

Draft 2019
 Five Year Data Review for LNNRD IMP
 Summary of Annual Report Data from Years 2014-2018

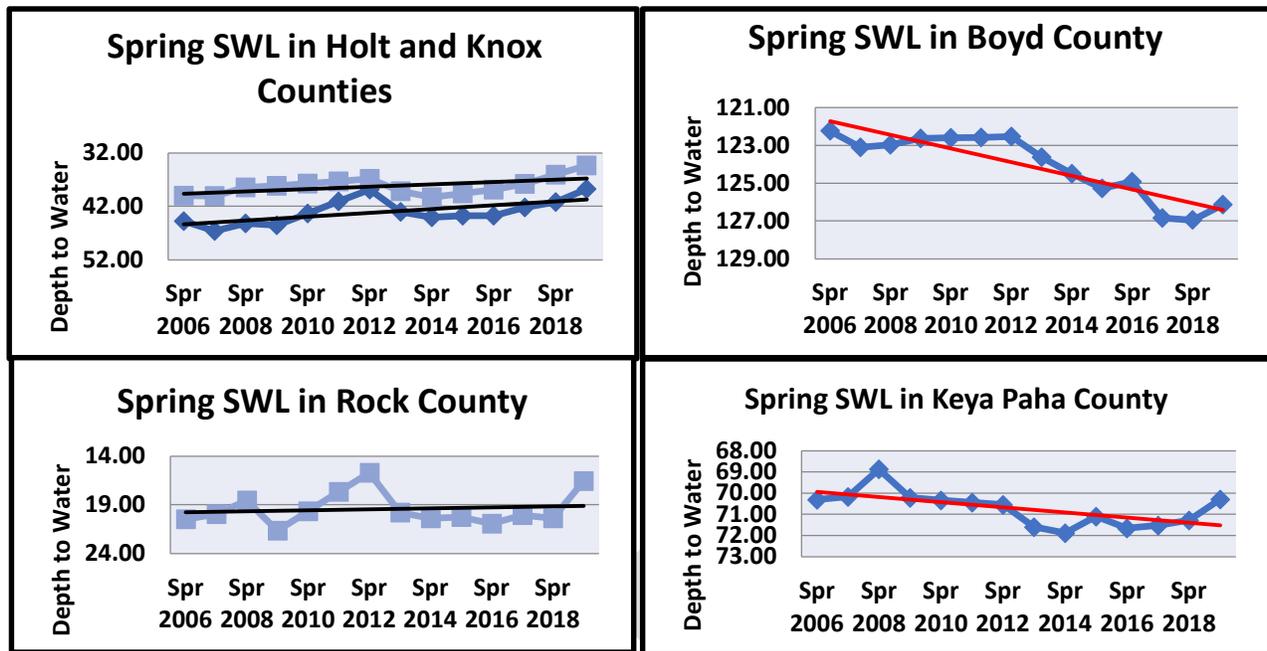


Figure 2: Spring static water levels (SWL) in LNNRD (measurement is in feet).

Certification of Groundwater Uses and Any Changes to these Certifications

The District has certified all irrigated acres in the District with the exception of one field which has illegal wells because the pump installer failed to update the registration. The District has contacted the landowner and he has failed to get the issue resolved; the District has also contacted the well driller, but they did not install the pumping equipment. This may require legal action to be resolved. The District has 213,242.5 groundwater-only irrigated acres; 18,126.11 surface water-only irrigated acres; and 3,588.51 comingled groundwater/surface water-irrigated acres. Each year the acres are reviewed and checked for change in size or ownership. Prior to the beginning of the District's acres certification program, numbers of irrigated acres were unknown.

Municipal, Commercial, and Industrial Annual Water Uses

The District will be working on developing a database for this information. During the first three years of the IMP, this data was not collected due to staffing limitations; over the last two years, the District has concentrated on getting all the irrigated acres certified and installing additional water monitoring equipment. The District's goal is to have a database developed of the municipal, commercial, and industrial information for the 2019 annual report.

Irrigation Water Use Data Required Mandatorily or Voluntarily by the District, Such as Metered High-capacity Well Flow Data

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The District does not require flow meters on all irrigation wells; District rules do require a flow meter to be installed on any high capacity well which is modified. In 2011, the District received a Nebraska Environmental Trust grant for the installation of flow meters on high-capacity wells, as a condition of receiving these funds, the producer was required to annually submit the meter readings to the District. Also, the District requires the producers to report water usage on their Phase II reporting forms for nitrogen management. From these two sources, the District calculates the average inches of water applied. Annual averages are listed in Table 1. For comparison, annual precipitation is presented in Table 2.

Table 1: Average inches of water applied in LNNRD.

Year	Inches per Acre
2014	11.24
2015	10.43
2016	13.74
2017	13.28
2018	8.31

Table 2: Annual precipitation within LNNRD.

ANNUAL PRECIPITATION IN INCHES FOR SIX STATIONS LOCATED WITHIN LLNRD							
Year	Ainsworth 2N	Emmet 3E	Long Pine 20S	Naper 12S	Newport 3W	Sparks 5NE	Annual Average
2014	14.51	26.22	15.26	7.92	15.67	19.94	16.59
2015	15.70	19.09	17.52	15.86	17.56	15.79	16.92
2016	19.40	22.72	19.66	19.21	20.75	26.42	21.36
2017	21.40	22.73	18.04	21.71	19.10	27.02	21.67
2018	22.98	25.39	20.39	16.73	0.00	16.58	17.01

Water Well Construction Permits Issued

Since the adoption of the IMP, the District has only allowed well construction permits for replacement wells or public water supply wells. Over the last five-year period, the District received a total of 36 well permits. Of the 36 permits, one was a new public water supply well, one a temporary dewatering well for repairs to the toe drains on the Spencer Dam, and one was a replacement well for industrial water supply. The remaining 33 replacement wells were irrigation wells with a varying reason for replacement; it is also important to note the replacement wells cannot pump more water than the irrigation well being replaced.

The Number of Well Permits Denied

There was a total of four permits denied during the last five years. Three were well permits for supplemental/helper wells. This type of well must meet a specific ranking criteria before approved. At the time of this report, there is one pending application for a supplemental/helper

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well. One replacement well permit was denied because the distance was greater than a 300-foot radius from the well being replaced.

Offsets Granted and Quantity of Water Used to Compensate for Groundwater that has been Either Withdrawn or Consumptively Used for Any New or Expanded Use

The District does allow the use of lagoon water to be pumped to a designated field for supplemental water. The rules allow up to 4 inches per acre to be used on an annual basis. The District has two sites which have designated systems for this purpose. The Board did approve the Village of Verdigre a variance to go up to 7 inches out of their lagoon system, but to date this project has not been completed.

Variations Granted by the District that Allow an Action Contrary to an Existing Rule or Regulation, Including the Purpose, the Location, Any Required Offset, the Length of Time for Which the Variance is Applicable, and the Reasoning Behind Approval of the Variance

During the past five-year period, the District received ten formal variance requests. These requests were to allow a few additional acres either by removing an old farm site or the addition of a swing arm. Only one of the variances was approved, which allowed a producer to move the groundwater irrigated acres one field to the west to allow new surface water acres to be closer to the source.

Transfer Permits Granted by the District Allowing the Point of Withdrawal, Location of Use, Type of Use, Addition of a Type of Use, or Location of Certified Irrigated Acres to be Altered, Including All Information Provided with the Application and Used in the Approval of the Transfer

There were no transfers other than the one approved under the variance to move groundwater to the next section west so the surface water field would be closer to the source. There have been several informal requests but, at the time of this report, no formal variance requests have been submitted.

Water Banking Transactions Completed by the District (Should the District Decide to Establish a Water Bank) for Tracking Reductions in, and Additions to, Consumptive Water Use within the District.

The District rules for certification of irrigated acres was land that had been irrigated 2 out of the 10 years prior to the implementation of the IMP in 2014. Irrigated land which fell outside of this timeframe was considered Historic Acres. To receive Historic Acres (qualify for certification), the owner was required to submit an application form and the land was required to meet District ranking criteria for new irrigated acres. If the land ranked out, the District reduces the requested number of acres by 5%. These acres are the beginning of the District's banked acres. There were 13 applications for a total of 720 acres. Five applications were approved for a total of 311 acres;

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three were denied because the land did not meet the ranking criteria; and 5 were tabled until the pasture irrigated acres rules were developed. Note: none have applied for pasture irrigated acres.

In addition, to better manage the water of the District, the District is working with three other NRDs, the Nebraska Game and Parks Commission and Nebraska Public Power District to acquire the water appropriation at the Spencer Hydro Facility. Once this purchase and transfer is complete, the IMP will be modified if needed to meet the needs of water management in the District and Basin.

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Summary of Annual Reporting and Tracking by NeDNR

Any Surface Water Permits Issued (See Table 3) and/or Denied (See Table 5)

While the IMP does not specifically require the reporting of cancelled surface water appropriations, NeDNR has provided this information for a more complete picture of surface water permitting activities within the LNNRD (See Table 4).

In total NeDNR approved 49 and denied zero surface water applications. The number of new acres approved in 2014, was 2,169.0, during the time with no acre restrictions. No other year resulted in any additional surface water-irrigated acres. In 2017, NeDNR approved an application for the purpose of instream flow, A-19406, which was divided into five portions, A-19406A through A-19406E, to distinguish between each time period and specific grant. The instream flow appropriation is to benefit fish and wildlife from the reach of the Niobrara River described as “Spencer Dam to the confluence of the Missouri River.” NeDNR cancelled a total of 34 appropriations, either in-full or in-part. This resulted in cancellation of 2,873.4 acres. The NeDNR dismissed a total of 8 pending applications, due to applicant’s request to withdrawal the application.

Table 3: Surface water applications approved within the LNNRD.

SURFACE WATER APPLICATIONS APPROVED BY YEAR				
YEAR	NUMBER OF PERMITS	Number of New Irrigated Acres¹	GRANT (cfs)	GRANT (af)
2014 ²	36	2169.0	18.62	1354.61
2015	6	0	0.57	53.45
2016	1	0	425.00	NA
2017	3	0	2271.27 ³	24.8
2018	3	0	0.58	10
TOTAL	49	2169.0	2714.77	1432.86

Table 4: Surface water permits cancelled in full or cancelled in part within LNNRD.

SURFACE WATER PERMITS CANCELLED (IN FULL OR IN PART) BY YEAR				
YEAR	NUMBER OF PERMITS	CANCELLED ACRES	Cancelled GRANT (cfs)	Cancelled GRANT (af)
2014	3	263.2	2.96	0
2015	2	187.0	2.67	0
2016	9	1,364.5	16.05	197.66
2017	9	596.1	3.39	41.8

¹ Permitted acres not previously permitted to be irrigated with surface water

² The 2015 report of 2014 permitting activity contained errors. The values here have been revised. A complete revised table detailing each appropriation granted in 2014 is available upon request.

³ Value shown is the highest of the 6 rates for instream flow permit A-19406A-E (2270) plus one additional natural flow permit (1.27).

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Table 4: Surface water permits cancelled in full or cancelled in part within LNNRD.

SURFACE WATER PERMITS CANCELLED (IN FULL OR IN PART) BY YEAR				
2018	11	462.6	4.79	11.69
TOTAL	34	2873.4	29.86	251.15

Table 5: Surface water applications dismissed or denied within LNNRD

SURFACE WATER APPLICATIONS DISMISSED⁴ OR DENIED BY YEAR		
YEAR	DISMISSED	DENIED
2014	6	0
2015	1	0
2016	1	0
2017	0	0
2018	0	0
TOTAL	8	0

Transfer Permits Granted by the Department Allowing the Point of Withdrawal, Location of Use, Type of Use, Addition of a Type of Use, or Location of Certified Irrigated Acres to be Altered, Including all Information Provided with the Application and Used in the Approval of the Transfer (See Table 6)

In total, NeDNR acted upon 9 transfer applications submitted. These were all “expedited transfers of the location of use,” which statute requires the appropriation remain an irrigation permit, may not increase in acres, the new location of use must be adjacent to the existing, and the point of diversion may not change significantly. The associated cancelled acres were due to acres not used in the last five years, and therefore subject to cancellation and not eligible for transfer.

⁴ Dismissed is when an application that is pending, and has not been acted upon by NeDNR, is dismissed.

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Table 6: Transfers of surface water permits approved within LNNRD.

Surface Water Permit Transfers by Year				
Year	Number Of Permits	Transfer Type	Acres Cancelled	Grant Cancelled
2014 ⁵	1	Expedited Transfer Of The Location Of Use ⁶	0	0
2015	2		36.7	0.52
2016	1		5.8	0.8
2017	4		12.1	0
2018	1		0	0
TOTAL	9		54.6	1.32

Variations Granted by the District and/or the Department that Allow an Action Contrary to an Existing Rule or Regulation, Including the Purpose, the Location, any Required Offset, the Length of Time for which the Variance is Applicable, and the Reasoning Behind Approval of the Variance (Table 7)

Neb. Admin. Code. Department of Natural Resources Rules for Surface Water, Title 457, Chapter 23, outlines the circumstances in which a variance petition should be filed. It states, “A 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 or consider an application.” Application A-19144; an application to store water in an existing road structure dam, was filed prior to the Temporary Stay on new natural flow surface water appropriations, effective November 8, 2013, but was pending when the stay went into effect. Therefore, the applicant filed variance petition, VAR-4889, for leave to consider pending application A-19144. VAR-4889 was granted on the basis that the reservoir existed prior to the stay. The storage application A-19144 was subsequently approved in 2014. No further variance petitions were filed during the Temporary Stay, and variance petitions have not been necessary as of the stay’s termination, on May 1, 2014.

Table 7: Variations granted by NeDNR within LNNRD.

VARIANCE PETITIONS GRANTED BY YEAR	
YEAR	GRANTED
2014	1

⁵ For years 2014-2017 NeDNR did not report approved transfers. A complete revised table detailing each appropriation transferred 2014-2017 is available upon request.

⁶ Expedited transfers of the location of use are a type of transfer that is restricted to permits for irrigation from a natural flowing source; there may be no increase in acres; the new location must be adjacent to the current; and no significant change in the surface water point of diversion.

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Table 7: Variances granted by NeDNR within LNNRD.

VARIANCE PETITIONS GRANTED BY YEAR	
2015	0
2016	0
2017	0
2018	0
TOTAL	1

Surface Water Usage Data, Such as Voluntary Water Use Reports, Flow Meter Data, Crops Irrigated, and Acreage Irrigated (See Table 8).

Each year, NeDNR sends out a voluntary water use survey to permit holders for each appropriation that is active and is for the purpose of irrigation. The responses are compiled and summarized each year.

Table 8: Voluntary water use survey results within LNNRD.

SURFACE WATER USAGE REPORTING BY YEAR					
YEAR	Number of Respondents/Surveys Sent	Response Rate	Total Acres Reported	Acres Reported as Irrigated	Acres Reported as Not Irrigated
2014	80/unknown ⁷	unknown	7007	5459	1548
2015	89/374	24%	3917	3641	276
2016	70/374	18%	6957	5189	1768
2017	94/378	25%	9264	5656	3608
2018	92/373 ⁸	25%	10044 ⁹	6976	3068

Any Groundwater Transfers Approved (See Table 9)

NeDNR issues four types of groundwater permits. They are: Municipal Transfer permit; Industrial Transfer permit; Transfer to Adjoining State permit; and Permit to Violate Well Spacing. In years 2014-2018, NeDNR has not approved any of said groundwater permits. An

⁷ The number of surveys sent in 2014 is no longer available due to changes in the tracking process, however the number of appropriations from year to year remains stable within 5±, therefore an estimate of 374 surveys would yield a response rate of (80/374) 21%.

⁸ The number of surveys sent that were reported in 2019's report has a typographical error. 373 is correct.

⁹ This value may contain acres that were counted more than once.

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application for a Municipal Transfer, MT-44 was dismissed in 2014, due to the applicant failing to provide supporting information.

Table 9: NeDNR-issued groundwater permits within LNNRD.

GROUNDWATER PERMITS BY YEAR	
YEAR	APPROVALS
2014	0 (MT-44 Dismissed)
2015	0
2016	0
2017	0
2018	0
TOTAL	0

Any Offsets Provided for Depletions Resulting from Increased Consumptive Use Related to Any of the Above Listed Items (See Table 10)

No offsets were required in years 2014-2018.

Table 10: Offsets implemented by NeDNR within LNNRD.

OFFSETS IMPLEMENTED BY YEAR	
YEAR	OFFSET
2014	0
2015	0
2016	0
2017	0
2018	0
TOTAL	0

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Stream Gage Measurements (See Figures 3-5)

NeDNR tracks and reports the discharge of six stream gages in LNNRD. Three are located on the Niobrara River, the others being on Ponca Creek, the Keya Paha River, and Verdigre Creek.

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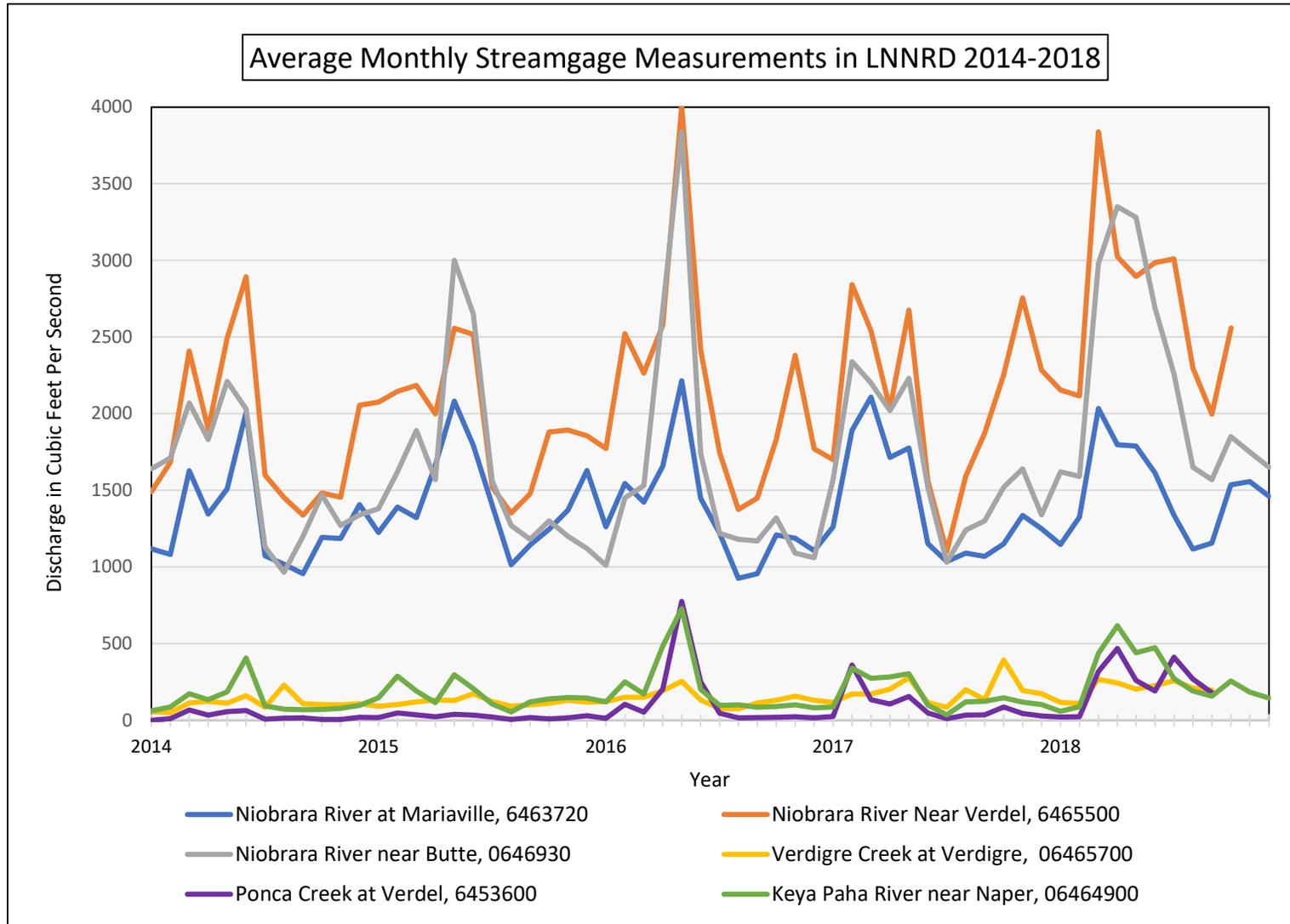


Figure 3: Streamgage discharge within LNNRD for years 2014-2018.

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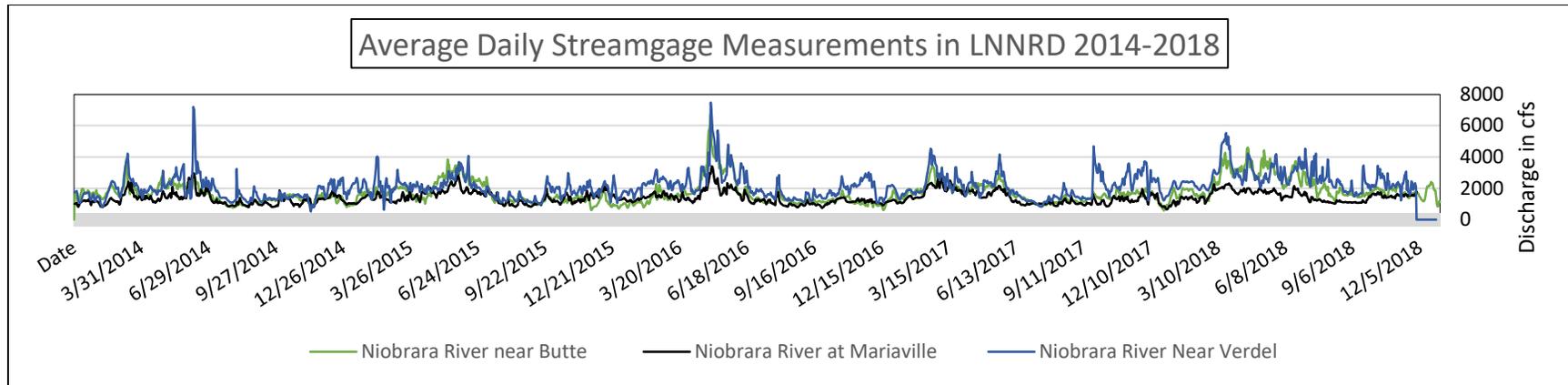


Figure 4: Average daily streamgauge measurements of the Niobrara River within LNNRD.

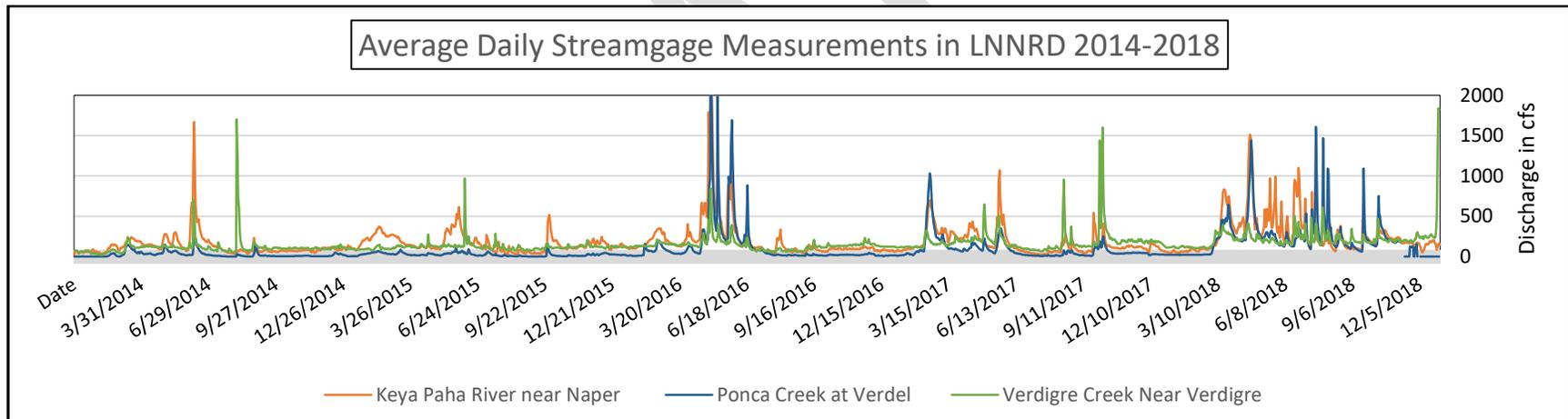


Figure 5: Average daily streamgauge measurements of Keya Paha River, Ponca Creek, and Verdigre Creek within LNNRD.

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Also, in the IMP are groundwater and surface water controls that relate to the number of additional irrigated acres allowed within the LNNRD IMP area. The LNNRD establishes annually the number of additional groundwater irrigated acres it will allow. The NeDNR will then limit additional surface water irrigated acres to one-third of those allowed by the LNNRD.

Table 11 summarizes the acres restrictions during the first five-year increment.

Table 11: Groundwater and surface water acres allowed 2014-2018.

ACRES LIMITS BY YEAR IN LNNRD			
YEAR		Number of Additional Groundwater Irrigated Acres LNNRD Allowed	Number of Additional Surface Water Irrigated Acres NeDNR Allowed
2014	1/1/2014 to 5/1/2014	Stay on GW = 0 Acres	(starting on 11/8/2013) Stay on SW= 0 Acres
	5/1/2014 to 12/31/2014	Stay ends as of 5/1/2014 No Restrictions Placed	IMP controls allow for increase of 1/3 of LNNRD acres. No Restrictions Placed ¹⁰
2015		Board allowed 0 acres	0 acres
2016		Board allowed 0 acres	0 acres
2017		Board allowed 0 acres	0 acres
2018		Board allowed 0 acres	0 acres

In addition to the annual tracking and reporting, the LNNRD and NeDNR will jointly evaluate the data and information gathered for accuracy, identify anomalies therein and probable causes for them, and flag data and information that may require closer inspection and review. In addition, the District and the Department will compare annual water use data to historically reported water usage data and information and perform analyses to determine the impacts of new water users on existing water users within the District. To the extent feasible, such an evaluation of the data and information will help identify potential water available to mitigate new uses, including, but not limited to, water rights leases, interference agreements, augmentation projects, conjunctive use management, and use retirement.

Through a review by the District and the Department of the data and information described above, an annual report is developed to evaluate the progress being made toward achieving the goals and objectives of this IMP. In addition to the annual meetings to exchange reports of data, the IMP requires this five-year summary of all data analyzed from the annual reports, and an interpretation to guide development of future IMP increments.

¹⁰ The number of acres approved by NeDNR during this period can be found in Table 2

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LNNRD Summary of Education and Outreach Activities 2014-2018

Regarding adult education and outreach: in 2015, the LNNRD worked with the Upper Elkhorn NRD to host a “Water Issues” meeting in O’Neill; over 200 producers were present. In the Bazile Groundwater Management area of the District, there are annual Producer Meetings. While most of the focus is on water quality in this area, quantity is addressed with efficient use of water to reduce leaching. The District also holds and assist other Districts with Nitrogen Certification Classes every spring. Again, while the focus of these classes is nitrogen management, water management is a key component of reducing nitrogen leaching. The staff also annually attend the NRD Water Programs Conference, NRD Annual Conference, NRD Legislative Conference, UNL Water for Food Conference as well as other conferences in and out of state and will on occasion provide presentations. The District has begun setting up booths at the Sandhills Ranch Expo and county fairs. The District will also have staff assisting at Husker Harvest Days.

As for youth education and outreach, the District sponsors 8th grade Conservation Day for the schools in the District and does presentations as requested by the teachers. Each year, the District co-sponsors “Wonderful World of Water” with Lewis and Clark, Lower Elkhorn, and Upper Elkhorn NRDs. There are over 100 9th and 10th grade students from across the four Districts which participate in this event. Other programs the staff assists with are Upper Elkhorn NRD Natural Resources Festival, Niobrara State Park Rendezvous, Niobrara Purple Loosestrife Program, and Springview After School Club. The NRD staff also assists with the Nebraska Envirothon competition, the Nebraska State Fair, and ACE Camp on a statewide level.

NeDNR Summary of Education and Outreach Activity 2014-2018

In years 2014-2018, NeDNR staff attended several education and outreach events across Nebraska. In February 2015, NeDNR, the District, and the Upper Elkhorn NRD held a joint “Water Issues” Town Hall Meeting in O’Neill. Topics covered included: surface water permitting procedures; NeDNR field office functions; and integrated water management activities. The event was attended by approximately 200-300 people, including stakeholders involved in the IMP development process.

In addition to this joint Town Hall meeting, NeDNR staff attended several events annually, including the Sandhills Ranch Expo in Bassett; the Nebraska State Fair; and Husker Harvest Days. NeDNR also provided integrated water management information to audiences at the Governor’s Agriculture Conference; the University of Nebraska-Lincoln’s Women in Agriculture Conference; Nebraska Association of Resource Districts conferences; and the Nebraska Planning and Zoning Association/American Planning Association-Nebraska Planning conference.

NeDNR provides a vast amount of information on the Department’s website (<https://dnr.nebraska.gov/>). One specific highlight of the website is known as INSIGHT (<https://nednr.nebraska.gov/INSIGHT/>), which provides users with a convenient and user-friendly experience when they need to access water resources related information or data. This resources is being continually improved and updated as analyses are completed.

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In 2018, NeDNR’s Water Planning Division debuted the first of a series of new educational interactive apps on NeDNR’s website. Users can explore how relative positions of a water table and stream levels affect the direction of flow and interaction between a stream and aquifer; or how soil textures affect recharge and streamflow. The app features a tutorial, as well as a description and hydrograph of the user’s effect on streamflow. It is available at <https://dnr.nebraska.gov/water-planning/education>.

Status of IMP Goals, Objectives, and Updates

Based upon this five-year review of data, the IMP is meeting its intended goal of responsibly managing the development of water supplies while protecting existing users. While groundwater levels are declining in some areas, the district is recording an overall increase in groundwater levels since 2012 (a dry year) to pre-2012 levels. Further, neither the District nor the Department is aware of interference occurring or that has occurred in the reporting period for existing users. Very little additional development has been allowed during this time. Table 12 provides a summary of how the goals and objectives of the IMP are being met.

Table 12. Goals and objectives of the IMP and how they are being met.

Goal	Objective	How Objectives are Being Met
1. To develop and implement processes for the adequate collection of hydrologic and other related data to assess water resources within the District	1.1. To conduct data collection and analyses of water supplies and demands, utilizing the best available information, data, and science	The District and the Department are gathering and reporting data on an annual basis. The Department also reports the balance of water uses and supplies on its INSIGHT web tool, http://nednr.nebraska.gov/INSIGHT/ .
	1.2. To conduct studies to identify hydrologically distinct sub-areas within the District for purposes of integrated management	The Department and the District are working with the U.S. Geological Survey and the National Parks Service to develop a new groundwater model that will include more detailed geologic information in this area.
	1.3. To monitor changes in water uses within the District	The District and the Department are gathering and reporting data on an annual basis.
2. To develop systematic approaches for the development and sustainability of water resources within the District	2.1. To assess the potential impact of new surface water and groundwater uses on existing surface water and groundwater users within the District	The District and the Department assess the potential impact on an ongoing basis as applications for new uses are received, by the use of models developed within the District for well spacing and land classification.
	2.2. To determine allowable levels of water development for the	Allowable levels of development are currently set by the NRD Board each year.

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	District, and by subbasin when designated	
3. To prevent, resolve, and minimize water related conflicts among and between surface water and groundwater users	3.1. To establish procedures for securing water for sustained future growth of domestic, municipal, agricultural, commercial, and industrial water users within the District	The District is working with other NRDs and the Game and Parks Commission to transfer the water right for the Spencer Hydro facility, to be used for purposes of integrated water management in the basin.
	3.2. To establish rules and regulations regarding transfers, variances, water banking, water leasing, or other actions of water management within the District, if necessary, to enhance equitable water use management, mitigate new uses, or to avoid conflicts	The District has established these rules and regulations to guide each of these processes and will continue to investigate the need for any changes to these rules and regulations in the future.
4. To develop and provide educational opportunities and outreach materials about hydrologically connected surface water and groundwater, water conservation, and to keep the constituents of the District informed about the IMP as it is implemented	4.1. To develop and disseminate water conservation guidelines for individuals to achieve sustainable water use	The District has worked on, and continues to work on, this type of education for users.
	4.2. To identify cost-share opportunities that may include collaborating with other agencies and other NRDs to implement plan objectives	The District and the Department remain aware of cost-sharing opportunities, though no need for these have arisen to date.
	4.3. To encourage participation in information sharing with other organizations and agencies to conserve resources and prevent duplication of work	The District and the Department work with other NRDs, as well as federal partners in the basin, to exchange information on an ongoing basis.

Based upon the conclusion that the IMP is meeting its overall intended goal and each of its goals and objectives, no revisions to the IMP are necessary at this time.