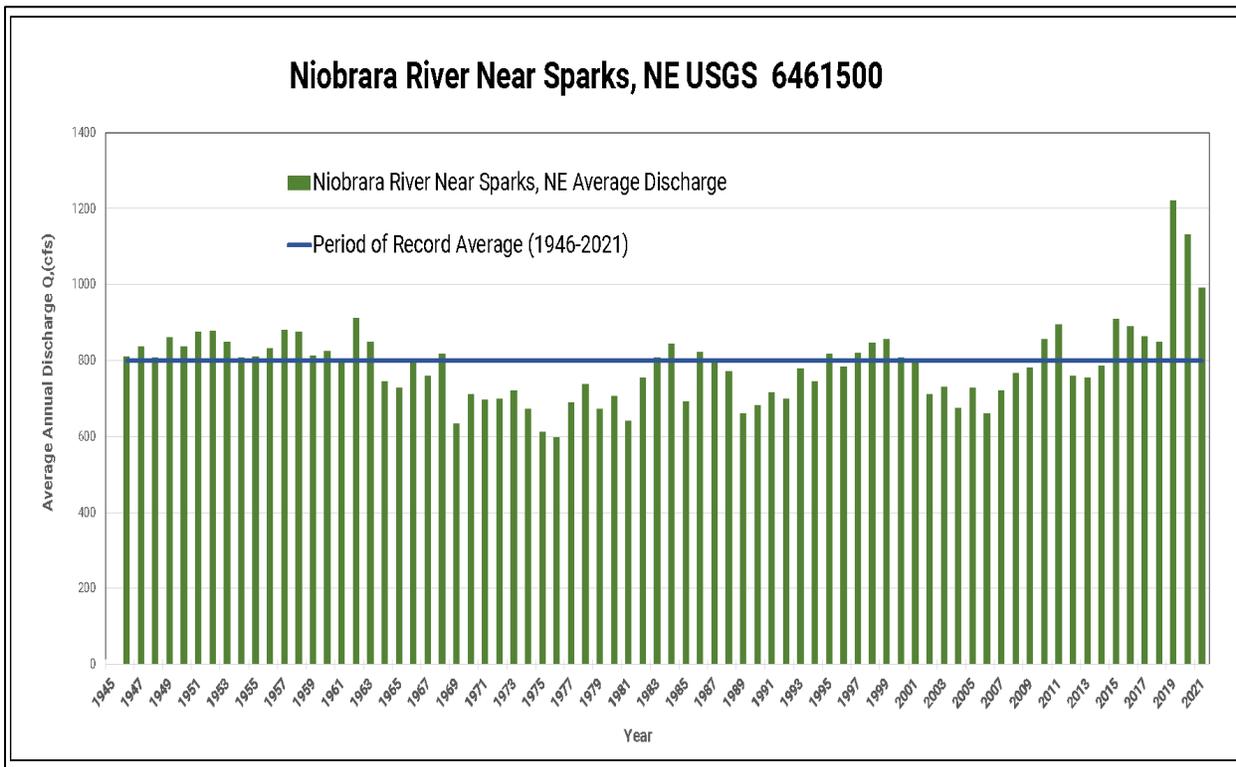
Appendix B



Appendix B



Appendix B



Appendix B

Source Data: Total Storage-Storage@064593.00, Merritt Reservoir near Burge												Units: Acre-ft
UTC Offset: -06:00, Start Time: 1993-05-31 00:00:00, End Time: 2021-10-04 00:00:00												Data Coverage Threshold: 80%
Oct 2020 - Sep 2021												
Cal Year 2020: Total: 21980000 Mean: 60040 Max: 66200 Min: 45060												
WY: Total: 21990000 Mean: 60260 Max: 65650 Min: 48210												
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53840	62160	61100	61340	60670	62290	60910	63240	64620	65340	55980	48210
2	54370	62020	61100	61340	61020	62570	60960	63300	64620	65200	55980	49030
3	54960	61910	61150	61210	61100	62850	61100	63440	64680	65080	55980	49450
4	55460	61720	61100	61100	60910	62740	61150	63580	64800	64800	55660	49890
5	55960	61530	61100	61150	61020	62660	61100	63690	64880	64230	55340	50300
6	56470	61340	61100	61150	61150	62540	61290	63830	64940	63630	55020	50530
7	56920	61340	61100	61100	60830	62410	61450	63890	64940	63040	54700	50780
8	57560	61290	61100	60960	60780	62350	61450	63940	64940	62540	54110	50830
9	58070	61340	61100	61020	60960	62160	61400	64080	64940	62270	53420	50780
10	58660	61290	61020	61020	60670	62210	61400	64230	65280	62160	52840	50720
11	59090	61020	61100	60960	61400	62100	61290	64340	65280	62020	52210	50930
12	59610	60910	61100	61020	61340	61970	61210	64480	65200	61640	51620	51210
13	60160	60960	61100	61590	61340	61910	61150	64620	65280	61020	51130	51470
14	60590	60720	61020	61720	60960	62210	61210	64800	65080	61400	50780	51820
15	61020	60590	61020	61640	60670	62270	61290	65000	65000	61720	50420	52210
16	61780	60400	61020	61590	60830	62410	61340	63770	65000	62160	49940	52880
17	62100	60540	61020	61530	59380	62410	61290	65650	64800	62540	49260	53420
18	62460	60540	61020	61530	60540	62350	61100	65650	64620	62850	48640	54000
19	62740	59510	61020	61450	60110	62270	61210	65600	64230	62930	48210	54370
20	62800	59510	60960	61150	61450	62210	61290	65400	63940	62600	48210	54960
21	62740	60350	61020	61100	61340	62020	61450	65280	63690	61970	48540	55460
22	62660	59930	61100	61150	61210	61910	61640	65080	63440	61290	48830	56010
23	62540	59560	61150	61100	61150	61780	61830	65080	63180	60540	49030	56520
24	62460	60030	61020	60960	61780	61590	62020	64940	63300	59800	49030	57040
25	62600	60910	61150	60910	62350	61400	62210	64800	63770	59090	48930	57560
26	62660	60910	61210	61100	62350	61290	62410	64740	64080	58320	48970	58070
27	62540	60960	61290	61020	61720	61150	62600	64800	64480	57560	48970	58600
28	62410	60960	61340	60960	62000	60960	62800	64740	64880	56920	49030	59090
29	62410	61020	61450	60910		60780	62930	64680	65140	55980	48970	59560
30	62410	61100	61530	60960		60780	63100	64680	65280	55980	48680	60300
31	62100		61450	60780		60830		64680		55980	48350	
Total	1862000	1826000	1895000	1897000	1711000	1921000	1848000	2000000	1938000	1903000	1587000	1606000
Mean	60070	60880	61130	61180	61110	61980	61590	64520	64610	61370	51190	53530
Max	62800	62160	61530	61720	62350	62850	63100	65650	65280	65340	55980	60300
Min	53840	59510	60960	60780	59380	60780	60910	63240	63180	55980	48210	48210