

Nebraska Department of Natural Resources
2022 Annual Report
of 2021 Data

for the jointly developed

Tri-Basin Natural Resources District
(Little Blue River Basin portion)
Voluntary Integrated Management Plan



Prepared by the
Nebraska Department of Natural Resources
September 15, 2022

INTRODUCTION

Tri-Basin Natural Resources District (TBNRD) and the Nebraska Department of Natural Resources (NeDNR) jointly adopted a voluntary Integrated Management Plan (IMP) for the Little Blue River Basin portion of the district. The IMP, which became effective on April 15, 2020, requires TBNRD and NeDNR to report annually on data collected, management actions taken, and progress made to implement the voluntary IMP.

The Department's 2022 Annual Report focuses on surface water. TBNRD completed a separate report that describes the actions and progress made in voluntary IMP implementation, with a focus on groundwater. These reports are intended to inform the public about integrated water management in the IMP area and to provide transparency between the TBNRD and NeDNR.

Included in this report are the following items required by the voluntary IMP.

1. Data on existing streamgaging in the Little Blue portion of TBNRD.
2. Data on water administration of surface water rights.
3. Data on monitoring the use of surface water.
4. Data on any new surface water appropriations.
5. Data collected through voluntary reporting program.
6. Transfers of surface water rights.
7. Variances acted upon, should a moratorium be placed on new surface water appropriations in TBNRD.

1. Streamgaging

The upper portion of the Little Blue River Basin consists of the Little Blue River, Sand Creek and Cottonwood Creek watersheds. All these streams originate within Kearney County and are intermittent, meaning that they have no baseflow within TBNRD. Because these streams are intermittent, no permanent streamgages are in operation in TBNRD's portion of the Little Blue River Basin.

In 2015, NeDNR installed two pressure transducers to monitor streamflow along Sand Creek. Pressure transducers are less costly than permanent streamgages and are used to observe trends in water levels. NeDNR typically collects transducer data in the spring and the fall. Though NeDNR does calculate discharge at transducer sites, these calculations are generally less accurate than those from permanent streamgages because fewer measurements are taken.

Figure 1 shows the location of the two transducer sites that monitor streamflow in the Little Blue Basin portion of TBNRD. Transducer site 26, is located on Sand Creek within TBNRD, about three miles northwest of Minden, NE, and has provisional data available through September 12, 2021 (Figure 2). Transducer site 27 is located just outside the IMP area within the LBNRD, about four miles east of Norman, NE. Data for transducer site 27 is available through June 26, 2019 (Figure 3). The Little Blue River and tributaries within the LBNRD have dedicated streamgages further downstream of the IMP area.

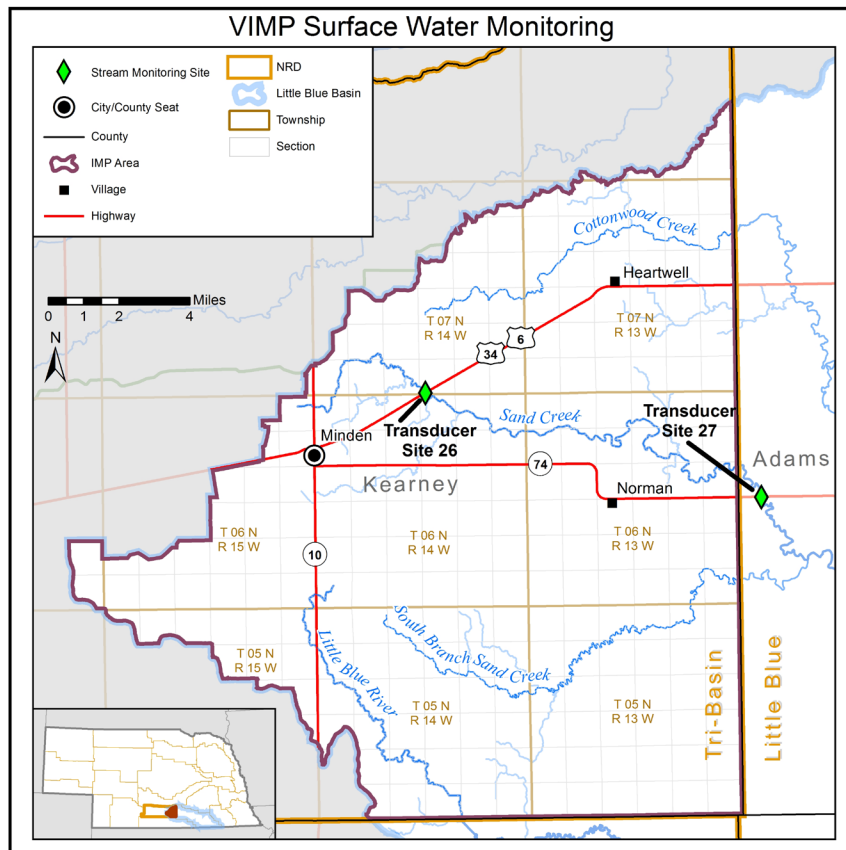


Figure 1: Location of Pressure Transducers within the IMP area

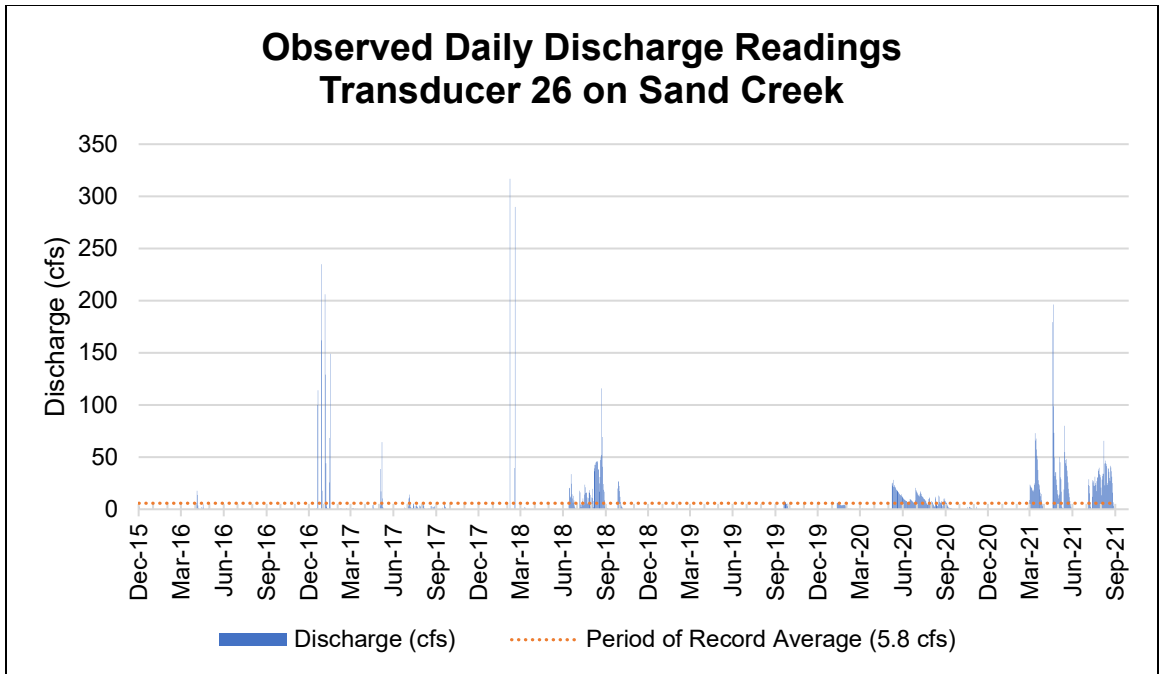


Figure 2: Observed daily discharge at transducer 26

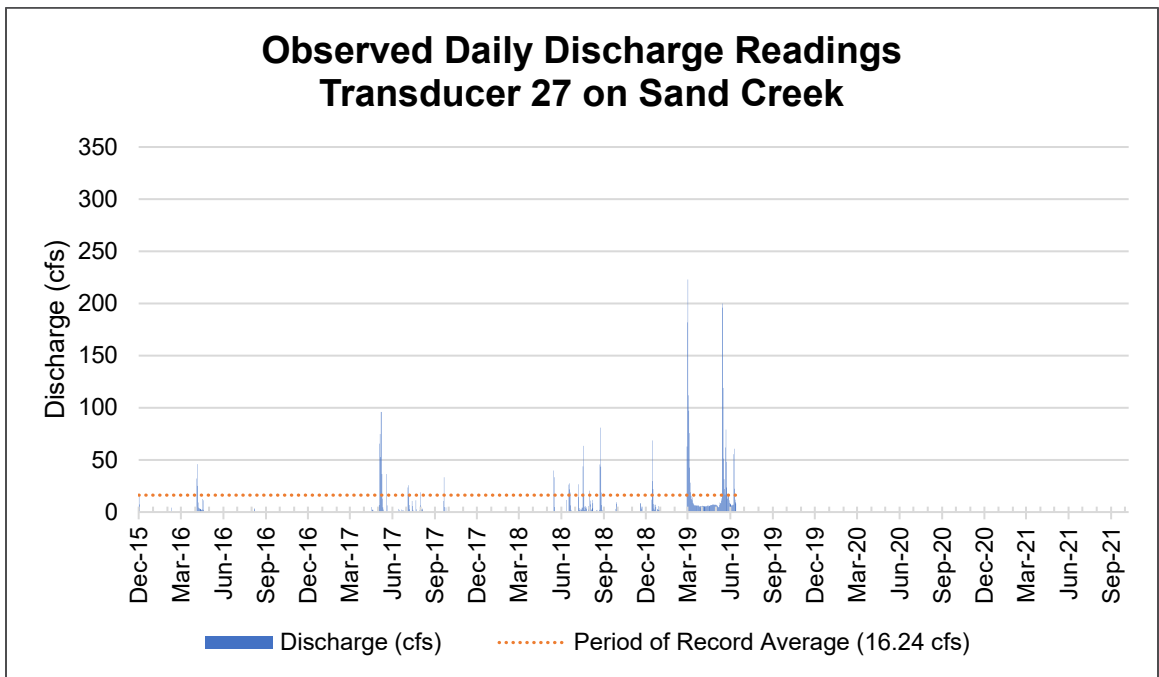


Figure 3: Observed daily discharge at transducer 27

2. Administer surface water rights according to State law.

Currently all the irrigation-use surface water permits in the Little Blue River portion of TBNRD are considered “exempt”. Prior to 2008, the Department issued surface water permits according to the then current statutes. Those statutes exempted the requirement of a surface water permit for diverting from a stream that had been determined by the U.S. Geological Service to be an intermittent stream. However, in 2008 the Nebraska Legislature modified statutes § 46-286 and § 46-287¹ to allow the NeDNR to investigate and determine if streams should be identified as “intermittent.” At that time, NeDNR identified additional “intermittent” streams, which were not previously mapped as such by the U.S. Geological Service. Therefore, existing surface water permits, located on streams that were re-classified as intermittent, are exempt from the provisions of Chapter 46, Article 2² (surface water permitting).

In 2021 no water administration was required. In 2021 the Department did not administer any water rights in the IMP area due to irrigation permits being exempt from NeDNR surface water regulation or administration according to Neb. Rev. Stat. §§ 46-285 to 46-287.

3. Monitoring of the use of surface water.

As time and conditions allow, the NeDNR field office staff visit pumpsites as mapped for each appropriation to collect various data. In 2021 the Department did not inspect any pumpsites in the IMP area due to irrigation permits being exempt from NeDNR surface water regulation or administration according to Neb. Rev. Stat. §§ 46-285 to 46-287.

4. Surface water permitting activity

In 2021 the Department did not act upon any applications, approving new or cancelling appropriations within the IMP area. The current active permits are shown in Table 1 below and continued on page 5.

Table 1: Current active surface water permits in the IMP area.

Surface Water Permits in TBNRD Voluntary IMP Area							
Permit Number	Date Approved	Use	General Location	Source	Exempt	Acres	AF of Storage
A-10159	3/29/1963	IR	S8-T5N-R13W	Sand Creek, Trib. To	Yes	25	-
A-12110	5/14/1971	IR	S2-T5N-R14W	Sand Creek, Trib. To	Yes	40	-
A-12111	5/14/1971	IR	S2-T5N-R14W	Sand Creek, Trib. To	Yes	40	-
A-12948	3/15/1974	IR	S18-T5N-R13W	Sand Creek, Trib. To	Yes	19.7	-
A-14869	1/31/1978	IR	S11-T6N-R13W	Sand Creek	Yes	50	-
A-15084	11/15/1978	IR	S9-T6N-R14W	Sand Creek, Trib. To	Yes	99.1	-
A-15359	1/15/1979	IR	S16-T6N-R14W	Sand Creek, Trib. To	Yes	68	-

¹ **Attachment A** contains the full language of Neb. Rev. Stat. §§ 46-283 to 46-287 for your reference.

² Chapter 46, Article 2 may be found at the following website: <https://nebraskalegislature.gov/>. Chapter 46 may be found here: <https://nebraskalegislature.gov/laws/browse-chapters.php?chapter=46>.

Permit Number	Date Approved	Use	General Location	Source	Exempt	Acres	AF of Storage
A-15361	1/15/1979	IR	S23-T7N-R13W	Cottonwood Creek,	Yes	17.4	-
A-15376	1/15/1979	IR	S4-T7N-R13W	Cottonwood Creek,	Yes	208	-
A-15390	2/15/1979	IR	S9-T6N-R13W	Sand Creek	Yes	30	-
A-16513	8/18/1986	IR	S17-T6N-R14W	Sand Creek, Trib. To	Yes	26	-
A-16541	3/16/1987	IR	S18-T5N-R14W	Blue River, Little	Yes	45.5	-
A-17285	6/17/1993	IR	S35-T6N-R13W	Sand Creek, South	Yes	27	-
A-17907	10/10/2000	IR	S33-T7N-R14W	Sand Creek, Trib. To	Yes	44	-
A-17905	11/14/2001	IR	S7-T5N-R14W	Blue River, Little	Yes	36	-
A-12967	3/15/1974	SO	S33-T5N-R14W	Olson Reservoir	No	147.5	36.6
A-12988	3/15/1974	SO	S25-T5N-R14W	Nelson Reservoir	No	64	50.3
A-13036	12/5/1975	SO	S25-T5N-R14W	Nelson Reservoir	No	102	11.6
A-17989	11/14/2001	SI	S7-T5N-R14W	Karen's Pond	Yes	36	108
A-10107	12/14/1962	ST	S18-T6N-R14W	Sand Creek, Trib. To	No	0	66.59
A-10381	10/16/1964	ST	S10-T5N-R14W	Sand Creek, Trib. To	No	-	76.24
A-11850	2/5/1970	ST	S3-T6N-R14W	Sand Creek, Trib. To	No	-	18
A-12298	7/7/1971	ST	S12-T5N-R14W	Sand Creek, Trib. To	No	-	15.1
A-12761	11/10/1972	ST	S25-T5N-R14W	Blue River, Little, Trib.	No	-	61.9
A-12942	9/27/1973	ST	S19-T5N-R13W	Sand Creek, Trib. To	No	-	65.3
A-12957	11/30/1973	ST	S33-T5N-R14W	Blue River, Little, Trib.	No	-	36.6
A-17924	1/25/2001	ST	S32-T7N-R14W	Sand Creek	No	-	107.4
A-17904	11/14/2001	ST	S7-T5N-R14W	Blue River, Little	Yes		108

5. Voluntary water use reporting

In 2021 no voluntary water use surveys were sent to appropriators that hold an irrigation use permit in the Little Blue River basin IMP area because the permits are exempt from NeDNR surface water regulation or administration according to Neb. Rev. Stat. §§ 46-285 to 46-287.

6. Transfers of surface water rights

In 2021 the Department did not act upon any transfers subject to Neb. Rev. Stat. §§ 46-290 to 46-294.04 in the Little Blue River basin IMP area because the permits are exempt from NeDNR surface water regulation or administration according to Neb. Rev. Stat. §§ 46-285 to 46-287.

7. Variances acted upon

In 2021, no moratoria were placed, thus no variances were sought.

Modeling Tools, and Data Analysis

TBNRD is participating with the Little Blue, 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 Blue River Basin delineations of hydrologically connected groundwater and surface water
- Spatially and temporally simulate groundwater level changes and their impacts on stream baseflow and assess potential streamflow depletions
- Support NeDNR's Blue River Basin appropriation status evaluation and other management decisions related to groundwater pumping impacts and streamflows; and provide a platform and datasets that represent the best available data for local-scale water issue evaluations.

In 2021, model development proceeded to the calibration phase. A fully calibrated model is expected to be completed by the end of 2022.

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