



Nebraska Department of Natural Resources 2021 Annual Report of 2020 Data

for the jointly developed

Little Blue Natural Resources District Integrated Management Plan

Prepared by the
Nebraska Department of Natural Resources
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NEBRASKA

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INTRODUCTION

The Little Blue Natural Resources District (LBNRD or District) and the Nebraska Department of Natural Resources (NeDNR or Department) jointly adopted a voluntary Integrated Management Plan (IMP) which became effective on August 15, 2019.

The voluntary IMP annual reports are intended to provide transparency between the LBNRD and NeDNR, as well as to the public, regarding integrated water management activities. This annual report covers the actions and progress made by NeDNR in 2020 to implement the voluntary IMP, with a focus on surface water. The LBNRD completed a separate report that describes the actions and progress made in voluntary IMP implementation, with a focus on groundwater.

Surface Water Permits that are within LBNRD and Considered “Exempt” According to *Neb. Rev. Stat. §§ 46-283 to 46-287*

Nearly one-half of the irrigation-use surface water permits in the Little Blue NRD are considered “exempt,” and the following offers some context as to what that means and how there came to be so many exempt permits. These exempt permits are for re-use pits that were built to capture and re-use runoff from groundwater irrigation, and for diversions from an ephemeral stream. Prior to 2008, the Department issued surface water permits according to the then-current statutes, which exempted the need for a permit on intermittent streams mapped as such by the U.S. Geological Survey (USGS). However, in 2008, the Nebraska Legislature modified statutes § 46-286 and § 46-287 to allow the Department to determine through investigation if streams should be identified as “intermittent.” The Department identified additional streams which were not mapped by the USGS as “intermittent.” Therefore, the existing surface water permits located on the newly classified intermittent streams as of 2008 are exempt from the provisions of Chapter 46, Article 2 (surface water permitting). Thus, permits with an exempt status are not included in Sections 2 through 7 below. **Attachment A** contains the full language of *Neb. Rev. Stat. §§ 46-283 to 46-287* for the reader’s reference. Chapter 46, Article 2 may be found at: <https://nebraskalegislature.gov/laws/browse-chapters.php?chapter=46>.

NeDNR SURFACE WATER MONITORING

1. Streamgaging

There are currently six streamgages in the District, with an additional gage located near the Nebraska-Kansas state line on the Little Blue River by Hollenburg, Kansas (Table 1). Five of the gages monitor Little Blue River flows, and two gages monitor flows that contribute to the Little Blue River along Big Sandy Creek and Rose Creek. Four gages, including the Hollenburg gage, are operated by the USGS and the remaining three gages are operated by the Department. Several entities contribute funds to operate and maintain the District’s streamgages in addition to the District, Department and USGS.

Two of the Department-operated gages were installed in 2017 to better monitor flood flows upstream of Fairbury and Hebron and further understand contributing flows along Rose Creek. The remaining Department-operated gage has been in operation since 1979 and collects streamflow data above the confluence of the Big Sandy Creek and the Little Blue River. The USGS-operated Hollenburg gage has the most extensive record, beginning in 1974, and is used for administration of the Blue River Compact. Streamgage data may be found at: <https://dnr.nebraska.gov/water-admin/streamgaging>.

NeDNR will continue to assess the need for additional streamgages in the voluntary IMP area.

Table 1. Active streamgages within Little Blue NRD

Streamgages in the Little Blue NRD				
Name of Gage	Funding Source(s)	Gage ID	Years Active	Operator
Little Blue River near Deweese	USGS	6883000	1990 to present	USGS
Little Blue River at County Line at Deshler	Little Blue NRD, Thayer and Jefferson Counties, City of Hebron, USGS	6883530	2017 to present	USGS
Little Blue River at Hebron,	Little Blue NRD and the Nebraska Department of Natural Resources	6883555	2017 to present	NeDNR
Big Sandy Creek at Alexandria	Nebraska Department of Natural Resources	6883940	1979 to present	NeDNR
Little Blue River near Fairbury	U.S. Army Corps of Engineers, USGS	6884000	1991 to present	USGS
Rose Creek at HWY 15 near Fairbury	Little Blue NRD and the Nebraska Department of Natural Resources	6884005	2017 to present	NeDNR
Little Blue River at Hollenburg, Kansas	USGS, Big Blue River Compact Administration	6884025	1974 to present	USGS

2. Administering Surface Water Rights According to State Law

Since 1895, Nebraska has had an administrative system overseeing the orderly use of the state’s surface water resources. All diversions of surface water for irrigation, hydropower, industrial use, municipal use, domestic use, storage, and other uses require a state permit. Each permit has certain responsibilities, limitations, and conditions associated with it. The Department has jurisdiction over all matters pertaining to surface water rights for storage, irrigation, power, manufacturing, instream flows, and other beneficial uses. This includes the distribution of available supply during times of water shortages and adjudication of established water rights. The activity of distributing the supply of surface water on a stream during shortages is called “surface water administration”. Surface water administration is set out in Nebraska Revised Statutes, Chapter 46.

In the LBNRD, the 247 irrigation permits from a naturally flowing source, that are not exempt, allow the use of surface water for irrigation on a maximum of 14,455.19 permitted acres, if the following conditions are true:

- The appropriator has not received a notice from NeDNR to stop diversion
- Terms and conditions of the application approval do not prevent diversion and
- The appropriator has not received a preliminary determination of nonuse.

When surface water administration occurs for permits that use naturally flowing water for irrigation, storage rights upstream from the call are also closed; this prohibits the storage of additional water behind a dam and requires appropriators to pass any inflows. Closing notices may be issued to storage appropriators for the benefit of the Big Blue River Compact as well. An operator may use previously legally stored water for irrigation during a closing notice as long as inflows are being passed downstream, and additional storage is not occurring. The Department would not order an appropriator to drain or release legally stored water.

In 2020, it was not necessary to issue closing notices for prior appropriations or for the Blue River Compact, nor were there any “calls for water” for localized shortages.

3. Monitoring Use of Surface Water to Make Sure that Unauthorized Irrigation is Not Occurring

As time and conditions allow, the NeDNR field office staff visit pumpsites (as mapped) for each appropriation to check for compliance and collect various data.

The Department inspected 125 pumpsites in July and August of 2020 within the LBNRD area. Of the sites visited, 28 had pumpsites set up and two of those were running. Of the 26 sites not running but with pumpsites set up, at least six had evidence that the pump had been pulled due to localized flooding.

4. Mapping and Tracking Acres Permitted to be Irrigated with Surface Water

Maps are required for appropriations according to the *Department of Natural Resources Rules for Surface Water, Title 457*, and Nebraska Revised Statutes.

There are 247 irrigation permits from a naturally flowing source, including the appropriations located in the Big Blue River Basin, within the LBNRD, that are not exempt, allowing the use of surface water for irrigation on a maximum of 14,455.19 permitted acres.

Storage and supplemental storage permits are allowed to store a total of 13,470.93 acre-feet of water per year. Storage-use for irrigation is allowed on a maximum of 7,140.3 permitted acres not covered by an irrigation-from-natural-flow permit.

4.1. New Appropriations

The IMP does not specifically require reporting of new and cancelled (in-full or in-part) surface water appropriations; however, NeDNR is providing this information for a more complete picture of surface water permitting activities within the LBNRD.

In 2020, the Department approved two applications for a new surface water appropriation. Both of the new permits allow for storage of water. The two permits approved in 2020 are summarized in Table 2.

Table 2. Applications for new surface water appropriations approved in 2020

Applications Approved in 2020 in the Little Blue NRD						
Appropriation Number	Approval Date	Use	Source	Acres	Grant	River Basin
A-19688	4/10/2020	Storage	Tributary to Dry Creek	NA	20.9 AF	Little Blue
A-19700	6/17/2020	Storage	Tributary to Brawner Creek	NA	63.2 AF	Little Blue

4.2. Cancelled Appropriations

In 2020, the Department cancelled four appropriations in the LBNRD. Two were irrigation from a naturally flowing source; one was for storage and one was for storage-use.

Permit use codes are as follows:

- IR– “Irrigation”, a permit to divert water from natural flow for irrigation
- SO– “Store-only”, a permit to divert water from a reservoir for irrigation
- ST– “Storage”, a permit to store water

The legal basis for the Department’s action pertains to one of the following authorities.

- Preliminary determination of non-use (PDNU): After a field investigation found the appropriation had not been used in the last five years, the owner did not successfully contest the preliminary determination of nonuse.
 - Authority upon which the action was based: *Neb. Rev. Stat. §§ 46-229.02(1) through 46-229.02(6)* which state that if the NeDNR makes a preliminary determination that an appropriation has not been used for more than five consecutive years, and the owner of said appropriation does not successfully contest the determination, then NeDNR may cancel said appropriation in whole or in part.
- Relinquishment (REL): Appropriator filed a voluntary relinquishment of water appropriation.
 - Authority upon which the action was based: *Department Rules for Surface Water, Neb. Admin. Code. Title 457, Chapter 3*, which specifies that any appropriation, or part of any appropriation, may be voluntarily relinquished.

The appropriations cancelled in 2020 are summarized in Table 3.

Table 3. Surface Water Appropriations cancelled in full in 2020

Surface Water Appropriations Cancelled in Full January 1, 2020, to December 31, 2020, Within the Little Blue NRD									
Appropriation Number	Cancelled Date	River Basin	Location of Diversion (S-T-R)	Use	Begin Acres	Cancelled Acres	Cancelled Grant in cfs	Cancelled Grant in af	Basis for NeDNR Action
A-2277	9/3/2020	Little Blue	S9-T2N-R2E	IR	17	17	0.25	NA	PDNU-9008
A-16046	1/14/2020	Little Blue	S3-T1N-R3W	SO	92	92	NA	35	REL-7777
A-17123	4/29/2020	Little Blue	S10-T3N-R4W	IR	35	35	0.50	NA	REL-8940
A-11953	8/17/2020	Republican	S33-T1-R5W	ST	NA	NA	NA	28.7	REL-9013

5. Voluntary Water Right Use Reporting

The Department received 79 responses to the voluntary survey for surface water appropriators in the LBNRD. These appropriators provided information for the year 2020 as follows.

Of the 53 appropriators with “IR” irrigation from a naturally flowing source

- 27 used surface water only on 1,806.3 acres
- 7 used groundwater only on 245.5 acres
- 19 did not irrigate 1,009.5 acres

Of the 22 appropriators with “SO” irrigation from storage only

- 9 used surface water only on 1,076.6 acres
- 1 used groundwater only on 42 acres
- 4 used groundwater and surface water on 643.6 acres
- 8 did not irrigate 506.2 acres

Of the 4 appropriators with “SI” irrigation from storage (supplementing irrigation from a naturally flowing source)

- 2 used surface water only on 187 acres
- 2 did not irrigate 176 acres

The average inches of water applied was 5.5” as reported by 24 respondents that indicated amounts they applied.

- The 24 responses included these uses: 16 “IR”, 7 “SO”, and 1 “SI.”
- The number of acres irrigated as indicated by the 24 respondents totals 1,979.4 acres, for a total of 10,805.1 acre/inches (900.4 acre-feet) of surface water reported as applied in the LBNRD in 2020.

6. Evaluating the Necessity for Mandatory Installation of Water Flow Meters on All Surface Water Pumps for Irrigation, Industrial, and Municipal Uses

The Department will continue to evaluate the need for flow meters on surface water diversions.

7. Water Right Transfer Activity Reporting

In 2020, the Department acted upon one expedited transfer subject to *Neb. Rev. Stat. §§ 46-290 to 46-294.04* in the voluntary IMP area.

Expedited transfers have additional parameters that the proposed changes must meet. According to *Neb. Rev. Stat. §46-291(1)*, “expedited transfers” are restricted to the following but not limited to:

- Appropriations that are for irrigation
- No increase in the number of acres
- Location of use may only change to adjacent lands
- Land must all be owned by the same landowner or be under the same irrigation district
- The point of diversion may not change significantly

For more information regarding this transfer, the approval order and map are available upon request. No other types of transfers were submitted. Table 4 summarizes the appropriation granted an expedited transfer.

Table 4. Application for an Expedited Transfer Approved in 2020

Transfer Application Approved in 2020 in the Little Blue NRD						
Appropriation Number	Approval Date	Use	Source	Acres Transferred	Grant Transferred	Increase in Acres?
A-8131	8/4/2020	IR	Tributary to Dry Creek	24	0.17 cfs	No

8. Variances Filed in Areas Under Moratorium

Since 2004, the Department has had a moratorium on new surface water applications in both the Republican River Basin and Upper Platte River Basin.

No variances have been filed in 2020 within the LBNRD within the Republican River Basin or the Upper Platte River Basin.

No moratoriums exist in either the Big Blue River Basin or the Little Blue River Basin; therefore, no variances were sought in 2020.

9. NeDNR Methodology for Tracking Depletions

The Department will institute mandatory reporting for all high-capacity (greater than 50 gallons per minute) surface water irrigation uses when a water availability trigger is met. The trigger is 24 average days of closure for surface water administration, between the period of July 1 and August 31. The average days of closure will be calculated using the past 20 years of records for surface water administration. For more details on this trigger, please see Appendix E. The Department reserves the right to institute mandatory reporting prior to the trigger being met, if deemed appropriate.

In 2020, the trigger was not met as surface water administration was not necessary.

10. Modeling Tools, and Data Analysis

To increase the understanding of hydrologically connected water, LBNRD is participating with the Tri-Basin, Upper Big Blue, and Lower Big Blue NRDs and NeDNR to develop a numerical Blue Basin Groundwater Model. The model is intended to:

- Refine the delineations of hydrologically connected groundwater and surface water of the Blue River Basin;
- Simulate groundwater level changes and their impacts on stream baseflow and assess potential streamflow depletions, both spatially and temporally;
- Support NeDNR's evaluation of the appropriation status of the Blue River Basin and other management decisions related to how groundwater pumping impacts streamflows; and
- Provide a platform and datasets representing the best available data for evaluation of local-scale water issues.

In 2020, model development proceeded to the calibration phase. A fully calibrated model is expected to be completed in summer 2021.

ATTACHMENT A

Water Reuse Pit Related Statutes: *Neb. Rev. Stat. §§ 46-283 to 46-287*

46-283 Legislative findings.

The Legislature hereby finds and declares that the practice of reusing ground water from irrigation water reuse pits on irrigated land contributes to the efficient use and conservation of the state's water resources and that such reuse may be more feasible when done from irrigation water reuse pits located within ephemeral natural streams.

Source: Laws 1980, LB 908, § 1; Laws 2008, LB798, § 1. 46-284

Definitions, sections found.

For purposes of sections 46-283 to 46-287, unless the context otherwise requires, the definitions found in sections 46-285 and 46-286 shall be used.

Source: Laws 1980, LB 908, § 2.

46-285 Irrigation water reuse pit, defined.

Irrigation water reuse pit shall mean an excavation constructed to capture, for reuse, runoff resulting from ground water irrigation or a structure designed for the purpose of water impoundment which is used for this same purpose so long as the capacity of the facility does not exceed fifteen acre-feet.

Source: Laws 1980, LB 908, § 3.

46-286 Ephemeral natural stream, defined.

An ephemeral natural stream shall mean that portion of a natural stream in which water flows only after a precipitation event or when augmented by surface water runoff caused by the pumping of ground water for irrigation. The portion of a natural stream that is shown as an intermittent stream on the most recent United States Geological Survey topographic quadrangle map published - 49 - prior to July 18, 2008, shall be considered an ephemeral natural stream unless the Department of Natural Resources has investigated the stream and determined that the stream or a reach of the stream is perennial or intermittent and subject to Chapter 46, Article 2. The department's determination for the purposes of this section shall be adopted and promulgated in rule or regulation.

Source: Laws 1980, LB 908, § 4; Laws 2006, LB 508, § 1; Laws 2008, LB798, § 2.

46-287 Irrigation water reuse pit; reusing ground water; exempt from certain provisions.

Notwithstanding any other provision of law, any person intending to or in the process of reusing ground water from an irrigation water reuse pit located within an ephemeral natural stream shall be exempt from the provisions of Chapter 46, Article 2, which would otherwise apply to such pits, and from the provisions of section 46-637.

Source: Laws 1980, LB 908, § 5; Laws 2008, LB798, § 3